

Chapter 296-19A WAC
VOCATIONAL REHABILITATION
 (Formerly chapter 296-18A WAC)

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DEFINITIONS

WAC 296-19A-010 Definitions. (1) What does it mean to say an injured worker is employable?

(a) "Employable" means having the skills and training that are commonly and currently necessary in the labor market to be capable of performing and obtaining gainful employment on a reasonably continuous basis when considering the worker's:

- (i) Age, education, and experience;
- (ii) Preexisting physical and mental limitations; and
- (iii) Physical and mental limitations caused, at least in part, by the worker's industrial injury or occupational disease.

(b) Physical and/or mental conditions that arose after the industrial injury/occupational disease that were not caused or aggravated by the industrial injury/occupational disease are not considered in determining whether the worker is employable under the Industrial Insurance Act.

(c) If there are no physical or mental restrictions caused by the worker's industrial injury/occupational disease, the worker must be found employable under the Industrial Insurance Act.

(2) What are vocational rehabilitation services?

Vocational rehabilitation services are those provided by a vocational rehabilitation provider and include, but are not limited to, the following:

(a) Gathering industrially injured or ill workers' work and/or education histories and physical capacities information;

(b) Assessing industrially injured or ill workers' employability;

(c) Developing, documenting, and writing vocational rehabilitation plans;

(d) Monitoring injured workers' progress during training;

(e) Writing progress reports;

(f) Analyzing and documenting the transferable skills of the injured worker and writing transferable skills analyses;

(g) Performing occupational research;

(h) Conducting labor market surveys and writing labor market survey reports;

(i) Conducting and writing job analyses;

(j) Communicating with industrially injured or ill workers, employers, physicians and others;

(k) Developing job modifications and work site modifications, as well as prejob accommodations, and writing reports for this work; and

(l) All work done to obtain any job with any employer for injured workers referred for vocational rehabilitation services.

(3) What is a vocational rehabilitation provider (provider)? A provider is any person, firm, partnership, corporation, or other legal entity that provides vocational rehabilitation services to industrially injured or ill workers, pursuant to RCW 51.32.095. A provider must meet the qualifications listed in WAC 296-19A-210.

(4) What is an injured worker's labor market? Generally, the worker's relevant labor market is the geographic area where the worker was last gainfully employed. The labor market must be within a reasonable commuting distance and be consistent with the industrially injured or ill worker's physical and mental capacities. The exceptions to this rule are listed in the table below:

When a worker:	Then the department:
<ul style="list-style-type: none"> Relocates to a labor market other than at the time of injury and Returns to work and Suffers an aggravation of the work-related condition. 	Uses the labor market where the industrially injured or ill worker worked at the time of the aggravation. This applies whether the department closed and reopened the claim or whether the claim remained open during the period of aggravation.
<ul style="list-style-type: none"> Relocates after the industrial injury/illness or aggravation and Now lives in a labor market with more employment opportunities than where the industrially injured or ill worker worked at the time of injury. 	Uses the industrially injured or ill worker's current labor market. For example, an industrially injured or ill worker was injured in Forks but after the injury, moves to Tacoma. Provider would use Tacoma as the industrially injured or ill worker's labor market.

When a worker:	Then the department:
<ul style="list-style-type: none"> Relocates to a labor market other than at the time of injury or onset of illness and The move was proximately caused by the medical condition arising from the occupational injury or disease. 	Uses the injured or ill worker's current labor market. For example, an industrially injured or ill worker moves to a drier climate due to an accepted asthma condition. Provider would use the labor market in the drier climate.

(5) What is a labor market survey (LMS)? It is a survey of employers in an industrially injured or ill worker's labor market to obtain specific information (such as physical demands and qualifications) related to job possibilities.

(6) What is a job analysis (JA)? It is the gathering, evaluating, and recording of accurate, objective data about the characteristics of a particular job.

(7) What is a transferable skill? Transferable skills are any combination of learned or demonstrated behavior, education, training, work traits, and work-related skills that can be readily applied by the worker. They are skills that are interchangeable among different jobs and workplaces. Nonwork-related talents or skills that are both demonstrated and applicable may also be considered.

(8) What is a transferable skills analysis? It is a systematic study of the transferable skill or skills a worker has demonstrated to see if that skill set makes him/her employable.

(9) What are job modifications? Job modifications are adjustments or alterations made to the way a job is performed to accommodate the restrictions imposed by an industrial injury or occupational disease. The purpose of job modification benefits is to encourage employers to modify jobs to retain or hire injured workers. Job modifications are used when an employer-employee relationship exists, and they may include worksite adjustment; job restructuring; and/or tools, equipment or appliances.

(10) What are prejob accommodations? Prejob accommodations are adjustments or alterations made to the way a job is performed to accommodate the restrictions imposed by an industrial injury or occupational disease. The purpose of prejob accommodation benefits is to make it possible for the worker to perform the essential functions of a job. Accommodations are used when an industrially injured or ill worker is engaged in a vocational rehabilitation plan or in a job search, and they may include tools, equipment or appliances.

[Statutory Authority: RCW 51.04.020, 51.04.030, 51.32.095, 51.36.100, 51.36.110. 03-11-009, § 296-19A-010, filed 5/12/03, effective 2/1/04; 00-18-078, § 296-19A-010, filed 9/1/00, effective 6/1/01.]

GENERAL INFORMATION

WAC 296-19A-020 When may the department offer vocational rehabilitation services? The department may, at its sole discretion, authorize vocational rehabilitation services that are necessary and likely to enable the industrially injured or ill worker to become employable.

[Statutory Authority: RCW 51.04.020, 51.04.030, 51.32.095, 51.36.100, 51.36.110. 03-11-009, § 296-19A-020, filed 5/12/03, effective 2/1/04; 00-18-078, § 296-19A-020, filed 9/1/00, effective 6/1/01.]

WAC 296-19A-025 What information does the department consider when exercising discretion? In exercising its discretion the department considers, but is not limited to:

- (1) Whether the worker took advantage of and utilized vocational rehabilitation services offered in this or other claims;
- (2) The worker's ability and willingness to participate in and benefit from vocational rehabilitation services; and
- (3) The likelihood that the worker will be employable after the vocational rehabilitation services are completed.

[Statutory Authority: RCW 51.04.020, 51.04.030, 51.32.095, 51.36.100, 51.36.110. 03-11-009, § 296-19A-025, filed 5/12/03, effective 2/1/04.]

WAC 296-19A-030 What are the responsibilities of the parties? All parties will have the following responsibilities in assisting the injured worker to become employable at gainful employment:

(1) The attending physician shall maintain open communication with the industrially injured or ill worker's assigned vocational rehabilitation counselor and the referral source. The attending physician shall respond to any requests for information in a timely fashion and will do all that is possible to expedite the vocational rehabilitation process, including making an estimate of the worker's physical or mental capacities that affect the worker's employability.

(2) The claims unit within the department shall notify the employer of the referral to a vocational rehabilitation provider.

(3) The employer shall assist the vocational rehabilitation counselor in any way necessary to collect data regarding the former gainful employment of the injured worker. Further, the employer will assist the vocational rehabilitation counselor and attending physician to determine whether or not a modified job could be made available for employment of the injured worker.

(4) The injured worker shall cooperate with all reasonable requests from all responsible individuals in determining disability, developing and implementing the rehabilitation process. Should the injured worker fail to be cooperative, the sanctions as set out in RCW 51.32.110 shall be applied.

(5) In assisting the injured worker to become employable at gainful employment, the provider is to follow the priorities as set out in RCW 51.32.095 and the requirements as set out in this chapter. This includes providing, upon request, copies of reports and attachments submitted to the referral source to the injured worker or their representative.

[Statutory Authority: RCW 51.04.020, 51.04.030, 51.32.095, 51.36.100, 51.36.110. 03-11-009, § 296-19A-030, filed 5/12/03, effective 2/1/04; 00-18-078, § 296-19A-030, filed 9/1/00, effective 6/1/01.]

WAC 296-19A-040 What vocational rehabilitation services require authorization? All vocational rehabilitation services must be preauthorized. The department may make one or more of the following type of referrals: Early intervention; ability to work assessment ("AWA" or "assessment"); plan development; plan implementation; forensic services; or stand alone job analysis. Each referral is a separate authorization for vocational rehabilitation services.

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[Statutory Authority: RCW 51.04.020, 51.04.030, 51.32.095, 51.36.100, 51.36.110. 03-11-009, § 296-19A-040, filed 5/12/03, effective 2/1/04; 00-18-078, § 296-19A-040, filed 9/1/00, effective 6/1/01.]

DEPARTMENT VOCATIONAL REHABILITATION REFERRALS

WAC 296-19A-045 Which rules under "department vocational rehabilitation referrals" apply only to the department? WAC 296-19A-050 through 296-19A-137 pertain to referrals for vocational rehabilitation services made by the department.

[Statutory Authority: RCW 51.04.020, 51.04.030, 51.32.095, 51.36.100, 51.36.110. 03-22-030, § 296-19A-045, filed 10/28/03, effective 2/1/04; 00-18-078, § 296-19A-045, filed 9/1/00, effective 6/1/01.]

WAC 296-19A-050 What are early intervention services? Early intervention services are intended to help an industrially injured or ill worker return to work, or continue to work, for the employer of injury or the current employer. These services include, but are not limited to, the following:

- (1) Discussing early return to work options with the employer, worker, and attending physician;
- (2) Identifying return to work goals and barriers that may interfere with or prevent the industrially injured or ill worker from returning or continuing to work;
- (3) Assisting employers with offers of employment;
- (4) Planning and working with the referral source on necessary job modifications and prejob accommodations;
- (5) Performing job analyses; and
- (6) Assessing the industrially injured or ill worker's need for preferred worker status and educating the worker on the preferred worker benefit, if appropriate.

[Statutory Authority: RCW 51.04.020, 51.04.030, 51.32.095, 51.36.100, 51.36.110. 00-18-078, § 296-19A-050, filed 9/1/00, effective 6/1/01.]

WAC 296-19A-060 What reports does the department require when early intervention services are provided at its request? (1) Progress reports. The vocational rehabilitation provider must submit a written progress report to the department, and upon request, to the injured worker or the injured worker's representative, every thirty calendar days from the date of the electronic referral summarizing progress during the most recent reporting period. The progress report must include the following:

- (a) Summarized results of all contacts the provider had with the industrially injured or ill worker, employer of injury or current employer, and medical provider(s);
- (b) Summary of all actions taken including progress on previously recommended actions;
- (c) Identification and analysis of any barriers preventing completion of the referral; and
- (d) Description of the specific actions the provider intends to take to overcome barriers and the expected time frame to complete those actions.

(2) Closing reports. The provider must always submit an early intervention closing report at the conclusion of services. In the report the provider must include or address:

- (a) A brief description of the industrially injured or ill worker's work history;

(b) Summary of the industrially injured or ill worker's education, training, licenses, and certificates;

(c) A medically reviewed job analysis for the job of injury and any other return to work options;

(d) Description of the worker's medical status and physical capacities;

(e) Indication of which return to work priority relates to the situation;

(f) Any other supporting documentation;

(g) The date the worker returned to work and the monthly salary or wage, or document attempts to obtain this information, if applicable;

(h) Documentation that no return to work options exist with the employer of injury or current employer, if applicable.

(3) The provider must notify the department orally and in writing within two working days after learning of an unsuccessful return to work by the injured worker.

(4) The provider must notify the department orally and in writing within two working days after learning of a return to work by the injured worker.

[Statutory Authority: RCW 51.04.020, 51.04.030, 51.32.095, 51.36.100, 51.36.110. 03-11-009, § 296-19A-060, filed 5/12/03, effective 2/1/04; 00-18-078, § 296-19A-060, filed 9/1/00, effective 6/1/01.]

WAC 296-19A-065 What are ability to work assessment (AWA) services? AWA services are used by the department to determine if an industrially injured or ill worker should receive vocational rehabilitation plan development services. AWA services may include, but are not limited to, the following:

(1) Performing job analyses;

(2) Conducting labor market surveys;

(3) Assessing transferable skills;

(4) Obtaining work restrictions;

(5) Evaluating the injured worker's ability to work at the job of injury or any other job;

(6) Coordinating with medical providers to obtain physical capacities and restriction information and a release to participate in vocational rehabilitation plan development services;

(7) With authorization from the department, vocational testing may be used to evaluate the industrially injured or ill worker's ability to benefit from vocational rehabilitation services;

(8) Assessing the industrially injured or ill worker's need for preferred worker status and educating the worker on the preferred worker benefit, if appropriate.

[Statutory Authority: RCW 51.04.020, 51.04.030, 51.32.095, 51.36.100, 51.36.110. 03-11-009, § 296-19A-065, filed 5/12/03, effective 2/1/04.]

WAC 296-19A-070 What is an ability to work assessment? (1) The AWA report must include an evaluation of the industrially injured or ill worker's:

(a) Age, education and experience;

(b) Transferable skills;

(c) Preexisting physical and mental conditions and the effect of those conditions on the worker's employability;

(d) Physical and mental conditions proximately caused by the worker's industrial injury or occupational disease and the effect of those conditions on the worker's employability;

(e) Wage at the time of injury;

(f) Work pattern;

(g) Significant barriers to employment;

(h) Labor market;

(i) Complete work history, addressing any gaps in employment, in addition to information about education level, courses or transcripts, licenses, certifications or registrations that the worker may have obtained in the past; and

(j) The report must address the first four return to work priorities set forth in RCW 51.32.095(2).

(2) The AWA must also include one of the following recommendations:

(a) Able to work: The injured worker is employable at gainful employment. The report must include:

(i) Whether the worker is employable with the employer of injury or current employer, or if not, a list of job possibilities for which the worker is qualified;

(ii) A medically approved job analysis. When this is not obtainable, medically approved physical capacities information regarding the worker's ability to perform the job may be used; and

(iii) Labor market information supporting the provider's recommendation. Labor market information is not necessary when the injured worker is medically released to work for their job of injury at their previous work pattern;

(b) Further services appropriate: Vocational rehabilitation services are necessary and likely to enable the injured worker to become employable at gainful employment. The report must include:

(i) An analysis demonstrating how vocational rehabilitation plan development services are necessary and likely to enable the injured worker to become employable at gainful employment;

(ii) The specific return to work possibilities investigated and the reasons why they were ruled out including labor market information when necessary; or

(c) Further services not appropriate: The injured worker is not likely to benefit from vocational services. The report must include:

(i) An analysis explaining why vocational rehabilitation services are not appropriate;

(ii) Identifying barriers that will make it unlikely the worker will benefit from vocational rehabilitation services, consistent with the requirements in WAC 296-19A-010(1);

(iii) Medical, labor market, and/or other information, as necessary, supporting the provider's recommendations.

(d) Return to work: The injured worker has returned to work. The report must specify and/or document attempts to obtain the following information:

(i) A description of the job the worker returned to;

(ii) The name of the employer;

(iii) The date that the worker returned to work;

(iv) The worker's monthly wages.

(3) The provider must immediately inform the department orally if the worker has returned to work or if the provider has documentation that the worker is medically released without restrictions or has returned to work. The provider must follow the oral notification with written notification within two working days. The provider must attach documentation showing the worker was medically released to work without restrictions. Except for completing the closing

report, the provider should not perform any other work on the AWA without the prior authorization of the referral source.

[Statutory Authority: RCW 51.04.020, 51.04.030, 51.32.095, 51.36.100, 51.36.110. 03-11-009, § 296-19A-070, filed 5/12/03, effective 2/1/04; 00-18-078, § 296-19A-070, filed 9/1/00, effective 6/1/01.]

WAC 296-19A-080 How often must written progress reports be completed and submitted during assessment activities? The provider must submit a written progress report to the department, and upon request, to the injured worker or the injured worker's representative, every thirty calendar days from the date of the electronic referral summarizing progress during the most recent reporting period. The written progress report must include:

- (1) A detailed explanation why the AWA was not completed as of the date of the report;
- (2) A summary of all activities taken in the past thirty days, including progress on previously recommended actions;
- (3) Identification and analysis of any barriers preventing completion of the referral; and
- (4) A description of the specific actions the provider intends to take to overcome barriers and the expected time frame to complete those actions.

[Statutory Authority: RCW 51.04.020, 51.04.030, 51.32.095, 51.36.100, 51.36.110. 03-22-030, § 296-19A-080, filed 10/28/03, effective 2/1/04; 00-18-078, § 296-19A-080, filed 9/1/00, effective 6/1/01.]

WAC 296-19A-090 What are vocational rehabilitation plan development services? Vocational rehabilitation plan development services are authorized to obtain the vocational rehabilitation provider's assistance in producing a vocational rehabilitation plan for an industrially injured or ill worker. The provider will work with the industrially injured or ill worker in the development of the plan. Covered services include, but are not limited to, the following:

- (1) Vocational counseling and occupational exploration;
- (2) Identifying job goal, training needs, resources, and expenses;
- (3) Vocational rehabilitation plan development services are authorized for the vocational rehabilitation provider to produce a recommended vocational rehabilitation plan for an industrially injured or ill worker;
- (4) Coordinating with medical providers to obtain physical capacities and restrictions information and a release to participate in a vocational rehabilitation plan;
- (5) Vocational testing; and
- (6) Identify, evaluate, and plan education and training resources, when necessary.

[Statutory Authority: RCW 51.04.020, 51.04.030, 51.32.095, 51.36.100, 51.36.110. 03-11-009, § 296-19A-090, filed 5/12/03, effective 2/1/04; 00-18-078, § 296-19A-090, filed 9/1/00, effective 6/1/01.]

WAC 296-19A-100 What reports does the department require when vocational rehabilitation plan development services are provided at its request? (1) Progress reports. The vocational rehabilitation provider must submit a written progress report to the department, and upon request, to the injured worker or the injured worker's representative, every thirty calendar days from the date of the electronic

referral summarizing progress during the most recent reporting period. The progress report must include the following:

- (a) Description of the return to work goals explored, accepted or ruled out;
 - (b) Review of the return to work priorities being addressed;
 - (c) Summary of all actions taken, including progress on previously recommended actions;
 - (d) Identification and analysis of any barriers preventing completion of the referral; and
 - (e) Description of the specific actions the provider intends to take to overcome barriers and the expected time frame to complete those actions.
- (2) Vocational rehabilitation plan. The provider must address the return to work priorities listed in RCW 51.32.095 (2) in the plan and explain why each preceding priority would not help the industrially injured or ill worker return to work. The vocational plan must also include the following information:

- (a) An assessment of the industrially injured or ill worker's skills and abilities considering the industrially injured or ill worker's physical capacities and mental status, aptitudes and transferable skills gained through prior work experience, education, training and avocation;
- (b) The services necessary to enable the industrially injured or ill worker to become employable in the labor market;
- (c) Labor market survey supportive of the industrially injured or ill worker's employability upon plan completion;
- (d) Documentation of the time and costs required for completion of the plan;
- (e) A direct comparison of the industrially injured or ill worker's skills, both existing and those to be acquired through the plan, with potential types of employment to demonstrate a likelihood of plan success;
- (f) A medically approved job analysis for the proposed retraining job goal;
- (g) Any other information that may significantly affect the plan; and
- (h) An agreement signed by the provider and industrially injured or ill worker that:
 - (i) Acknowledges that the provider and the industrially injured or ill worker have reviewed, understand and agree to the vocational rehabilitation plan; and
 - (ii) Sets forth the provider's and industrially injured or ill worker's responsibilities for the successful implementation and completion of the vocational rehabilitation plan.

The provider must use a statement approved by, or substantially similar to a statement used by, the department in order to document this agreement.

(3) Closing report. If the provider has to stop plan development before a rehabilitation plan is submitted and/or approved, submit a plan development closing report. The report must include:

- (a) A list of the reasons the provider cannot proceed with vocational rehabilitation plan development activities;
- (b) Supporting documentation, such as: Goals researched, job analyses developed, and/or labor market research conducted; and

(c) Address whether or not further vocational rehabilitation services may be necessary and likely to enable the injured worker to become employable.

[Statutory Authority: RCW 51.04.020, 51.04.030, 51.32.095, 51.36.100, 51.36.110. 03-11-009, § 296-19A-100, filed 5/12/03, effective 2/1/04; 00-18-078, § 296-19A-100, filed 9/1/00, effective 6/1/01.]

WAC 296-19A-110 What are vocational rehabilitation plan implementation and monitoring services? Vocational rehabilitation plan implementation and monitoring services are those services a vocational rehabilitation provider provides to assist an industrially injured or ill worker to successfully complete a vocational rehabilitation plan. These services may include, but are not limited to, the following:

(1) Maintain sufficient contact with the industrially injured or ill worker, trainer and medical providers to make sure the worker successfully enters and progresses in the vocational rehabilitation plan;

(2) Confirm that the industrially injured or ill worker has received all necessary equipment and supplies;

(3) Contact the industrially injured or ill worker and trainer at least every thirty days to identify potential problems;

(4) Notify the department if the plan needs to be interrupted;

(5) Notify the department when the industrially injured or ill worker completes the plan;

(6) Monitor the industrially injured or ill worker's progress and resolve any problems that might arise or address by submitting supporting documentation regarding why it cannot be brought to resolution;

(7) Assisting in job search assistance prior to the completion of the vocational rehabilitation plan.

(8) Document the industrially injured or ill worker's acquisition of skills; and

(9) Notify the department if the plan needs to be terminated.

(10) Obtain preferred worker status for worker, if appropriate.

[Statutory Authority: RCW 51.04.020, 51.04.030, 51.32.095, 51.36.100, 51.36.110. 03-11-009, § 296-19A-110, filed 5/12/03, effective 2/1/04; 00-18-078, § 296-19A-110, filed 9/1/00, effective 6/1/01.]

WAC 296-19A-120 What reports does the department require when vocational rehabilitation plan implementation and monitoring services are provided at its request? (1) Progress reports. The vocational rehabilitation provider must submit a written progress report to the department, and upon request, to the injured worker or the injured worker's representative, every thirty calendar days from the date of the electronic referral summarizing progress during the most recent reporting period. The progress report must include the following:

(a) Review of the industrially injured or ill worker's compliance with the vocational rehabilitation plan;

(b) A list of the dates the provider contacted the industrially injured or ill worker and training site;

(c) Description of the skills the worker has acquired so far and a comparison with the vocational rehabilitation plan;

(d) Summary of all actions taken in the past thirty days, including progress on previously recommended actions;

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(e) Identification and analysis of any barriers preventing completion of the referral;

(f) Statement of whether the industrially injured or ill worker will complete the plan by the target plan end date.

(2) Closing report. If the industrially injured or ill worker successfully completes the vocational rehabilitation plan, the closing report, at a minimum, must contain the following information:

(a) An assessment of the industrially injured or ill worker's employability status at the time of closure;

(b) An assessment of the skills acquired by the industrially injured or ill worker as compared to the vocational rehabilitation plan;

(c) A statement as to whether or not the industrially injured or ill worker has returned to gainful employment; and

(d) The barriers, if any, to the industrially injured or ill worker's return to gainful employment.

(3) If the industrially injured or ill worker does not successfully complete the vocational rehabilitation plan, the closing report, at a minimum, must contain the following information:

(a) Explain why the vocational rehabilitation plan cannot be completed;

(b) Assess the industrially injured or ill worker's employability status at the time the plan stopped;

(c) Assess what skills the industrially injured or ill worker acquired and compare them to the vocational rehabilitation plan;

(d) Indicate whether or not the industrially injured or ill worker has returned to work. If so, list the job title, employer, and monthly salary; and

(e) Describe any remaining barriers that may keep the industrially injured or ill worker from returning to work.

[Statutory Authority: RCW 51.04.020, 51.04.030, 51.32.095, 51.36.100, 51.36.110. 03-22-030, § 296-19A-120, filed 10/28/03, effective 2/1/04; 00-18-078, § 296-19A-120, filed 9/1/00, effective 6/1/01.]

WAC 296-19A-125 What is the purpose of forensic services? The department may make a referral for forensic services to obtain an independent and objective evaluation of the vocational rehabilitation components of a complex claim. The department will only authorize a forensic evaluation when previous vocational referrals have not resolved an injured worker's vocational issues, except when necessary to make a determination regarding whether a deceased worker was totally and permanently disabled at the time of death. The forensic evaluation shall define what additional services, if any, are necessary and likely to enable an industrially injured or ill worker to become employable at gainful employment. A forensic evaluation shall also include collecting information relevant to making a vocational recommendation, according to the provisions in WAC 296-19A-130.

[Statutory Authority: RCW 51.04.020, 51.04.030, 51.32.095, 51.36.100, 51.36.110. 03-11-009, § 296-19A-125, filed 5/12/03, effective 2/1/04.]

WAC 296-19A-130 What are the requirements for a forensic evaluation? (1) A forensic evaluation constitutes an analysis of prior vocational services and the medical conditions of an injured worker, including pre and post injury, to determine whether any further vocational services are necessary and likely to enable the injured worker to become

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employable at gainful employment. Services that may be conducted in order to make a recommendation to the department may include, but are not limited to:

- (a) Reviewing medical and vocational records;
- (b) Obtaining, clarifying, and/or evaluating an industrially injured or ill worker's:
 - (i) Work and/or education history;
 - (ii) Skills, knowledge and aptitudes;
 - (iii) Physical capacities information related to the injury or other medical conditions;
- (c) Identifying barriers to employment and possibilities for resolving the barriers;
- (d) Identifying potential training needs and resources;
- (e) Performing recommended services as needed to make a recommendation. These services may include conducting and writing job analyses, conducting labor market surveys, performing transferable skills analysis and performing occupational research.

(2) Recommendations must address the return to work priorities in RCW 51.32.095(2) and be documented by providing evidence of previous services and/or services performed under this referral.

(3) Development of a vocational rehabilitation plan is specifically precluded during a forensic evaluation.

(4) Any vocational provider that has provided any vocational rehabilitation services to the industrially injured or ill worker may not receive a referral for a forensic evaluation of that industrially injured or ill worker. Any vocational provider who begins a forensic evaluation cannot receive further vocational referrals for that worker.

[Statutory Authority: RCW 51.04.020, 51.04.030, 51.32.095, 51.36.100, 51.36.110. 03-11-009, § 296-19A-130, filed 5/12/03, effective 2/1/04; 00-18-078, § 296-19A-130, filed 9/1/00, effective 6/1/01.]

WAC 296-19A-135 What reports does the department require when forensic services are provided? A forensic evaluation requires thirty-day progress report(s) and a final report.

- (1) Progress reports. Each progress report must include:
 - (a) A detailed explanation why the forensic referral was not completed as of the date of the report;
 - (b) A summary of all activities taken in the past thirty days, including progress on previously recommended actions;
 - (c) Identification and analysis of any barriers preventing completion of the referral; and
 - (d) A description of the specific actions the provider intends to take to overcome barriers and the expected time frame to complete those actions.

(2) Final report. The final report must include recommendations and a recommended outcome. The report must comprehensively evaluate the vocational and medical aspects of the claim so that the adjudicator can make an appropriate vocational decision. The vocational provider must designate an outcome in the closing report when the forensic evaluation is complete. The recommendations may include, but are not limited to:

- (a) Able to work: The injured worker is employable at gainful employment. The report must include:

- (i) Whether the worker is employable with the employer of injury or current employer, or if not, a list of job possibilities for which the worker is qualified;

- (ii) A medically approved job analysis. When this is not obtainable, medically approved physical capacities information supporting the worker's ability to perform the job may be used; and

- (iii) Labor market information supporting the provider's recommendation. Labor market information is not necessary when the injured worker is medically released to work for their job of injury at their previous work pattern.

(b) Further services appropriate: Vocational rehabilitation services are necessary and likely to enable the injured worker to become employable at gainful employment. The report must include:

- (i) An analysis demonstrating how vocational rehabilitation plan development services are necessary and likely to enable the injured worker to become employable at gainful employment.

- (ii) The specific return to work possibilities investigated and the reasons why they were ruled out, including labor market information when necessary.

(c) Further services not appropriate: The injured worker is not likely to benefit from vocational services. The report must include:

- (i) An analysis explaining why vocational services are not appropriate;

- (ii) Identifying barriers that will make it unlikely the worker will benefit from vocational services, consistent with the requirements in WAC 296-19A-010(1);

- (iii) Medical, labor market, and/or other information, as necessary, supporting the provider's recommendations.

(d) Return to work: The injured worker has returned to work. The report must specify and/or document attempts to obtain the following information:

- (i) A description of the job the worker returned to;

- (ii) The name of the employer;

- (iii) The date that the worker returned to work;

- (iv) The worker's monthly wages.

(e) Further clarification of medical issues is needed. The vocational rehabilitation provider will identify issues impacting the vocational rehabilitation process and requiring clarification.

[Statutory Authority: RCW 51.04.020, 51.04.030, 51.32.095, 51.36.100, 51.36.110. 03-11-009, § 296-19A-135, filed 5/12/03, effective 2/1/04.]

WAC 296-19A-137 When can the department request a stand alone job analysis? The department can request a stand alone job analysis to analyze the requirements and characteristics of a job(s), an injured worker's ability to perform job functions and duties, and whether the injured worker requires further vocational rehabilitation services in order to become employable at gainful employment. Stand alone job analysis services are distinct services from any other referral type and may not be performed in conjunction with another referral for vocational rehabilitation services. A referral for a stand alone job analysis may be made at any time while the claim is open or in provisional status. The provider shall conduct an on-site job analysis whenever possible. Stand alone job analysis services must be completed and submitted to the department within fifteen calendar days of the

referral assignment. The provider shall prepare a report addressing all elements set forth in WAC 296-19A-170.

[Statutory Authority: RCW 51.04.020, 51.04.030, 51.32.095, 51.36.100, 51.36.110. 03-11-009, § 296-19A-137, filed 5/12/03, effective 7/1/03.]

VOCATIONAL REHABILITATION TOOLS

WAC 296-19A-140 What information must a provider include in a labor market survey? (1) The following information must be included in a labor market survey that is submitted to the department as documentation in support of a vocational recommendation. This information must be presented in the form of a summary report and accompanied by the results of the individual employer contacts:

(a) The specific job title surveyed and its DOT code. If the DOT code is not an accurate reflection/description of the job, then list the specific job surveyed, the occupational code and the source from which the occupational code was obtained;

(b) The name of the surveyor;

(c) A summary of all contacts and the dates of contact;

(d) A summary of whether or not the industrially injured or ill worker has the physical and mental/cognitive capacities to perform the job, based upon information from the attending physician or from a preponderance of medical information;

(e) A summary of whether the labor market matches the industrially injured or ill worker's work pattern;

(f) A summary of whether the labor market is considered positive or negative, as follows:

(i) If the labor market survey is conducted during an ability to work assessment, a labor market is considered positive if it shows that there are sufficient job opportunities in the worker's relevant labor market to enable the injured worker to become employable.

(ii) If the labor market is conducted during a plan development, a labor market is considered positive if it shows that jobs suitable for the injured worker for the proposed job goal exist in sufficient numbers to reasonably conclude that the worker will be employable at plan completion.

(g) Additional information may be presented in the summary, but only as a supplement to the labor market survey. Additional information may include, but is not limited to, published statistical data regarding occupations and projected job openings.

(2) The following information must be obtained from the individual employer contacts and submitted to the department with the summary report. If the information is not available, the VRC should document attempts made to obtain the information and why it was not available.

(a) The specific job title surveyed;

(b) All specific employer contacts, including their firm names, phone numbers, contact name and job title;

(c) Physical and mental/cognitive demands of the job in relation to the industrially injured or ill worker's physical and mental/cognitive capacities;

(d) Minimum hiring requirements and the skills and training commonly and currently necessary to be gainfully employed in the job;

(e) Work patterns;

(f) Number of positions per job title;

(g) Wage;

(h) Date of last hire;

(i) Number of current openings; and

(j) An indication of whether each contact was considered positive or negative. The provider must include specific documentation to support why a contact was positive or negative for the recommended occupation or proposed vocational goal.

[Statutory Authority: RCW 51.04.020, 51.04.030, 51.32.095, 51.36.100, 51.36.110. 03-11-009, § 296-19A-140, filed 5/12/03, effective 2/1/04; 00-18-078, § 296-19A-140, filed 9/1/00, effective 6/1/01.]

WAC 296-19A-170 What information must a provider include in a job analysis? When completing a job analysis, the vocational rehabilitation provider must:

(1) Include identifying information on each page. This information includes the worker's name and claim number, and the specific job title surveyed and its DOT code. If the DOT code is not an accurate reflection/description of the job, then list the specific job surveyed, the occupational code and the source from which the occupational code was obtained;

(2) Note the name of the vocational rehabilitation provider who completed the job analysis, where the provider completed the job analysis and the date of the job analysis. If the analysis is based on site specific information, include the employer name and employer contact person(s) name(s) with phone number(s);

(3) Describe the essential functions and all other tasks required to perform the job. Essential job functions are the basic, necessary, and integral parts of a job performed by a worker;

(4) List the tools and equipment required to do the job;

(5) Evaluate and describe the skills required to perform the job;

(6) Evaluate and describe the physical demands and their frequency required to perform the job, utilizing the physical demands listing consistent with the DOT. If the DOT does not represent an accurate reflection/description of the job, then list the specific job surveyed, the physical demands and the source from which the physical demands listing was obtained. The vocational rehabilitation provider should pay special attention to any job duties and physical demands that may be affected by the industrially injured or ill worker's condition;

(7) Describe, if pertinent, any environmental hazards encountered on the job;

(8) Describe possible modifications to the job for employer job offers or job modifications;

(9) A section for medical approval, signature, and comments; and

(10) The signature of the vocational rehabilitation provider presenting the job analysis for review and date signed.

[Statutory Authority: RCW 51.04.020, 51.04.030, 51.32.095, 51.36.100, 51.36.110. 03-11-009, § 296-19A-170, filed 5/12/03, effective 2/1/04; 00-18-078, § 296-19A-170, filed 9/1/00, effective 6/1/01.]

JOB MODIFICATION ASSISTANCE

WAC 296-19A-180 When may the department authorize job modifications? As provided for in section 13, chapter 63, Laws of 1982 (RCW 51.32.250), the supervisor

or supervisor's designee, in his or her discretion, may authorize job modifications when the following criteria are met:

- (1) The claim is open or in statutory pension status; and
- (2) Due to the restrictions related to the accepted industrial condition to the worker:
 - (a) Is in a light-duty job (graduated or transitional) and the modification is necessary to return the worker to the job of injury or a new job; or
 - (b) Is off work and the modification is necessary to return the worker to the job of injury or a new job; and
- (3) An employer-employee relationship exists.

[Statutory Authority: RCW 51.04.020, 51.04.030, 51.32.095, 51.36.100, 51.36.110. 03-11-009, § 296-19A-180, filed 5/12/03, effective 2/1/04; 00-18-078, § 296-19A-180, filed 9/1/00, effective 6/1/01.]

WAC 296-19A-190 How much is available for job modification assistance? An amount not to exceed five thousand dollars from the department is available per worker per job or job site. If combined with prejob accommodations for the same return to work goal, the maximum combined benefit available for job modification and prejob accommodation is five thousand dollars. The employer may add to this amount with its own contribution.

[Statutory Authority: RCW 51.04.020, 51.04.030, 51.32.095, 51.36.100, 51.36.110. 03-11-009, § 296-19A-190, filed 5/12/03, effective 2/1/04; 00-18-078, § 296-19A-190, filed 9/1/00, effective 6/1/01.]

WAC 296-19A-191 When may the department authorize prejob accommodations? As provided for in RCW 51.32.095(4), the supervisor or the supervisor's designee, in his or her discretion, may authorize prejob accommodations when the following criteria are met:

- (1) The claim is open or in statutory pension status; and
- (2) The injured worker's attending doctor certifies that the prejob accommodations are medically necessary due to the effects of the accepted industrial condition; and
- (3) The prejob accommodation is medically necessary to enable the industrially injured or ill worker to:
 - (a) Participate in an approved retraining program; or
 - (b) Perform the essential functions of a job or a return to work goal in which the worker is seeking employment consistent with a completed retraining plan or the recommendations of an ability to work assessment; and
- (4) No employer-employee relationship exists.

[Statutory Authority: RCW 51.04.020, 51.04.030, 51.32.095, 51.36.100, 51.36.110. 03-11-009, § 296-19A-191, filed 5/12/03, effective 2/1/04.]

WAC 296-19A-192 How much is available for prejob accommodations? An amount not to exceed five thousand dollars from the department is available per worker per claim. If combined with job modifications for the same return to work goal, the maximum combined benefit available for job modification and prejob accommodation is five thousand dollars.

[Statutory Authority: RCW 51.04.020, 51.04.030, 51.32.095, 51.36.100, 51.36.110. 03-11-009, § 296-19A-192, filed 5/12/03, effective 2/1/04.]

WAC 296-19A-193 What documentation must be submitted to the department for prejob accommodations? (1) A vocational provider assisting the injured worker in applying for prejob accommodation assistance must sub-

mit to the department a prejob accommodation assistance application. Prejob accommodations assistance applications shall be submitted on a form prescribed by the department.

(2) The prejob accommodation assistance application shall include, but is not limited to:

- (a) A document supporting the need for prejob accommodation;
- (b) A description of the prejob accommodation;
- (c) An itemized account of each expense to be incurred in the prejob accommodation;
- (d) An ownership agreement;
- (e) Physician's certification of medical necessity.

[Statutory Authority: RCW 51.04.020, 51.04.030, 51.32.095, 51.36.100, 51.36.110. 03-11-009, § 296-19A-193, filed 5/12/03, effective 2/1/04.]

WAC 296-19A-200 How does an employer apply for job modification assistance? (1) An employer requesting job modification assistance must submit to the department a job modification assistance application. A vocational provider may assist the employer with the application.

(2) The job modification assistance application shall include, but not be limited to:

- (a) A document supporting the need for job modification;
- (b) A description of the job modification;
- (c) An itemized account of each expense to be incurred in the job modification. Job modification assistance applications shall be submitted on a form prescribed by the department; and
- (d) An ownership agreement.

(3) The supervisor or supervisor's designee shall accept, reject or modify the job modification application within thirty days of receipt. Notification of the supervisor's acceptance, rejection, or modification shall be in writing.

[Statutory Authority: RCW 51.04.020, 51.04.030, 51.32.095, 51.36.100, 51.36.110. 03-11-009, § 296-19A-200, filed 5/12/03, effective 2/1/04; 00-18-078, § 296-19A-200, filed 9/1/00, effective 6/1/01.]

QUALIFICATIONS

WAC 296-19A-210 What are the qualifications to provide vocational rehabilitation services to industrially injured or ill workers? Provider community commentary, expert opinion and best practices suggest that there is a correlation between a higher quality level of vocational rehabilitation services and higher qualifications of vocational rehabilitation providers. To ensure the provision of the highest possible quality of vocational rehabilitation services, the department shall only issue a provider number to persons, firms, partnerships, corporations, and other legal entities that meet the following qualification requirements:

- (1) Vocational rehabilitation counselor (VRC).
 - (a) VRCs not registered with the department and applying for a provider number with the department effective on or after December 1, 2000, must meet the following minimum qualifications:

Education Masters Degree	Experience 1 year full-time industrial insurance experience	Certification and CRC or CDMS or ABVE
OR		
Bachelors Degree	2 years full-time industrial insurance experience	and CRC or CDMS

CRC = Certified Rehabilitation Counselor

CDMS = Certified Disability Management Specialist

ABVE = American Board of Vocational Experts

(b) VRCs registered with the department as of November 30, 2000, will be required to meet the qualification criteria in (a) of this subsection no later than November 30, 2010.

(c) The VRC assigned to or directly receiving the referral from the referral source is responsible for all work performed by any vocational provider on that referral.

(2) VRC supervisor of interns (supervisor).

(a) The supervisor must meet the qualification requirements for a VRC in subsection (1)(a) and (b) of this section.

(b) The supervisor must provide proof of a total of five years full-time experience providing, evaluating, analyzing and/or assessing vocational services. For the purposes of this rule, "vocational services" are those defined in WAC 296-19A-010(2). At least three of the five years must be under Title 51 RCW.

(c) A maximum of thirty-six months in intern status may be counted toward the five years of experience needed to become a supervisor.

(d) Supervisors are expected to monitor and assist in the training and professional development of interns under their supervision, in order to ensure that interns develop the requisite knowledge and professional skills to become competent VRCs. A supervisor's responsibilities, include, but are not limited to:

(i) Monitoring billing;

(ii) Monitoring work;

(iii) Monitoring professional behavior;

(iv) Promoting professional development and assisting the intern in meeting the department's requirements to become a VRC; and

(v) Communicating statute, rule and policy.

(3) Forensic services—In order to provide forensic services to the department, on or after the effective date of this rule, a VRC must provide proof of five years full-time experience providing direct vocational services to Washington state industrially injured or ill workers, and must possess a CRC or ABVE certification. Vocational providers previously approved to provide this service, under chapter 296-19A WAC, will retain that status.

(4) Intern.

(a) Interns not registered with the department and applying for a provider number with the department on or after December 1, 2000, must meet the following minimum qualifications:

Degree	Internship Length
Masters Degree in field acceptable to CRC or CDMS or ABVE	Equal to required experience to obtain CRC or CDMS or ABVE certification including at least 1 year working with industrially injured or ill workers.
OR	
Bachelors Degree in field acceptable by CDMS	Equal to required experience to obtain CDMS certification including at least 2 years working with industrially injured or ill workers.

(b) Interns not registered with the department and applying for a provider number with the department on or after December 1, 2000, must obtain one of the required VRC certifications within one year of completing their required internship. Interns will remain in internship status during this time frame.

(c) Interns registered with the department as of November 30, 2000, will be required to apply for a provider number with the department and may work as an intern until the end of their current internship. Upon completion of the internship the intern may submit an application to the department as a VRC. These providers must obtain one of the required VRC certifications by November 30, 2010.

(d) All interns are required to conform to Title 51 RCW, department rules, and department policies. All interns granted a provider number by the department must be supervised by a VRC supervisor.

(e) No person shall serve as an intern under these rules for more than seventy-two months of full-time experience, or its equivalent, working with industrially injured or ill workers. The intern must notify the department when there is a change in the status of an internship.

(5) Interns may not receive referrals directly from the department or self-insured employers. Interns may perform aspects of vocational rehabilitation services under the supervision of a VRC supervisor.

(6) Providers who receive or are assigned referrals must comply with all electronic security requirements in place for accessing department files.

(7) Providers registered with the department as of November 30, 2000, who do not meet the above qualification requirements within the ten-year period will no longer be eligible to provide vocational rehabilitation services to industrially injured or ill workers and the department will terminate their provider number(s).

(8) Business requirements.

(a) Providers must comply with all federal and state laws, regulations and other requirements with regard to business operations. In order to be eligible to receive referrals from the department, providers must satisfy the requirements set forth in this subsection in every service location in which they wish to operate.

(b) Providers must be covered by general liability insurance, automobile liability insurance, errors and omission insurance, malpractice insurance, and industrial insurance if required by Title 51 RCW.

(c) Providers must have services and facilities that provide injured workers a private and professionally suitable location in which to discuss vocational rehabilitation services issues. In order to be eligible to receive referrals from the

department, providers must satisfy the requirements set forth in this subsection in every service location in which they wish to operate.

(d) Providers must have telephone-answering capability during regular business hours, Monday through Friday. In order to be eligible to receive referrals from the department, providers must satisfy the requirements set forth in this subsection in every service location in which they wish to operate.

(e) In order to receive referrals made by the department, providers must maintain or have access to equipment that can utilize the department's remote access system for transmitting vocational referrals.

(9) The department may assign a provider number to a vocational rehabilitation firm, partnership, corporation or other legal entity so long as substantial control over the daily management of the vocational rehabilitation firm, partnership, corporation or other legal entity is performed by a VRC that satisfies the qualifications set forth in this rule.

[Statutory Authority: RCW 51.04.020, 51.04.030, 51.32.095, 51.36.100, 51.36.110. 04-08-045, § 296-19A-210, filed 3/31/04, effective 7/1/04; 03-11-009, § 296-19A-210, filed 5/12/03, effective 2/1/04; 00-18-078, § 296-19A-210, filed 9/1/00, effective 12/1/00.]

WAC 296-19A-220 Can a vocational rehabilitation provider deliver vocational rehabilitation services pursuant to RCW 51.32.095 without receiving a provider number from the department? No. The department may only issue provider numbers to persons, firms, partnerships, corporations and other legal entities that satisfy the qualification requirements in WAC 296-19A-210.

[Statutory Authority: RCW 51.04.020, 51.04.030, 51.32.095, 51.36.100, 51.36.110. 00-18-078, § 296-19A-220, filed 9/1/00, effective 6/1/01.]

AUDITING AND OVERSIGHT

WAC 296-19A-230 Why does the department audit vocational rehabilitation providers? The department audits providers to:

- (1) Ensure that the provider is providing services conforming to accepted standards of service;
- (2) Ensure compliance with the Revised Code of Washington, the Washington Administrative Code, and department policies governing vocational rehabilitation services.

[Statutory Authority: RCW 51.04.020, 51.04.030, 51.32.095, 51.36.100, 51.36.110. 00-18-078, § 296-19A-230, filed 9/1/00, effective 6/1/01.]

WAC 296-19A-240 What authority does the department have to audit vocational rehabilitation providers? The department has the authority to:

- (1) Conduct audits of a provider, either for cause or at random;
- (2) Conduct audits at a provider's place of business using copies and originals of all files and records maintained by the provider;
- (3) Conduct audits away from a provider's place of business, using copies of all files and records supplied by the provider;
- (4) Require a provider to submit legible copies of all files and records requested for audit;

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(5) When the department requires the provider to submit copies of records and files to the department, the provider shall submit the requested material within thirty calendar days of the request;

(6) Inspect and audit all of the provider's vocational rehabilitation files and records relating to services delivered under Title 51 RCW;

(7) Inspect and audit a provider's documentation supporting charges billed for vocational rehabilitation services delivered.

[Statutory Authority: RCW 51.04.020, 51.04.030, 51.32.095, 51.36.100, 51.36.110. 03-11-009, § 296-19A-240, filed 5/12/03, effective 2/1/04; 00-18-078, § 296-19A-240, filed 9/1/00, effective 6/1/01.]

WAC 296-19A-245 What is the department's formal appeal process? For information regarding the formal appeals process refer to chapter 51.52 RCW.

[Statutory Authority: RCW 51.04.020, 51.04.030, 51.32.095, 51.36.100, 51.36.110. 03-11-009, § 296-19A-245, filed 5/12/03, effective 2/1/04.]

WAC 296-19A-250 How much notice is the department required to give a vocational rehabilitation provider prior to an audit? The department will give ten working days' written notification to a provider before starting an audit.

[Statutory Authority: RCW 51.04.020, 51.04.030, 51.32.095, 51.36.100, 51.36.110. 00-18-078, § 296-19A-250, filed 9/1/00, effective 6/1/01.]

WAC 296-19A-260 What are the possible consequences for a provider that does not comply with the RCWs, WACs, or department policies? The department may order corrective action(s) when it determines that a provider is not in compliance with department statute, rule, or written department policy. Possible corrective actions include, but are not limited to:

- (1) Submission and implementation of a written corrective action by the provider showing how the provider will come into compliance;
- (2) Recoupment of payments, plus interest, made to the provider;
- (3) Requirement that the provider satisfactorily complete remedial education courses and/or other educational or training programs;
- (4) Suspension or termination of a provider's provider number and ability to receive payment for vocational rehabilitation services rendered to industrially injured or ill workers under the Industrial Insurance Act;
- (5) Rejection of a provider's application to provide vocational rehabilitation services to industrially injured or ill workers under the Industrial Insurance Act;
- (6) Denial or rejection of a request for payment submitted by or on behalf of the provider;
- (7) Placement of the provider on prepayment review status requiring the submission of supporting documents prior to payment;
- (8) Assessment of penalties.

[Statutory Authority: RCW 51.04.020, 51.04.030, 51.32.095, 51.36.100, 51.36.110. 03-11-009, § 296-19A-260, filed 5/12/03, effective 2/1/04; 00-18-078, § 296-19A-260, filed 9/1/00, effective 6/1/01.]

WAC 296-19A-270 In what situation(s) can the department take corrective action(s)? (1) Reasons the department can order corrective actions against a vocational rehabilitation provider include, but are not limited to, the following:

(a) Charging the department for services that do not contribute to the completion of a vocational referral, including, but not limited to:

(i) Preparation and submission of job analyses during plan development for jobs that are beyond the worker's documented or expected capacities and physical abilities as demonstrated by the medical information in the file at the time the job analysis was performed;

(ii) Preparation and submission of job analyses or labor market surveys during early intervention or assessment that are not supported by the injured worker's education, work history and/or transferable skills as demonstrated by the information in the file at the time the job analysis and/or labor market survey was performed;

(iii) Hand delivery of records when other less expensive means of delivery are reasonably appropriate and available;

(b) Commission of an act involving moral turpitude, dishonesty, or corruption relating to the provision of vocational rehabilitation services whether the act constitutes a crime or not;

(c) Misrepresentation or concealment of a material fact in obtaining a department provider number, or in response to any request for information about service delivery made by the department;

(d) Provision of vocational rehabilitation services without having a department provider number;

(e) Use of persons that do not possess a department provider number to deliver vocational rehabilitation services;

(f) Operation of a vocational firm, partnership, corporation, or other legal entity in violation of the business requirements set forth in RCW, WAC, or written department policy;

(g) Use of false, fraudulent, or misleading advertising;

(h) Commission of any incompetent or negligent action which presents the significant risk of resulting in harm to an industrially injured or ill worker, the referral source, or an employer;

(i) Submission of a false or misleading report or document as part of delivering vocational rehabilitation services;

(j) Failure to supervise a vocational rehabilitation intern in accordance with RCW, WAC, or written department policy;

(k) Failure to comply with any order issued by the department;

(l) Disclosure of confidential information on vocational rehabilitation services to a person who is not entitled to it;

(m) Unauthorized disclosure of confidential claim information, including, but not limited to, private health care information;

(n) Charges an industrially injured or ill worker or employer a fee for delivering vocational rehabilitation services on a referral from the referral source; and

(o) Bills an industrially injured or ill worker or state fund employer for providing services under the Industrial Insurance Act.

(2) The department can take corrective action(s) for other violations of RCW, WAC, or written department policy not specifically mentioned above.

[Statutory Authority: RCW 51.04.020, 51.04.030, 51.32.095, 51.36.100, 51.36.110. 03-11-009, § 296-19A-270, filed 5/12/03, effective 2/1/04; 00-18-078, § 296-19A-270, filed 9/1/00, effective 6/1/01.]

WAC 296-19A-280 What criteria does the department use to evaluate a vocational rehabilitation provider's performance? The department must make referrals for vocational rehabilitation services based on the vocational rehabilitation provider's performance. The performance measurement factors for vocational rehabilitation providers will include, but not be limited to:

(1) Cost for services delivered;

(2) Length of time taken to provide the services;

(3) The outcome of the vocational rehabilitation services;

(4) Complexity of cases referred; and

(5) Whether the vocational rehabilitation services conformed with department rules and accepted standards of good practice.

[Statutory Authority: RCW 51.04.020, 51.04.030, 51.32.095, 51.36.100, 51.36.110. 00-18-078, § 296-19A-280, filed 9/1/00, effective 6/1/01.]

WAC 296-19A-290 How does the department incorporate performance measurement into making referrals to providers? Based on WAC 296-19A-280, the department will generate periodic performance ratings for vocational rehabilitation providers. The performance ratings will be the method used for making referrals from the department to vocational rehabilitation providers based on quality and effectiveness.

[Statutory Authority: RCW 51.04.020, 51.04.030, 51.32.095, 51.36.100, 51.36.110. 00-18-078, § 296-19A-290, filed 9/1/00, effective 6/1/01.]

WAC 296-19A-300 How does the department evaluate performance when a vocational rehabilitation provider does not have either a performance rating with the department or previous experience delivering services to Washington injured workers? (1) Several situations exist in which a vocational rehabilitation provider may not have a performance rating with the department or may not have sufficient experience with Washington industrially injured or ill workers covered by the department to establish a performance rating.

(2) Provider community commentary, expert opinion and best practices suggest that there is a correlation between a higher level of vocational rehabilitation services and higher qualifications of vocational rehabilitation providers. Based upon this information, the department concludes that referrals to providers who satisfy these minimum qualification criteria set forth in WAC 296-19A-210 (1)(a), but who do not have a performance rating with the department, may be appropriate. The department will ensure that these providers are complying with department statutes, rules, and policies and furnishing a high level of service through close and continued monitoring. The department may consider making referrals to vocational rehabilitation providers, on a trial basis, for whom the department does not have performance rating data, under the following circumstances:

(a) The provider fulfills the qualification requirements set forth in WAC 296-19A-210 (1)(a); and

(b) The department may consider making referrals sufficient to develop a reliable performance rating.

(3) If the department elects to refer and monitor a limited number of cases to the provider(s) in order to evaluate a provider's performance and develop performance rating, the department makes no guarantee of future referrals to the provider.

[Statutory Authority: RCW 51.04.020, 51.04.030, 51.32.095, 51.36.100, 51.36.110. 03-11-009, § 296-19A-300, filed 5/12/03, effective 2/1/04; 00-18-078, § 296-19A-300, filed 9/1/00, effective 6/1/01.]

WAC 296-19A-310 Are vocational rehabilitation providers entitled to referrals from the department? The department or self-insured employer refers industrially injured or ill workers for vocational rehabilitation services at their sole discretion. No provider is entitled to referrals from the referral source.

[Statutory Authority: RCW 51.04.020, 51.04.030, 51.32.095, 51.36.100, 51.36.110. 00-18-078, § 296-19A-310, filed 9/1/00, effective 6/1/01.]

WAC 296-19A-320 What other requirements are providers required to follow? By rendering vocational rehabilitation services to industrially injured or ill workers under RCW 51.32.095, the vocational rehabilitation provider agrees to comply with Title 51 RCW, chapters 296-19A and 296-15 WAC, and the department's fee schedule.

[Statutory Authority: RCW 51.04.020, 51.04.030, 51.32.095, 51.36.100, 51.36.110. 00-18-078, § 296-19A-320, filed 9/1/00, effective 6/1/01.]

BILLING AND DOCUMENTATION SECTION

WAC 296-19A-330 How does a vocational rehabilitation provider receive payment for services? All providers must apply for and receive a provider number from the department in order to bill the department and get paid for providing vocational rehabilitation services to industrially injured or ill workers. More detailed billing instructions for vocational rehabilitation services are available from the department.

[Statutory Authority: RCW 51.04.020, 51.04.030, 51.32.095, 51.36.100, 51.36.110. 00-18-078, § 296-19A-330, filed 9/1/00, effective 6/1/01.]

WAC 296-19A-340 For what services will the department not pay? The following services are considered overhead and the department will not pay for these services:

- (1) Administrative and supervisory salaries and related personnel expenses;
- (2) Office rent;
- (3) Depreciation;
- (4) Equipment purchase and rental;
- (5) Telephone expenses including long distance phone call charges;
- (6) Postage;
- (7) Shipping;
- (8) Expendable supplies;
- (9) Printing costs;
- (10) Copier costs;
- (11) Printing of fiche and department electronic files;
- (12) Maintenance and repair;

- (13) Taxes;
- (14) Automobile costs and maintenance;
- (15) Insurance;
- (16) Dues and subscriptions;
- (17) Vacation, sick leave, and other expenses of a similar nature;
- (18) Internal staffing time;
- (19) Filing of material in case files;
- (20) Setting up files;
- (21) Activities associated with reports other than composing or dictating complete draft of the report (e.g., editing, filing, distribution, revising, typing, and mailing);
- (22) Generating and keeping internal recordkeeping forms;
- (23) Time spent on any administrative and clerical activity, including typing, copying, mailing, distributing, filing, payroll, recordkeeping, delivering mail, picking up mail;
- (24) Activities associated with counselor training, general discussion regarding office procedures, internal case file reviews by supervisors, meetings, and seminars;
- (25) Unanswered phone calls; and
- (26) Any other item or service not specifically identified and separately billable.

[Statutory Authority: RCW 51.04.020, 51.04.030, 51.32.095, 51.36.100, 51.36.110. 00-18-078, § 296-19A-340, filed 9/1/00, effective 6/1/01.]

WAC 296-19A-350 What are the requirements for case notes? Vocational rehabilitation providers must maintain case notes. Case notes must:

- (1) Include the first and last name of the industrially injured or ill worker being served and the worker's claim number at the top of each page;
- (2) Include the first and last name of the vocational rehabilitation provider providing each service documented on each page;
- (3) Be kept in a claimant file corresponding to the reports, medical information, correspondence, and other materials that they provide documentation for;
- (4) Testing and other records with special confidentiality requirements may be kept in separate files;
- (5) Be legible;
- (6) Be in chronological order;
- (7) Record the date each service was provided month/month/day/year year;
- (8) For providers who bill for vocational services, include the amount of time, recorded in tenths of an hour, required to provide each service;
- (9) Describe each service sufficiently to allow the referral source to verify the purpose, level, type, and outcome of each service provided and substantiate the charges billed for them.

[Statutory Authority: RCW 51.04.020, 51.04.030, 51.32.095, 51.36.100, 51.36.110. 03-11-009, § 296-19A-350, filed 5/12/03, effective 2/1/04; 00-18-078, § 296-19A-350, filed 9/1/00, effective 6/1/01.]

WAC 296-19A-360 What are the requirements for bills submitted to the department? (1) Any bill a provider submits to the department must include the following information:

- (a) Worker's name;
- (b) Worker's claim number;

- (c) Vocational referral number;
- (d) Dates of service;
- (e) Place of service;
- (f) Type of service;
- (g) Appropriate procedure code(s);
- (h) Charge;
- (i) Units of service;
- (j) Total bill charge;
- (k) The name and the department-assigned provider ID of the counselor or intern rendering the services;
- (l) Provider number of the payee;
- (m) Date of billing;
- (n) Submission of any supporting documentation required under other sections of this chapter.

(2) Itemize the bills on department approved forms. A vocational rehabilitation provider may transmit the bills electronically if the provider uses department file format specifications. If the provider uses any of the electronic transfer options, the provider must follow department instructions for electronic billing.

(3) The provider must bill using procedure codes, fees, and methods provided by the department. The department will publish codes, fees, and procedures and provide this information to all vocational rehabilitation providers receiving department referrals. The department will establish fees at regular intervals.

(4) Document all billed charges and justify the type, level and extent of services in the case notes. A provider's billed charges must be consistent with the services provided. The department may reduce, deny, or recoup payment whenever case notes fail to document billed charges or services provided.

(5) It is the vocational rehabilitation provider's responsibility to make sure the charges billed are complete and accurate, even if a third party is actually performing the billing.

(6) The vocational rehabilitation provider is encouraged to bill every two weeks. The department must receive bills within one year of the date of service to be eligible for payment.

[Statutory Authority: RCW 51.04.020, 51.04.030, 51.32.095, 51.36.100, 51.36.110. 00-18-078, § 296-19A-360, filed 9/1/00, effective 6/1/01.]

WAC 296-19A-370 What are the procedures for adjustments to provider bills? (1) The department or self-insurer may adjust payment of charges when appropriate. The department or self-insurer must provide a written explanation of why they adjusted a billing or line item of a bill when they make any adjustment. In cases where the department is the referral source, it will not give the provider a written explanation if the department made the adjustment solely to conform to its maximum allowable fees.

(2) The department or self-insurer must receive any inquiries about a bill adjustment within ninety days from the date of payment to be considered. All provider inquiries must be in the required format.

[Statutory Authority: RCW 51.04.020, 51.04.030, 51.32.095, 51.36.100, 51.36.110. 00-18-078, § 296-19A-370, filed 9/1/00, effective 6/1/01.]

WAC 296-19A-380 What are the procedures for rebilling? (1) If a provider does not receive payment or noti-

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fication from the department within one hundred twenty days, he or she may rebill for services.

(2) Rebills should be identical to the original bill: Same charges, codes, and billing date.

[Statutory Authority: RCW 51.04.020, 51.04.030, 51.32.095, 51.36.100, 51.36.110. 00-18-078, § 296-19A-380, filed 9/1/00, effective 6/1/01.]

WAC 296-19A-390 What are the procedures for repayment of excess payment of charges? (1) When a vocational rehabilitation provider receives a payment to which that provider is not entitled, the provider must repay the excess amount, plus accrued interest, without regard to whether the excess payment occurred due to provider or department error or oversight.

(2) Interest accrues on excess payments at the rate of one percent per month or portion of a month beginning on the thirty-first day after payment was made. Where partial repayment on an excess payment is made, interest accrues on the remaining balance.

(3) The department reserves the option of either requesting the provider to remit the amount of excess payment and accrued interest to the department or offsetting excess payments and accrued interest against future payments due the provider.

[Statutory Authority: RCW 51.04.020, 51.04.030, 51.32.095, 51.36.100, 51.36.110. 00-18-078, § 296-19A-390, filed 9/1/00, effective 6/1/01.]

WAC 296-19A-400 What records are vocational rehabilitation providers required to maintain? (1) A vocational rehabilitation provider must maintain adequate documentation in claimant-specific files to verify the level, type, and extent of the vocational rehabilitation services provided to and on behalf of industrially injured or ill workers.

(2) A vocational rehabilitation provider who requests payment from the referral source for vocational rehabilitation services must maintain all records necessary for the director's authorized auditors to audit the provision of services. Providers need to keep all records necessary to disclose the specific nature and extent of all services provided for an industrially injured or ill worker, along with the amounts billed to the department, for those services. Records must be maintained for audit purposes for a minimum of five years from the date of closure by the provider.

[Statutory Authority: RCW 51.04.020, 51.04.030, 51.32.095, 51.36.100, 51.36.110. 03-11-009, § 296-19A-400, filed 5/12/03, effective 2/1/04; 00-18-078, § 296-19A-400, filed 9/1/00, effective 6/1/01.]

VOCATIONAL DISPUTES

WAC 296-19A-410 What is the purpose of the department's vocational dispute process? The purpose is to avoid delays in vocational rehabilitation services by resolving disputes between industrially injured or ill workers, employers and the referral source.

[Statutory Authority: RCW 51.04.020, 51.04.030, 51.32.095, 51.36.100, 51.36.110. 00-18-078, § 296-19A-410, filed 9/1/00, effective 6/1/01.]

WAC 296-19A-420 Who can dispute a vocational determination? The following parties are authorized to dispute a vocational determination made by the referral source:

- (1) An industrially injured or ill worker;

(2) An employer; or

(3) The representative of an industrially injured or ill worker or employer.

[Statutory Authority: RCW 51.04.020, 51.04.030, 51.32.095, 51.36.100, 51.36.110. 00-18-078, § 296-19A-420, filed 9/1/00, effective 6/1/01.]

WAC 296-19A-430 Can a vocational rehabilitation provider dispute a vocational determination? A vocational rehabilitation provider cannot dispute a vocational determination.

[Statutory Authority: RCW 51.04.020, 51.04.030, 51.32.095, 51.36.100, 51.36.110. 00-18-078, § 296-19A-430, filed 9/1/00, effective 6/1/01.]

WAC 296-19A-440 What elements of a vocational determination may be disputed? (1) A finding that an industrially injured or ill worker is eligible for vocational rehabilitation services, or a finding that he or she is ineligible for vocational rehabilitation services, may be disputed.

(2) An approved vocational rehabilitation plan may also be disputed.

(3) An approved plan modification may also be disputed.

(4) A previously approved vocational rehabilitation plan may not be disputed through a plan modification dispute process.

[Statutory Authority: RCW 51.04.020, 51.04.030, 51.32.095, 51.36.100, 51.36.110. 03-11-009, § 296-19A-440, filed 5/12/03, effective 2/1/04; 00-18-078, § 296-19A-440, filed 9/1/00, effective 6/1/01.]

WAC 296-19A-450 What are the time frames for filing a dispute of a vocational determination with the department? The department must receive the written dispute within fifteen calendar days of receipt of notification to the worker or employer. The dispute must explain the reason(s) for the disagreement with the determination. The department may accept the dispute if it is not received within the fifteen-day period if there is a demonstrated good cause for the delay.

[Statutory Authority: RCW 51.04.020, 51.04.030, 51.32.095, 51.36.100, 51.36.110. 00-18-078, § 296-19A-450, filed 9/1/00, effective 6/1/01.]

WAC 296-19A-460 What part of the department is charged with reviewing vocational disputes? The vocational dispute resolution office (VDRO) consultant reviews disputes of vocational determinations and makes a recommendation to the director, who makes a final decision. Disputes should be sent to the director, in care of the VDRO.

[Statutory Authority: RCW 51.04.020, 51.04.030, 51.32.095, 51.36.100, 51.36.110. 00-18-078, § 296-19A-460, filed 9/1/00, effective 6/1/01.]

WAC 296-19A-470 What is the process for review of a vocational dispute? VDRO will review the written dispute and issue an acceptance letter, which will be sent to all parties. If the department does not accept your dispute, the letter will explain the reason(s) for the rejection. A copy of this letter, along with the written dispute, will be sent to all involved parties.

The director, at his or her sole discretion, will initiate a review of an accepted dispute to determine further action. If necessary, and at the discretion of the director, VDRO staff will contact the parties to attempt to resolve the dispute.

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If the dispute is not resolved, the director in his or her sole discretion will take other action that he or she considers appropriate to protect the rights of the parties. The director will promptly inform all parties, in writing, of what action is taken.

[Statutory Authority: RCW 51.04.020, 51.04.030, 51.32.095, 51.36.100, 51.36.110. 00-18-078, § 296-19A-470, filed 9/1/00, effective 6/1/01.]

EFFECTIVE DATES

WAC 296-19A-480 When must providers comply with these rules? (1) The amendments to WAC 296-19A-210(2) become effective July 1, 2004.

(2) The following amendments to chapter 296-19A WAC and new sections become effective February 1, 2004:

WAC 296-19A-010 "Definitions."

WAC 296-19A-020 "When may the department offer vocational rehabilitation services?"

WAC 296-19A-025 "What information does the department consider when exercising discretion?"

WAC 296-19A-030 "What are the responsibilities of the parties?"

WAC 296-19A-040 "What vocational rehabilitation services require authorization?"

WAC 296-19A-045 "Which rules under 'department vocational rehabilitation referrals' apply only to the department?"

WAC 296-19A-060 "What reports does the department require when early intervention services are provided at its request?"

WAC 296-19A-065 "What are ability to work assessment (AWA) services?"

WAC 296-19A-070 "What is an ability to work assessment?"

WAC 296-19A-080 "How often must written progress reports be completed and submitted during assessment activities?"

WAC 296-19A-090 "What are vocational rehabilitation plan development services?"

WAC 296-19A-100 "What reports does the department require when vocational rehabilitation plan development services are provided at its request?"

WAC 296-19A-110 "What are vocational rehabilitation plan implementation and monitoring services?"

WAC 296-19A-120 "What reports does the department require when vocational rehabilitation plan implementation and monitoring services are provided at its request?"

WAC 296-19A-125 "What is the purpose of forensic services?"

WAC 296-19A-130 "What are the requirements for a forensic evaluation?"

WAC 296-19A-135 "What reports does the department require when forensic services are provided?"

WAC 296-19A-140 "What information must a provider include in a labor market survey?"

WAC 296-19A-170 "What information must a provider include in a job analysis?"

WAC 296-19A-180 "What job modification assistance benefits are available?"

WAC 296-19A-190 "How much is available for job modification assistance?"

WAC 296-19A-191 "What prejob accommodations are available?"

WAC 296-19A-192 "How much is available for prejob accommodations?"

WAC 296-19A-193 "What are the requirements for prejob accommodations?"

WAC 296-19A-200 "How does an employer apply for job modification assistance?"

WAC 296-19A-210 "What are the qualifications to provide vocational rehabilitation services to industrially injured or ill workers?"

WAC 296-19A-230 "Why does the department audit vocational rehabilitation providers?"

WAC 296-19A-240 "What authority does the department have to audit vocational rehabilitation providers?"

WAC 296-19A-245 "What is the department's formal appeal process?"

WAC 296-19A-260 "What are the possible consequences for a provider that does not comply with the RCWs, WACs or department policies?"

WAC 296-19A-270 "In what situation(s) can the department take corrective action(s)?"

WAC 296-19A-300 "How does the department evaluate performance when a vocational rehabilitation provider does not have either a performance rating with the department or previous experience delivering services to Washington injured workers?"

WAC 296-19A-350 "What are the requirements for case notes?"

WAC 296-19A-400 "What records are vocational rehabilitation providers required to maintain?"

WAC 296-19A-440 "What elements of a vocational determination may be disputed?"

(3) All remaining sections of chapter 296-19A WAC shall remain in full force and effect.

[Statutory Authority: RCW 51.04.020, 51.04.030, 51.32.095, 51.36.100, 51.36.110, 04-08-045, § 296-19A-480, filed 3/31/04, effective 7/1/04; 03-11-009, § 296-19A-480, filed 5/12/03, effective 7/1/03; 00-18-078, § 296-19A-480, filed 9/1/00, effective 6/1/01.]

Chapter 296-20 WAC MEDICAL AID RULES

WAC

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296-20-19030	To what extent is pain considered in an award for permanent partial disability?	296-20-690	Permanent impairments of the cervico-dorsal (WAC 296-20-240) and lumbosacral regions (WAC 296-20-280) jointly.
296-20-200	General information for impairment rating examinations by attending doctors, consultants or independent medical examination (IME) providers.	DISPOSITION OF SECTIONS FORMERLY CODIFIED IN THIS CHAPTER	
296-20-2010	General rules for impairment rating examinations by attending doctors and consultants.	296-20-02001	Penalties. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 90-04-057, § 296-20-02001, filed 2/2/90, effective 3/5/90. Statutory Authority: RCW 51.04.020(4), 51.04.030, and 51.16.120(3). 81-01-100 (Order 80-29), § 296-20-02001, filed 12/23/80, effective 3/1/81; Order 76-34, § 296-20-02001, filed 11/24/76, effective 1/1/77.] Repealed by 02-21-108, filed 10/22/02, effective 12/1/02. Statutory Authority: RCW 51.04.020.
296-20-2015	What rating systems are used for determining an impairment rating conducted by the attending doctor or a consultant?	296-20-03003	Drugs and medication. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 86-06-032 (Order 86-19), § 296-20-03003, filed 2/28/86, effective 4/1/86; 83-16-066 (Order 83-23), § 296-20-03003, filed 8/2/83. Statutory Authority: RCW 51.04.020(4), 51.04.030, and 51.16.120(3). 81-24-041 (Order 81-28), § 296-20-03003, filed 11/30/81, effective 1/1/82; 81-01-100 (Order 80-29), § 296-20-03003, filed 12/23/80, effective 3/1/81; Order 77-27, § 296-20-03003, filed 11/30/77, effective 1/1/78; Order 76-34, § 296-20-03003, filed 11/24/76, effective 1/1/77.] Repealed by 00-01-040, filed 12/7/99, effective 1/20/00. Statutory Authority: RCW 51.04.020 and 51.04.030.
296-20-2025	May a worker bring someone with them to an impairment rating examination conducted by the attending doctor or a consultant?	296-20-040	Modalities not requiring prior authorization after sixty days. [Order 68-7, § 296-20-040, filed 11/27/68, effective 1/1/69.] Repealed by Order 70-12, filed 12/1/70, effective 1/1/71.
296-20-2030	May the worker videotape or audiotape the impairment rating examination conducted by the attending doctor or a consultant?	296-20-050	Periodical clinical reports. [Order 68-7, § 296-20-050, filed 11/27/68, effective 1/1/69.] Repealed by Order 70-12, filed 12/1/70, effective 1/1/71. Later promulgation, see WAC 296-20-061.
296-20-220	Special rules for evaluation of permanent bodily impairment.	296-20-060	Fees for concurrent treatment. [Order 68-7, § 296-20-060, filed 11/27/68, effective 1/1/69.] Repealed by Order 70-12, filed 12/1/70, effective 1/1/71. Later promulgation, see WAC 296-20-071.
296-20-230	Cervical and cervico-dorsal impairments.	296-20-061	Periodic clinical progress reports. [Order 71-6, § 296-20-061, filed 6/1/71; Order 70-12, § 296-20-061, filed 12/1/70, effective 1/1/71. Formerly WAC 296-20-050.] Repealed by Order 74-39, filed 11/22/74.
296-20-240	Categories of permanent cervical and cervico-dorsal impairments.	296-20-070	Consultations. [Order 68-7, § 296-20-070, filed 11/27/68, effective 1/1/69.] Repealed by Order 70-12, filed 12/1/70, effective 1/1/71. Later promulgation, see WAC 296-20-051.
296-20-250	Impairments of the dorsal area.	296-20-080	Private room—Special nurses. [Order 68-7, § 296-20-080, filed 11/27/68, effective 1/1/69.] Repealed by Order 70-12, filed 12/1/70, effective 1/1/71. Later promulgation, see WAC 296-20-091.
296-20-260	Categories of permanent dorsal area impairments.	296-20-085	Isolation of infected cases. [Order 71-6, § 296-20-085, filed 6/1/71; Order 70-12, § 296-20-085, filed 12/1/70, effective 1/1/71; Order 68-7, § 296-20-085, filed 11/27/68, effective 1/1/69.] Repealed by 81-01-100 (Order 80-29), filed 12/23/80, effective 3/1/81. Statutory Authority: RCW 51.04.020(4), 51.04.030, and 51.16.120(3).
296-20-270	Dorso-lumbar and lumbosacral impairments.	296-20-090	Reopenings. [Order 68-7, § 296-20-090, filed 11/27/68, effective 1/1/69.] Repealed by Order 70-12, filed 12/1/70, effective 1/1/71. Later promulgation, see WAC 296-20-097.
296-20-280	Categories of permanent dorso-lumbar and lumbosacral impairments.	296-20-095	Unrelated elective surgery. [Order 68-7, § 296-20-095, filed 11/27/68, effective 1/1/69.] Repealed by Order 70-12, filed 12/1/70, effective 1/1/71. Later promulgation, see WAC 296-20-081.
296-20-290	Impairments of the pelvis.	296-20-105	Laboratory. [Order 68-7, § 296-20-105, filed 11/27/68, effective 1/1/69.] Repealed by Order 70-12, filed 12/1/70, effective 1/1/71.
296-20-300	Categories of permanent impairments of the pelvis.	296-20-115	Flat fees. [Statutory Authority: RCW 51.04.020(4), 51.04.030, and 51.16.120(3). 81-01-100 (Order 80-29), § 296-20-115, filed 12/23/80, effective 3/1/81; Order 71-6, § 296-20-115, filed 6/1/71; Order 70-12, § 296-20-115, filed 12/1/70, effective 1/1/71; Order 68-7, § 296-20-115, filed 11/27/68, effective 1/1/69.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.
296-20-310	Convulsive neurological impairments.	296-20-12502	Physician assistant modifiers. [Statutory Authority: RCW 51.04.020(4), 51.04.030, and 51.16.120(3). 81-24-041 (Order 81-28), § 296-20-12502, filed 11/30/81, effective 1/1/82; 81-01-100 (Order 80-29), § 296-20-12502, filed 12/23/80, effective 3/1/81. Statutory Authority: RCW 51.04.030 and 51.16.035. 79-12-086
296-20-320	Categories of permanent convulsive neurological impairments.		
296-20-330	Impairments of mental health.		
296-20-340	Categories for evaluation of permanent impairments of mental health.		
296-20-350	Cardiac impairments.		
296-20-360	Categories of permanent cardiac impairments.		
296-20-370	Respiratory impairments.		
296-20-380	Categories of permanent respiratory impairments.		
296-20-385	Categories of persisting variable respiratory impairment with normal baseline spirometry.		
296-20-390	Air passage impairments.		
296-20-400	Categories of permanent air passage impairments.		
296-20-410	Nasal septum impairments.		
296-20-420	Categories of permanent air passage impairment due to nasal septum perforations.		
296-20-430	Loss of taste and smell.		
296-20-440	Categories of permanent loss of taste and smell.		
296-20-450	Speech impairments.		
296-20-460	Categories of permanent speech impairments.		
296-20-470	Skin impairments.		
296-20-480	Categories of permanent skin impairments.		
296-20-490	Impairment of the upper digestive tract, stomach, esophagus or pancreas.		
296-20-500	Categories of permanent impairments of the upper digestive tract, stomach, esophagus or pancreas.		
296-20-510	Lower digestive tract impairments.		
296-20-520	Categories of permanent lower digestive tract impairments.		
296-20-530	Impairment of anal function.		
296-20-540	Categories of permanent impairments of anal function.		
296-20-550	Liver and biliary tract impairments.		
296-20-560	Categories of permanent liver and biliary tract impairments.		
296-20-570	Impairments of the spleen, loss of one kidney, and surgical removal of the bladder with urinary diversion.		
296-20-580	Categories of permanent impairment of the spleen, loss of one kidney, and surgical removal of bladder with urinary diversion.		
296-20-590	Impairment of upper urinary tract.		
296-20-600	Categories of permanent impairments of upper urinary tract.		
296-20-610	Additional permanent impairments of upper urinary tract due to surgical diversion.		
296-20-620	Categories of additional permanent impairments of upper urinary tract due to surgical diversion.		
296-20-630	Impairment of bladder function.		
296-20-640	Categories of permanent impairments of bladder function.		
296-20-650	Anatomical or functional loss of testes.		
296-20-660	Categories of permanent anatomical or functional loss of testes.		
296-20-670	Disability.		
296-20-680	Classification of disabilities in proportion to total bodily impairment.		

- (Order 79-18), § 296-20-12502, filed 11/30/79, effective 1/1/80.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.
- 296-20-130 Medical aid contracts. [Order 74-7, § 296-20-130, filed 1/30/74; Order 70-12, § 296-20-130, filed 12/1/70, effective 1/1/71; Order 68-7, § 296-20-130, filed 11/27/68, effective 1/1/69.] Repealed by Order 77-27, filed 11/30/77, effective 1/1/78.
- 296-20-131 Advance authorization required for nonstandard treatment. [Order 74-7, § 296-20-131, filed 1/30/74.] Repealed by Order 76-34, filed 11/24/76, effective 1/1/77.
- 296-20-140 Conversion factor table—Anesthesia. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 87-03-004 (Order 86-45), § 296-20-140, filed 1/8/87; 83-24-016 (Order 83-35), § 296-20-140, filed 11/30/83, effective 1/1/84; 82-24-050 (Order 82-39), § 296-20-140, filed 11/29/82, effective 7/1/83. Statutory Authority: RCW 51.04.020(4), 51.04.030, and 51.16.120(3). 81-24-041 (Order 81-28), § 296-20-140, filed 11/30/81, effective 1/1/82; 80-18-033 (Order 80-24), § 296-20-140, filed 12/1/80, effective 1/1/81. Statutory Authority: RCW 51.04.030 and 51.16.035. 79-12-086 (Order 79-18), § 296-20-140, filed 11/30/79, effective 1/1/80; Order 77-27, § 296-20-140, filed 11/30/77, effective 1/1/78; Order 76-34, § 296-20-140, filed 11/24/76, effective 1/1/77; Order 75-39, § 296-20-140, filed 11/28/75, effective 1/1/76; Order 74-39, § 296-20-140, filed 11/22/74, effective 4/1/75; Order 74-7, § 296-20-140, filed 1/30/74.] Repealed by 88-24-011 (Order 88-28), filed 12/1/88, effective 1/1/89. Statutory Authority: RCW 51.04.020(4) and 51.04.030.
- 296-20-14001 Conversion factor table—Hospital. [Order 75-39, § 296-20-14001, filed 11/28/75, effective 1/1/76.] Repealed by Order 76-34, filed 11/24/76, effective 1/1/77.
- 296-20-145 Conversion factor table—Surgery. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 87-03-004 (Order 86-45), § 296-20-145, filed 1/8/87; 83-24-016 (Order 83-35), § 296-20-145, filed 11/30/83, effective 1/1/84; 82-24-050 (Order 82-39), § 296-20-145, filed 11/29/82, effective 7/1/83. Statutory Authority: RCW 51.04.020(4), 51.04.030, and 51.16.120(3). 81-24-041 (Order 81-28), § 296-20-145, filed 11/30/81, effective 1/1/82; 80-18-033 (Order 80-24), § 296-20-145, filed 12/1/80, effective 1/1/81. Statutory Authority: RCW 51.04.030 and 51.16.035. 79-12-086 (Order 79-18), § 296-20-145, filed 11/30/79, effective 1/1/80; Order 77-27, § 296-20-145, filed 11/30/77, effective 1/1/78; Order 76-34, § 296-20-145, filed 11/24/76, effective 1/1/77; Order 75-39, § 296-20-145, filed 11/28/75, effective 1/1/76; Order 74-7, § 296-20-145, filed 1/30/74.] Repealed by 88-24-011 (Order 88-28), filed 12/1/88, effective 1/1/89. Statutory Authority: RCW 51.04.020(4) and 51.04.030.
- 296-20-150 Conversion factor table—Radiology. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 87-03-004 (Order 86-45), § 296-20-150, filed 1/8/87; 83-24-016 (Order 83-35), § 296-20-150, filed 11/30/83, effective 1/1/84. Statutory Authority: RCW 51.04.020(4), 51.04.030, and 51.16.120(3). 81-24-041 (Order 81-28), § 296-20-150, filed 11/30/81, effective 1/1/82; 80-18-033 (Order 80-24), § 296-20-150, filed 12/1/80, effective 1/1/81. Statutory Authority: RCW 51.04.030 and 51.16.035. 79-12-086 (Order 79-18), § 296-20-150, filed 11/30/79, effective 1/1/80; Order 77-27, § 296-20-150, filed 11/30/77, effective 1/1/78; Order 76-34, § 296-20-150, filed 11/24/76, effective 1/1/77; Order 75-39, § 296-20-150, filed 11/28/75, effective 1/1/76; Order 74-7, § 296-20-150, filed 1/30/74.] Repealed by 88-24-011 (Order 88-28), filed 12/1/88, effective 1/1/89. Statutory Authority: RCW 51.04.020(4) and 51.04.030.
- 296-20-155 Conversion factor table—Pathology. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 87-03-004 (Order 86-45), § 296-20-155, filed 1/8/87; 83-24-016 (Order 83-35), § 296-20-155, filed 11/30/83, effective 1/1/84. Statutory Authority: RCW 51.04.020(4), 51.04.030, and 51.16.120(3). 81-24-041 (Order 81-28), § 296-20-155, filed 11/30/81, effective 1/1/82; 80-18-033 (Order 80-24), § 296-20-155, filed 12/1/80, effective 1/1/81. Statutory Authority: RCW 51.04.030 and 51.16.035. 79-12-086 (Order 79-18), § 296-20-155, filed 11/30/79, effective 1/1/80; Order 77-27, § 296-20-155, filed 11/30/77, effective 1/1/78; Order 76-34, § 296-20-155, filed 11/24/76, effective 1/1/77; Order 74-7, § 296-20-155, filed 1/30/74.] Repealed by 88-24-011 (Order 88-28), filed 12/1/88, effective 1/1/89. Statutory Authority: RCW 51.04.020(4) and 51.04.030.
- 296-20-17003 Fees. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 83-24-016 (Order 83-35), § 296-20-17003, filed 11/30/83, effective 1/1/84. Statutory Authority: RCW 51.04.020(4), 51.04.030, and 51.16.120(3). 80-18-033 (Order 80-24), § 296-20-17003, filed 12/1/80, effective 1/1/81; Order 77-27, § 296-20-17003, filed 11/30/77, effective 1/1/78; Order 76-34, § 296-20-17003, filed 11/24/76, effective 1/1/77.] Repealed by 95-16-031, filed 7/21/95, effective 8/22/95. Statutory Authority: RCW 51.04.030, 70.14.050 and 51.04.020(4).
- 296-20-210 General rules. [Statutory Authority: RCW 51.04.020, 51.04.030, 51.32.112, 51.32.114 and 51.36.015. 97-09-036, § 296-20-210, filed 4/14/97 effective 5/15/97. Statutory Authority: RCW 51.04.020(4) and 51.04.030. 88-14-012 (Order 88-09), § 296-20-210, filed 6/24/88; Order 74-32, § 296-20-210, filed 6/21/74, effective 10/1/74.] Repealed by 04-04-029, filed 1/27/04, effective 3/1/04. Statutory Authority: RCW 51.32.055, 51.32.112, 51.32.114, 51.36.060, and 51.36.070.
- 296-20-303 Attendant services. [Statutory Authority: RCW 51.04.020, 51.04.030, 51.32.060, 51.32.072, and 7.68.070. 01-18-041, § 296-20-303, filed 8/29/01, effective 10/1/01.] Decodified by 03-21-069, filed 10/14/03, effective 12/1/03. Statutory Authority: RCW 51.04.020. Recodified as WAC 296-23-246.

WAC 296-20-010 General information. (1) The following rules are promulgated pursuant to RCW 51.04.020 and 51.04.030. The department or self-insurer may purchase necessary physician and other provider services according to the fee schedules. The fee schedules shall be established in consultation with interested persons and updated at times determined by the department in consultation with those interested persons. Prior to the establishment or amendment of the fee schedules, the department will give at least thirty calendar days notice by mail to interested persons who have made timely request for advance notice of the establishment or amendment of the fee schedules. To request advance notice of the establishment or amendment of the fee schedules, interested persons must contact the department at the following address:

Department of Labor and Industries
Health Services Analysis
Interested Person's Mailing List for the Fee Schedules
P.O. Box 44322
Olympia, WA 98504-4322

As an alternative, interested persons may subscribe to the L&I medical provider news listserv. To subscribe, go to the department's web site at www.lni.wa.gov and click on the link "Provider billing & payment." Look for the icon that says "Get E-mail Updates" and click on it.

The department or self-insurer will require the current version of the federal Health Care Common Procedure Coding System (HCPCS) Level I (or CPT) and II codes on January 1, of each new year. CPT refers to the American Medical Association's Physicians' Current Procedural Terminology codes.

The adoption of these codes on an annual basis is designed to reduce the administrative burden on providers and lead to more accurate reporting of services. However, the inclusion of a service, product or supply within these new codes does not necessarily imply coverage, reimbursement or

endorsement, by the department or self-insurer. The department will make coverage and reimbursement decisions for these new codes on an individual basis.

If there are any services, procedures or narrative text contained in the new HCPCS Level I and II codes that conflict with the medical aid rules or fee schedules, the department's rules and policies take precedence.

Copies of the HCPCS Level I and II codes are available for public inspection. These documents are available in each of the department's service locations.

Copies of the HCPCS Level II codes may be purchased from:

The Superintendent of Documents
United States Government Printing Office
Washington, DC 20402
(202) 783-3238

Copies of the Level I (or CPT) codes may be purchased from:

The American Medical Association
Chicago, Illinois 60601
(800) 621-8335

In addition to the sources listed above, both the Level I and II codes may be purchased from a variety of private sources.

(2) The fee schedules are intended to cover all services for accepted industrial insurance claims. All fees listed are the maximum fees allowable. Practitioners shall bill their usual and customary fee for services. **If a usual and customary fee for any particular service is lower to the general public than listed in the fee schedules, the practitioner shall bill the department or self-insurer at the lower rate.** The department or self-insurer will pay the lesser of the billed charge or the fee schedules' maximum allowable.

(3) The rules contained in the introductory section pertain to *all* practitioners regardless of specialty area or limitation of practice. Additional rules pertaining to specialty areas will be found in the appropriate section of the medical aid rules.

(4) The methodology for making conversion factor cost of living adjustments is listed in WAC 296-20-132. The conversion factors are listed in WAC 296-20-135.

(5) No fee is payable for missed appointments unless the appointment is for an examination arranged by the department or self-insurer.

(6) When a claim has been accepted by the department or self-insurer, no provider or his/her representative may bill the worker for the difference between the allowable fee and the usual and customary charge. Nor can the worker be charged a fee, either for interest or completion of forms, related to services rendered for the industrial injury or condition. Refer to chapter 51.04 RCW.

(7) Practitioners must maintain documentation in claimant medical or health care service records adequate to verify the level, type, and extent of services provided to claimants. A health care practitioner's bill for services, appointment book, accounting records, or other similar methodology do not qualify as appropriate documentation for services rendered. Refer to chapter 296-20 WAC and department policy for reporting requirements.

(8) Except as provided in WAC 296-20-055 (Limitation of treatment and temporary treatment of unrelated conditions when retarding recovery), practitioners shall bill, and the department or self-insurer shall pay, only for proper and necessary medical care required for the diagnosis and curative or rehabilitative treatment of the accepted condition.

(9) When a worker is being treated concurrently for an unrelated condition the fee allowable for the service(s) rendered must be shared proportionally between the payors.

(10) Correspondence: Correspondence pertaining to state fund and department of energy claims should be sent to: Department of Labor and Industries, Claims Administration, P.O. Box 44291, Olympia, Washington 98504-4291.

Accident reports should be sent to: Department of Labor and Industries, P.O. Box 44299, Olympia, Washington 98504-4299.

Send provider bills by type (UB-92) to: Department of Labor and Industries, P.O. Box 44266, Olympia, Washington 98504-4266.

Adjustments, Home Nursing, Retraining, Job Modification, and Miscellaneous to: Department of Labor and Industries, P.O. Box 44267, Olympia, Washington 98504-4267.

Pharmacy to: Department of Labor and Industries, P.O. Box 44268, Olympia, Washington 98504-4268.

HCFA-1500 to: Department of Labor and Industries, P.O. Box 44269, Olympia, Washington 98504-4269.

State fund claims have six digit numbers or a letter and five digits preceded by a letter other than "S," "T," or "W."

All correspondence and billings pertaining to *crime victims* claims should be sent to Crime Victims Division, Department of Labor and Industries, P.O. Box 44520, Olympia, Washington 98504-4520.

Crime victim claims have six digit numbers preceded by a "V" or five digit numbers preceded by "VA," "VB," "VC," "VH," "VJ," or "VK."

All correspondence and billings pertaining to self-insured claims should be sent directly to the employer or the service representative as the case may be.

Self-insured claims are six digit numbers or a letter and five digits preceded by an "S," "T," or "W."

Communications to the department or self-insurer must show the patient's full name and claim number. If the claim number is unavailable, providers should contact the department or self-insurer for the number, indicating the patient's name, Social Security number, the date and the nature of the injury, and the employer's name. A communication should refer to one claim only. Correspondence must be legible and reproducible, as department records are microfilmed. Correspondence regarding specific claim matters should be sent directly to the department in Olympia or self-insurer in order to avoid rehandling by the service location.

(11) The department's various local service locations should be utilized by providers to obtain information, supplies, or assistance in dealing with matters pertaining to industrial injuries.

[Statutory Authority: RCW 51.04.020. 05-09-063, § 296-20-010, filed 4/19/05, effective 7/1/05; 03-21-069, § 296-20-010, filed 10/14/03, effective 12/1/03. Statutory Authority: RCW 51.04.020(4) and 51.04.030. 96-10-086, § 296-20-010, filed 5/1/96, effective 7/1/96. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159. 94-14-044, § 296-20-010, filed 6/29/94, effective 7/30/94; 93-16-072, § 296-20-010, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066,

§ 296-20-010, filed 12/1/92, effective 1/1/93; 90-04-057, § 296-20-010, filed 2/2/90, effective 3/5/90; 87-24-050 (Order 87-23), § 296-20-010, filed 11/30/87, effective 1/1/88; 86-20-074 (Order 86-36), § 296-20-010, filed 10/1/86, effective 11/1/86; 86-06-032 (Order 86-19), § 296-20-010, filed 2/28/86, effective 4/1/86; 83-16-066 (Order 83-23), § 296-20-010, filed 8/2/83. Statutory Authority: RCW 51.04.020(4), 51.04.030, and 51.16.120(3). 81-24-041 (Order 81-28), § 296-20-010, filed 11/30/81, effective 1/1/82; 81-01-100 (Order 80-29), § 296-20-010, filed 12/23/80, effective 3/1/81; Order 76-34, § 296-20-010, filed 11/24/76, effective 1/1/77; Order 75-39, § 296-20-010, filed 11/28/75, effective 1/1/76; Order 74-7, § 296-20-010, filed 1/30/74; Order 70-12, § 296-20-010, filed 12/1/70, effective 1/1/71; Order 68-7, § 296-20-010, filed 11/27/68, effective 1/1/69.]

WAC 296-20-0100 Chiropractic advisory committee.

(1) The director or the director's designee shall appoint a chiropractic advisory and utilization review committee.

(2) The committee will function as an advisor to the department with respect to policies affecting chiropractic care, quality assurance, clinical management of cases, utilization review, and the establishment of rules. It shall advise and assist the department in the department's relationship with providers of chiropractic care, and assist the department in ensuring that injured workers receive good quality chiropractic care in a safe and effective manner.

(3) The chiropractic advisory committee shall:

(a) Advise the department on standards as to what constitutes effective and accepted chiropractic treatment, for use by attending chiropractors and for chiropractic consultants to use in reviewing cases referred for consultation;

(b) Advise the department on standards and minimum credentials for chiropractic consultants and the content of consultant reports; and

(c) Review the performance of individual chiropractors and chiropractic consultants for conformance with standards and requirements and advise the department of instances where standards and requirements have not been met.

The department shall review the advice and recommendations of the committee and shall promulgate those standards and requirements which it chooses to adopt. The department shall review the advice from the committee on the performance of chiropractors and shall act upon this advice at its sole discretion.

(4) The committee will meet on a monthly basis or as needed. The department will reimburse members of the committee for travel and incidental expenses related to the meetings.

[Statutory Authority: RCW 51.04.020(4) and 51.04.030. 88-24-011 (Order 88-28), § 296-20-0100, filed 12/1/88, effective 1/1/89.]

WAC 296-20-01001 Medical advisory industrial insurance committee.

(1) The Washington state medical association shall appoint an advisory and utilization review committee composed of nine members, one of whom shall be an osteopathic physician nominated by the Washington state osteopathic medical association. The remaining members should be selected from the following specialty groups: Family or general practice, orthopaedics, neurology or neurosurgery, general surgery, physical medicine and rehabilitation, psychiatry, internal medicine, and industrial medicine.

(2) The committee will function as an advisor to the department with respect to policies affecting medical care and rehabilitation, quality control and supervision of medical care, and the establishment of rules and regulations. It shall

also advise and assist the department in the resolution of controversies, disputes and problems between the department and the providers of medical care. It will also advise and assist the department in the education of members of the medical community with regard to the roles of the physician, the department and the employer in providing the needs and care of the injured worker.

(3) The committee shall normally meet on a monthly basis or as necessity dictates. The department will reimburse members of the committee for each meeting.

[Order 77-27, § 296-20-01001, filed 11/30/77, effective 1/1/78; Emergency Order 77-26, § 296-20-01001, filed 12/1/77; Emergency Order 77-16, § 296-20-01001, filed 9/6/77; Order 76-34, § 296-20-01001, filed 11/24/76, effective 1/1/77.]

WAC 296-20-01002 Definitions. Acceptance,

accepted condition: Determination by a qualified representative of the department or self-insurer that reimbursement for the diagnosis and curative or rehabilitative treatment of a claimant's medical condition is the responsibility of the department or self-insurer. The condition being accepted must be specified by one or more diagnosis codes from the current edition of the International Classification of Diseases, Clinically Modified (ICD-CM).

Appointing authority: For the evidence-based prescription drug program of the participating agencies in the state purchased health care programs, appointing authority shall mean the following persons acting jointly: The administrator of the health care authority, the secretary of the department of social and health services, and the director of the department of labor and industries.

Attendant care: Those proper and necessary personal care services provided to maintain the worker in his or her residence. Refer to WAC 296-20-303 for more information.

Attending doctor report: This type of report may also be referred to as a "60 day" or "special" report. The following information must be included in this type of report. Also, additional information may be requested by the department as needed.

(1) The condition(s) diagnosed including ICD-9-CM codes and the objective and subjective findings.

(2) Their relationship, if any, to the industrial injury or exposure.

(3) Outline of proposed treatment program, its length, components, and expected prognosis including an estimate of when treatment should be concluded and condition(s) stable. An estimated return to work date should be included. The probability, if any, of permanent partial disability resulting from industrial conditions should be noted.

(4) If the worker has not returned to work, the attending doctor should indicate whether a vocational assessment will be necessary to evaluate the worker's ability to return to work and why.

(5) If the worker has not returned to work, a doctor's estimate of physical capacities should be included with the report. If further information regarding physical capacities is needed or required, a performance-based physical capacities evaluation can be requested. Performance-based physical capacities evaluations should be conducted by a licensed occupational therapist or a licensed physical therapist. Performance-based physical capacities evaluations may also be

conducted by other qualified professionals who provided performance-based physical capacities evaluations to the department prior to May 20, 1987, and who have received written approval to continue supplying this service based on formal department review of their qualifications.

Authorization: Notification by a qualified representative of the department or self-insurer that specific proper and necessary treatment, services, or equipment provided for the diagnosis and curative or rehabilitative treatment of an accepted condition will be reimbursed by the department or self-insurer.

Average wholesale price (AWP): A pharmacy reimbursement formula by which the pharmacist is reimbursed for the cost of the product plus a mark-up. The AWP is an industry benchmark which is developed independently by companies that specifically monitor drug pricing.

Baseline price (BLP): Is derived by calculating the mean average for all NDC's (National Drug Code) in a specific product group, determining the standard deviation, and calculating a new mean average using all prices within one standard deviation of the original mean average. "Baseline price" is a drug pricing mechanism developed and updated by First Data Bank.

Bundled codes: When a bundled code is covered, payment for them is subsumed by the payment for the codes or services to which they are incident. (An example is a telephone call from a hospital nurse regarding care of a patient. This service is not separately payable because it is included in the payment for other services such as hospital visits.) Bundled codes and services are identified in the fee schedules.

By report: BR (by report) in the value column of the fee schedules indicates that the value of this service is to be determined by report (BR) because the service is too unusual, variable or new to be assigned a unit value. The report shall provide an adequate definition or description of the services or procedures that explain why the services or procedures (e.g., operative, medical, radiological, laboratory, pathology, or other similar service report) are too unusual, variable, or complex to be assigned a relative value unit, using any of the following as indicated:

- (1) Diagnosis;
- (2) Size, location and number of lesion(s) or procedure(s) where appropriate;
- (3) Surgical procedure(s) and supplementary procedure(s);
- (4) Whenever possible, list the nearest similar procedure by number according to the fee schedules;
- (5) Estimated follow-up;
- (6) Operative time;
- (7) Describe in detail any service rendered and billed using an "unlisted" procedure code.

The department or self-insurer may adjust BR procedures when such action is indicated.

Chart notes: This type of documentation may also be referred to as "office" or "progress" notes. Providers must maintain charts and records in order to support and justify the services provided. "Chart" means a compendium of medical records on an individual patient. "Record" means dated reports supporting bills submitted to the department or self-insurer for medical services provided in an office, nursing facility, hospital, outpatient, emergency room, or other place

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of service. Records of service shall be entered in a chronological order by the practitioner who rendered the service. For reimbursement purposes, such records shall be legible, and shall include, but are not limited to:

- (1) Date(s) of service;
- (2) Patient's name and date of birth;
- (3) Claim number;
- (4) Name and title of the person performing the service;
- (5) Chief complaint or reason for each visit;
- (6) Pertinent medical history;
- (7) Pertinent findings on examination;
- (8) Medications and/or equipment/supplies prescribed or provided;
- (9) Description of treatment (when applicable);
- (10) Recommendations for additional treatments, procedures, or consultations;
- (11) X rays, tests, and results; and
- (12) Plan of treatment/care/outcome.

Consultation examination report: The following information must be included in this type of report. Additional information may be requested by the department as needed.

- (1) A detailed history to establish:
 - (a) The type and severity of the industrial injury or occupational disease.
 - (b) The patient's previous physical and mental health.
 - (c) Any social and emotional factors which may effect recovery.
- (2) A comparison history between history provided by attending doctor and injured worker, must be provided with exam.
- (3) A detailed physical examination concerning all systems affected by the industrial accident.
- (4) A general physical examination sufficient to demonstrate any preexisting impairments of function or concurrent condition.
- (5) A complete diagnosis of all pathological conditions including ICD-9-CM codes found to be listed:
 - (a) Due solely to injury.
 - (b) Preexisting condition aggravated by the injury and the extent of aggravation.
 - (c) Other medical conditions neither related to nor aggravated by the injury but which may retard recovery.
 - (d) Coexisting disease (arthritis, congenital deformities, heart disease, etc.).
- (6) Conclusions must include:
 - (a) Type of treatment recommended for each pathological condition and the probable duration of treatment.
 - (b) Expected degree of recovery from the industrial condition.
 - (c) Probability, if any, of permanent disability resulting from the industrial condition.
 - (d) Probability of returning to work.
- (7) Reports of necessary, reasonable X-ray and laboratory studies to establish or confirm the diagnosis when indicated.

Doctor: For these rules, means a person licensed to practice one or more of the following professions: Medicine and surgery; osteopathic medicine and surgery; chiropractic; naturopathic physician; podiatry; dentistry; optometry.

Only those persons so licensed may sign report of accident forms and certify time loss compensation except as provided in WAC 296-20-01502, When can a physician assistant have sole signature on the report of accident or physician's initial report? and WAC 296-23-241, Can advanced registered nurse practitioners independently perform the functions of an attending physician?

Emergent hospital admission: Placement of the worker in an acute care hospital for treatment of a work related medical condition of an unforeseen or rapidly progressing nature which if not treated in an inpatient setting, is likely to jeopardize the workers health or treatment outcome.

Endorsing practitioner: A practitioner who has reviewed the preferred drug list and has notified the health care authority that he or she has agreed to allow therapeutic interchange of a preferred drug for any nonpreferred drug in a given therapeutic class.

Fatal: When the attending doctor has reason to believe a worker has died as a result of an industrial injury or exposure, the doctor should notify the nearest department service location or the self-insurer immediately. Often an autopsy is required by the department or self-insurer. If so, it will be authorized by the service location manager or the self-insurer. Benefits payable include burial stipend and monthly payments to the surviving spouse and/or dependents.

Fee schedules or maximum fee schedule(s): The fee schedules consist of, but are not limited to, the following:

(a) Health Care Common Procedure Coding System Level I and II Codes, descriptions and modifiers that describe medical and other services, supplies and materials.

(b) Codes, descriptions and modifiers developed by the department.

(c) Relative value units (RVUs), calculated or assigned dollar values, percent-of-allowed-charges (POAC), or diagnostic related groups (DRGs), that set the maximum allowable fee for services rendered.

(d) Billing instructions or policies relating to the submission of bills by providers and the payment of bills by the department or self-insurer.

(e) Average wholesale price (AWP), baseline price (BLP), and policies related to the purchase of medications.

Health services provider or provider: For these rules means any person, firm, corporation, partnership, association, agency, institution, or other legal entity providing any kind of services related to the treatment of an industrially injured worker. It includes, but is not limited to, hospitals, medical doctors, dentists, chiropractors, vocational rehabilitation counselors, osteopathic physicians, pharmacists, podiatrists, physical therapists, occupational therapists, massage therapists, psychologists, naturopathic physicians, and durable medical equipment dealers.

Home nursing: Those nursing services that are proper and necessary to maintain the worker in his or her residence. These services must be provided through an agency licensed, certified or registered to provide home care, home health or hospice services. Refer to WAC 296-20-091 for more information.

Independent or separate procedure: Certain of the fee schedule's listed procedures are commonly carried out as an integral part of a total service, and as such do not warrant a separate charge. When such a procedure is carried out as a

separate entity, not immediately related to other services, the indicated value for "independent procedure" is applicable.

Medical aid rules: The Washington Administrative Codes (WACs) that contain the administrative rules for medical and other services rendered to workers.

Modified work status: The worker is not able to return to their previous work, but is physically capable of carrying out work of a lighter nature. Workers should be urged to return to modified work as soon as reasonable as such work is frequently beneficial for body conditioning and regaining self confidence.

Under RCW 51.32.090, when the employer has modified work available for the worker, the employer must furnish the doctor and the worker with a statement describing the available work in terms that will enable the doctor to relate the physical activities of the job to the worker's physical limitations and capabilities. The doctor shall then determine whether the worker is physically able to perform the work described. The employer may not increase the physical requirements of the job without requesting the opinion of the doctor as to the worker's ability to perform such additional work. If after a trial period of reemployment the worker is unable to continue with such work, the worker's time loss compensation will be resumed upon certification by the attending doctor.

If the employer has no modified work available, the department should be notified immediately, so vocational assessment can be conducted to determine whether the worker will require assistance in returning to work.

Nonemergent (elective) hospital admission: Placement of the worker in an acute care hospital for medical treatment of an accepted condition which may be safely scheduled in advance without jeopardizing the worker's health or treatment outcome.

Physician: For these rules, means any person licensed to perform one or more of the following professions: Medicine and surgery; or osteopathic medicine and surgery.

Practitioner: For these rules, means any person defined as a "doctor" under these rules, or licensed to practice one or more of the following professions: Audiology; physical therapy; occupational therapy; pharmacy; prosthetics; orthotics; psychology; nursing; physician or osteopathic assistant; and massage therapy.

Preferred drug list: The list of drugs selected by the appointing authority to be used by applicable state agencies as the basis for the purchase of drugs in state purchased health care programs.

Proper and necessary:

(1) The department or self-insurer pays for proper and necessary health care services that are related to the diagnosis and treatment of an accepted condition.

(2) Under the Industrial Insurance Act, "proper and necessary" refers to those health care services which are:

(a) Reflective of accepted standards of good practice, within the scope of practice of the provider's license or certification;

(b) Curative or rehabilitative. Care must be of a type to cure the effects of a work-related injury or illness, or it must be rehabilitative. Curative treatment produces permanent changes, which eliminate or lessen the clinical effects of an accepted condition. Rehabilitative treatment allows an

injured or ill worker to regain functional activity in the presence of an interfering accepted condition. Curative and rehabilitative care produce long-term changes;

(c) Not delivered primarily for the convenience of the claimant, the claimant's attending doctor, or any other provider; and

(d) Provided at the least cost and in the least intensive setting of care consistent with the other provisions of this definition.

(3) The department or self-insurer stops payment for health care services once a worker reaches a state of maximum medical improvement. Maximum medical improvement occurs when no fundamental or marked change in an accepted condition can be expected, with or without treatment. Maximum medical improvement may be present though there may be fluctuations in levels of pain and function. A worker's condition may have reached maximum medical improvement though it might be expected to improve or deteriorate with the passage of time. Once a worker's condition has reached maximum medical improvement, treatment that results only in temporary or transient changes is not proper and necessary. "Maximum medical improvement" is equivalent to "fixed and stable."

(4) In no case shall services which are inappropriate to the accepted condition or which present hazards in excess of the expected medical benefits be considered proper and necessary. Services that are controversial, obsolete, investigational or experimental are presumed not to be proper and necessary, and shall be authorized only as provided in WAC 296-20-03002(6) and 296-20-02850.

Refill: The continuation of therapy with the same drug (including the renewal of a previous prescription or adjustments in dosage) when a prescription is for an antipsychotic, antidepressant, chemotherapy, antiretroviral or immunosuppressive drug.

Regular work status: The injured worker is physically capable of returning to his/her regular work. It is the duty of the attending doctor to notify the worker and the department or self-insurer, as the case may be, of the specific date of release to return to regular work. Compensation will be terminated on the release date. Further treatment can be allowed as requested by the attending doctor if the condition is not stationary and such treatment is needed and otherwise in order.

Temporary partial disability: Partial time loss compensation may be paid when the worker can return to work on a limited basis or return to a lesser paying job is necessitated by the accepted injury or condition. The worker must have a reduction in wages of more than five percent before consideration of partial time loss can be made. No partial time loss compensation can be paid after the worker's condition is stationary. **All time loss compensation must be certified by the attending doctor based on objective findings.**

Termination of treatment: When treatment is no longer required and/or the industrial condition is stabilized, a report indicating the date of stabilization should be submitted to the department or self-insurer. This is necessary to initiate closure of the industrial claim. The patient may require continued treatment for conditions not related to the industrial condition; however, financial responsibility for such care must be the patient's.

Therapeutic alternative: Drug products of different chemical structure within the same pharmacologic or therapeutic class and that are expected to have similar therapeutic effects and safety profiles when administered in therapeutically equivalent doses.

Therapeutic interchange: To dispense with the endorsing practitioner's authorization, a therapeutic alternative to the prescribed drug.

Total permanent disability: Loss of both legs or arms, or one leg and one arm, total loss of eyesight, paralysis or other condition permanently incapacitating the worker from performing any work at any gainful employment. When the attending doctor feels a worker may be totally and permanently disabled, the attending doctor should communicate this information immediately to the department or self-insurer. A vocational evaluation and an independent rating of disability may be arranged by the department prior to a determination as to total permanent disability. Coverage for treatment does not usually continue after the date an injured worker is placed on pension.

Total temporary disability: Full-time loss compensation will be paid when the worker is unable to return to any type of reasonably continuous gainful employment as a direct result of an accepted industrial injury or exposure.

Unusual or unlisted procedure: Value of unlisted services or procedures should be substantiated "by report" (BR).

Utilization review: The assessment of a claimant's medical care to assure that it is proper and necessary and of good quality. This assessment typically considers the appropriateness of the place of care, level of care, and the duration, frequency or quantity of services provided in relation to the accepted condition being treated.

[Statutory Authority: 2004 c 65 and 2004 c 163. 04-22-085, § 296-20-01002, filed 11/2/04, effective 12/15/04. Statutory Authority: RCW 51.04.020, 70.14.050. 04-08-040, § 296-20-01002, filed 3/30/04, effective 5/1/04. Statutory Authority: RCW 51.04.020. 03-21-069, § 296-20-01002, filed 10/14/03, effective 12/1/03. Statutory Authority: RCW 51.04.010, 51.04.020, 51.04.030, 51.32.080, 51.32.110, 51.32.112, 51.36.060. 02-21-105, § 296-20-01002, filed 10/22/02, effective 12/1/02. Statutory Authority: RCW 51.04.020, 51.04.030, 51.32.060, 51.32.072, and 7.68.070. 01-18-041, § 296-20-01002, filed 8/29/01, effective 10/1/01. Statutory Authority: RCW 51.04.020 and 51.04.030. 00-01-039, § 296-20-01002, filed 12/7/99, effective 1/8/00. Statutory Authority: RCW 51.04.030, 70.14.050 and 51.04.020(4). 95-16-031, § 296-20-01002, filed 7/21/95, effective 8/22/95. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159. 93-16-072, § 296-20-01002, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-20-01002, filed 12/1/92, effective 1/1/93; 92-05-041, § 296-20-01002, filed 2/13/92, effective 3/15/92. Statutory Authority: RCW 51.04.020. 90-14-009, § 296-20-01002, filed 6/25/90, effective 8/1/90. Statutory Authority: RCW 51.04.020(4) and 51.04.030. 90-04-057, § 296-20-01002, filed 2/2/90, effective 3/5/90; 87-24-050 (Order 87-23), § 296-20-01002, filed 11/30/87, effective 1/1/88; 86-20-074 (Order 86-36), § 296-20-01002, filed 10/1/86, effective 11/1/86; 83-24-016 (Order 83-35), § 296-20-01002, filed 11/30/83, effective 1/1/84; 83-16-066 (Order 83-23), § 296-20-01002, filed 8/2/83. Statutory Authority: RCW 51.04.020(4), 51.04.030, and 51.16.120(3). 81-24-041 (Order 81-28), § 296-20-01002, filed 11/30/81, effective 1/1/82; 81-01-100 (Order 80-29), § 296-20-01002, filed 12/23/80, effective 3/1/81.]

WAC 296-20-015 Who may treat. (1) In order to treat workers under the Industrial Insurance Act, a health care provider must qualify as an approved provider under the department's rules. The department must approve the health care provider through the issuance of a provider number before the health care provider is eligible for payment for services.

(2) Para-professionals, who are not independently licensed, must practice under the direct supervision of a licensed health care professional whose scope of practice and specialty training includes the service provided by the para-professional. The department may deny direct reimbursement to the para-professional for services rendered, and may instead directly reimburse the licensed and supervising health care professional for covered services. Payment rules for para-professionals may be determined by department policy.

(3) Procedures and evaluations requiring specialized skills and knowledge will be limited to board certified or board qualified physicians, or osteopathic physicians as specified by the American Medical Association or the American Osteopathic Association.

(4) The department as a trustee of the medical aid fund has a duty to supervise provision of proper and necessary medical care that is delivered promptly, efficiently, and economically. The department can deny, revoke, suspend, limit, or impose conditions on a health care provider's authorization to treat workers under the Industrial Insurance Act. Reasons for denying issuance of a provider number or imposing any of the above restrictions include, but are not limited to the following:

(a) Incompetence or negligence, which results in injury to a worker or which creates an unreasonable risk that a worker may be harmed.

(b) The possession, use, prescription for use, or distribution of controlled substances, legend drugs, or addictive, habituating, or dependency-inducing substances in any way other than for therapeutic purposes.

(c) Any temporary or permanent probation, suspension, revocation, or type of limitation of a practitioner's license to practice by any court, board, or administrative agency.

(d) The commission of any act involving moral turpitude, dishonesty, or corruption relating to the practice of the provider's profession. The act need not constitute a crime. If a conviction or finding of such an act is reached by a court or other tribunal pursuant to plea, hearing, or trial, a certified copy of the conviction or finding is conclusive evidence of the violation.

(e) The failure to comply with the department's orders, rules, or policies.

(f) The failure, neglect, or refusal to:

(i) Provide records requested by the department pursuant to a health care services review or an audit.

(ii) Submit complete, adequate, and detailed reports or additional reports requested or required by the department regarding the treatment and condition of a worker.

(g) The submission or collusion in the submission of false or misleading reports or bills to any government agency.

(h) Billing a worker for:

(i) Treatment of an industrial condition for which the department has accepted responsibility; or

(ii) The difference between the amount paid by the department under the maximum allowable fee set forth in these rules and any other charge.

(i) Repeated failure to notify the department immediately and prior to burial in any death, where the cause of the death is not definitely known and possibly related to an industrial injury or occupational disease.

(j) Repeated failure to recognize emotional and social factors impeding recovery of a worker who is being treated under the Industrial Insurance Act.

(k) Repeated unreasonable refusal to comply with the recommendations of board certified or qualified specialists who have examined a worker.

(l) Repeated use of:

(i) Treatment of controversial or experimental nature;

(ii) Contraindicated or hazardous treatment; or

(iii) Treatment past stabilization of the industrial condition or after maximum curative improvement has been obtained.

(m) Declaration of mental incompetency by a court or other tribunal.

(n) Failure to comply with the applicable code of professional conduct or ethics.

(o) Failure to inform the department of any disciplinary action issued by order or formal letter taken against the provider's license to practice.

(p) The finding of any peer group review body of reason to take action against the provider's practice privileges.

(q) Misrepresentation or omission of any material information in the application for authorization to treat workers. (chapter 51.04 RCW.)

(5) If the department finds reason to take corrective action, the department may also order one or more of the following:

(a) Recoupment of payments made to the provider, including interest; (chapter 51.04 RCW.)

(b) Denial or reduction of payment;

(c) Assessment of penalties for each action that falls within the scope of subsection (4) (a) through (q) of this section; (chapter 51.48 RCW.)

(d) Placement of the provider on a prepayment review status requiring the submission of supporting documents prior to payment;

(e) Requirement to satisfactorily complete remedial education courses and/or programs; and

(f) Imposition of other appropriate restrictions or conditions on the provider's privilege to be reimbursed for treating workers under the Industrial Insurance Act.

(6) The department shall forward a copy of any corrective action taken against a provider to the applicable disciplinary authority.

[Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159. 93-16-072, § 296-20-015, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020(4) and 51.04.030. 90-04-057, § 296-20-015, filed 2/2/90, effective 3/5/90; 86-20-074 (Order 86-36), § 296-20-015, filed 10/1/86, effective 11/1/86; 86-06-032 (Order 86-19), § 296-20-015, filed 2/28/86, effective 4/1/86. Statutory Authority: RCW 51.04.020(4), 51.04.030, and 51.16.120(3). 81-01-100 (Order 80-29), § 296-20-015, filed 12/23/80, effective 3/1/81; Order 76-34, § 296-20-015, filed 11/24/76; effective 1/1/77; Order 74-4, § 296-20-015, filed 1/30/74; Order 71-6, § 296-20-015, filed 6/1/71; Order 70-12, § 296-20-015, filed 12/1/70, effective 1/1/71; Order 68-7, § 296-20-015, filed 11/27/68, effective 1/1/69.]

WAC 296-20-01501 Physician assistant rules. (1)

Physician assistants may perform only those medical services in industrial injury cases, for which the physician assistant is trained and licensed, under the control and supervision of a licensed physician. Such control and supervision shall not be

construed to require the personal presence of the supervising physician.

(2) Physician assistants may perform those medical services which are within the scope of their physician's assistant license for industrial injury cases within the limitations of subsection (3) of this section.

(3) Advance approval must be obtained from the department to treat industrial injury cases. To be eligible to treat industrial injuries, the physician assistant must:

(a) Provide the department with a copy of his/her license.

(b) Provide the name and address and specialty of the supervising physician.

(c) Provide the department with the evidence of a reliable and rapid system of communication with the supervising physician.

(4) Physician assistants may prepare report of accident, time loss compensation certification, and progress reports for the supervising physician signature. Physician assistants cannot submit such information under his/her signature. Under certain circumstances, physician assistants can submit the report of accident or physician initial report under his or her signature. See WAC 296-20-01502.

[Statutory Authority: 2004 c 65 and 2004 c 163. 04-22-085, § 296-20-01501, filed 11/2/04, effective 12/15/04. Statutory Authority: RCW 51.04.020, 03-21-069, § 296-20-01501, filed 10/14/03, effective 12/1/03. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159. 93-16-072, § 296-20-01501, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020(4), 51.04.030, and 51.16.120(3). 81-24-041 (Order 81-28), § 296-20-01501, filed 11/30/81, effective 1/1/82; 81-01-100 (Order 80-29), § 296-20-01501, filed 12/23/80, effective 3/1/81. Statutory Authority: RCW 51.04.030 and 51.16.035. 79-12-086 (Order 79-18), § 296-20-01501, filed 11/30/79, effective 1/1/80.]

WAC 296-20-01502 When can a physician assistant have sole signature on the report of accident or physician's initial report? (1) Physician assistants (PAs) may complete and have sole signature on the report of accident or the physician's initial report, where applicable, on simple industrial injury claims. This can occur for the period beginning July 1, 2004, and ending July 1, 2007.

PAs cannot certify entitlement to time-loss compensation, pension benefits, death benefits, or loss-of-earning power benefits.

(2) A simple industrial injury claim would include:

- No time lost from work after the date of injury; and
- A simple industrial injury limited to an insect bite, abrasion, contusion, laceration, blister, foreign body, open wound, sprain, strain, closed fracture, simple burn, or probable exposure to bloodborne pathogen due to a needlestick.

(Specific examples include 2nd degree burn, ICD-9 943.29, tibia fracture, closed, ICD-9 823.80.)

A simple industrial injury does not involve:

- Time lost from work after the date of injury; or
- Surgery or hospitalization on the date of the injury or date of first treatment; or
- Occupational diseases (e.g., dermatitis, carpal tunnel syndrome, hearing loss, asbestosis, exposure to blood with no needlestick); or
- Complex industrial injuries (e.g., hernias, head injuries (except simple lacerations or abrasions), mental health conditions, open fractures, extremity amputation, severe crush

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injuries, severe burns, spinal cord injuries, cancer, heart disease, stroke or chemical exposure).

(3) An attending physician must be assigned to the claim to certify any time off work after the date of injury.

(4) The PA must identify on the report of accident or physician's initial report the name of the doctor who will be supervising care under this claim and also list the corresponding labor and industries provider number for that doctor. The claim will be considered on its own merits regardless of the absence of the supervising physician's L&I number but payment of bills may be delayed.

(5) WAC 296-20-01502 expires July 1, 2007.

[Statutory Authority: 2004 c 65 and 2004 c 163. 04-22-085, § 296-20-01502, filed 11/2/04, effective 12/15/04.]

WAC 296-20-01505 Provider types and services not covered. The department will not pay for services performed by the following practitioners:

Acupuncturists

Herbalists

Christian Science practitioners or theological healers

Homeopathists

Noncertified physician assistants

Operating room technicians

Certified surgical technicians

Certified surgical assistants

Any other licensed or unlicensed practitioners not otherwise specifically provided for by the department.

[Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159. 94-14-044, § 296-20-01505, filed 6/29/94, effective 7/30/94.]

WAC 296-20-020 Acceptance of rules and fees. The filing of an accident report or the rendering of treatment to a worker who comes under the department's or self-insurer's jurisdiction, as the case may be, constitutes acceptance of the department's medical aid rules and compliance with its rules and fees.

In accordance with RCW 51.28.020 of the industrial insurance law, when a doctor renders treatment to a worker entitled to benefits under the law, "it shall be the duty of the physician to inform the worker of his rights under this title and to lend all necessary assistance in making the application for compensation and such proof of other matters as required by the rules of the department without charge to the worker," a worker shall not be billed for treatment rendered for his accepted industrial injury or occupational disease.

The department or self-insurer must be notified immediately, when an unrelated condition is being treated concurrently with an industrial injury. See WAC 296-20-055 for specific information required.

When there is questionable eligibility, (i.e., service is not usually allowed for industrial injuries or investigation is pending, etc.) the provider may require the worker to pay for the treatment rendered.

In cases of questionable eligibility where the provider has billed the worker or other insurance, and the claim is subsequently allowed, the provider shall refund the worker or insurer in full and bill the department or self-insurer for services rendered using billing instructions, codes, and policies as listed in the medical aid rules and fee schedules.

Cases in which there is a question of medical ethics or quality of medical care, will be referred to the Washington state medical association's medical advisory and utilization review committee to the department of labor and industries for recommendations.

[Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159, 93-16-072, § 296-20-020, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020(4) and 51.04.030, 86-06-032 (Order 86-19), § 296-20-020, filed 2/28/86, effective 4/1/86. Statutory Authority: RCW 51.04.020(4), 51.04.030, and 51.16.120(3), 81-01-100 (Order 80-29), § 296-20-020, filed 12/23/80, effective 3/1/81; Order 76-34, § 296-20-020, filed 11/24/76, effective 1/1/77; Order 75-39, § 296-20-020, filed 11/28/75, effective 1/1/76; Order 74-39, § 296-20-020, filed 11/22/74, effective 1/1/75; Order 71-6, § 296-20-020, filed 6/1/71; Order 70-12, § 296-20-020, filed 12/1/70, effective 1/1/71; Order 68-7, § 296-20-020, filed 11/27/68, effective 1/1/69.]

WAC 296-20-02005 Keeping of records. A health services provider who requests from the department payment for providing services shall maintain all records necessary for the director's authorized auditors to audit the provision of services. A provider shall keep all records necessary to disclose the extent of services the provider furnishes to industrially injured workers. At a minimum, these records must provide and include prompt and specific documentation of the level and type of service for which payment is sought. Records must be maintained for audit purposes for a minimum of five years.

[Statutory Authority: RCW 51.04.020(4) and 51.04.030, 86-20-074 (Order 86-36), § 296-20-02005, filed 10/1/86, effective 11/1/86.]

WAC 296-20-02010 Review of health services providers. (1) The department may review providers' patient and billing related records to ensure workers are receiving proper and necessary medical care and to ensure providers' compliance with the department's medical aid rules, fee schedules, and policies. A records review may be the basis for corrective action against the provider.

(2) The department may review records before, during, or after delivery of health services. Records reviews may be for cause or at random and may include the utilization of statistical sampling methodologies and projections based upon sample findings. Records reviews may be conducted at or away from the provider's places of business, at the department's discretion.

(3) The department will give ten working days' written notification to any provider that the provider's patient and billing related records will be reviewed by an auditor at the provider's place(s) of business to determine compliance with medical aid rules and standards.

(4) The department may request legible copies of providers' records. Providers shall furnish copies of the requested records within thirty calendar days of receipt of the request.

(5) The department will not remove original records from provider's premises.

(6) For information regarding the formal appeals process refer to chapter 51.52 RCW.

[Statutory Authority: RCW 51.04.020, 03-21-069, § 296-20-02010, filed 10/14/03, effective 12/1/03. Statutory Authority: RCW 51.04.020(4) and 51.04.030, 90-04-057, § 296-20-02010, filed 2/2/90, effective 3/5/90; 86-20-074 (Order 86-36), § 296-20-02010, filed 10/1/86, effective 11/1/86.]

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WAC 296-20-02015 Interest on excess payments. (1)

When a provider of health services receives a payment to which that provider is not entitled, the provider must repay the excess payment, plus accrued interest, without regard to whether the excess payment occurred due to provider or department error or oversight, except as provided in subsection (2) of this section.

(2) When a provider:

(a) Accepts in good faith a determination by the department that a worker is eligible for benefits under Title 51 RCW;

(b) Provides, bills, and receives payment for services to that worker and the department later determines that the worker was ineligible for services during that period no interest will begin to accrue until notification is received by the provider that the worker was ineligible.

(3) Interest accrues on excess payments at the rate of one percent per month or portion of a month beginning on the thirty-first day after payment was made. Where partial repayment of an excess payment is made, interest accrues on the remaining balance.

(4) The department reserves the option of either requesting the provider to remit the amount of the excess payment and accrued interest to the department or offsetting excess payments and accrued interest against future payments due to the provider.

[Statutory Authority: RCW 51.04.020(4) and 51.04.030, 86-20-074 (Order 86-36), § 296-20-02015, filed 10/1/86, effective 11/1/86.]

WAC 296-20-022 Payment of out-of-state providers.

(1) How will health care providers outside of Washington state be paid? All health care service providers, regardless of their geographic location, will be paid according to the fee schedule rules, rates, coverage and payment policies as published in the Washington state *Medical Aid Rules and Fee Schedules* and/or provider bulletins.

(2) Can an injured worker be charged for services?

In all cases, the department's maximum allowed fees and payment levels are the maximum payable. If a provider's charge exceeds the maximum amount payable under the department's *Medical Aid Rules and Fee Schedules*, the provider must not charge the injured worker for the difference. A provider violating this provision may be held ineligible to treat injured workers as provided by department rules and may be subject to other applicable penalties.

Exception: When a provider treats an injured worker for condition(s) unrelated to the worker's accepted industrial injury or illness, the provider may bill the worker or other insurers for the unrelated services only.

(3) What services will be paid to providers outside of Washington? Only those diagnostic and treatment services authorized under the state of Washington medical aid rules, fee schedules, payment policies, or medical coverage decisions may be authorized or paid by the department or self-insurer. As determined by the department of labor and industries, the scope of practice of providers outside the state of Washington may be recognized for payment purposes. However, in all cases WAC 296-20-03002 (Treatment not authorized) shall apply. Specifically, services not authorized under Washington workers compensation rules, fee schedules, payment policies, or medical coverage decisions will not be paid,

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even if permitted under the workers compensation program in the provider's state or country of business. When in doubt, the provider should verify coverage of a service with the department or self-insurer.

[Statutory Authority: RCW 51.04.020, 51.04.030, 51.36.080, 00-09-078, § 296-20-022, filed 4/18/00, effective 7/1/00. Statutory Authority: RCW 51.04.020(4) and 51.04.030, 90-04-057, § 296-20-022, filed 2/2/90, effective 3/5/90; 87-24-050 (Order 87-23), § 296-20-022, filed 11/30/87, effective 1/1/88; 87-03-004 (Order 86-45), § 296-20-022, filed 1/8/87.]

WAC 296-20-023 Third party settlement—Excess recoveries. (1) In cases where a third party settlement has been made resulting in an excess recovery subject to offset from the worker's future benefits or compensation due, the department or self-insurer is not liable for payment for services rendered by providers.

(2) The worker should be treated and billed in accordance with the department's medical aid rules and maximum fee schedules. When bills are processed against the amount of the excess recovery, the department will notify the provider on the remittance advice.

(3) The department or self-insurer will resume financial responsibility to or on behalf of the worker when the amount of such excess has been reduced to zero.

[Statutory Authority: Chapters 51.04, 51.08, 51.12, 51.24 and 51.32 RCW and 117 Wn.2d 122 and 121 Wn.2d 304, 93-23-060, § 296-20-023, filed 11/15/93, effective 1/1/94. Statutory Authority: RCW 51.04.020(4) and 51.04.030, 86-06-032 (Order 86-19), § 296-20-023, filed 2/28/86, effective 4/1/86.]

WAC 296-20-024 Utilization management. The department, as a trustee of the medical aid fund, has a duty to supervise the provision of proper and necessary medical care that is delivered promptly, efficiently, and economically. Toward this end, the department will institute programs of utilization management. These programs are designed to monitor and control the proper and necessary use and cost of, health care services. These programs include, but are not limited to, managed care contracting, prior authorization for services, and alternative reimbursement systems.

[Statutory Authority: RCW 51.04.020(4) and 51.04.030, 90-04-057, § 296-20-024, filed 2/2/90, effective 3/5/90; 87-24-050 (Order 87-23), § 296-20-024, filed 11/30/87, effective 1/1/88.]

WAC 296-20-025 Initial treatment and report of accident. It is the responsibility of the worker to notify the practitioner when the worker has reason to believe his injury or condition is industrial in nature. Conversely, if the attending doctor discovers a condition which he believes to be work related or has reason to believe an injury is work related, he must so notify the worker. Once such determination is made by either the claimant or the attending doctor, a report of accident must be filed.

Failure to comply with this responsibility can result in penalties as outlined in WAC 296-20-02001.

It is the practitioner's responsibility to ascertain whether he is the first attending practitioner. If so, he will take the following action:

- (1) Give emergency treatment.
- (2) Immediately complete and forward the report of accident, to the department and the employer or self-insurer. Instruct and give assistance to the injured worker in complet-

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ing his portion of the report of accident. In filing a claim, the following information is necessary so there is no delay in adjudication of the claim or payment of compensation.

(a) Complete history of the industrial accident or exposure.

(b) Complete listing of positive physical findings.

(c) Specific diagnosis with ICD-9-CM code(s) and narrative definition relating to the injury.

(d) Type of treatment rendered.

(e) Known medical, emotional or social conditions which may influence recovery or cause complications.

(f) Estimate time loss due to the injury.

(3) If the patient remains under his care continue with necessary treatment in accordance with medical aid rules. If the practitioner is *not* the original attending doctor, he should question the injured worker to determine whether a report of accident has been filed for the injury or condition. If no report of accident has been filed, it should be completed immediately and forwarded to the department or self-insurer, as the case may be, with information as to the name and address of original practitioner if known, so that he/she may be contacted for information if necessary.

If a report of accident has been filed, it is necessary to have the worker complete a request for transfer as outlined in WAC 296-20-065, if the worker and practitioner agree that a change in attending doctor is desirable.

[Statutory Authority: RCW 51.04.020(4) and 51.04.030, 86-06-032 (Order 86-19), § 296-20-025, filed 2/28/86, effective 4/1/86. Statutory Authority: RCW 51.04.020(4), 51.04.030, and 51.16.120(3), 81-01-100 (Order 80-29), § 296-20-025, filed 12/23/80, effective 3/1/81; Order 71-6, § 296-20-025, filed 6/1/71; Order 70-12, § 296-20-025, filed 12/1/70, effective 1/1/71; Order 68-7, § 296-20-025, filed 11/27/68, effective 1/1/69.]

WAC 296-20-02700 What is a medical coverage decision? A medical coverage decision is a general policy decision by the director or the director's designee to include or exclude a specific health care service or supply as a covered benefit. These decisions are made to insure quality of care and prompt treatment of workers. Medical coverage decisions include, but are not limited to, decisions on health care services and supplies rendered for the purpose of diagnosis, treatment or prognosis, such as:

- Ancillary services including, but not limited to, home health care services, ambulatory services, specific rehabilitative modalities;
- Devices;
- Diagnostic tests;
- Drugs, biologics, and other therapeutic modalities;
- Durable medical equipment;
- Procedures;
- Prognostic tests; and
- Supplies.

[Statutory Authority: RCW 51.04.020 and 51.04.030, 00-01-037, § 296-20-02700, filed 12/7/99, effective 1/8/00.]

WAC 296-20-02701 Who makes medical coverage decisions? The director or the director's designee makes medical coverage decisions.

[Statutory Authority: RCW 51.04.020 and 51.04.030, 00-01-037, § 296-20-02701, filed 12/7/99, effective 1/8/00.]

WAC 296-20-02702 Who uses medical coverage decisions? Self-insured employers and state fund claim managers use medical coverage decisions to help them make claim-specific decisions. For example, the director or director's designee may find that a particular medical device is effective in treating a specific category of injuries. The medical coverage decision might be that that device is a covered benefit for that category of injuries. The self-insured employer or state fund claim manager would make a claim-specific decision to pay or deny payment for that device based on a number of factors, one of which is whether the accepted condition on that claim matches the approved category of injuries in the medical coverage decision.

[Statutory Authority: RCW 51.04.020 and 51.04.030. 00-01-037, § 296-20-02702, filed 12/7/99, effective 1/8/00.]

WAC 296-20-02703 How can I determine if a specific health care service or supply is the subject of a medical coverage decision? (1) The *Medical Aid Rules*, fee schedules, and provider bulletins and updates specify covered and noncovered services and supplies.

(2) For additional information on existing medical coverage decisions or if you have a question about a new and emerging technology, device, or off-label use of a drug, contact the office of the medical director at:

Department of Labor and Industries
Office of the Medical Director
P.O. Box 44321
Olympia, WA 98504-4321

(3) For questions about what will be authorized on a specific claim, contact the self-insured employer or state fund claim manager.

[Statutory Authority: RCW 51.04.020 and 51.04.030. 00-01-037, § 296-20-02703, filed 12/7/99, effective 1/8/00.]

WAC 296-20-02704 What criteria does the director or director's designee use to make medical coverage decisions? (1) In making medical coverage decisions, the director or the director's designee considers information from a variety of sources. These sources include, but are not limited to:

- Scientific evidence;
- National and community-based opinions;
- Informal syntheses of provider opinion;
- Experience of the department and other entities;
- Regulatory status.

Because of the unique nature of each health care service, the type, quantity and quality of the information available for review may vary. The director or director's designee weighs the quality of the available evidence in making medical coverage decisions.

(2) Scientific evidence.

(a) "Scientific evidence" includes reports and studies published in peer-reviewed scientific and clinical literature. The director or the director's designee will consider the nature and quality of the study, its methodology and rigor of design, as well as the quality of the journal in which the study was published.

• For treatment services, studies addressing safety, efficacy, and effectiveness of the treatment or procedure for its intended use will be considered.

• For diagnostic devices or procedures, studies addressing safety, technical capacity, accuracy or utility of the device or procedure for its intended use will be considered.

(b) The greatest weight will be given to the most rigorously designed studies and on those well-designed studies that are reproducible. The strength of the design will depend on such scientifically accepted methodological principles as randomization, blinding, appropriateness of outcomes, spectrum of cases and controls, appropriate power to detect differences, magnitude and significance of effect. Additional consideration will be given to those studies that focus on sustained health and functional outcomes of workers with occupational conditions rather than unsustained clinical improvements.

(3) National and community-based opinion.

(a) "National opinion" includes, but is not limited to, syntheses of clinical issues that may take the form of published reports in the scientific literature, national consensus documents, formalized documents addressing standards of practice, practice parameters from professional societies or commissions, and technology assessments produced by independent evidence-based practice centers.

The director or the director's designee will consider the nature and quality of the process used to reach consensus or produce the synthesis of expert opinion. This consideration will include, but may not be limited to, the qualifications of participants, potential biases of sponsoring organizations, the inclusion of graded scientific information in the deliberations, the explicit nature of the document, and the processes used for broader review.

(b) "Community-based opinion" refers to advice and recommendations of formal committees made up of clinical providers within the state of Washington. As appropriate to the subject matter, this may include recommendations from the department's formal advisory committees:

- The industrial insurance and rehabilitation committee of the Washington State Medical Association, which includes a representative from the Washington Osteopathic Medical Association;
- The chiropractic advisory committee.
- The Washington state pharmacy and therapeutics committee.

(4) "Informal syntheses of provider opinion" includes, but is not limited to, professional opinion surveys.

(5) Experience of the department and other entities.

The director or director's designee may consider data from a variety of sources including the department, other state agencies, federal agencies and other insurers regarding studies, experience and practice with past coverage. Examples of these include, but are not limited to, formal outcome studies, cost-benefit analyses, and adverse event, morbidity or mortality data.

(6) Regulatory status.

The director or director's designee will consider related licensing and approval processes of other state and federal regulatory agencies. This includes, but is not limited to:

• The federal food and drug administration's (FDA) regulation of drugs and medical devices (21 U.S.C. 301 et seq. and 21 CFR Chapter 1, Subchapters C, D, & H consistent with the purposes of this chapter, and as now or hereafter amended); and

- The Washington state department of health's regulation of scope of practice and standards of practice for licensed health care professionals regulated under Title 18 RCW.

[Statutory Authority: RCW 51.04.020, 70.14.050, 04-08-040, § 296-20-02704, filed 3/30/04, effective 5/1/04. Statutory Authority: RCW 51.04.020 and 51.04.030, 00-01-037, § 296-20-02704, filed 12/7/99, effective 1/8/00.]

WAC 296-20-02705 What are treatment and diagnostic guidelines and how are they related to medical coverage decisions? (1) Treatment and diagnostic guidelines are recommendations for the diagnosis or treatment of accepted conditions. These guidelines are intended to guide providers through the range of the many treatment or diagnostic options available for a particular medical condition. Treatment and diagnostic guidelines are a combination of the best available scientific evidence and a consensus of expert opinion.

(2) The department may develop treatment or diagnostic guidelines to improve outcomes for workers receiving covered health services. As appropriate to the subject matter, the department may develop these guidelines in collaboration with the department's formal advisory committees:

- The industrial insurance and rehabilitation committee of the Washington State Medical Association, which includes a representative from the Washington Osteopathic Medical Association;

- The chiropractic advisory committee.

- The Washington state pharmacy and therapeutics committee.

(3) In the process of implementing these guidelines, the department may find it necessary to make a formal medical coverage decision on one or more of the treatment or diagnostic options. The department, not the advisory committees, is responsible for implementing treatment guidelines and for making coverage decisions that result from such implementation.

[Statutory Authority: RCW 51.04.020, 70.14.050, 04-08-040, § 296-20-02705, filed 3/30/04, effective 5/1/04. Statutory Authority: RCW 51.04.020 and 51.04.030, 00-01-037, § 296-20-02705, filed 12/7/99, effective 1/8/00.]

WAC 296-20-02850 When may the department cover controversial, obsolete, investigational or experimental treatment? (1) The department or self-insurer will not authorize nor pay for treatment measures of a controversial, obsolete, investigational or experimental nature. (See WAC 296-20-03002.) Under certain conditions, the director or the director's designee may determine that such treatment is appropriate. In making such a decision, the director or director's designee will consider factors including, but not limited to, the following:

(a) Scientific studies investigating the safety and efficacy of the treatment are incomplete, or if completed, have conflicting conclusions, and:

- Preliminary data indicate the treatment or diagnostic procedure or device has improved net health and functional outcomes; and

- No alternative treatment or diagnostic is available; or

(b) The treatment or diagnostic procedure or device is prescribed as part of:

- A controlled, clinical trial that has been reviewed and approved by an institutional review board that was established in accordance with the federal Department of Health

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and Human Services (DHHS) regulations (45 CFR Part 46 consistent with the purposes of this chapter, and as now or hereafter amended); and

- For medical devices not yet cleared for marketing, the clinical evaluation has an approved investigational device exemption (IDE) in accordance with the federal Food and Drug Administration (FDA) regulations (21 CFR Parts 50, 56, and 812 consistent with the purposes of this chapter, and as now or hereafter amended); and

- For drugs not yet cleared for marketing, the clinical evaluation has been approved in accordance with the federal Food and Drug Administration (FDA) regulations (21 CFR Part 312 consistent with the purposes of this chapter, and as now or hereafter amended); or

(c) The usually indicated procedure or diagnostic test would likely be harmful for the patient because of other unrelated conditions.

(2) The health care provider must submit a written request and obtain approval from the department or self-insurer, prior to using a controversial, obsolete, investigational, or experimental treatment. The written requests must contain a description of the treatment, the reason for the request, potential risks and expected benefits, length of care and estimated cost of treatment.

[Statutory Authority: RCW 51.04.020 and 51.04.030, 00-01-037, § 296-20-02850, filed 12/7/99, effective 1/8/00.]

WAC 296-20-030 Treatment not requiring authorization for accepted conditions. (1) A maximum of twenty office calls for the treatment of the industrial condition, during the first sixty days, following injury. Subsequent office calls must be authorized. Reports of treatment rendered must be filed at sixty day intervals to include number of office visits to date. See chapter 296-20 WAC and department policies for report requirements and further information.

(2) Initial diagnostic x rays necessary for evaluation and treatment of the industrial injury or condition. See WAC 296-20-121 for further information.

(3) The first twelve physical therapy treatments as provided by chapters 296-21, 296-23, and 296-23A WAC, upon consultation by the attending doctor or under his direct supervision. Additional physical therapy treatment must be authorized and the request substantiated by evidence of improvement. In no case will the department or self-insurer pay for inpatient hospitalization of a claimant to receive physical therapy treatment only. USE OF DIAPULSE, THERMATIC (standard model only), SPECTROWAVE AND SUPERPULSE MACHINES AND IONTOPHORESIS IS NOT AUTHORIZED FOR WORKERS ENTITLED TO BENEFITS UNDER THE INDUSTRIAL INSURANCE ACT.

(4) Routine laboratory studies reasonably necessary for diagnosis and/or treatment of the industrial condition. Other special laboratory studies require authorization.

(5) Routine standard treatment measures rendered on an emergency basis or in connection with minor injuries not otherwise requiring authorization.

(6) Consultation with specialist when indicated. See WAC 296-20-051 for consultation guidelines.

(7) Diagnostic or therapeutic nerve blocks. See WAC 296-20-03001 for restrictions.

(8) Intra-articular injections. See WAC 296-20-03001 for restrictions.

(9) Myelogram if prior to emergency surgery.

[Statutory Authority: RCW 51.04.020 and 51.04.030. 00-01-040, § 296-20-030, filed 12/7/99, effective 1/20/00. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159. 93-16-072, § 296-20-030, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020(4) and 51.04.030. 86-06-032 (Order 86-19), § 296-20-030, filed 2/28/86, effective 4/1/86. Statutory Authority: RCW 51.04.020(4), 51.04.030, and 51.16.120(3). 81-24-041 (Order 81-28), § 296-20-030, filed 11/30/81, effective 1/1/82; 81-01-100 (Order 80-29), § 296-20-030, filed 12/23/80, effective 3/1/81; Order 76-34, § 296-20-030, filed 11/24/76, effective 1/1/77; Order 75-39, § 296-20-030, filed 11/28/75, effective 1/1/76; Order 74-7, § 296-20-030, filed 1/30/74; Order 71-6, § 296-20-030, filed 6/1/71; Order 70-12, § 296-20-030, filed 12/1/70, effective 1/1/71; Order 68-7, § 296-20-030, filed 11/27/68, effective 1/1/69.]

WAC 296-20-03001 Treatment requiring authorization. Certain treatment procedures require authorization by the department or self-insurer. Requests for authorization must include a statement of: The condition(s) diagnosed; ICD-9-CM codes; their relationship, if any, to the industrial injury/exposure; an outline of the proposed treatment program, its length and components, procedure codes, and expected prognosis; and an estimate of when treatment would be concluded and condition stable.

(1) Office calls in excess of the first twenty visits or sixty days whichever occurs first.

(2) The department may designate those inpatient hospital admissions that require prior authorization.

(3) X ray and radium therapy.

(4) Diagnostic studies other than routine X-ray and blood or urinalysis laboratory studies.

(5) Myelogram and discogram in nonemergent cases.

(6) Physical therapy treatment beyond initial twelve treatments as outlined in chapters 296-21, 296-23, and 296-23A WAC.

(7) Diagnostic or therapeutic injection. Epidural or caudal injection of substances other than anesthetic or contrast solution will be authorized under the following conditions only:

(a) When the worker has experienced acute low back pain or acute exacerbation of chronic low back pain of no more than six months duration.

(b) The worker will receive no more than three injections in an initial thirty-day treatment period, followed by a thirty-day evaluation period. If significant pain relief is demonstrated one additional series of three injections will be authorized. No more than six injections will be authorized per acute episode.

(8) Home nursing, attendant services or convalescent center care must be authorized per provisions outlined in WAC 296-20-091 or 296-20-303.

(9) Provision of prosthetics, orthotics, surgical appliances, special equipment for home or transportation vehicle; custom made shoes for ankle/foot injuries resulting in permanent deformity or malfunction of a foot; TNS units; masking devices; hearing aids; etc., must be authorized in advance as per WAC 296-20-1101 and 296-20-1102.

(10) Biofeedback program; pain clinic; weight loss program; psychotherapy; rehabilitation programs; and other programs designed to treat special problems must be authorized

in advance. Refer to the department's medical aid rules and fee schedules for details.

(11) Prescription or injection of vitamins for specific therapeutic treatment of the industrial condition(s) when the attending doctor can demonstrate that published clinical studies indicate vitamin therapy is the treatment of choice for the condition. Authorization for this treatment will require presentation of facts to and review by department medical consultant.

(12) Injections of anesthetic and/or anti-inflammatory agents into the vertebral facet joints will be authorized to qualified specialists in orthopedics, neurology, and anesthesia, or other physicians who can demonstrate expertise in the procedure, AND who can provide certification their hospital privileges include the procedure requested under the following conditions:

(a) Rationale for procedure, treatment plan, and request for authorization must be presented in writing to the department or self-insurer.

(b) Procedure must be performed in an accredited hospital under radiographic control.

(c) Not more than four facet injection procedures will be authorized in any one patient.

(13) The long term prescription of medication under the specific conditions and circumstances in (a) and (b) are considered corrective therapy rather than palliative treatment and approval in advance must be obtained.

(a) Nonsteroidal anti-inflammatory agents for the treatment of degenerative joint conditions aggravated by occupational injury.

(b) Anticonvulsive agents for the treatment of seizure disorders caused by trauma.

(14) Intra-muscular and trigger point injections of steroids and other nonscheduled medications are limited to three injections per patient. The attending doctor must submit justification for an additional three injections if indicated with a maximum of six injections to be authorized for any one patient.

(15) The department may designate those diagnostic and surgical procedures which can be performed in other than a hospital inpatient setting. Where a worker has a medical condition which necessitates a hospital admission, prior approval of the department or self-insurer must be obtained.

[Statutory Authority: RCW 51.04.020, 51.04.030, 51.32.060, 51.32.072, and 7.68.070. 01-18-041, § 296-20-03001, filed 8/29/01, effective 10/1/01. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159. 93-16-072, § 296-20-03001, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020(4) and 51.04.030. 90-04-057, § 296-20-03001, filed 2/2/90, effective 3/5/90; 86-20-074 (Order 86-36), § 296-20-03001, filed 10/1/86, effective 11/1/86; 86-06-032 (Order 86-19), § 296-20-03001, filed 2/28/86, effective 4/1/86; 83-16-066 (Order 83-23), § 296-20-03001, filed 8/2/83. Statutory Authority: RCW 51.04.020(4), 51.04.030, and 51.16.120(3). 81-24-041 (Order 81-28), § 296-20-03001, filed 11/30/81, effective 1/1/82; 81-01-100 (Order 80-29), § 296-20-03001, filed 12/23/80, effective 3/1/81. Statutory Authority: RCW 51.04.030 and 51.16.035. 79-12-086 (Order 79-18), § 296-20-03001, filed 11/30/79, effective 1/1/80; Order 76-34, § 296-20-03001, filed 11/24/76, effective 1/1/77.]

WAC 296-20-03002 Treatment not authorized. The department or self-insurer will not allow nor pay for following treatment:

(1) Use of diapulse, thermatic (standard model only), spectrowave and superpulse machines on workers entitled to benefits under the Industrial Insurance Act.

(2) Iontophoresis; prolotherapy; acupuncture; injections of colchicine; injections of fibrosing or sclerosing agents; and injections of substances other than anesthetic or contrast into the subarachnoid space (intra-theal injections).

(3) Lumbar artificial disc replacement with Charite lumbar artificial disc.

(4) Treatment to improve or maintain general health (i.e., prescriptions and/or injection of vitamins or referrals to special programs such as health spas, swim programs, exercise programs, athletic-fitness clubs, diet programs, social counseling).

(5) Continued treatment beyond stabilization of the industrial condition(s), i.e., maintenance care, except where necessary to monitor prescription of medication necessary to maintain stabilization i.e., anti-convulsive, anti-spasmodic, etc.

(6) After consultation and advice to the department or self-insurer, any treatment measure deemed to be dangerous or inappropriate for the injured worker in question.

(7) Treatment measures of an unusual, controversial, obsolete, or experimental nature (see WAC 296-20-045). Under certain conditions, treatment in this category may be approved by the department or self-insurer. Approval must be obtained prior to treatment. Requests must contain a description of the treatment, reason for the request with benefits and results expected.

[Statutory Authority: RCW 51.04.020, 51.04.030, 06-15-110, § 296-20-03002, filed 7/18/06, effective 8/18/06. Statutory Authority: RCW 51.04.020(4) and 51.04.030, 86-06-032 (Order 86-19), § 296-20-03002, filed 2/28/86, effective 4/1/86; 83-16-066 (Order 83-23), § 296-20-03002, filed 8/2/83. Statutory Authority: RCW 51.04.020(4), 51.04.030, and 51.16.120(3), 81-24-041 (Order 81-28), § 296-20-03002, filed 11/30/81, effective 1/1/82; 81-01-100 (Order 80-29), § 296-20-03002, filed 12/23/80, effective 3/1/81; Order 76-34, § 296-20-03002, filed 11/24/76, effective 1/1/77.]

WAC 296-20-03004 Chemonucleolysis. Chymopapain injections may be authorized in the treatment of lumbar disc disease under the following limitations and criteria:

(1) Only physicians (a) who routinely care for patients with herniated lumbar intervertebral discs, (b) who are qualified by training and experience to diagnose lumbar disc disease and to perform laminectomy, discectomy or other spinal procedures, (c) who have received specialized training in chemonucleolysis, may administer the procedure for industrial injured workers covered under state industrial insurance fund or self-insurance.

(2) Preadministration work-up shall include but is not limited to (a) a concurring opinion from a physician familiar with the procedure and qualified by training and experience to diagnose and treat lumbar disc disease, (b) diagnostic studies indicative of level of disc herniation i.e., myelogram, a high resolution CT scan, discogram, etc., (c) other diagnostic studies including sedimentation rate (anaphylaxis has occurred primarily in females with sedimentation rates in excess of 20 mm per hour) as indicated for the individual patient.

(3) Procedure will be authorized (a) one time only in the treatment life of any given patient, (b) maximum of two lev-

els per patient (Generally only one level will be authorized. Indications for a second level are infrequent. However, authorization may be granted if diagnostic studies and/or concurring opinion so indicates.), (c) only for patients who have had no previous lumbar surgery at that level.

(4) Procedure must be carried out in hospital setting under radiographic or fluoroscopic control, with a permanent X-ray record maintained.

(5) Prior authorization from the department or the self-insurer must be obtained before procedure is scheduled.

(6) These rules were formulated based upon the recommendations of the Federal Food and Drug Administration, the drug manufacturer, and the industrial insurance committee of the Washington state medical association.

[Statutory Authority: RCW 51.04.020(4) and 51.04.030, 83-16-066 (Order 83-23), § 296-20-03004, filed 8/2/83.]

WAC 296-20-03005 Inoculation or immunological treatment for exposure to infectious occupational disease.

Authorization for inoculation or other immunological treatment for occupational disease shall be given only in cases in which a work related activity has resulted in probable exposure of the worker to a potential infectious occupational disease. In no case shall such inoculation or immunological treatment be authorized until such time as a work related activity has resulted in such probable exposure. Inoculation or other treatment required as a condition for employment or otherwise obtained prior to the worker's performing a work related activity resulting in probable exposure to an occupational disease shall not be authorized. For purposes of this section, probable exposure is an incident which gives rise to a clear and immediate likelihood of contracting an occupational disease process.

[Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.36.010, 86-18-025 (Order 86-34), § 296-20-03005, filed 8/27/86, effective 11/1/86.]

WAC 296-20-03010 What are the general principles the department uses to determine coverage on drugs and medications? The department or self-insurer pays for drugs that are deemed proper and necessary to treat the industrial injury or occupational disease accepted under the claim. In general, the department will consider coverage for all FDA approved drugs for stated indications. The department or self-insurer may pay for prescriptions for off label indications when used within current medical standards and prescribed in compliance with published contraindications, precautions and warnings.

[Statutory Authority: RCW 51.04.020 and 51.04.030, 00-01-040, § 296-20-03010, filed 12/7/99, effective 1/20/00.]

WAC 296-20-03011 What general limitations are in place for medications? (1) Amount dispensed. The department or self-insurer will pay for no more than a thirty-day supply of a medication dispensed at any one time.

(2) **Over-the-counter drugs.** Prescriptions for over-the-counter items may be paid. Special compounding fees for over-the-counter items are not payable.

(3) **Generic drugs.** Prescriptions are to be written for generic drugs unless the attending physician specifically indi-

cates that substitution is not permitted. For example: The patient cannot tolerate substitution. Pharmacists are instructed to fill with generic drugs unless the attending physician specifically indicates substitution is not permitted.

(4) **Evidence-based prescription drug program.** In accordance with RCW 70.14.050, the department in cooperation with other state agencies may develop a preferred drug list. Any pharmacist filling a prescription under state purchased health care programs as defined in RCW 41.05.011(2) shall substitute, where identified, a preferred drug for any nonpreferred drug in a given therapeutic class, unless the endorsing practitioner has indicated on the prescription that the nonpreferred drug must be dispensed as written, or the prescription is for a refill of an antipsychotic, antidepressant, chemotherapy, antiretroviral, or immunosuppressive drug (see RCW 69.41.190) or the nonendorsing practitioner has received prior authorization from the department to fill the prescription as written, in which case the pharmacist shall dispense the prescribed nonpreferred drug.

(5) **Prescriptions for unrelated medical conditions.** The department or self-insurer may consider temporary coverage of prescriptions for conditions not related to the industrial injury when such conditions are retarding recovery. Any treatment for such conditions must have prior authorization per WAC 296-20-055. This would apply to any prescription for such conditions even when the endorsing practitioner indicates "dispense as written."

(6) **Pension cases.** Once the worker is placed on a pension, the department or self-insurer may pay for only those drugs and medications authorized for continued medical treatment for conditions previously accepted by the department. Authorization for continued medical and surgical treatment is at the sole discretion of the supervisor of industrial insurance and must be authorized before the treatment is rendered. In such pension cases, the department or self-insurer cannot pay for scheduled drugs used to treat continuing pain resulting from an industrial injury or occupational disease.

[Statutory Authority: RCW 51.04.020, 70.14.050, 04-08-040, § 296-20-03011, filed 3/30/04, effective 5/1/04. Statutory Authority: RCW 51.04.020 and 51.04.030, 00-01-040, § 296-20-03011, filed 12/7/99, effective 1/20/00.]

WAC 296-20-03012 Where can I find the department's outpatient drug and medication coverage decisions? The department's outpatient drug and medication coverage decisions are contained in the department's formulary, as developed by the department in collaboration with the Washington state pharmacy and therapeutics committee and the Washington State Medical Association's industrial insurance and rehabilitation committee.

In the formulary, drugs are listed in the following categories:

- **Allowed**

Drugs used routinely for treating accepted industrial injuries and occupational illnesses, including those on the preferred drug list.

Example: Nonscheduled drugs and other medications during the acute phase of treatment for the industrial injury or condition.

- **Prior authorization required**

Drugs used routinely to treat conditions not normally accepted as work related injuries, drugs which are used to

treat unrelated conditions retarding recovery from the accepted condition on the claim, and drugs for which less expensive alternatives exist. For example: All drugs to treat hypertension require prior authorization because hypertension is not normally an accepted industrial condition. In addition, nonendorsing practitioners must obtain prior authorization for a nonpreferred drug when the category of drugs has a preferred drug.

- **Denied**

Drugs not normally used for treating industrial injuries or not normally dispensed by outpatient pharmacies.

Example: Most hormones, most nutritional supplements.

[Statutory Authority: RCW 51.04.020, 70.14.050, 04-08-040, § 296-20-03012, filed 3/30/04, effective 5/1/04. Statutory Authority: RCW 51.04.020 and 51.04.030, 00-01-040, § 296-20-03012, filed 12/7/99, effective 1/20/00.]

WAC 296-20-03013 Will the department or self-insurer pay for a denied outpatient drug in special circumstances? Some of the drugs that are routinely denied may be covered in special circumstances. Requests for coverage under special circumstances require authorization prior to treatment. Examples of drugs that may be covered in special circumstances include:

- Drugs and medications to treat unrelated conditions when retarding recovery;
- Special treatments for unique catastrophic injuries.

The department may require written documentation to support the request.

[Statutory Authority: RCW 51.04.020 and 51.04.030, 00-01-040, § 296-20-03013, filed 12/7/99, effective 1/20/00.]

WAC 296-20-03014 Which drugs have specific limitations? (1) **Injectables.** Prescriptions for injectable opioids or other analgesics, sedatives, antihistamines, tranquilizers, psychotropics, vitamins, minerals, food supplements, and hormones are not covered.

Exceptions: The department or self-insurer covers injectable medications under the following circumstances.

(a) Indicated injectable drugs for the following:

- Inpatients; or
- During emergency treatment of a life-threatening condition/injury; or
- During outpatient treatment of severe soft tissue injuries, burns or fractures when needed for dressing or cast changes; or
- During the perioperative period and the postoperative period, not to exceed forty-eight hours from the time of discharge.

(b) Prescriptions of injectable insulin, heparin, anti-migraine medications, or impotency treatment, when proper and necessary.

(2) **Noninjectable scheduled drugs administered by other than the oral route.** Nonoral routes of administration of scheduled drugs that result in systemic availability of the drug equivalent to injectable routes will also not be covered.

(3) **Sedative-hypnotics.** During the chronic stage of an industrial injury or occupational disease, payment for scheduled sedatives and hypnotics will not be authorized.

(4) **Benzodiazepines.** Payment for prescriptions for benzodiazepines are limited to the following types of patients:

- Hospitalized patients;
- Claimants with an accepted psychiatric disorder for which benzodiazepines are indicated;
- Claimants with an unrelated psychiatric disorder that is retarding recovery but which the department or self-insurer has temporarily authorized treatment (see WAC 296-20-055) and for which benzodiazepines are indicated; and
- Other outpatients for not more than thirty days for the life of the claim.

(5) **Cancer.** When cancer or any other end-stage disease is an accepted condition, the department or self-insurer may authorize payment for any indicated scheduled drug and by any indicated route of administration.

(6) **Spinal cord injuries.** When a spinal cord injury is an accepted condition, the department or self-insurer may authorize payment for anti-spasticity medications by any indicated route of administration (e.g., some benzodiazepines, Baclofen). Prior authorization is required.

Note: See the department formulary for specific limitations and prior authorization requirements of other drugs.

[Statutory Authority: RCW 51.04.020 and 51.04.030. 00-01-040, § 296-20-03014, filed 12/7/99, effective 1/20/00.]

WAC 296-20-03015 What steps may the department or self-insurer take when concerned about the amount or appropriateness of drugs and medications prescribed to the injured worker? (1) The department or self-insurer may take any or all of the following steps when concerned about the amount or appropriateness of drugs the patient is receiving:

- Notify the attending physician of concerns regarding the medications such as drug interactions, adverse reactions, prescriptions by other providers;
- Require that the attending physician send a treatment plan addressing the drug concerns;
- Request a consultation from an appropriate specialist;
- Request that the attending physician consider reducing the prescription, and provide information on chemical dependency programs;
- Limit payment for drugs on a claim to one prescribing doctor.

(2) If the attending physician or worker does not comply with these requests, or if the probability of imminent harm to the worker is high, the department or self-insurer may discontinue payment for the drug after adequate prior notification has been given to the worker, pharmacy and physician.

(3) Physician failure to reduce or terminate prescription of controlled substances, habit forming or addicting medications, or dependency inducing medications, after department or self-insurer request to do so for an injured worker may result in a transfer of the worker to another physician of the worker's choice. (See WAC 296-20-065.)

(4) Other corrective actions may be taken in accordance with WAC 296-20-015, Who may treat.

[Statutory Authority: RCW 51.04.020 and 51.04.030. 00-01-040, § 296-20-03015, filed 12/7/99, effective 1/20/00.]

WAC 296-20-03016 Is detoxification and/or chemical dependency treatment covered? The department or self-insurer may pay for detoxification and/or chemical dependency treatment in the following circumstances:

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- The injured worker becomes dependent or toxic on medication prescribed for an accepted condition on the claim; or

• The injured worker becomes dependent or toxic due to medications prescribed for a condition retarding recovery of the accepted condition on the claim; or

- The injured worker is dependent or toxic due to medications for an unrelated condition, but that dependency or toxicity is retarding recovery of the accepted condition.

[Statutory Authority: RCW 51.04.020 and 51.04.030. 00-01-040, § 296-20-03016, filed 12/7/99, effective 1/20/00.]

WAC 296-20-03017 What information is needed for prescriptions and the physician's record? Prescriptions must include the department authorized provider number for the prescribing physician and the physician's signature. The physician's record must contain the name and reason for the medication, the dosage, quantity prescribed and/or dispensed, the route of administration, the frequency, the starting and stopping dates, the expected outcome of treatment, and any adverse effects that occur. Please refer to WAC 296-20-03021 and 296-20-03022 for additional documentation requirements when treating chronic, noncancer pain.

[Statutory Authority: RCW 51.04.020 and 51.04.030. 00-01-040, § 296-20-03017, filed 12/7/99, effective 1/20/00.]

WAC 296-20-03018 What inpatient drugs are covered? In general, the department or self-insured employer pays for most drugs in an inpatient hospital setting. Please see WAC 296-20-075, Hospitalization.

[Statutory Authority: RCW 51.04.020 and 51.04.030. 00-01-040, § 296-20-03018, filed 12/7/99, effective 1/20/00.]

WAC 296-20-03019 Under what conditions will the department or self-insurer pay for oral opioid treatment for chronic, noncancer pain? Chronic, noncancer pain may develop after an acute injury episode. It is defined as pain that typically persists beyond two to four months following the injury.

The department or self-insurer may pay for oral opioids for the treatment of chronic, noncancer pain caused by an accepted condition when that treatment is proper and necessary. See WAC 296-20-01002 for the definition of "proper and necessary" health care services.

[Statutory Authority: RCW 51.04.020 and 51.04.030. 00-01-040, § 296-20-03019, filed 12/7/99, effective 1/20/00.]

WAC 296-20-03020 What are the authorization requirements for treatment of chronic, noncancer pain with opioids? No later than thirty days after the attending physician begins treating the worker with opioids for chronic, noncancer pain, the attending physician must submit a written report to the department or self-insurer in order for the department or self-insurer to pay for such treatment. The written report must include the following:

- A treatment plan with time-limited goals;
- A consideration of relevant prior medical history;
- A summary of conservative care rendered to the worker that focused on reactivation and return to work;

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- A statement on why prior or alternative conservative measures may have failed or are not appropriate as sole treatment;

- A summary of any consultations that have been obtained, particularly those that have addressed factors that may be barriers to recovery;

- A statement that the attending physician has conducted appropriate screening for factors that may significantly increase the risk of abuse or adverse outcomes (e.g., a history of alcohol or other substance abuse); and

- An opioid treatment agreement that has been signed by the worker and the attending physician. This agreement must be renewed every six months. The treatment agreement must outline the risks and benefits of opioid use, the conditions under which opioids will be prescribed, the physician's need to document overall improvement in pain and function, and the worker's responsibilities.

[Statutory Authority: RCW 51.04.020 and 51.04.030. 00-01-040, § 296-20-03020, filed 12/7/99, effective 1/20/00.]

WAC 296-20-03021 What documentation is required to be submitted for continued coverage of opioids to treat chronic, noncancer pain? In addition to the general documentation required by the department or self-insurer, the attending physician must submit the following information at least every sixty days when treating with opioids:

- Documentation of drug screenings, consultations, and all other treatment trials;
- Documentation of outcomes and responses, including pain intensity and functional levels; and
- Any modifications to the treatment plan.

The physician must use a form developed by the department, or a substantially equivalent form, to document the patient's improvement in pain intensity and functional levels. This form may be included as part of a sixty-day report.

[Statutory Authority: RCW 51.04.020 and 51.04.030. 00-01-040, § 296-20-03021, filed 12/7/99, effective 1/20/00.]

WAC 296-20-03022 How long will the department or self-insurer continue to pay for opioids to treat chronic, noncancer pain? The department or self-insurer will continue to pay for treatment with opioids so long as the physician documents:

- Substantial reduction of the patient's pain intensity; and
- Continuing substantial improvement in the patient's function.

Once the worker's condition has reached maximum medical improvement, further treatment with opioids is not payable. Opioid treatment for chronic, noncancer pain past the first three months of such treatment without documentation of substantial improvement is presumed to be not proper and necessary.

[Statutory Authority: RCW 51.04.020 and 51.04.030. 00-01-040, § 296-20-03022, filed 12/7/99, effective 1/20/00.]

WAC 296-20-03023 When may the department or self-insurer deny payment of opioid medications used to treat chronic, noncancer pain? Payment for opioid medications may be denied in any of the following circumstances:

- Absent or inadequate documentation;
- Noncompliance with the treatment plan;
- Pain and functional status have not substantially improved after three months of opioid treatment; or
- Evidence of misuse or abuse of the opioid medication or other drugs, or noncompliance with the attending physician's request for a drug screen.

[Statutory Authority: RCW 51.04.020 and 51.04.030. 00-01-040, § 296-20-03023, filed 12/7/99, effective 1/20/00.]

WAC 296-20-03024 Will the department or self-insurer pay for nonopioid medications for the treatment of chronic, noncancer pain? The department or self-insurer may pay for nonopioid medication for the treatment of chronic, noncancer pain when it is proper and necessary.

For example, some drugs such as anti-convulsants, anti-depressants, and others have been demonstrated to be useful in the treatment of chronic pain and may be approved when proper and necessary.

[Statutory Authority: RCW 51.04.020 and 51.04.030. 00-01-040, § 296-20-03024, filed 12/7/99, effective 1/20/00.]

WAC 296-20-035 Treatment in cases that remain open beyond sixty days. Conditions requiring treatment beyond sixty days are indicative of a major industrial condition or complication by other conditions. Except in cases of severe and extensive injuries, i.e., quadriplegia, paraplegia, multiple fractures, etc., when the worker requires treatment beyond sixty days following injury, a complete examination is necessary to determine and/or establish need for continued treatment and/or payment of time loss compensation. This may be accomplished either by the attending doctor or a consultation exam. In either case, a detailed exam report must be provided to the department or self-insurer. Refer to chapter 296-20 WAC (including the definition section) and department policy for the type of information that must be included in these reports.

[Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159. 93-16-072, § 296-20-035, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020(4) and 51.04.030 [51.04.030]. 87-08-004 (Order 87-09), § 296-20-035, filed 3/20/87. Statutory Authority: RCW 51.04.020(4) and 51.04.030. 86-06-032 (Order 86-19), § 296-20-035, filed 2/28/86, effective 4/1/86. Statutory Authority: RCW 51.04.020(4), 51.04.030, and 51.16.120(3). 81-24-041 (Order 81-28), § 296-20-035, filed 11/30/81, effective 1/1/82; 81-01-100 (Order 80-29), § 296-20-035, filed 12/23/80, effective 3/1/81; Order 71-6, § 296-20-035, filed 6/1/71; Order 70-12, § 296-20-035, filed 12/1/70, effective 1/1/71; Order 68-7, § 296-20-035, filed 11/27/68, effective 1/1/69.]

WAC 296-20-045 Consultation requirements. In the event of complication, controversy, or dispute over the treatment aspects of any claim, the department or self-insurer will not authorize treatment until the attending doctor has arranged a consultation with a qualified doctor with experience and expertise on the subject, and the department or self-insurer has received notification of the findings and recommendations of the consultant.

This consultation must be arranged in accordance with WAC 296-20-051.

Consultations are also required in the following situations:

(1) All nonemergent major surgery on a patient with serious medical, emotional or social problems which are likely to complicate recovery.

(2) All procedures of a controversial nature or type not in common use for the specific condition.

(3) Surgical cases where there are complications or unfavorable circumstances such as age, preexisting conditions or interference with occupational requirements, etc.

(4) If the attending doctor, the department, self-insurer, or authorized department representative requests a consultation.

(5) Conservative care, (e.g., nonsurgical cases) extending past one hundred twenty days following initial visit. Such consultation may be with a chiropractic or a medical or osteopathic consultant.

[Statutory Authority: RCW 51.04.020(4) and 51.04.030. 90-04-057, § 296-20-045, filed 2/2/90, effective 3/5/90. Statutory Authority: RCW 51.04.020(4), 51.04.030, and 51.16.120(3). 81-01-100 (Order 80-29), § 296-20-045, filed 12/23/80, effective 3/1/81. Statutory Authority: RCW 51.04.030 and 51.16.035. 79-12-086 (Order 79-18), § 296-20-045, filed 11/30/79, effective 1/1/80; Order 71-6, § 296-20-045, filed 6/1/71; Order 70-12, § 296-20-045, filed 12/1/70, effective 1/1/71; Order 68-7, § 296-20-045, filed 11/27/68, effective 1/1/69.]

WAC 296-20-051 Consultations. In cases presenting diagnostic or therapeutic problems to the attending doctor, consultation with a specialist will be allowed without prior authorization. The consultant must submit his findings and recommendations immediately to the attending doctor and the department or self-insurer. Refer to chapter 296-20 WAC and department policy for reporting requirements.

Whenever possible, the referring doctor should make his x-rays and records available to the consultant to avoid unnecessary duplication. The department's consultation referral form may be used to convey information to the consultant. Consultants may proceed with indicated and reasonable x rays or laboratory work and reasonable diagnostic studies as permitted within their scope of practice.

Consultations will be held with a specialist within a reasonable geographic area. Whenever possible, consultation should be made with a doctor outside the referring doctor's office or partnership.

The attending doctor will not arrange a consultation if he has received notification that a special or commission examination is being arranged by the department or self-insurer. If he has had recent consultation and is notified that the department or self-insurer is arranging an examination, he must immediately advise the department or self-insurer of the consultation.

The consultation fee will be paid only if a consultation report is complete and contains all pathological findings as well as all pertinent negative or normal findings. The report must be received in the department within fifteen days from the date of the consultation. No fee is paid to the consultant if the worker fails the appointment.

The consultant may not order, prescribe, or provide treatment without the approval of the attending doctor and the injured worker. No transfer will be made to the consultant without the prior approval of the attending doctor and the injured worker.

Consultation services will not be reimbursed for workers who are currently, or have been under the physician's care

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within the last three years. Such services should be billed as follow up visits, as listed in the fee schedules.

[Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159. 93-16-072, § 296-20-051, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020(4) and 51.04.030. 86-06-032 (Order 86-19), § 296-20-051, filed 2/28/86, effective 4/1/86. Statutory Authority: RCW 51.04.020(4), 51.04.030, and 51.16.120(3). 81-01-100 (Order 80-29), § 296-20-051, filed 12/23/80, effective 3/1/81; Order 71-6, § 296-20-051, filed 6/1/71; Order 70-12, § 296-20-051, filed 12/1/70, effective 1/1/71. Formerly WAC 296-20-070.]

WAC 296-20-055 Limitation of treatment and temporary treatment of unrelated conditions when retarding recovery. Conditions preexisting the injury or occupational disease are not the responsibility of the department. When an unrelated condition is being treated concurrently with the industrial condition, the attending doctor must notify the department or self-insurer immediately and submit the following:

- (1) Diagnosis and/or nature of unrelated condition.
- (2) Treatment being rendered.
- (3) The effect, if any, on industrial condition.

Temporary treatment of an unrelated condition may be allowed, upon prior approval by the department or self-insurer, provided these conditions directly retard recovery of the accepted condition. The department or self-insurer will not approve or pay for treatment for a known preexisting unrelated condition for which the claimant was receiving treatment prior to his industrial injury or occupational disease, which is not retarding recovery of his industrial condition.

A thorough explanation of how the unrelated condition is affecting the industrial condition must be included with the request for authorization.

The department or self-insurer will not pay for treatment of an unrelated condition when it no longer exerts any influence upon the accepted industrial condition. When treatment of an unrelated condition is being rendered, reports must be submitted monthly outlining the effect of treatment on both the unrelated and the accepted industrial conditions.

The department or self-insurer will not pay for treatment for unrelated conditions unless specifically authorized. This includes prescription of drugs and medicines.

[Statutory Authority: RCW 51.04.020(4), 51.04.030, and 51.16.120(3). 81-01-100 (Order 80-29), § 296-20-055, filed 12/23/80, effective 3/1/81; Order 71-6, § 296-20-055, filed 6/1/71; Order 70-12, § 296-20-055, filed 12/1/70, effective 1/1/71; Order 68-7, § 296-20-055, filed 11/27/68, effective 1/1/69.]

WAC 296-20-06101 What reports are health care providers required to submit to the insurer? The department or self-insurer requires different kinds of information at various stages of a claim in order to approve treatment, time loss compensation, and treatment bills. The department or self-insurer may request the following reports at specified points in the claim. The information provided in these reports is needed to adequately manage industrial insurance claims.

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<i>Report</i>	<i>Due/Needed by Insurer</i>	<i>What Information Should Be Included In the Report?</i>	<i>Special Notes</i>
Report of Industrial Injury or Occupational Disease (form) Self-Insurance: Physician's Initial Report (form)	Immediately - within five days of first visit.	See form If additional space is needed, please attach the information to the application. The claim number should be at the top of the page.	Only MD, DO, DC, ND, DPM, DDS, ARNP, and OD may sign and be paid for completion of this form. PAs may sign and be paid for completion of this form under the circumstances outlined in WAC 296-20-01502.
Sixty Day (narrative) Purpose: Support and document the need for continued care when conservative (non-surgical) treatment is to continue beyond sixty days	Every sixty days when only conservative (non-surgical) care has been provided.	<p>(1) The conditions diagnosed, including ICD-9-CM codes and the subjective complaints and objective findings.</p> <p>(2) The relationship of diagnoses, if any, to the industrial injury or exposure.</p> <p>(3) Outline of proposed treatment program, its length, components and expected prognosis including an estimate of when treatment should be concluded and condition(s) stable. An estimated return to work date and the probability, if any, of permanent partial disability resulting from the industrial condition.</p> <p>(4) Current medications, including dosage and amount prescribed. With repeated prescriptions, include the plan and need for continuing medication.</p> <p>(5) If the worker has not returned to work, indicate whether a vocational assessment will be necessary to evaluate the worker's ability to return to work and why.</p> <p>(6) If the worker has not returned to work, a doctor's estimate of physical capacities should be included.</p>	<p>Providers may submit legible comprehensive chart notes in lieu of sixty day reports PROVIDED the chart notes include all the information required as noted in the "What Information Should Be Included?" column.</p> <p>However, office notes are not acceptable in lieu of requested narrative reports and providers may not bill for the report if chart notes are submitted in place of the report. Please see WAC 296-20-03021 and 296-20-03022 for documentation requirements for those workers receiving opioids to treat chronic non-cancer pain.</p> <p>Providers must include their name, address and date on all chart notes submitted.</p>

<i>Report</i>	<i>Due/Needed by Insurer</i>	<i>What Information Should Be Included In the Report?</i>	<i>Special Notes</i>
		(7) Response to any specific questions asked by the insurer or vocational counselor.	
Special Reports/Follow-up Reports (narrative)	As soon as possible following request by the department/insurer.	Response to any specific questions asked by the insurer or vocational counselor.	"Special reports" are payable only when requested by the insurer.
Consultation Examination Reports (narrative) Purpose: Obtain an objective evaluation of the need for ongoing conservative medical management of the worker. The attending doctor may choose the consultant.	At one hundred twenty days if only conservative (nonsurgical) care has been provided.	(1) Detailed history. (2) Comparative history between the history provided by the attending doctor and injured worker. (3) Detailed physical examination. (4) Condition(s) diagnosed including ICD-9-CM codes, subjective complaints and objective findings. (5) Outline of proposed treatment program: Its length, components, expected prognosis including when treatment should be concluded and condition(s) stable. (6) Expected degree of recovery from the industrial condition. (7) Probability of returning to regular work or modified work and an estimated return to work date . (8) Probability , if any, of permanent partial disability resulting from the industrial condition. (9) A doctor's estimate of physical capacities should be included if the worker has not returned to work. (10) Reports of necessary, reasonable X ray and laboratory studies to establish or confirm diagnosis when indicated.	If the injured/ill worker had been seen by the consulting doctor within the past three years for the same condition, the consultation will be considered a follow-up office visit, not consultation. A copy of the consultation report must be submitted to both the attending doctor and the department/insurer.
Supplemental Medical Report (form)	As soon as possible following request by the department/insurer.	See form	Payable only to the attending doctor upon request of the department/insurer.

Report	Due/Needed by Insurer	What Information Should Be Included In the Report?	Special Notes
Attending Doctor Review of IME Report (form) Purpose: Obtain the attending doctor's opinion about the accuracy of the diagnoses and information provided based on the IME.	As soon as possible following request by the department/insurer.	Agreement or disagreement with IME findings. If you disagree, provide objective/subjective findings to support your opinion.	Payable only to the attending doctor upon request of the department/insurer.
Loss of Earning Power (form) Purpose: Certify the loss of earning power is due to the industrial injury/occupational disease.	As soon as possible after receipt of the form.	See form	Payable only to the AP.
Application to Reopen Claim Due to Worsening of Condition (form) Purpose: Document worsening of the accepted condition and need to reopen claim for additional treatment.	Immediately following identification of worsening after a claim has been closed for sixty days. Crime Victims: Following identification of worsening after a claim has been closed for ninety days.	See form	Only MD, DO, DC, ND, DPM, DDS, ARNP, and OD may sign and be paid for completion of this form.

What documentation is required for initial and follow up visits?

Legible copies of office or progress notes are required for the initial and all follow-up visits.

What documentation are ancillary providers required to submit to the insurer?

Ancillary providers are required to submit the following documentation to the department or self-insurer:

[Statutory Authority: 2004 c 65 and 2004 c 163. 04-22-085, § 296-20-06101, filed 11/2/04, effective 12/15/04. Statutory Authority: RCW 51.04.020, 51.04.030 and 51.36.060. 00-01-190, § 296-20-06101, filed 12/22/99, effective 1/24/00. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159. 93-16-072, § 296-20-06101, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020(4) and 51.04.030. 86-06-032 (Order 86-19), § 296-20-06101, filed 2/28/86, effective 4/1/86. Statutory Authority: RCW 51.04.020(4), 51.04.030, and 51.16.120(3). 81-24-041 (Order 81-28), § 296-20-06101, filed 11/30/81, effective 1/1/82; 81-01-100 (Order 80-29), § 296-20-06101, filed 12/23/80, effective 3/1/81; Order 74-39, § 296-20-06101, filed 11/22/74, effective 1/1/75.]

Provider	Chart Notes	Reports
Audiology	X	X
Biofeedback	X	X
Dietician		X
Drug & Alcohol Treatment	X	X
Free Standing Surgery	X	X
Free Standing Emergency Room	X	X
Head Injury Program	X	X
Home Health Care		X
Infusion Treatment, Professional Services		X
Hospitals	X	X
Laboratories		X
Licensed Massage Therapy	X	X
Medical Transportation		X
Nurse Case Managers		X
Nursing Home	X	X
Occupational Therapist	X	X
Optometrist	X	X
Pain Clinics	X	X
Panel Examinations		X
Physical Therapist	X	X
Prosthetist/Orthotist	X	X
Radiology		X
Skilled Nursing Facility	X	X
Speech Therapist	X	X

WAC 296-20-065 Transfer of doctors. All transfers from one doctor to another must be approved by the department or self-insurer. Normally transfers will be allowed only after the worker has been under the care of the attending doctor for sufficient time for the doctor to: Complete necessary diagnostic studies, establish an appropriate treatment regimen, and evaluate the efficacy of the therapeutic program.

Under RCW 51.36.010 the worker is entitled to free choice of treating doctor. Except as provided under subsections (1) through (7) of this section, no reasonable request for transfer will be denied. The worker must be advised when and why a transfer is denied.

When a transfer is approved, the new attending doctor must be provided with a copy of the worker's treatment record by the previous attending doctor. X rays in the possession of the previous attending doctor must be immediately forwarded to the new attending doctor for his or her retention as long as the worker remains under his or her care. Copies of X rays and other records may be provided in lieu of originals.

The department or self-insurer reserves the right to require a worker to select another doctor or specialist for treatment, under the following conditions:

- (1) When more conveniently located doctors, qualified to provide the necessary treatment, are available.
- (2) When the attending doctor fails to cooperate in observation and compliance with the department rules.

(3) In time loss cases where reasonable progress towards return to work is not shown.

(4) Cases requiring specialized treatment, which the attending doctor is not qualified to render, or is outside the scope of the attending doctor's license to practice.

(5) Where the department or self-insurer finds a transfer of doctor to be appropriate and has requested the worker to transfer in accordance with this rule, the department or self-insurer may select a new attending doctor if the worker unreasonably refuses or delays in selecting another attending doctor.

(6) In cases where the attending doctor is not qualified to treat each of several accepted conditions. This does not preclude concurrent care where indicated. See WAC 296-20-071.

(7) No transfer will be approved to a consultant or special examiner without the approval of the attending doctor and the worker.

Transfers will be authorized for the foregoing reasons or where the department or self-insurer in its discretion finds that a transfer is in the best interest of returning the worker to a productive role in society.

When a worker's care is transferred to another doctor each doctor must submit a separate bill to the department or self-insurer for their portion of the care. Payment will be made at rates determined by department policy.

[Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159, 93-16-072, § 296-20-065, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020(4) and 51.04.030, 86-06-032 (Order 86-19), § 296-20-065, filed 2/28/86, effective 4/1/86. Statutory Authority: RCW 51.04.020(4), 51.04.030, and 51.16.120(3), 81-01-100 (Order 80-29), § 296-20-065, filed 12/23/80, effective 3/1/81; Order 77-27, § 296-20-065, filed 11/30/77, effective 1/1/78; Emergency Order 77-26, § 296-20-065, filed 12/1/77; Emergency Order 77-16, § 296-20-065, filed 9/6/77; Order 75-39, § 296-20-065, filed 11/28/75, effective 1/1/76; Order 74-7, § 296-20-065, filed 1/30/74; Order 71-6, § 296-20-065, filed 6/1/71; Order 70-12, § 296-20-065, filed 12/1/70, effective 1/1/71; Order 68-7, § 296-20-065, filed 11/27/68, effective 1/1/69.]

WAC 296-20-071 Concurrent treatment. In some cases, treatment by more than one practitioner may be allowed. The department or self-insurer will consider concurrent treatment when the accepted conditions resulting from the injury involve more than one system and/or require specialty or multidisciplinary care.

When requesting consideration for concurrent treatment, the attending doctor must provide the department or self-insurer with the following:

The name, address, discipline, and specialty of all other practitioners assisting in the treatment of the injured worker and an outline of their responsibility in the case and an estimate of the length of the period of concurrent care.

When concurrent treatment is allowed, the department or self-insurer will recognize one primary attending doctor, who will be responsible for prescribing all medications; directing the over-all treatment program; providing copies of all reports and other data received from the involved practitioners and, in time loss cases, providing adequate certification evidence of the worker's inability to work.

The department or self-insurer will approve concurrent care on a case-by-case basis. Consideration will be given to all factors in the case including availability of providers in the worker's geographic location.

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[Statutory Authority: RCW 51.04.020(4) and 51.04.030, 86-06-032 (Order 86-19), § 296-20-071, filed 2/28/86, effective 4/1/86. Statutory Authority: RCW 51.04.020(4), 51.04.030, and 51.16.120(3), 81-01-100 (Order 80-29), § 296-20-071, filed 12/23/80, effective 3/1/81; Order 75-39, § 296-20-071, filed 11/28/75, effective 1/1/76; Order 70-12, § 296-20-071, filed 12/1/70, effective 1/1/71. Formerly WAC 296-20-060.]

WAC 296-20-075 Hospitalization. (1) Hospitalization will be paid for proper and necessary medical treatment of the accepted condition(s). The department may develop and implement utilization management criteria which will be used to review inpatient hospital admissions. Reimbursement for hospitalization is limited to proper and necessary care for an accepted condition. Failure to comply with these criteria may result in delayed or reduced reimbursement to the provider as allowed under chapter 51.48 RCW. Ward or semi-private accommodations will be paid, unless the worker's condition requires special care.

(2) Discharge from the hospital shall be at the earliest date possible consistent with proper health care. If transfer to a convalescent center or nursing home is indicated, prior arrangements should be made with the department or self-insurer. See WAC 296-20-091 for further information. The department may designate those diagnostic and surgical procedures which will be reimbursed only if performed in an outpatient setting. When procedures so designated must be performed in an inpatient setting for reasons of medical necessity, prior authorization must be obtained.

[Statutory Authority: RCW 51.04.020(4) and 51.04.030, 90-04-057, § 296-20-075, filed 2/2/90, effective 3/5/90; 87-24-050 (Order 87-23), § 296-20-075, filed 11/30/87, effective 1/1/88; 86-20-074 (Order 86-36), § 296-20-075, filed 10/1/86, effective 11/1/86; 86-06-032 (Order 86-19), § 296-20-075, filed 2/28/86, effective 4/1/86. Statutory Authority: RCW 51.04.020(4), 51.04.030, and 51.16.120(3), 81-01-100 (Order 80-29), § 296-20-075, filed 12/23/80, effective 3/1/81; Order 71-6, § 296-20-075, filed 6/1/71; Order 70-12, § 296-20-075, filed 12/1/70, effective 1/1/71; Order 68-7, § 296-20-075, filed 11/27/68, effective 1/1/69.]

WAC 296-20-081 Unrelated concurrent nonemergent surgery. Elective surgery for an unrelated condition is not normally permitted during hospitalization for an industrial condition. Under some circumstances unrelated elective surgery may be permitted through prior agreement and approval by the department provided the unrelated surgery is not more extensive than the procedure for the industrial condition. The requesting doctor must submit a written request and identify which services are needed due to the industrial injury and which are needed due to unrelated conditions, along with an estimate of what effect, if any, the unrelated surgery will have on the accepted conditions and recovery time from surgery.

[Statutory Authority: RCW 51.04.020(4), 51.04.030, and 51.16.120(3), 81-01-100 (Order 80-29), § 296-20-081, filed 12/23/80, effective 3/1/81; Order 70-12, § 296-20-081, filed 12/1/70, effective 1/1/71. Formerly WAC 296-20-095.]

WAC 296-20-091 Home nursing. A worker temporarily totally disabled or permanently totally disabled may either temporarily or permanently require home nursing care. A physician's request and prior department authorization are required for home nursing care.

Home health, hospice, and home care agency providers shall be licensed.

[Statutory Authority: RCW 51.04.020, 51.04.030, 51.32.060, 51.32.072, and 7.68.070. 01-18-041, § 296-20-091, filed 8/29/01, effective 10/1/01. Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-05-041, § 296-20-091, filed 2/13/92, effective 3/15/92. Statutory Authority: RCW 51.04.020(4), 51.04.030, and 51.16.120(3). 81-01-100 (Order 80-29), § 296-20-091, filed 12/23/80, effective 3/1/81; Order 71-6, § 296-20-091, filed 6/1/71; Order 70-12, § 296-20-091, filed 12/1/70, effective 1/1/71. Formerly WAC 296-20-080.]

WAC 296-20-097 Reopenings. When a claim has been closed by the department or self-insurer by written order and notice for sixty days, submission of a formal "application to reopen claim for aggravation of condition" form (LI 210-79) is necessary. The department or self-insurer is responsible for customary charges for examinations, diagnostic studies, and determining whether or not time-loss is payable regardless of the final action taken on the reopening application. Reopening applications should be submitted immediately. When reopening is granted, the department or self-insurer can pay time loss and treatment benefits only for a period not to exceed sixty days *prior* to date the application is received by the department or self-insurer. Necessary treatment should not be deferred pending a department or self-insurer adjudication decision. However, should reopening be denied treatment costs become the financial responsibility of the worker.

[Statutory Authority: RCW 51.32.190 and 51.32.210. 90-22-054, § 296-20-097, filed 11/5/90, effective 12/6/90. Statutory Authority: RCW 51.04.020(4), 51.04.030, and 51.16.120(3). 81-24-041 (Order 81-28), § 296-20-097, filed 11/30/81, effective 1/1/82; 81-01-100 (Order 80-29), § 296-20-097, filed 12/23/80, effective 3/1/81; Order 71-6, § 296-20-097, filed 6/1/71; Order 70-12, § 296-20-095 (codified as WAC 296-20-097), filed 12/1/70, effective 1/1/71. Formerly WAC 296-20-090.]

WAC 296-20-09701 Request for reconsideration. On occasion, a claim may be closed prematurely or in error or other adjudication action may be taken, which may seem inappropriate to the doctor or injured worker. When this occurs the attending doctor should submit immediately in writing his request for reconsideration of the adjudication action, supported by an outline of:

- (1) The claimant's current condition.
- (2) The treatment program being received.
- (3) The prognosis of when stabilization will occur.

All requests for reconsideration must be received by the department or self-insurer within sixty days from date of the order and notice of closure. Request for reconsideration of other department or self-insurer orders or actions must be made in writing by either the doctor or the injured worker within sixty days of the date of the action or order.

[Statutory Authority: RCW 51.04.020(4), 51.04.030, and 51.16.120(3). 81-01-100 (Order 80-29), § 296-20-09701, filed 12/23/80, effective 3/1/81.]

WAC 296-20-100 Eye glasses and refractions. The department or self-insurer will be responsible one time for replacement of glasses or contact lenses only to the extent of the cost of restoring damaged item to its condition at the time of the accident. This benefit applies only if the worker was wearing the glasses or contact lens when the industrial accident occurred.

If glasses are repairable and a worker determines that he/she prefers a replacement, the department or self-insurer is responsible only for the cost of the repairs and the worker

is responsible for the difference between repair and replacement costs.

Refraction to replace a broken or lost lens is only payable when it is substantiated that the prescription was not available from the broken lens or any other source. If the prescription is available, and the patient needs a new refraction, he is responsible for the costs of such exam.

If a refractive error is the result of the industrial injury or occupational disease condition, refraction and glasses or contact lenses will be authorized and paid by the department or self-insurer.

When broken or lost glasses or contact lenses are the only injury or condition suffered, the doctor's portion of the report of accident can be completed by an optometrist or other vendor furnishing the replacement. A report of accident must be received by the department or self-insurer in order to adjudicate the claim.

[Statutory Authority: RCW 51.04.020(4) and 51.04.030. 86-06-032 (Order 86-19), § 296-20-100, filed 2/28/86, effective 4/1/86. Statutory Authority: RCW 51.04.020(4), 51.04.030, and 51.16.120(3). 81-01-100 (Order 80-29), § 296-20-100, filed 12/23/80, effective 3/1/81; Order 71-6, § 296-20-100, filed 6/1/71; Order 70-12, § 296-20-100, filed 12/1/70, effective 1/1/71; Order 68-7, § 296-20-100, filed 11/27/68, effective 1/1/69.]

WAC 296-20-110 Dental. Only dentists, oral surgeons or dental specialists licensed in the state in which they practice are eligible to treat workers entitled to benefits under the industrial insurance law.

If only a dental injury is involved, the doctor's portion of the report of accident must be completed by the dentist to whom the worker first reports. See WAC 296-20-025 for further information.

If the accident report has been submitted by another doctor, the dentist's report should be made by letter. In addition to the information required under WAC 296-20-025, the dentist should outline the extent of the dental injury and the treatment program necessary to repair damage due to the injury. Dental X rays should be retained by the attending dentist for a period of not less than ten years. The department or self-insurer does not require submission of the actual films except upon specific request.

The department or self-insurer is responsible only for repair or replacement of teeth injured or dentures broken as a result of an industrial accident. Any dental work needed due to underlying conditions unrelated to the industrial injury is the responsibility of the worker. It is the responsibility of the dentist to advise the worker accordingly.

In cases presenting complication, controversy, or diagnostic or therapeutic problems, consultation by another dentist may be requested to support authorization for restorative repairs.

Bills covering the cost of dentures should be submitted for the denture only and should not include the cost for subsequent relining. If relining becomes necessary, authorization for relining must be obtained in advance from the department or self-insurer.

Bills must be submitted to the department or self-insurer within one year from the date the service is rendered. Bills must itemize the service rendered, including the current HCPCS Level II codes, the materials used and the injured

tooth number(s). See WAC 296-20-125 and department policy for further billing rules.

[Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159, 94-14-044, § 296-20-110, filed 6/29/94, effective 7/30/94; 93-16-072, § 296-20-110, filed 8/1/93, effective 9/1/93, Statutory Authority: RCW 51.04.020(4) and 51.04.030, 86-06-032 (Order 86-19), § 296-20-110, filed 2/28/86, effective 4/1/86. Statutory Authority: RCW 51.04.020(4), 51.04.030, and 51.16.120(3), 81-01-100 (Order 80-29), § 296-20-110, filed 12/23/80, effective 3/1/81; Order 70-12, § 296-20-110, filed 12/1/70, effective 1/1/71; Order 68-7, § 296-20-110, filed 11/27/68, effective 1/1/69.]

WAC 296-20-1101 Hearing aids and masking devices. The department or self-insurer is responsible for replacement or repair of hearing aids damaged or lost due to an industrial accident only to the extent of restoring the damaged item to its condition at time of the accident. If the hearing aid is repairable and the worker determines he prefers replacement, the department or self-insurer is responsible only to the extent of the cost to repair the original and the worker is responsible for the difference between repair and replacement costs.

When the department or self-insurer has accepted a hearing loss condition either as a result of industrial injury or occupational exposure, the department or self-insurer will furnish a hearing aid (hearing aids when bilateral loss is present) when prescribed or recommended by a physician.

The department or self-insurer will bear the cost of repairs or replacement due to normal wear and the cost of battery replacement for the life of the hearing aid.

In cases of accepted tinnitus, the department or self-insurer may provide masking devices under the same provisions as outlined for hearing aids due to hearing loss.

Provision of masking devices and hearing aids require prior authorization.

[Statutory Authority: RCW 51.04.020(4), 51.04.030, and 51.16.120(3), 81-01-100 (Order 80-29), § 296-20-1101, filed 12/23/80, effective 3/1/81.]

WAC 296-20-1102 Special equipment rental and purchase prosthetic and orthotics equipment. The department or self-insurer will authorize and pay rental fee for equipment or devices if the need for the equipment will be for a short period of treatment during the acute phase of condition. Rental extending beyond sixty days requires prior authorization. If the equipment will be needed on long term basis, the department or self-insurer will consider purchase of the equipment or device. The department's or self-insurer's decision to rent or purchase an item of medical equipment will be based on a comparison of the projected rental costs of the item with its purchase price. An authorized representative of the department or self-insurer will decide whether to rent or purchase certain items, provided they are appropriate and medically necessary for treatment of the worker's accepted industrial condition. Decisions to rent or purchase items will be based on the following information:

- (1) Purchase price of the item.
- (2) Monthly rental fee.
- (3) The prescribing doctor's estimate of how long the item will be needed.

The prescribing doctor must obtain prior authorization from the department or self-insurer, for rental or purchase of special equipment or devices. Also, all equipment (rentals and purchases), prosthetics, and orthotics must be billed

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using the appropriate codes, and billing forms, as determined by the medical aid rules and fee schedules.

The department or self-insurer will authorize and pay for prosthetics and orthotics as needed by the worker and substantiated by attending doctor. If such items are furnished by the attending doctor, the department or self-insurer will reimburse the doctor his cost for the item. See chapter 296-20 WAC (including WAC 296-20-124) and the fee schedules for information regarding replacement of such items on closed claims.

The department or self-insurer will repair or replace originally provided damaged, broken, or worn-out prosthetics, orthotics, or special equipment devices upon documentation and substantiation from the attending doctor.

Provision of such equipment requires prior authorization.

THE GRAVITY GUIDING SYSTEM, GRAVITY LUMBAR REDUCTION DEVICE, BACKSWING AND OTHER INVERSION TRACTION EQUIPMENT MAY ONLY BE USED IN A SUPERVISED SETTING. RENTAL OR PURCHASE FOR HOME USE WILL NOT BE ALLOWED NOR PAID BY THE DEPARTMENT OR SELF-INSURER.

EQUIPMENT NOT REQUIRING PRIOR AUTHORIZATION INCLUDES CRUTCHES, CERVICAL COLLARS, LUMBAR AND RIB BELTS, AND OTHER COMMONLY USED ORTHOTICS OF MINIMAL COST.

PERSONAL APPLIANCES SUCH AS VIBRATORS, HEATING PADS, HOME FURNISHINGS, HOT TUBS, WATERBEDS, EXERCISE BIKES, EXERCISE EQUIPMENT, JACUZZIES, PILLOWS, CASSETTE TAPES, EDUCATIONAL MATERIALS OR BOOKS, AND OTHER SIMILAR ITEMS WILL NOT BE AUTHORIZED OR PAID.

In no case will the department or self-insurer pay for rental fees once the purchase price of the rented item has been reached with the exception of oxygen equipment. The department or self-insurer may pay for rental fees of oxygen equipment beyond its purchase price.

[Statutory Authority: RCW 51.04.020 and 51.04.030, 05-23-143, § 296-20-1102, filed 11/22/05, effective 1/3/06. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159, 93-16-072, § 296-20-1102, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020(4) and 51.04.030, 87-22-052 (Order 87-22), § 296-20-1102, filed 11/2/87; 86-06-032 (Order 86-19), § 296-20-1102, filed 2/28/86, effective 4/1/86; 83-16-066 (Order 83-23), § 296-20-1102, filed 8/2/83. Statutory Authority: RCW 51.04.020(4), 51.04.030, and 51.16.120(3), 81-24-041 (Order 81-28), § 296-20-1102, filed 11/30/81, effective 1/1/82; 81-01-100 (Order 80-29), § 296-20-1102, filed 12/23/80, effective 3/1/81.]

WAC 296-20-1103 Travel expense. The department or self-insurer will reimburse travel expense incurred by workers for the following reasons: (1) Examinations at department's or self-insurer's request; (2) vocational services at department's or self-insurer's request; (3) treatment at department rehabilitation center; (4) fitting of prosthetic device; and (5) upon *prior authorization* for treatment when worker must travel more than ten miles one-way from the worker's home to the nearest point of adequate treatment. Travel expense *is not* payable when adequate treatment is available within ten miles of injured worker's home, yet the injured worker prefers to report to an attending doctor outside the worker's home area.

Travel expenses will be reimbursed at the current department rate.

Receipts are required for all expenses except parking expenses under ten dollars.

Claims for reimbursement of travel expenses must be received by the department or self-insurer within one year after the date expenses are incurred. Refer to WAC 296-20-125 and to department policy for additional rules.

[Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159. 93-16-072, § 296-20-1103, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 91-12-010, § 296-20-1103, filed 5/30/91, effective 7/1/91. Statutory Authority: RCW 51.04.020(4) and 51.04.030, 83-16-066 (Order 83-23), § 296-20-1103, filed 8/2/83. Statutory Authority: RCW 51.04.020(4), 51.04.030, and 51.16.120(3), 81-24-041 (Order 81-28), § 296-20-1103, filed 11/30/81, effective 1/1/82; 81-01-100 (Order 80-29), § 296-20-1103, filed 12/23/80, effective 3/1/81.]

WAC 296-20-120 Procedures not listed in this schedule. Procedures not specifically listed will be given values comparable to those of the listed procedures of closest similarity. Refer to chapter 296-20 WAC (including the definition section) and the fee schedules for required billing documentation.

[Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159. 93-16-072, § 296-20-120, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020(4), 51.04.030, and 51.16.120(3), 81-01-100 (Order 80-29), § 296-20-120, filed 12/23/80, effective 3/1/81; Order 71-6, § 296-20-120, filed 6/1/71; Order 70-12, § 296-20-120, filed 12/1/70, effective 1/1/71; Order 68-7, § 296-20-120, filed 11/27/68, effective 1/1/69.]

WAC 296-20-12050 Special programs. (1) The department or self-insurer may from time to time enter into special agreements for services provided by, or under the direction of, licensed providers authorized to bill the department. Special agreements are for services other than routine services covered under the fee schedule, and may include multidisciplinary or inter-disciplinary programs such as pain management, work hardening, and physical conditioning.

(2) The department shall establish payment rates for special agreements, and may establish outcome criteria, measures of effectiveness, minimum staffing levels, certification requirements, special reporting requirements and such other criteria as will ensure injured workers receive good quality and effective services at a prudent cost.

(3) Special agreements shall be purchased at the discretion of the department or self-insurer. The department may terminate special programs from the industrial insurance program upon thirty days notice to the provider.

[Statutory Authority: RCW 51.04.020(4) and 51.04.030, 87-24-050 (Order 87-23), § 296-20-12050, filed 11/30/87, effective 1/1/88.]

WAC 296-20-121 X rays. Recognizing the greatest need for access to X rays lies with the attending doctor, the department or self-insurer requires only submission of X-ray findings and does not require submission of the actual films except upon specific request when needed for purposes of permanent disability rating, other administrative or legal decisions, or in litigation cases. The department or self-insurer requires the attending doctor retain X rays for a period of not less than ten years. In transfer cases, the X rays in the possession of the current attending doctor must be made available to the new attending doctor.

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When requesting consultation, the attending doctor should make any X rays in his possession available to the consultant.

When a special exam has been arranged for the worker by the department or self-insurer, the worker's existing X rays should be provided to the special examiner. The worker may carry such X rays to the exam.

When the doctor's office is closed because of death, retirement or leaving the state, arrangements must be made with the department or self-insurer regarding custody of X rays to insure availability on request. When submitting billing for X-ray service, a copy of the X-ray findings is required. No payment will be made for excessive or unnecessary X rays. No payment will be made on closed or rejected claims, except under conditions outlined in WAC 296-20-124.

Prior authorization is required for X rays subsequent to the initial study. Repeat or serial radiology examinations may be performed only upon adequate clinical justification to confirm changes in the condition(s) accepted. The subjective complaints and the objective findings substantiating the repeat study must be submitted by the practitioner in the request for authorization to the department or self-insurer.

[Statutory Authority: RCW 51.04.020(4) and 51.04.030, 86-06-032 (Order 86-19), § 296-20-121, filed 2/28/86, effective 4/1/86. Statutory Authority: RCW 51.04.020(4), 51.04.030, and 51.16.120(3), 81-24-041 (Order 81-28), § 296-20-121, filed 11/30/81, effective 1/1/82; 81-01-100 (Order 80-29), § 296-20-121, filed 12/23/80, effective 3/1/81; Order 77-27, § 296-20-121, filed 11/30/77, effective 1/1/78; Emergency Order 77-26, § 296-20-121, filed 12/1/77; Emergency Order 77-16, § 296-20-121, filed 9/6/77; Order 74-39, § 296-20-121, filed 11/22/74, effective 1/1/75; Order 74-7, § 296-20-121, filed 1/30/74.]

WAC 296-20-124 Rejected and closed claims. (1) No payment will be made for treatment or medication on rejected claims or for services rendered after the date of claim closure.

(2) When the department or self-insurer has denied responsibility for an alleged injury or industrial condition the only services which will be paid are those which were carried out at the specific request of the department or the self-insurer and/or those examination or diagnostic services which served as a basis for the adjudication decision. Following the date of the order and notice of claim closure, the department or self-insurer will be responsible only for those services specifically requested or those examinations, and diagnostic services necessary to complete and file a reopening application.

(3) Periodic medical surveillance examinations will be covered by the department or self-insurer for workers with closed claims for asbestos-related disease, to include chest X-ray abnormalities, without the necessity of filing a reopening application when such examinations are recommended by accepted medical protocol.

(4) Replacement of prosthetics, orthotics, and special equipment can be provided on closed claims after prior authorization. See WAC 296-20-1102 for further information.

[Statutory Authority: Chapters 34.04 [34.05], 51.04, 51.32 and 51.36 RCW. 90-04-007, § 296-20-124, filed 1/26/90, effective 2/26/90. Statutory Authority: RCW 51.04.020(4), 51.04.030, and 51.16.120(3), 81-01-100 (Order 80-29), § 296-20-124, filed 12/23/80, effective 3/1/81; Order 76-34, § 296-20-124, filed 11/24/76, effective 1/1/77.]

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WAC 296-20-12401 Provider application process. (1)

How can a provider obtain a provider account number from the department? In order to receive a provider account number from the department, a provider must:

- Complete a provider application;
- Sign a provider agreement;
- Provide a copy of any practice or other license held;
- Complete, sign and return a Form W-9; and
- Meet the department's provider eligibility requirements as cited in the department's rules.

Notes: A provider account number is required to receive payment from the department, but is not a guarantee of payment for services.
Self-insured employers may have additional requirements for provider status.

(2) Provider account status definitions.

- Active - account information is current and provider is eligible to receive payment.
- Inactive - account is not eligible to receive payment based on action by the department or at provider request. These accounts can be reactivated.
- Terminated - account is not eligible to receive payment based on action by the department or at provider request. These accounts can not be reactivated.

(3) When may the department inactivate a provider account? The department may inactivate a provider account when:

- There has been no billing activity on the account for eighteen months; or
- The provider requests inactivation; or
- Provider communications are returned due to address changes; or
- The department changes the provider application or application procedures; or
- Provider does not comply with department request to update information.

(4) When may the department terminate a provider account? The department may terminate a provider account when:

- The provider is found ineligible to treat per department rules; or
- The provider requests termination; or
- The provider dies or is no longer in active business status.

(5) How can a provider reactivate a provider account? To reactivate a provider account, the provider may call or write the department. The department may require the provider to update the provider application and/or agreement or complete other needed forms prior to reactivation. Account reactivation is subject to department review.

If a provider account has been terminated, a new provider application will be required.

[Statutory Authority: RCW 51.04.020, 51.04.030, 51.36.080. 00-09-078, § 296-20-12401, filed 4/18/00, effective 7/1/00.]

WAC 296-20-125 Billing procedures. All services rendered must be in accordance with the medical aid rules, fee schedules, and department policy. The department or self-insurer may reject bills for services rendered in violation of these rules. Workers may not be billed for services rendered in violation of these rules.

(2007 Ed.)

(1) Bills must be itemized on department or self-insurer forms or other forms which have been approved by the department or self-insurer. Bills may also be transmitted electronically using department file format specifications. Providers using any of the electronic transfer options must follow department instructions for electronic billing. Physicians, osteopaths, advanced registered nurse practitioners, chiropractors, naturopaths, podiatrists, psychologists, and registered physical therapists use the national standard HCFA 1500 health insurance claim form with the bar code placed 2/10 of an inch from the top and 1 1/2 inches from the left side of the form. Hospitals use the UB-92 billing form for institution services and the national standard HCFA 1500 health insurance claim form with the bar code placed 2/10 of an inch from the top and 1 1/2 inches from the left side of the form for professional services. Hospitals should refer to chapter 296-23A WAC for billing rules pertaining to institution, or facilities, charges. Pharmacies use the department's statement for pharmacy services. Dentists, equipment suppliers, transportation services, vocational services, and massage therapists use the department's statement for miscellaneous services. When billing the department for home health services, providers should use the "statement for home nursing services." Providers may obtain billing forms from the department's local service locations.

(2) Bills must specify the date and type of service, the appropriate procedure code, the condition treated, and the charges for each service.

(3) Bills submitted to the department must be completed to include the following:

- (a) Worker's name and address;
- (b) Worker's claim number;
- (c) Date of injury;
- (d) Referring doctor's name and L&I provider account number;
- (e) Area of body treated, including ICD-9-CM code(s), identification of right or left, as appropriate;
- (f) Dates of service;
- (g) Place of service;
- (h) Type of service;
- (i) Appropriate procedure code, hospital revenue code, or national drug code;
- (j) Description of service;
- (k) Charge;
- (l) Units of service;
- (m) Tooth number(s);
- (n) Total bill charge;
- (o) The name and address of the practitioner rendering the services and the provider account number assigned by the department;
- (p) Date of billing;
- (q) Submission of supporting documentation required under subsection (6) of this section.

(4) Responsibility for the completeness and accuracy of the description of services and charges billed rests with the practitioner rendering the service, regardless of who actually completes the bill form;

(5) Vendors are urged to bill on a monthly basis. Bills must be received within one year of the date of service to be considered for payment.

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(6) The following supporting documentation is required when billing for services:

- (a) Laboratory and pathology reports;
- (b) X-ray findings;
- (c) Operative reports;
- (d) Office notes;
- (e) Consultation reports;
- (f) Special diagnostic study reports;
- (g) For BR procedures - see chapter 296-20 WAC for requirements; and
- (h) Special or closing exam reports.

(7) The claim number must be placed on each bill and on each page of reports and other correspondence in the upper right-hand corner.

(8) The following considerations apply to rebills.

(a) If you do not receive payment or notification from the department within one hundred twenty days, services may be rebilled.

(b) Rebills must be submitted for services denied if a claim is closed or rejected and subsequently reopened or allowed. In these instances, the rebills must be received within one year of the date the final order is issued which subsequently reopens or allows the claim.

(c) Rebills should be identical to the original bill: Same charges, codes, and billing date.

(d) In cases where vendors rebill, please indicate "REBILL" on the bill.

(9) The department or self-insurer will adjust payment of charges when appropriate. The department or self-insurer must provide the health care provider or supplier with a written explanation as to why a billing or line item of a bill was adjusted at the time the adjustment is made. A written explanation is not required if the adjustment was made solely to conform with the maximum allowable fees as set by the department. Any inquiries regarding adjustment of charges must be received in the required format within ninety days from the date of payment to be considered. Refer to the medical aid rules for additional information.

[Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159. 93-16-072, § 296-20-125, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020(4) and 51.04.030. 87-16-004 (Order 87-18), § 296-20-125, filed 7/23/87; 86-20-074 (Order 86-36), § 296-20-125, filed 10/1/86, effective 11/1/86; 86-06-032 (Order 86-19), § 296-20-125, filed 2/28/86, effective 4/1/86; 83-16-066 (Order 83-23), § 296-20-125, filed 8/2/83. Statutory Authority: RCW 51.04.020(4), 51.04.030, and 51.16.120(3). 81-01-100 (Order 80-29), § 296-20-125, filed 12/23/80, effective 3/1/81; Order 77-27, § 296-20-125, filed 11/30/77, effective 1/1/78; Emergency Order 77-26, § 296-20-125, filed 12/1/77; Emergency Order 77-16, § 296-20-125, filed 9/6/77; Order 75-39, § 296-20-125, filed 11/28/75, effective 1/1/76; Order 74-39, § 296-20-125, filed 11/22/74, effective 1/1/75; Order 74-7, § 296-20-125, filed 1/30/74; Order 71-6, § 296-20-125, filed 6/1/71; Order 70-12, § 296-20-125, filed 12/1/70, effective 1/1/71; Order 68-7, § 296-20-125, filed 11/27/68, effective 1/1/69.]

WAC 296-20-12501 Physician assistant billing procedure. Billing for physician assistant services will be paid at ninety percent of the value listed in the fee schedules. Payment will be made directly to the supervising physician.

(1) Bills must be itemized on department or self-insurer forms, as the case may be, specifying: The date, type of service and the charges for each service.

(2) The bill form must be completed in detail to include the claim number. All bills must be submitted under the phy-

sician assistant's account number. Bills will be accepted when signed by other than the practitioner rendering services. When bills are prepared by someone else, the responsibility for the completeness and accuracy of the description of services and charges rests with the supervising physician.

(3) For a bill to be considered for payment, it must be received in the department or by the self-insurer within one year from the date each specific treatment and/or service was rendered or performed. Whenever possible, bills should be submitted monthly.

(4) Bills cannot be paid for services rendered while a claim is closed.

(5) The department or self-insurer may deny payment of bills for services rendered in violation of the medical aid rules or department policy. Workers may not be billed for services rendered in violation of these rules.

[Statutory Authority: RCW 51.04.020. 03-21-069, § 296-20-12501, filed 10/14/03, effective 12/1/03. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159. 93-16-072, § 296-20-12501, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.030 and 51.16.035. 79-12-086 (Order 79-18), § 296-20-12501, filed 11/30/79, effective 1/1/80.]

WAC 296-20-132 Determination of conversion factor adjustments. Adjustments to the conversion factors for providers and services covered by the fee schedules and by department policy may occur annually following prior public hearings.

Such adjustments will be based on the estimated increase/decrease in the state's average wage for the current year and on other factors as determined by department policy. The following calendar year's estimate, of the average state wage will be adjusted to reflect the actual increase/decrease in the state's average wage for the preceding year.

The total percentage change for any one calendar year for the conversion factors may not exceed the total of the estimated increase/decrease in the current year, plus or minus the actual adjustment for the preceding calendar year.

[Statutory Authority: RCW 51.04.020(4) and 51.04.030. 96-10-086, § 296-20-132, filed 5/1/96, effective 7/1/96. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159. 93-16-072, § 296-20-132, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020(4) and 51.04.030. 88-24-011 (Order 88-28), § 296-20-132, filed 12/1/88, effective 1/1/89; 82-24-050 (Order 82-39), § 296-20-132, filed 11/29/82, effective 1/1/84.]

WAC 296-20-135 Conversion factors. (1) Conversion factors are used to calculate payment levels for services reimbursed under the Washington resource based relative value scale (RBRVS), and for anesthesia services payable with base and time units.

(2) **Washington RBRVS** services have a conversion factor of \$54.22. The fee schedules list the reimbursement levels for these services.

(3) **Anesthesia services** that are paid with base and time units have a conversion factor of \$2.97 per minute, which is equivalent to \$44.55 per 15 minutes. The base units and payment policies can be found in the fee schedules.

[Statutory Authority: RCW 51.04.020(1) and 51.04.030. 06-09-071, § 296-20-135, filed 4/18/06, effective 7/1/06; 05-09-062, § 296-20-135, filed 4/19/05, effective 7/1/05; 04-09-100, § 296-20-135, filed 4/20/04, effective 7/1/04; 03-14-043, § 296-20-135, filed 6/24/03, effective 8/1/03; 02-10-129, § 296-20-135, filed 5/1/02, effective 7/1/02; 01-10-026, § 296-20-135, filed 4/24/01, effective 7/1/01; 00-09-077, § 296-20-135, filed 4/18/00, effective 7/1/00. Statutory Authority: RCW 51.04.020(4) and 51.04.030. 99-10-043,

§ 296-20-135, filed 4/30/99, effective 7/1/99; 98-09-125, § 296-20-135, filed 4/22/98, effective 7/1/98; 97-10-017, § 296-20-135, filed 4/28/97, effective 7/1/97. Statutory Authority: RCW 51.04.020 and 51.04.030. 96-19-060. § 296-20-135, filed 9/16/96, effective 10/17/96; 96-10-086, § 296-20-135, filed 5/1/96, effective 7/1/96; 95-17-001 § 296-20-135, filed 8/2/95, effective 10/1/95; 95-05-072, § 296-20-135, filed 2/15/95, effective 3/18/95. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159. 94-02-045 and 94-03-008, § 296-20-135, filed 12/30/93 and 1/6/94, effective 3/1/94; 93-16-072, § 296-20-135, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020(4) and 51.04.030. 91-02-063, § 296-20-135, filed 12/28/90, effective 1/28/91; 88-24-011 (Order 88-28), § 296-20-135, filed 12/1/88, effective 1/1/89; 87-03-004 (Order 86-45), § 296-20-135, filed 1/8/87; 83-24-016 (Order 83-35), § 296-20-135, filed 11/30/83, effective 1/1/84; 82-24-050 (Order 82-39), § 296-20-135, filed 11/29/82, effective 7/1/83. Statutory Authority: RCW 51.04.020(4), 51.04.030, and 51.16.120(3). 81-24-041 (Order 81-28), § 296-20-135, filed 11/30/81, effective 1/1/82; 80-18-033 (Order 80-24), § 296-20-135, filed 12/1/80, effective 1/1/81. Statutory Authority: RCW 51.04.030 and 51.16.035. 79-12-086 (Order 79-18), § 296-20-135, filed 11/30/79, effective 1/1/80; Order 77-27, § 296-20-135, filed 11/30/77, effective 1/1/78; Order 76-34, § 296-20-135, filed 11/24/76, effective 1/1/77; Order 75-39, § 296-20-135, filed 11/28/75, effective 1/1/76; Order 74-7, § 296-20-135, filed 1/30/74; Order 71-6, § 296-20-135, filed 6/1/71; Order 68-7, § 296-20-135, filed 11/27/68, effective 1/1/69.]

WAC 296-20-170 Pharmacy—Acceptance of rules and fees. Acceptance and filling of a prescription for a worker entitled to benefits under the industrial insurance law, constitutes acceptance of the department's rules and fees. When there is questionable eligibility, (i.e., no claim number, prescription is for medication other than usually prescribed for industrial injury; or pharmacist has reason to believe claim is closed or rejected), the pharmacist may require the worker to pay for the prescription. In these cases, the pharmacist must furnish the worker with a signed receipt and a non-negotiable copy of the prescription including national drug code and quantity or a completed department pharmacy bill form signed in the appropriate areas verifying worker has paid for the prescribed item(s) in order for the worker to bill the department or self-insurer for reimbursement. The worker may not be charged more than the amount allowable by the department or self-insurer. The worker must submit such reimbursement request within one year of the date of service.

See WAC 296-20-020 for details on providing a refund.

[Statutory Authority: RCW 51.04.020. 03-21-069, § 296-20-170, filed 10/14/03, effective 12/1/03. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159. 93-16-072, § 296-20-170, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020(4) and 51.04.030. 86-06-032 (Order 86-19), § 296-20-170, filed 2/28/86, effective 4/1/86. Statutory Authority: RCW 51.04.020(4), 51.04.030, and 51.16.120(3). 80-18-033 (Order 80-24), § 296-20-170, filed 12/1/80, effective 1/1/81; Order 76-34, § 296-20-170, filed 11/24/76, effective 1/1/77.]

WAC 296-20-17001 Allowance and payment for medication. The department or self-insurer will pay for medications or supplies dispensed for the treatment of conditions resulting from an industrial injury and/or conditions which are retarding the recovery from the industrial injury, for which the department or self-insurer has accepted temporary responsibility.

Approved generics are to be substituted for brand name pharmaceuticals in all cases unless the worker's condition will not tolerate a generic preparation and the prescribing physician indicates no substitution is permitted. A list of approved generics and their base cost will be published periodically by the department.

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Items not normally paid include: Syringes, injectables, heating pads, vibrators, personal appliances, oral nutritional supplements, anorexiant, and medications normally prescribed for systemic conditions. These items may be authorized to certain individuals in unusual circumstances; prior approval from the department or self-insurer is mandatory.

Rental or purchase of medical equipment must be prior authorized by the department or self-insurer.

No bills will be paid for medication dispensed after the date of order and notice of claim closure, on an accepted claim; nor, on rejected claims; nor for conditions unrelated to the industrial condition.

[Statutory Authority: RCW 51.04.020(4) and 51.04.030. 86-06-032 (Order 86-19), § 296-20-17001, filed 2/28/86, effective 4/1/86; 83-24-016 (Order 83-35), § 296-20-17001, filed 11/30/83, effective 1/1/84. Statutory Authority: RCW 51.04.020(4), 51.04.030, and 51.16.120(3). 80-18-033 (Order 80-24), § 296-20-17001, filed 12/1/80, effective 1/1/81; Order 76-34, § 296-20-17001, filed 11/24/76, effective 1/1/77.]

WAC 296-20-17002 Billing. In addition to the billing procedures described in WAC 296-20-125 and in department policy the current national drug code number for each prescribed drug, followed by the average wholesale price to the pharmacy must be entered on each prescription. The department's statement for pharmacy services must be used when billing the department for NDC medications and supplies. The department's statement for miscellaneous services must be used when billing the department for non-NDC medications and supplies. In addition, the claimant's name, claim number, date of injury, prescribing doctor's name and department of labor and industries provider number; and the assigned department provider number for the pharmacy must be on the bill. Bills for medication not containing this information will be returned to the pharmacy. Billing must be made within one year of the date of service. It is requested bills be presented on a monthly basis.

When billing the department for compound prescriptions, providers must use the "Statement for Compound Prescriptions."

[Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159. 93-16-072, § 296-20-17002, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020(4) and 51.04.030. 86-06-032 (Order 86-19), § 296-20-17002, filed 2/28/86, effective 4/1/86; 83-24-016 (Order 83-35), § 296-20-17002, filed 11/30/83, effective 1/1/84. Statutory Authority: RCW 51.04.020(4), 51.04.030, and 51.16.120(3). 80-18-033 (Order 80-24), § 296-20-17002, filed 12/1/80, effective 1/1/81; Order 76-34, § 296-20-17002, filed 11/24/76, effective 1/1/77.]

WAC 296-20-19000 What is a permanent partial disability award? Permanent partial disability is any anatomic or functional abnormality or loss after maximum medical improvement (MMI) has been achieved. At MMI, the worker's condition is determined to be stable or nonprogressive at the time the evaluation is made. A permanent partial disability award is a monetary award designed to compensate the worker for the amputation or loss of function of a body part or organ system. Impairment is evaluated without reference to the nature of the injury or the treatment given. To ensure uniformity, consistency and fairness in rating permanent partial disability, it is essential that injured workers with comparable anatomic abnormalities and functional loss receive comparable disability awards. As such, the amount of the permanent partial disability award is not dependent upon

or influenced by the economic impact of the occupational injury or disease on an individual worker. Rather, Washington's Industrial Insurance Act requires that permanent partial disability be established primarily by objective physical or clinical findings establishing a loss of function. Mental health impairments are evaluated under WAC 296-20-330 and 296-20-340.

[Statutory Authority: RCW 51.04.010, 51.04.020, 51.04.030, 51.32.080, 51.32.110, 51.32.112, 51.36.060. 02-21-105, § 296-20-19000, filed 10/22/02, effective 12/1/02.]

WAC 296-20-19010 Are there different types of permanent partial disabilities? Under Title 51 RCW, there are two types of permanent partial disabilities.

(1) Specified disabilities are listed in RCW 51.32.080 (1)(a). They are limited to amputation or loss of function of extremities, loss of hearing or loss of vision.

(2) Unspecified disabilities include, but are not limited to, internal injuries, back injuries, mental health conditions, respiratory disorders, and other disorders affecting the internal organs.

[Statutory Authority: RCW 51.04.010, 51.04.020, 51.04.030, 51.32.080, 51.32.110, 51.32.112, 51.36.060. 02-21-105, § 296-20-19010, filed 10/22/02, effective 12/1/02.]

WAC 296-20-19020 How is it determined which impairment rating system is to be used to rate specified and unspecified disabilities? (1) Specified disabilities are rated in one of two ways:

(a) Impairment due to amputation, total loss of hearing, and total loss of vision are rated according to RCW 51.32.-080;

(b) Impairment for the loss of function of extremities, as well as partial loss of hearing or vision, is rated using a nationally recognized impairment rating guide unless otherwise precluded by department rule.

(2) Unspecified disabilities are rated in accordance with WAC 296-20-200 through 296-20-660.

[Statutory Authority: RCW 51.04.010, 51.04.020, 51.04.030, 51.32.080, 51.32.110, 51.32.112, 51.36.060. 02-21-105, § 296-20-19020, filed 10/22/02, effective 12/1/02.]

WAC 296-20-19030 To what extent is pain considered in an award for permanent partial disability? The categories used to rate unspecified disabilities incorporate the worker's subjective complaints. Similarly, the organ and body system ratings in the *AMA Guides to the Evaluation of Permanent Impairment* incorporate the worker's subjective complaints. A worker's subjective complaints or symptoms, such as a report of pain, cannot be objectively validated or measured. There is no valid, reliable or consistent means to segregate the worker's subjective complaints of pain from the pain already rated and compensated for in the conventional rating methods. When rating a worker's permanent partial disability, reliance is primarily placed on objective physical or clinical findings that are independent of voluntary action by the worker and can be seen, felt or consistently measured by examiners. No additional permanent partial disability award will be made beyond what is already allowed in the categories and in the organ and body system ratings in the *AMA guides*.

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For example:

• Chapter 18 of the 5th Edition of the *AMA Guides to the Evaluation of Permanent Impairment* attempts to rate impairment caused by a patient's pain complaints. The impairment caused by the worker's pain complaints is already taken into consideration in the categories and in the organ and body system ratings in the *AMA guides*. There is no reliable means to segregate the pain already rated and compensated from the pain impairment that Chapter 18 purports to rate. Chapter 18 of the 5th Edition of *AMA Guides to the Evaluation of Permanent Impairment* cannot be used to calculate awards for permanent partial disability under Washington's Industrial Insurance Act.

[Statutory Authority: RCW 51.04.010, 51.04.020, 51.04.030, 51.32.080, 51.32.110, 51.32.112, 51.36.060. 02-21-105, § 296-20-19030, filed 10/22/02, effective 12/1/02.]

WAC 296-20-200 General information for impairment rating examinations by attending doctors, consultants or independent medical examination (IME) providers. (1) The department of labor and industries has promulgated the following rules and categories to provide a comprehensive system of classifying unspecified permanent partial disabilities in the proportion they reasonably bear to total bodily impairment. The department's objectives are to reduce litigation and establish more certainty and uniformity in the rating of unspecified permanent partial disabilities pursuant to RCW 51.32.080(2).

(2) The following system of rules and categories directs the provider's attention to the actual conditions found and establishes a uniform system for conducting rating examinations and reporting findings and conclusions in accord with broadly accepted medical principles.

The evaluation of bodily impairment must be made by experts authorized to perform rating examinations. After conducting the examination, the provider will choose the appropriate category for each bodily area or system involved in the particular claim and include this information in the report. The provider will, therefore, in addition to describing the worker's condition in the report, submit the conclusions as to the relative severity of the impairment by giving it in terms of a defined condition rather than a personal opinion as to a percentage figure. In the final section of this system of categories and rules are some rules for determining disabilities and the classification of disabilities in bodily impairment is listed for each category. These last provisions are for the department's administrative use in acting upon the expert opinions which have been submitted to it.

(3) In preparing this system, the department has complied with its duty to enact rules classifying unspecified disabilities in light of statutory references to nationally recognized standards or guides for determining various bodily impairments. Accordingly, the department has obtained and acted upon sound established medical opinion in thus classifying unspecified disabilities in the reasonable proportion they bear to total bodily impairment. In framing descriptive language of the categories and in assigning a percentage of disability, careful consideration has been given to nationally recognized medical standards and guides. Both are matters calling for the use of expert medical knowledge. For this reason, the meaning given the words used in this set of categories

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ries and accompanying rules, unless the text or context clearly indicates the contrary, is the meaning attached to the words in normal medical usage.

(4) The categories describe levels of physical and mental impairment. Impairment is anatomic or functional abnormality or loss of function after maximum medical improvement has been achieved. This is the meaning of "impairment" as the word is used in the guides mentioned above. This standard applies to all persons equally, regardless of factors other than loss of physical or mental function. Impairment is evaluated without reference to the nature of injury or the treatment therefore, but is based on the functional loss due to the injury or occupational disease. The categories have been framed to include conditions in other bodily areas which derive from the primary impairment. The categories also include the presence of pain, tenderness and other complaints. Workers with comparable loss of function thus receive comparable awards.

(5) These rules and categories (WAC 296-20-200 through 296-20-690) shall only be applicable to compensable injuries occurring on or after the effective date of these rules and categories.

(6) These rules and categories (WAC 296-20-200 through 296-20-690) shall be applicable only to cases of permanent partial disability. They have no applicability to determinations of permanent total disability.

[Statutory Authority: RCW 51.32.055, 51.32.112, 51.32.114, 51.36.060, and 51.36.070. 04-04-029, § 296-20-200, filed 1/27/04, effective 3/1/04. Statutory Authority: RCW 51.04.020, 51.04.030, 51.32.112, 51.32.114 and 51.36.015. 97-09-036, § 296-20-200, filed 4/14/97 effective 5/15/97. Statutory Authority: RCW 51.04.020(4) and 51.04.030. 91-07-008, § 296-20-200, filed 3/8/91, effective 5/1/91; Order 74-32, § 296-20-200, filed 6/21/74, effective 10/1/74.]

WAC 296-20-2010 General rules for impairment rating examinations by attending doctors and consultants. These general rules must be followed by doctors who perform examinations or evaluations of permanent bodily impairment.

(1) Impairment rating examinations shall be performed only by doctors currently licensed in medicine and surgery (including osteopathic and podiatric) or dentistry, and department-approved chiropractors subject to RCW 51.32.112. The department or self-insurer may request the worker's attending doctor conduct the impairment rating when appropriate. If the attending doctor is unable or unwilling to perform the impairment rating examination, a consultant, at the attending doctor's request, may conduct a consultation examination and provide an impairment rating based on the findings. The department or self-insurer can also request an impairment rating examination from an independent medical examination (IME) provider. A chiropractic impairment rating examination may be performed only when the worker has been clinically managed by a chiropractor.

(2) Whenever an impairment rating examination is made, the attending doctor or consultant must complete a rating report that includes, at a minimum, the following:

(a) Statement that the patient has reached maximum medical improvement (MMI) and that no further curative treatment is recommended;

(b) Pertinent details of the physical examination performed (both positive and negative findings);

(c) Results of any pertinent diagnostic tests performed (both positive and negative findings). Include copies of any pertinent tests or studies ordered as part of the exam;

(d) An impairment rating consistent with the findings and a statement of the system on which the rating was based (for example, the *AMA Guides to the Evaluation of Permanent Impairment* and edition used, or the Washington state category rating system - refer to WAC 296-20-19000 through 296-20-19030 and WAC 296-20-200 through 296-20-690); and

(e) The rationale for the rating, supported by specific references to the clinical findings, especially objective findings and supporting documentation including the specific rating system, tables, figures and page numbers on which the rating was based.

(3) It is the responsibility of attending doctors and consultants to be familiar with the contents of the *Medical Examiner Handbook* section on how to rate impairment.

(4) Attending doctors and consultants performing impairment ratings must be available and willing to testify on behalf of the department or self-insurer, worker or employer and accept the department fee schedule for testimony.

(5) A complete impairment rating report must be sent to the department or self-insurer within fourteen calendar days of the examination date, or within fourteen calendar days of receipt of the results of any special tests or studies requested as a part of the examination. Job analyses (JAs) sent to the IME provider at the time of the impairment rating exam must be completed and submitted with the impairment rating report.

[Statutory Authority: RCW 51.32.055, 51.32.112, 51.32.114, 51.36.060, and 51.36.070. 04-04-029, § 296-20-2010, filed 1/27/04, effective 3/1/04.]

WAC 296-20-2015 What rating systems are used for determining an impairment rating conducted by the attending doctor or a consultant? The following table provides guidance regarding the rating systems generally used. These rating systems or others adopted through department policies should be used to conduct an impairment rating.

Overview of Systems for Rating Impairment

Rating System	Used for These Conditions	Form of the Rating
RCW 51.32.080	Specified disabilities: Loss by amputation, total loss of vision or hearing	Supply the level of amputation
<i>AMA Guides to the Evaluation of Permanent Impairment</i>	Loss of function of extremities, partial loss of vision or hearing	Determine the percentage of loss of function, as compared to amputation value listed in RCW 51.32.080
Category Rating System	Spine, neurologic system, mental health, respiratory, taste and smell, speech, skin, or disorders affecting other internal organs	Select the category that most accurately indicates overall impairment

Overview of Systems for Rating Impairment

Rating System	Used for These Conditions	Form of the Rating
Total Bodily Impairment (TBI)	Impairments not addressed by any of the rating systems above, and claims prior to 1971	Supply the percentage of TBI

[Statutory Authority: RCW 51.32.055, 51.32.112, 51.32.114, 51.36.060, and 51.36.070. 04-04-029, § 296-20-2015, filed 1/27/04, effective 3/1/04.]

WAC 296-20-2025 May a worker bring someone with them to an impairment rating examination conducted by the attending doctor or a consultant? (1) Workers can bring an adult friend or family member to the impairment rating examination to provide comfort and reassurance. The accompanying person may attend the physical examination but may not attend a psychiatric examination.

(2) The accompanying person cannot be compensated for attending the examination by anyone in any manner.

(3) The worker may not bring an interpreter to the examination. If interpretive services are needed, the department or self-insurer will provide an interpreter.

(4) The purpose of the impairment rating examination is to provide information to assist in the determination of the level of any permanent impairment, not to conduct an adversarial procedure. Therefore, the accompanying person cannot be:

(a) The worker's attorney, paralegal, any other legal representative, or any other personnel employed by the worker's attorney or legal representative; or

(b) The worker's attending doctor, any other provider involved in the worker's care, or any other personnel employed by the attending doctor or other provider involved in the worker's care.

The department may designate other conditions under which the accompanying person is allowed to be present during the impairment rating examination.

[Statutory Authority: RCW 51.32.055, 51.32.112, 51.32.114, 51.36.060, and 51.36.070. 04-04-029, § 296-20-2025, filed 1/27/04, effective 3/1/04.]

WAC 296-20-2030 May the worker videotape or audiotape the impairment rating examination conducted by the attending doctor or a consultant? The use of recording equipment of any kind by the worker or accompanying person is not allowed.

[Statutory Authority: RCW 51.32.055, 51.32.112, 51.32.114, 51.36.060, and 51.36.070. 04-04-029, § 296-20-2030, filed 1/27/04, effective 3/1/04.]

WAC 296-20-220 Special rules for evaluation of permanent bodily impairment. (1) Evaluations of permanent bodily impairment using categories require uniformity in procedure and terminology. The following rules have been enacted to produce this uniformity and shall apply to all evaluations of permanent impairment of an unspecified nature.

(a) Gradations of relative severity shall be expressed by the words "minimal," "mild," "moderate" and "marked" in an ascending scale. "Minimal" shall describe deviations from normal responses which are not medically significant. "Mild," "moderate" and "marked" shall describe ranges of

medically significant deviations from normal responses. "Mild" shall describe the least severe third. "Moderate" shall describe the middle third. "Marked" shall describe the most severe third.

(b) "Permanent" describes those conditions which are fixed, lasting and stable, and from which within the limits of medical probability, further recovery is not expected.

(c) "Impairment" means a loss of physical or mental function.

(d) "Total bodily impairment," as used in these rules, is the loss of physical or mental function which is essentially complete short of death.

(e) The examiner shall not assign a percentage figure for permanent bodily impairment described in the categories established herein.

(f) The method of evaluating impairment levels is by selection of the appropriate level of impairment. These descriptive levels are called "categories." Assessments of the level of impairment are to be made by comparing the condition of the injured workman with the conditions described in the categories and selecting the most appropriate category.

These rules and categories for various bodily areas and systems provide a comprehensive system for the measurement of disabling conditions which are not already provided for in the list of specified permanent partial disabilities in RCW 51.32.080(1). Disabilities resulting from loss of central visual acuity, loss of an eye by enucleation, loss of hearing, amputation or loss of function of the extremities will continue to be evaluated as elsewhere provided in RCW 51.32.-080.

The categories have been classified in percentages in reasonable proportion to total bodily impairment for the purpose of determining the proper award. Provision has been made for correctly weighing the overall impairment due to particular injuries or occupational disease in cases in which there are preexisting impairments.

(g) The categories of the various bodily areas and systems are listed in the order of increasing impairment except as otherwise specified. Where several categories are given for the evaluation of the extent of permanent bodily impairment, the impairments in the higher numbered categories, unless otherwise specified, include the impairments in the lesser numbered categories. No category for a condition due to an injury shall be selected unless that condition is permanent as defined by these rules.

The examiner shall select the one category which most accurately indicates the overall degree of permanent impairment unless otherwise instructed. Where there is language in more than one category which may appear applicable, the category which most accurately reflects the overall impairment shall be selected.

The categories include appropriate subjective complaints in an ascending scale in keeping with the severity of objective findings, thus a higher or lower category is not to be selected purely on the basis of unusually great or minor complaints.

(h) When the examination discloses a preexisting permanent bodily impairment in the area of the injury, the examiner shall report the findings and any category of impairment appropriate to the worker's condition prior to the industrial

injury in addition to the findings and the categories appropriate to the worker's condition after the injury.

(i) Objective physical or clinical findings are those findings on examination which are independent of voluntary action and can be seen, felt, or consistently measured by examiners.

(j) Subjective complaints or symptoms are those perceived only by the senses and feelings of the person being examined which cannot be independently proved or established.

(k) Muscle spasm as used in these rules is an involuntary contraction of a muscle or group of muscles of a more than momentary nature.

(l) An involuntary action is one performed independently of the will.

(m) These special rules for evaluation of permanent bodily impairment shall apply to all examinations for the evaluation of impairment, in accordance with RCW 51.32.-080, for the body areas or systems covered by or enumerated in WAC 296-20-230 through 296-20-660.

(n) The rules for evaluation of each body area or system are an integral part of the categories for that body area or system.

(o) In cases of injury or occupational disease of bodily areas and/or systems which are not included in these categories or rules and which do not involve loss of hearing, loss of central visual acuity, loss of an eye by enucleation or loss of the extremities or use thereof, examiners shall determine the impairment of such bodily areas and/or systems in terms of percentage of total bodily impairment.

(p) The words used in the categories of impairments, in the rules for evaluation of specific impairments, the general rules, and the special rules shall be deemed, unless the context indicates the contrary, to have their general and accepted medical meanings.

(q) The rating of impairment due to total joint replacement shall be in accordance with the limitation of motion guidelines as set forth in the "Guides to the Evaluation of Permanent Impairment" of American Medical Association, with department of labor and industries acknowledgement of responsibility for failure of prostheses beyond the seven year limitation.

[Statutory Authority: RCW 51.04.020, 51.04.030, 51.32.112, 51.32.114 and 51.36.015. 97-09-036, § 296-20-220, filed 4/14/97 effective 5/15/97. Statutory Authority: RCW 51.04.030 and 51.16.035. 79-12-086 (Order 79-18), § 296-20-220, filed 11/30/79, effective 1/1/80; Order 74-32, § 296-20-220, filed 6/21/74, effective 10/1/74.]

WAC 296-20-230 Cervical and cervico-dorsal impairments. (1) Rules for evaluation of cervical and cervico-dorsal impairments are as follows:

(a) Muscle spasm or involuntary guarding, bony or fibrous fusion, any arthritic condition, internal fixation devices or other physical finding shall be considered, in selecting the appropriate category, only insofar as productive of cervical or cervico-dorsal impairment.

(b) Gradations of clinical findings of cervico-dorsal impairments in terms of "mild," "moderate" or "marked" shall be based on objective medical tests.

(c) Categories 2, 3, 4 and 5 include the presence of complaints of whatever degree in the neck or extremities.

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(d) Bladder and/or bowel sphincter impairments deriving from cervical and cervico-dorsal impairment shall be evaluated separately.

(e) Neck as used in these rules and categories shall include the cervical and adjacent areas.

[Order 74-32, § 296-20-230, filed 6/21/74, effective 10/1/74.]

WAC 296-20-240 Categories of permanent cervical and cervico-dorsal impairments. (1) No objective clinical findings are present. Subjective complaints may be present or absent.

(2) Mild cervico-dorsal impairment, with objective clinical findings of such impairment with neck rigidity substantiated by X-ray findings of loss of anterior curve, without significant objective neurological findings.

This and subsequent categories include the presence or absence of pain locally and/or radiating into an extremity or extremities. This and subsequent categories also include the presence or absence of reflex and/or sensory losses. This and subsequent categories also include objectively demonstrable herniation of a cervical intervertebral disc with or without discectomy and/or fusion, if present.

(3) Mild cervico-dorsal impairment, with objective clinical findings of such impairment, with neck rigidity substantiated by X-ray findings of loss of anterior curve, narrowed intervertebral disc spaces and/or osteoarthritic lipping of vertebral margins, with significant objective findings of mild nerve root involvement.

This and subsequent categories include the presence or absence of any other neurological deficits not otherwise specified in these categories with the exception of bladder and/or bowel sphincter impairments.

(4) Moderate cervico-dorsal impairment, with objective clinical findings of such impairment, with neck rigidity substantiated by X-ray findings of loss of anterior curve, narrowed intervertebral disc spaces and/or osteoarthritic lipping of vertebral margins, with objective findings of moderate nerve root involvement with weakness and numbness in one or both upper extremities.

(5) Marked cervico-dorsal impairment, with marked objective clinical findings of such impairment, with neck rigidity substantiated by X-ray findings of loss of anterior curve, narrowed intervertebral disc spaces and/or osteoarthritic lipping of vertebral margins, with objective findings of marked nerve root involvement with weakness and numbness in one or both upper extremities.

[Order 74-32, § 296-20-240, filed 6/21/74, effective 10/1/74.]

WAC 296-20-250 Impairments of the dorsal area. (1) Rules for evaluation of permanent dorsal area impairments are as follows:

(a) Muscle spasm or involuntary guarding, bony or fibrous fusion, any arthritic condition, internal fixation devices or other physical finding shall be considered, in selection of the appropriate category, only insofar as productive of dorsal area impairment.

(b) Gradations of clinical findings of dorsal impairments in terms of "mild," "moderate" or "marked" shall be based on objective medical tests.

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(c) Categories 2 and 3 include the presence of complaints of whatever degree.

(d) Bladder and/or bowel sphincter impairments deriving from impairments of the dorsal area shall be evaluated separately.

(e) Impairments which also involve the cervical or lumbar areas shall be evaluated only under the cervical and cervico-dorsal or dorsolumbar and lumbosacral categories.

[Order 74-32, § 296-20-250, filed 6/21/74, effective 10/1/74.]

WAC 296-20-260 Categories of permanent dorsal area impairments. (1) No objective clinical findings are present. Subjective complaints may be present or absent.

(2) Mild or moderate dorsal impairment, with objective clinical findings of such impairment, without significant objective neurological findings, with or without X-ray changes of narrowed intervertebral disc spaces and/or osteoarthritic lipping of intervertebral margins. Includes the presence or absence of reflex and/or sensory losses.

This and the subsequent category include the presence or absence of pain, locally or radiating from the dorsal area.

(3) Marked dorsal impairment, with marked objective clinical findings, with marked X-ray findings of narrowed intervertebral disc spaces and/or osteoarthritic lipping of vertebral margins, with significant objective neurological deficits, complaints and/or findings, deriving from dorsal impairment.

[Order 74-32, § 296-20-260, filed 6/21/74, effective 10/1/74.]

WAC 296-20-270 Dorso-lumbar and lumbosacral impairments. (1) Rules for evaluation of permanent dorso-lumbar and lumbosacral impairments are as follows:

(a) Muscle spasm or involuntary guarding, bony or fibrous fusion, any arthritic condition, internal fixation devices or other physical finding shall be considered, in selecting the appropriate category, only insofar as productive of low back impairment.

(b) Gradations of clinical findings of low back impairments in terms of "mild," "moderate" or "marked" shall be based on objective medical tests.

(c) All of the low back categories include the presence of complaints of whatever degree.

(d) Any and all neurological deficits, complaints, and/or findings in other bodily areas or systems which are the result of dorso-lumbar and lumbosacral impairments, except for objectively demonstrated bladder and/or bowel sphincter impairments, shall be evaluated by the descriptions contained in the categories of dorso-lumbar and lumbosacral impairments.

(e) Bladder and/or bowel sphincter impairments deriving from dorso-lumbar and lumbosacral impairments shall be evaluated separately.

(f) Low back as used in these rules and categories includes the lumbar and adjacent areas.

[Order 74-32, § 296-20-270, filed 6/21/74, effective 10/1/74.]

WAC 296-20-280 Categories of permanent dorso-lumbar and lumbosacral impairments. (1) No objective clinical findings. Subjective complaints and/or sensory losses may be present or absent.

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(2) Mild low back impairment, with mild intermittent objective clinical findings of such impairment but no significant X-ray findings and no significant objective motor loss. Subjective complaints and/or sensory losses may be present.

(3) Mild low back impairment, with mild continuous or moderate intermittent objective clinical findings of such impairment but without significant X-ray findings or significant objective motor loss.

This and subsequent categories include: The presence or absence of reflex and/or sensory losses; the presence or absence of pain locally and/or radiating into an extremity or extremities; the presence or absence of a laminectomy or discectomy with normally expected residuals.

(4) Mild low back impairment, with mild continuous or moderate intermittent objective clinical findings of such impairment, with mild but significant X-ray findings and with mild but significant motor loss objectively demonstrated by atrophy and weakness of a specific muscle or muscle group.

This and subsequent categories include the presence or absence of a surgical fusion with normally expected residuals.

(5) Moderate low back impairment, with moderate continuous or marked intermittent objective clinical findings of such impairment, with moderate X-ray findings and with mild but significant motor loss objectively demonstrated by atrophy and weakness of a specific muscle or muscle group.

(6) Marked low back impairment, with marked intermittent objective clinical findings of such impairment, with moderate or marked X-ray findings and with moderate motor loss objectively demonstrated by atrophy and weakness of a specific muscle or muscle group.

(7) Marked low back impairment, with marked continuous objective clinical findings of such impairment, with marked X-ray findings and with marked motor loss objectively demonstrated by marked atrophy and weakness of a specific muscle or muscle group.

(8) Essentially total loss of low back functions, with marked X-ray findings and with marked motor loss objectively demonstrated by marked atrophy and weakness of a muscle group or groups.

[Statutory Authority: RCW 51.04.020(4) and 51.04.030. 83-16-066 (Order 83-23), § 296-20-280, filed 8/2/83; Order 74-32, § 296-20-280, filed 6/21/74, effective 10/1/74.]

WAC 296-20-290 Impairments of the pelvis. (1) Rules for impairment of the pelvis:

(a) All of these categories include the presence of complaints of whatever degree.

(b) Categories 2, 5, 6 and 7 describe separate entities and more than one may be selected when appropriate. Category 9 includes the findings described in Category 3, and Category 8 includes the findings described in Category 4.

[Order 74-32, § 296-20-290, filed 6/21/74, effective 10/1/74.]

WAC 296-20-300 Categories of permanent impairments of the pelvis. (1) Healed pelvic fractures without displacement, without residuals; healed fractures with displacement without residuals, of: Single ramus, bilateral rami, ilium, innominate or coccyx; or healed fracture of single rami with displacement with deformity and residuals.

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(2) Healed fractures with displacement with deformity and residuals of ilium.

(3) Healed fractures of symphysis pubis, without separation with displacement without residuals.

(4) Healed fractures of sacrum with displacement without residuals.

(5) Healed fracture of bilateral rami with displacement with deformity and residuals.

(6) Excision or nonunion of fractures of coccyx.

(7) Healed fractures of innominate, displaced one inch or more, with deformity and residuals.

(8) Healed fractures of sacrum extending into sacroiliac joint with deformity and residuals.

(9) Healed fractures of symphysis, displaced or separated, with deformity and residuals.

[Order 74-32, § 296-20-300, filed 6/21/74, effective 10/1/74.]

WAC 296-20-310 Convulsive neurological impairments. (1) Rules for evaluation of convulsive neurological impairments:

(a) The description of Categories 2, 3 and 4 include the presence of complaints of whatever degree.

[Order 74-32, § 296-20-310, filed 6/21/74, effective 10/1/74.]

WAC 296-20-320 Categories of permanent convulsive neurological impairments. (1) No electroencephalogram findings of convulsive neurological disorder. Subjective complaints may be present or absent.

(2) Electroencephalogram findings of convulsive neurological disorder, but on appropriate medication there are no seizures.

(3) Electroencephalogram findings of convulsive neurological disorder, and on appropriate medication there are each year either one through four major seizures or one through twelve minor seizures.

(4) Electroencephalogram findings of convulsive neurological disorder, and on appropriate medication there are each year either more than four major seizures or more than twelve minor seizures.

[Order 74-32, § 296-20-320, filed 6/21/74, effective 10/1/74.]

WAC 296-20-330 Impairments of mental health. (1) Rules for evaluation of permanent impairment of mental health:

(a) Mental illness means malfunction of the psychic apparatus that significantly interferes with ordinary living.

(b) Each person has a pattern of adjustment to life. The pattern of adjustment before the industrial injury or occupational disease serves as a base line for all assessments of whether there has been a permanent impairment due to the industrial injury or occupational disease.

(c) To determine the preinjury pattern of adjustment, all evaluations of mental health shall contain a complete preinjury history including, but not necessarily limited to: Family background and the relationships with parents or other nurturing figures; extent of education and reaction to it; military experience, if any; problems with civil authorities; any history of prolonged illness, and difficulty with recovery; any history of drug abuse or alcoholism; employment history, the extent of and reaction to responsibility, and relationships with

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others at work; capacity to make and retain friends; relationships with spouses and children; nature of daily activities, including recreation and hobbies; and lastly, some summary statement about the sources of the patient's self-esteem and sense of identity. Both strengths and vulnerabilities of the person shall be included.

(d) Differences in adjustment patterns before and after the industrial injury or occupational disease shall be described, and the report shall contain the examining physician's opinion as to whether any differences: (1) Are the result of the industrial injury or occupational disease and its sequelae, in the sense they would not have occurred had there not been the industrial injury or occupational disease; (2) are permanent or temporary; (3) are more than the normal, self-correcting and expectable response to the stress of the industrial injury or occupational disease; (4) constitute an impairment psychosocially or physiologically; and (5) are susceptible to treatment, and, if so, what kind. The presence of any unrelated or coincidental mental impairment shall always be mentioned.

(e) All reports of mental health evaluations shall use the diagnostic terminology listed in the *Diagnostic and Statistical Manual of Mental Disorders of the American Psychiatric Association*.

(f) No classification of impairment shall be made for complaints where the quality of daily life does not differ substantially from the preinjury pattern. A patient not currently employed may not engage in the same activities as when working, but the level and variety of his activities and zest for them shall distinguish the purely situational difference from cases of regression and withdrawal. In cases where some loss of use of body member is claimed, no category or impairment shall be assigned unless there are objective findings of physiologic regression or consistent evidence of altered adaptability.

(g) The physician shall identify the schizoid, antisocial, inadequate, sociopathic, passive, hysterical, paranoid, or dependent personality types. Patients with these longstanding character disorders may show problem behavior that seems more related to current stress than it is, sometimes unconsciously insinuating themselves into difficult situations of which they then complain. Emotional reactions to an injury and subsequent events must be carefully evaluated in these patients. It must be medically probable that such reactions are permanent before a category of impairment can be attributed to the injury; temporary reactions or preexisting psychopathology must be differentiated.

[Order 74-32, § 296-20-330, filed 6/21/74, effective 10/1/74.]

WAC 296-20-340 Categories for evaluation of permanent impairments of mental health. (1) Nervousness, irritability, worry or lack of motivation following an injury and commensurate with it and/or other situational responses to injury that do not alter significantly the life adjustment of the patient may be present.

(2) Any and all permanent worsenings of preexisting personality traits or character disorders where aggravation of preexisting personality trait or character disorder is the major diagnosis; mild loss of insight, mildly deficient judgment, or rare difficulty in controlling behavior, anxiety with feelings

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of tension that occasionally limit activity; lack of energy or mild apathy with malaise; brief phobic reactions under usually avoidable conditions; mildly unusual and overly rigid responses that cause mild disturbance in personal or social adjustment; rare and usually self-limiting psycho-physiological reactions; episodic hysterical or conversion reactions with occasional self-limiting losses of physical functions; a history of misinterpreted conversations or events, which is not a pre-occupation; is aware of being absentminded, forgetful, thinking slowly occasionally or recognizes some unusual thoughts; mild behavior deviations not particularly disturbing to others; shows mild over-activity or depression; personal appearance is mildly unkempt. Despite such features, productive activity is possible most of the time. If organicity is present, some difficulty may exist with orientation; language skills, comprehension, memory; judgment; capacity to make decisions; insight; or unusual social behavior; but the patient is able to carry out usual work day activities unassisted.

(3) Episodic loss of self-control with risk of causing damage to the community or self; moments of morbid apprehension; periodic depression that disturbs sleep and eating habits or causes loss of interest in usual daily activities but self-care is not a problem; fear-motivated behavior causing mild interference with daily life, frequent emotogenic organ dysfunctions requiring treatment; obsessive-compulsive reactions which limit usual activity; periodic losses of physical function from hysterical or conversion reactions; disturbed perception in that patient does not always distinguish daydreams from reality; recognizes his fantasies about power and money are unusual and tends to keep them secret; thought disturbances cause patient to fear the presence of serious mental trouble; deviant social behavior can be controlled on request; exhibits periodic lack of appropriate emotional control; mild disturbance from organic brain disease such that a few work day activities require supervision.

(4) Very poor judgment, marked apprehension with startle reactions, foreboding leading to indecision, fear of being alone and/or insomnia; some psychomotor retardation or suicidal preoccupation; fear-motivated behavior causing moderate interference with daily life; frequently recurrent and disruptive organ dysfunction with pathology of organ or tissues; obsessive-compulsive reactions causing inability to work with others or adapt; episodic losses of physical function from hysterical or conversion reactions lasting longer than several weeks; misperceptions including sense of persecution or grandiosity which may cause domineering, irritable or suspicious behavior; thought disturbance causing memory loss that interferes with work or recreation; periods of confusion or vivid daydreams that cause withdrawal or reverie; deviations in social behavior which cause concern to others; lack of emotional control that is a nuisance to family and associates; moderate disturbance from organic brain disease such as to require a moderate amount of supervision and direction of work day activities.

(5) Marked apprehension so as to interfere with memory and concentration and/or to disturb markedly personal relationships; depression causing marked loss of interest in daily activities, loss of weight, unkempt appearance, marked psychomotor retardation, suicidal preoccupation or attempts, or marked agitation as well as depression; marked phobic reactions with bizarre and disruptive behavior; psychophysiolog-

ical reactions resulting in lasting organ or tissue damage; obsessive-compulsive reactions that preclude patient's usual activity; frequent or persistent loss of function from conversion or hysterical reactions with regressive tissue or organ change; defects in perception including frank illusions or hallucinations occupying much of the patient's time; behavior deviations so marked as to interfere seriously with the physical or mental well-being or activities of others; lack of emotional control including marked irritability or overactivity.

[Order 74-32, § 296-20-340, filed 6/21/74, effective 10/1/74.]

WAC 296-20-350 Cardiac impairments. (1) Rule for evaluation of permanent cardiac impairments:

(a) Classification of impairment using the following categories shall be based upon a carefully obtained history, thorough physical examination and the use of appropriate laboratory aids.

[Order 74-32, § 296-20-350, filed 6/21/74, effective 10/1/74.]

WAC 296-20-360 Categories of permanent cardiac impairments. (1) No objective findings are present. Subjective complaints may be present or absent.

(2) Objective findings of mild organic heart disease but no signs of congestive heart failure. No medically appropriate symptoms produced by prolonged exertion or intensive effort or marked emotional stress.

(3) Objective findings of mild organic heart disease but no signs of congestive heart failure. Medically appropriate symptoms produced by prolonged exertion or intensive effort, or marked emotional stress but not by usual daily activities.

(4) Objective findings of moderate organic heart disease but no signs of congestive heart failure. Medically appropriate symptoms produced by prolonged exertion or intensive effort or marked emotional stress but not by usual daily activities.

(5) Objective findings of marked organic heart disease with minimal signs of congestive heart failure with therapy. Medically appropriate symptoms produced by usual daily activities.

(6) Objective findings of marked organic heart disease with mild to moderate signs of congestive heart failure despite therapy. Medically appropriate symptoms produced by usual daily activities.

[Order 74-32, § 296-20-360, filed 6/21/74, effective 10/1/74.]

WAC 296-20-370 Respiratory impairments. (1) Rules for evaluation of permanent respiratory impairments:

(a) Definitions.

(i) "FEV1" means the forced expiratory volume in 1 second as measured by a spirometric test performed as described in the most current *American Thoracic Society Statement on Standardization of Spirometry*, and using equipment, methods of calibration, and techniques that meet American Thoracic Society (ATS) criteria including reproducibility. The measurement used must be taken from a spirogram which is technically acceptable and represents the patient's best effort. The measurement is to be expressed as both an absolute value and as a percentage of the predicted value. The predicted values are those listed in the most current edition of the *Ameri-*

can Medical Association (AMA) Guidelines for rating permanent respiratory impairment.

(ii) "FVC" means the forced vital capacity as measured by a spirometric test in accordance with criteria described in (a)(i) of this subsection.

(iii) "FEV1/FVC" is a ratio calculated based on the ATS Guides criteria as described in the most current *American Thoracic Society Statement on Standardization of Spirometry*.

(iv) "Significant improvement" means a fifteen percent or greater improvement in FEV1 (volume) after a post-bronchodilator pulmonary function test.

(v) "DLCO" means the diffusion capacity of carbon monoxide as measured by a test based on predicted values demonstrated to be appropriate to the techniques and equipment of the laboratory performing the test according to current ATS standards. DLCO may be considered for impairment rating only if accompanied by evidence of impaired gas exchange based on exercise testing.

(vi) "VO2 Max" means the directly measured oxygen consumption at maximum exercise capacity of an individual as measured by exercise testing and oxygen consumption expressed in ml/kilo/min corrected for lean bodyweight. Estimated values from treadmill or other exercise tests without direct measurement are not acceptable. The factor limiting the exercise must be identified.

(vii) "Preexisting impairment" shall be reported as described in WAC 296-20-220 (1)(h).

(viii) "Coexisting" is a disease or injury not due to or causally related to the work-related condition that impacts the overall respiratory disability.

(ix) "Apportionment" is an estimate of the degree of impairment due to the occupational injury/exposure when preexisting or coexisting conditions are present.

(x) "Dyspnea" is the subjective complaint of shortness of breath. Dyspnea alone must not be used to determine the level of respiratory impairment. Dyspnea unexplained by objective signs of impairment or spirometry requires more extensive testing (i.e., VO2 Max).

(xi) Copies of the *American Thoracic Society Statement on Standardization of Spirometry* and ATS standards for measuring D_{LCO} can be obtained by ordering *Pulmonary Function Testing* from The American Thoracic Society, 1740 Broadway, New York, NY 10019-4374, Attn: ATS Statements. Copies of this document are available for review in the section of the office of the medical director, department of labor and industries, Tumwater building.

These standards are also available through the following references: "American Thoracic Society Committee on Proficiency Standards for Pulmonary Function Laboratories: Standardization of spirometry-1987 update." *Am Rev Respir Dis* 1987; 136:1285-1298. "American Thoracic Society D_{LCO} Standardization Conference: Single breath carbon monoxide diffusing capacity (transfer factor): Recommendations for a standard technique." *Am Rev Respir Dis* 1987; 136:1299-1307.

(b) Evaluation procedures. Each report of examination must include the following, at a minimum:

(i) Identification data: Worker's name, claim number, gender, age, and race.

(ii) Detailed occupational history: Job titles of all jobs held since employment began. A detailed description of typical job duties, protective equipment worn, engineering controls present (e.g., ventilation) as well as the specific exposures and intensity (frequency and duration) of exposures. More detail is required for jobs involving potential exposure to known respiratory hazards.

(iii) History of the present illness: Chief complaint and description of all respiratory symptoms present (e.g., wheezing, cough, phlegm, chest pain, paroxysmal nocturnal dyspnea, dyspnea at rest and on exertion) as well as the approximate date of onset, and duration of each symptom, and aggravating and relieving factors.

(iv) Past medical history: Past history of childhood or adult respiratory illness, hay fever, asthma, bronchitis, chest injury, chest surgery, respiratory infections, cardiac problems, hospitalizations for chest or breathing problems and current medications.

(v) Lifestyle and environmental exposures: Descriptive history of exposures clinically related to respiratory disease including, but not limited to, tobacco use with type and years smoked. Use of wood as a primary heat source at home or hobbies that involve potential exposure to known respiratory tract hazards, and other environmental exposures.

(vi) Family history: Family history of respiratory or cardiac disease.

(vii) Physical examination findings: Vital signs including a measured height without shoes, weight, and blood pressure. Chest exam shall include a description of the shape, breathing, breath sounds, cardiac exam, and condition of extremities (e.g., cyanosis, clubbing, or edema).

(viii) Diagnostic tests: A chest X ray shall be obtained in all cases. When available, the X ray should be obtained using International Labor Organization (ILO) standard techniques and interpreted using the ILO classification system. The presence or absence of pleural thickening or interstitial abnormalities shall be noted. Pulmonary function reports including a description of equipment used, method of calibration, and the predicted values used. A hard copy of all pulmonary function tracings must be available for review. The report must contain at a minimum FEV1 and FVC and a narrative summary of an interpretation of the test results and their validity.

(ix) The rating of respiratory impairment. The rating of respiratory impairment shall be based on the pulmonary function test most appropriate to the respiratory condition. A pre-bronchodilator and postbronchodilator test must be performed on and results reported for all patients with demonstrated airway obstruction. The largest FEV1 or FVC, on either the prebronchodilator or postbronchodilator trial must be used for rating the impairment. If the FEV1 and FEV1/FVC result in different categories of impairment, the value resulting in a higher category of impairment will be used.

(x) The rating of persisting variable respiratory impairment with abnormal baseline function. If resting FEV1 is "abnormal" (below eighty percent predicted) and shows significant bronchodilator improvement (a greater than or equal to fifteen percent improvement in FEV1) one category of impairment must be added to the given category rating, but only when the work-related disease being rated is obstructive in nature. If there is substantial variability from test to test

(and good effort), the severity of impairment may be rated, using the best fit into the category system, as described in WAC 296-20-380.

(xi) The rating of persisting variable respiratory impairment with normal baseline spirometry. Variable respiratory impairment due to allergic or irritative disorder of the respiratory tract, such as bronchial asthma or reactive airway disease, caused or permanently aggravated by factors in the work place, shall be evaluated by detailed narrative report, including the casual relationship to work factors, a discussion of the relative importance of nonwork related cofactors, such as preexisting asthma, tobacco usage, or other personal habits, the need for regular medication to substantially improve or control the respiratory condition, and the prognosis. When tests of ventilatory function, done when the patient is in clinical steady state, are normal (one second forced expiratory volume eighty percent or greater of predicted), an appropriate provocative bronchial challenge test (i.e., methacholine or histamine) shall be done to demonstrate the presence of unusual respiratory sensitivity.

(xii) At the time of the rating, the patient shall be off theophylline for at least twenty-four hours, beta agonists for at least twelve hours, and oral and/or inhaled steroids or cromolyn for at least two weeks, in order to determine severity of air-flow obstruction, unattenuated by therapy. If withdrawal of medication would produce a hazardous or life threatening condition, then the impairment cannot be rated at this time, and the physician must provide a statement describing the patient's condition and the effect of medication withdrawal.

(xiii) The method for standardizing provocative bronchial challenge testing, using either histamine or methacholine, shall be used. The test drug may be given either by continuous tidal volume inhalation of known concentrations, using an updraft nebulizer, for two minutes, or by the technique of intermittent deep breaths of increasing test drug strengths either via a Rosenthal dosimeter or updraft nebulizer, and the results shall be expressed either as the mg/ml concentration of test drug, or the cumulative breath units (1 breath of a 1 mg/ml solution equals one breath unit) which result in a prompt and sustained (at least three minute) fall in the FEV1, greater than twenty percent below baseline FEV1. Medications that can blunt the effect of bronchoprovocation testing shall be withheld prior to testing. Once testing is complete, the results shall be expressed in terms of normal, mild, moderate, or marked bronchial reactivity, as described in WAC 296-20-385.

If multiple bronchoprovocative inhalation challenge tests have been done, the examining physician shall select the one category (normal, mild, moderate, or marked) which most accurately indicates the overall degree of permanent impairment at the time of rating.

If the results of serial pulmonary function testing are extremely variable and the clinical course and use of medication also indicate major impairment, then the physician must make a statement in the formulation and medical evaluation containing, at a minimum: Diagnosis and whether work related or nonwork related; nature and frequency of treatment; stability of condition and work limitations; impairment.

(xiv) Further treatment needs. In all cases, the examining physician shall indicate whether further treatment is indicated and the nature, type, frequency, and duration of treatment recommended.

[Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.32.080(2), 94-03-073, § 296-20-370, filed 1/17/94, effective 3/1/94. Statutory Authority: RCW 51.04.020(4) and 51.04.030. 82-24-050 (Order 82-39), § 296-20-370, filed 11/29/82, effective 1/1/83; Order 74-32, § 296-20-370, filed 6/21/74, effective 10/1/74.]

WAC 296-20-380 Categories of permanent respiratory impairments. (1) The FVC and FEV1 are greater than or equal to eighty percent of predicted normal for the person's age, gender, and height. The FEV1/FVC ratio is greater than or equal to .70. Subjective complaints may be present or absent. If exercise testing is done, the maximum oxygen consumption is greater than 25cc/kilo/min.

(2) The FVC or FEV1 is from seventy to seventy-nine percent of predicted, and if obstruction is present, the FEV1/FVC ratio is .60 - .69. If exercise testing is done, the maximum oxygen consumption is 22.5-25cc/kilo/min.

(3) The FVC or FEV1 is from sixty to sixty-nine percent of predicted, and if obstruction is present, the FEV1/FVC ratio is .60 - .69. If exercise testing is done, the maximum oxygen consumption is 20-22.4cc/kilo/min.

(4) The FVC or FEV1 is from fifty-one to fifty-nine percent of predicted. The FEV1/FVC ratio is .51 - .59. If exercise testing is done, the maximum oxygen consumption is 17.5-19.9cc/kilo/min.

(5) FVC from fifty-one to fifty-nine percent of predicted, or the FEV1 from forty-one to fifty percent of predicted, and if obstruction is present, the FEV1/FVC ratio is .41 - .50. If exercise testing is done, the maximum oxygen consumption is 15-17.4cc/kilo/min.

(6) The FVC is equal to or less than fifty percent of predicted or the FEV1 is equal to or less than forty percent of predicted. The FEV1/FVC ratio is equal to or less than .40. If exercise testing is done, the maximum oxygen consumption is less than 15cc/kilo/min.

[Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.32.080(2), 94-03-073, § 296-20-380, filed 1/17/94, effective 3/1/94. Statutory Authority: RCW 51.04.020(4) and 51.04.030. 82-24-050 (Order 82-39), § 296-20-380, filed 11/29/82, effective 1/1/83; Order 74-32, § 296-20-380, filed 6/21/74, effective 10/1/74.]

WAC 296-20-385 Categories of persisting variable respiratory impairment with normal baseline spirometry.

(1) "Normal" bronchial reactivity is demonstrated by an insignificant (less than twenty percent) fall from baseline FEV1 at test doses of histamine or methacholine, up to 16 mg/ml (continuous inhalation method) or up to 160 breath units (cumulative, repeated deep breath technique).

(2) "Mild" bronchial hyperactivity (BHR) is a significant (equal to or greater than twenty percent) fall in the FEV1 at test doses of 2.1-16 mg/ml, or 21-160 breath units.

(3) "Moderate" BHR is a significant (equal to or greater than twenty percent) fall in the FEV1 at test doses of 0.26-2 mg/ml, or 2.6-20 breath units.

(4) "Marked" BHR is a significant (equal to or greater than twenty percent) fall in the FEV1 at test doses equal to or less than .25 mg/ml, or 2.5 breath units.

[Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.32.080(2). 94-03-073, § 296-20-385, filed 1/17/94, effective 3/1/94.]

WAC 296-20-390 Air passage impairments. (1) Rule for evaluation of permanent air passage impairments:

(a) Categories 2, 3, 4 and 5 include the presence of complaints of whatever degree.

[Order 74-32, § 296-20-390, filed 6/21/74, effective 10/1/74.]

WAC 296-20-400 Categories of permanent air passage impairments. (1) No objective findings are present. Subjective complaints may be present or absent.

(2) Objective findings of one or more of the following air passage defects: Partial obstruction of oropharynx, laryngopharynx, larynx, trachea, bronchi, complete obstruction of nasopharynx or of nasal passages bilaterally. No dyspnea caused by the air passage defect even on activity requiring prolonged exertion or intensive effort.

(3) Objective findings of one or more of the following air passage defects: Partial obstruction of oropharynx, laryngopharynx, larynx, trachea, bronchi, complete obstruction of nasopharynx or of nasal passages bilaterally, dyspnea caused by the air passage defect produced only by prolonged exertion or intensive effort.

(4) Objective findings of one or more of the following air passage defects: Partial obstruction of oropharynx, laryngopharynx, larynx, trachea, bronchi, complete obstruction of nasopharynx or of nasal passages bilaterally, with permanent tracheostomy or stoma, dyspnea caused by the air passage defect produced only by prolonged exertion or intensive effort.

(5) Objective findings of one or more of the following air passage defects: Partial obstruction of oropharynx, laryngopharynx, larynx, trachea, bronchi, with or without permanent tracheostomy or stoma if dyspnea is produced by moderate exertion.

(6) Objective findings of one or more of the following air passage defects: Partial obstruction of oropharynx, laryngopharynx, larynx, trachea, bronchi, with or without permanent tracheostomy or stoma if dyspnea is produced by mild exertion.

[Statutory Authority: RCW 51.04.020(4) and 51.04.030. 83-16-066 (Order 83-23), § 296-20-400, filed 8/2/83; Order 74-32, § 296-20-400, filed 6/21/74, effective 10/1/74.]

WAC 296-20-410 Nasal septum impairments. (1) Rules for evaluation of permanent air passage impairments due to nasal septum perforation.

(a) These categories, if appropriate, are to be used in addition to the categories of permanent air passage impairment.

(b) Categories 1 and 2 include complaints of whatever degree.

[Order 74-32, § 296-20-410, filed 6/21/74, effective 10/1/74.]

WAC 296-20-420 Categories of permanent air passage impairment due to nasal septum perforations. (1) Perforation or perforations posterior to the cartilaginous septum.

(2) Perforation or perforations through or anterior to the cartilaginous septum.

(2007 Ed.)

[Order 74-32, § 296-20-420, filed 6/21/74, effective 10/1/74.]

WAC 296-20-430 Loss of taste and smell. (1) Rule for evaluation of permanent loss of taste and smell.

(a) If the person being examined can detect any odor or taste, even though it cannot be named, no category shall be assigned.

[Order 74-32, § 296-20-430, filed 6/21/74, effective 10/1/74.]

WAC 296-20-440 Categories of permanent loss of taste and smell. (1) Loss of sense of taste.

(2) Loss of sense of smell.

[Order 74-32, § 296-20-440, filed 6/21/74, effective 10/1/74.]

WAC 296-20-450 Speech impairments. (1) Rules for evaluation of permanent speech impairments.

(a) The physician making an examination for evaluation of permanent speech impairment should have normal hearing and the examination should be conducted in a reasonably quiet office which approximates the noise level conditions of everyday living.

(b) Selection of the appropriate category of permanent speech impairment shall be based on direct observation of the speech of the person being examined, including, but not limited to: Response to interview, oral reading, and counting aloud. The observation shall be made with the physician about eight feet from the person being examined both when he faces the physician and with his back to the physician.

[Order 74-32, § 296-20-450, filed 6/21/74, effective 10/1/74.]

WAC 296-20-460 Categories of permanent speech impairments. (1) No objective findings of significant speech impairment are present. Subjective complaints may be present or absent.

(2) Can produce speech of sufficient audibility, intelligibility and functional efficiency for most everyday needs, although this may require effort and occasionally exceed capacity; listeners may occasionally ask for repetition and it may be difficult to produce some elements of speech, and there may be slow speaking and hesitation.

(3) Can produce speech of sufficient audibility, intelligibility and functional efficiency for many everyday needs, is usually heard under average conditions but may have difficulty in automobiles, busses, trains, or enclosed areas; can give name, address, and be understood by a stranger, but may have numerous inaccuracies and have difficulty articulating; speech may be interrupted, hesitant or slow.

(4) Can produce speech of sufficient audibility, intelligibility and functional efficiency for some everyday needs such as close conversation, conversation with family and friends, but has considerable difficulty in noisy places; voice tires rapidly and tends to become inaudible in a few seconds, strangers may find patient difficult to understand; patient may be asked to repeat often, and often can only sustain consecutive speech for brief periods.

(5) Can produce speech of sufficient audibility, intelligibility and functional efficiency for few everyday needs; can barely be heard by a close listener or over the telephone; may be able to whisper audibly but has no voice; can produce some speech elements; may have approximation of a few

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words such as names of family members which are, however, unintelligible out of context; cannot maintain uninterrupted speech flow, speech is labored, and its rate is impractically slow.

(6) Is unable to produce speech of sufficient audibility, intelligibility and functional efficiency for any everyday needs.

[Order 74-32, § 296-20-460, filed 6/21/74, effective 10/1/74.]

WAC 296-20-470 Skin impairments. (1) Rules for evaluation of permanent skin impairments.

(a) Evaluation of permanent impairment of the skin shall be based upon actual loss of function and cosmetic factors shall not be considered.

(b) Categories 2, 3, 4, 5 and 6 include the presence of complaints of whatever degree.

[Order 74-32, § 296-20-470, filed 6/21/74, effective 10/1/74.]

WAC 296-20-480 Categories of permanent skin impairments. (1) Objective findings of skin disorder may be present or absent but there is no or minimal limitation in daily activities. Subjective complaints may be present or absent.

(2) Objective findings of skin disorder are present and there is discomfort and minimal limitation in the performance of daily activities.

(3) Objective findings of skin disorder are present and there is limitation in some daily activities, including avoidance of and protective measures against certain chemical or physical agents. Intermittent symptomatic treatment is required.

(4) Objective findings of skin disorder are present and there is limitation in many daily activities, including avoidance of and protective measures against certain chemical or physical agents. Continuous symptomatic treatment is required.

(5) Objective findings of skin disorder are present and there is limitation in most daily activities, including avoidance of and protective measures against certain chemical or physical agents. Continuous symptomatic treatment is required.

(6) Objective findings of skin disorder are present and there is limitation in all daily activities, including avoidance of and protective measures against certain chemical or physical agents. Continuous symptomatic treatment is required.

[Order 74-32, § 296-20-480, filed 6/21/74, effective 10/1/74.]

WAC 296-20-490 Impairment of the upper digestive tract, stomach, esophagus or pancreas. (1) Rule for evaluation of permanent impairments of the upper digestive tract, stomach, esophagus or pancreas.

(a) Categories 2, 3, 4 and 5 include complaints of whatever degree.

[Order 74-32, § 296-20-490, filed 6/21/74, effective 10/1/74.]

WAC 296-20-500 Categories of permanent impairments of the upper digestive tract, stomach, esophagus or pancreas. (1) No objective findings are present. Subjective complaints may be present or absent.

(2) There are objective findings of digestive tract impairment but no anatomic loss or alteration, continuous treatment

is not required and weight can be maintained at the medically appropriate level.

(3) There are objective findings of digestive tract impairment, or there is anatomic loss or alteration. Dietary restrictions and drugs control symptoms, signs and/or nutritional state, and weight can be maintained at at least 90 percent of medically appropriate level.

(4) There are objective findings of digestive tract impairment, or there is anatomic loss or alteration. Dietary restrictions and drugs do not completely control symptoms, signs and/or nutritional state. Weight can be maintained at 80-90 percent of medically appropriate level.

(5) There are objective findings of digestive tract impairment, or there is anatomic loss or alteration. Dietary restrictions and drugs do not control symptoms, signs and/or nutritional state. Weight cannot be maintained as high as 80 percent of medically appropriate level.

[Order 74-32, § 296-20-500, filed 6/21/74, effective 10/1/74.]

WAC 296-20-510 Lower digestive tract impairments. (1) Rule for evaluation of permanent lower digestive tract impairments.

(a) Categories 2, 3 and 4 include the presence of complaints of whatever degree.

[Order 74-32, § 296-20-510, filed 6/21/74, effective 10/1/74.]

WAC 296-20-520 Categories of permanent lower digestive tract impairments. (1) No objective findings of impairment of lower digestive tract. Subjective complaints may be present or absent.

(2) The objective findings of lower digestive tract impairment are infrequent and of brief duration, and there is limitation of activities, but special diet or medication is not required, and there are neither systemic manifestations nor impairment of nutrition.

(3) There are objective findings of lower digestive tract impairment or anatomic loss or alteration and mild gastrointestinal symptoms with occasional disturbance of bowel function, accompanied by moderate pain and minimal restriction of diet; mild symptomatic therapy may be necessary; no impairment of nutrition.

(4) There are moderate to marked intermittent bowel disturbances with continual or periodic pain; there is restriction of activities and diet during exacerbations, there are constitutional manifestations such as fever, anemia or weight loss. Includes but is not limited to any permanent ileostomy or colostomy.

[Order 74-32, § 296-20-520, filed 6/21/74, effective 10/1/74.]

WAC 296-20-530 Impairment of anal function. (1) Rule for evaluation of permanent impairment of anal function.

(a) Categories 2, 3 and 4 include the presence of complaints of whatever degree.

[Order 74-32, § 296-20-530, filed 6/21/74, effective 10/1/74.]

WAC 296-20-540 Categories of permanent impairments of anal function. (1) No objective findings of impairment of anal function. Subjective complaints may be present or absent.

(2) There are objective findings of mild organic disease, anatomic loss or alteration with loss of anal function and mild incontinence involving gas and/or liquid stool.

(3) There are objective findings of moderate anal disease, anatomic loss or alteration with loss of anal function and moderate incontinence requiring continual care.

(4) There are objective findings of marked anal disease, anatomic loss, alteration and/or complete fecal incontinence.

[Order 74-32, § 296-20-540, filed 6/21/74, effective 10/1/74.]

WAC 296-20-550 Liver and biliary tract impairments. (1) Rule for evaluation of permanent liver and biliary tract impairments.

(a) Categories 2, 3, 4 and 5 include complaints of whatever degree.

[Order 74-32, § 296-20-550, filed 6/21/74, effective 10/1/74.]

WAC 296-20-560 Categories of permanent liver and biliary tract impairments. (1) There are no objective findings of impairment of the liver or biliary tract. Subjective complaints may be present or absent.

(2) There are objective findings on biochemical studies of minimal impairment of liver function with or without symptoms, or there are occasional episodes of loss of function of the biliary tract, but nutrition and strength are good.

(3) There are objective findings on biochemical studies of mild impairment of liver function without symptoms, or there is recurrent biliary tract impairment, but no ascites, jaundice or bleeding esophageal varices and nutrition and strength are good.

(4) There are objective findings on biochemical studies of moderate impairment of liver function with jaundice, ascites, bleeding esophageal varices or gastric varices and nutrition and strength may be affected; or there is irreparable obstruction of the common bile duct with recurrent cholangitis.

(5) There are objective findings on biochemical studies of marked impairment of liver function and nutritional state is poor; or persistent jaundice, bleeding esophageal varices or gastric varices.

[Order 74-32, § 296-20-560, filed 6/21/74, effective 10/1/74.]

WAC 296-20-570 Impairments of the spleen, loss of one kidney, and surgical removal of the bladder with urinary diversion. (1) Rule for evaluation of permanent impairments of the spleen, loss of one kidney, and surgical removal of bladder with urinary diversion.

(a) Categories 1, 2 and 3 include complaints of whatever degree.

[Order 74-32, § 296-20-570, filed 6/21/74, effective 10/1/74.]

WAC 296-20-580 Categories of permanent impairment of the spleen, loss of one kidney, and surgical removal of bladder with urinary diversion. (1) Loss of spleen by splenectomy after age eight.

(2) Loss of one kidney by surgery or complete loss of function of one kidney.

(3) Surgical removal of bladder with urinary diversion.

[Order 74-32, § 296-20-580, filed 6/21/74, effective 10/1/74.]

(2007 Ed.)

WAC 296-20-590 Impairment of upper urinary tract. (1) Rule for evaluation of permanent impairment of upper urinary tract.

(a) Categories 2, 3, 4 and 5 include the presence of complaints of whatever nature.

[Order 74-32, § 296-20-590, filed 6/21/74, effective 10/1/74.]

WAC 296-20-600 Categories of permanent impairments of upper urinary tract. (1) No objective findings of impairment of upper urinary tract. Subjective complaints may be present or absent.

(2) Loss of upper urinary function as evidenced by creatinine clearance of 75 to 90 liters/24 hr. (52 to 62.5 ml/min) and PSP excretion of 15 percent to 20 percent in 15 minutes; or if there are intermittent objective findings of upper urinary tract disease or dysfunction not requiring continuous treatment or surveillance.

(3) Loss of upper urinary tract function as evidenced by creatinine clearance of 60 to 75 liters/24 hr. (42 to 52 ml/min) and PSP excretion of 10 percent to 15 percent in 15 minutes; or although function is greater than these levels, there are objective findings of upper urinary tract disease or dysfunction requiring continuous surveillance and frequent symptomatic treatment.

(4) Loss of upper urinary tract function as evidenced by creatinine clearance of 40 to 60 liters/24 hr. (28 to 42 ml/min) and PSP excretion of 5 percent to 10 percent in 15 minutes; or although function is greater than these levels, there are objective findings of mild or moderate upper urinary tract disease or dysfunction which can be only partially controlled.

(5) Loss of upper urinary tract function as evidenced by creatinine clearance below 40 liters/24 hr. (28 ml/min) and PSP excretion below 5 percent in 15 minutes; or although function is greater than these levels there are objective findings of severe upper urinary tract disease or dysfunction which persists despite continuous treatment.

[Order 74-32, § 296-20-600, filed 6/21/74, effective 10/1/74.]

WAC 296-20-610 Additional permanent impairments of upper urinary tract due to surgical diversion. (1) Rule for evaluation of additional permanent impairments of upper urinary tract due to surgical diversion.

(a) These categories include the presence of complaints of whatever degree.

[Order 74-32, § 296-20-610, filed 6/21/74, effective 10/1/74.]

WAC 296-20-620 Categories of additional permanent impairments of upper urinary tract due to surgical diversion. (1) Uretero-intestinal diversion or cutaneous ureterostomy without intubation.

(2) Nephrostomy or intubated ureterostomy.

[Order 74-32, § 296-20-620, filed 6/21/74, effective 10/1/74.]

WAC 296-20-630 Impairment of bladder function. (1) Rules for evaluation of permanent impairment of bladder function.

(a) In making examinations for evaluation of impairments of bladder function, physicians shall use objective techniques including, but not limited to, cystoscopy, cystog-

raphy, voiding cystourethrography, cystometry, uroflometry, urinalysis and urine culture.

(b) Categories 2, 3, 4 and 5 include the presence of complaints of whatever degree.

[Order 74-32, § 296-20-630, filed 6/21/74, effective 10/1/74.]

WAC 296-20-640 Categories of permanent impairments of bladder function. (1) No objective findings are present. Subjective complaints may be present or absent.

(2) Objective findings of bladder dysfunction, intermittent treatment required, but there is no dysfunction between such intermittent attacks.

(3) Objective findings of bladder dysfunction, continuous treatment required or there is good bladder reflex activity but no voluntary control.

(4) Objective findings of bladder dysfunction, there is poor reflex activity with intermittent dribbling and no voluntary control.

(5) Objective findings of bladder dysfunction, there is no reflex or voluntary control and there is continuous dribbling.

[Order 74-32, § 296-20-640, filed 6/21/74, effective 10/1/74.]

WAC 296-20-650 Anatomical or functional loss of testes. (1) Rule for evaluation of permanent anatomical or functional loss of testes.

(a) Categories 2, 3, 4 and 5 include the presence of whatever complaints.

[Order 74-32, § 296-20-650, filed 6/21/74, effective 10/1/74.]

WAC 296-20-660 Categories of permanent anatomical or functional loss of testes. (1) No objective findings. Subjective complaints may be present or absent.

(2) Anatomical or functional loss of one testicle.

(3) Anatomical or functional loss of both testes after the age of 65.

(4) Anatomical or functional loss of both testes between the ages of 40 and 65.

(5) Anatomical or functional loss of both testes before the age of 40.

[Order 74-32, § 296-20-660, filed 6/21/74, effective 10/1/74.]

WAC 296-20-670 Disability. (1) The rules for determining disability are as follows:

(a) The determination of the percentage of disability in terms of total bodily impairment for any category is solely an administrative function and shall be done only in accordance with the tables of disability listed in WAC 296-20-680 and 296-20-690, or as otherwise provided in this chapter.

(b) When the industrial injury or occupational disease has caused further impairment to a bodily area where permanent bodily impairment existed prior to the industrial injury or occupational disease, the department shall award the percentage difference between the disability for the category of impairment which preexisted the industrial injury or occupational disease and the disability for the category of permanent impairment existing after the industrial injury or occupational disease.

(c) Neither the combined values chart provided in the guides to the evaluation of permanent impairment nor any other formula for the combination of the disabilities to differ-

ent body areas or organ systems used in any other nationally recognized guide for determining bodily impairments shall be applied in computing the amount of disabilities to be awarded under these rules.

(d) Except as otherwise specifically provided, a percentage of total bodily impairment in one body area or system shall not be added to or combined with a percentage of total bodily impairment from another body area or system; the percentages for each body area or system shall be stated separately.

[Order 74-32, § 296-20-670, filed 6/21/74, effective 10/1/74.]

WAC 296-20-680 Classification of disabilities in proportion to total bodily impairment.

(1) Permanent Cervical and Cervico-Dorsal Impairments

Category	1	0%
	2	10%
	3	20%
	4	25%
	5	35%

(2) Permanent Dorsal Region Impairments

Category	1	0%
	2	10%
	3	20%

(3) Permanent Dorso-Lumbar and Lumbosacral Impairments

Category	1	0%
	2	5%
	3	10%
	4	15%
	5	25%
	6	40%
	7	60%
	8	75%

(4) Permanent Impairments of the Pelvis

Category	1	0%
	2	2%
	3	5%
	4	5%
	5	5%
	6	5%
	7	10%
	8	10%
	9	15%

(5) Permanent Convulsive Neurologic Impairments

Category	1	0%
	2	10%
	3	35%
	4	60%

(6) Permanent Mental Health Impairments

Category	1	0%
	2	10%
	3	25%
	4	45%
	5	70%

(7) <u>Permanent Cardiac Impairments</u>		
Category	1	0%
	2	10%
	3	20%
	4	35%
	5	50%
	6	65%
(8) <u>Permanent Respiratory Impairments</u>		
Category	1	0%
	2	15%
	3	25%
	4	40%
	5	65%
	6	75%
(9) <u>Permanent Variable Respiratory Impairment with Normal Baseline Spirometry</u>		
Category	1	0%
	2	5%
	3	10%
	4	15%
(10) <u>Permanent Air Passage Impairments</u>		
Category	1	0%
	2	5%
	3	15%
	4	25%
	5	35%
	6	60%
(11) <u>Permanent Air Passage Impairments Due to Nasal Septum Perforations</u>		
Category	1	0%
	2	2%
(12) <u>Permanent Loss of Taste and Smell</u>		
Category	1	3%
	2	3%
(13) <u>Permanent Speech Impairments</u>		
Category	1	0%
	2	5%
	3	10%
	4	20%
	5	30%
	6	35%
(14) <u>Permanent Skin Impairments</u>		
Category	1	0%
	2	5%
	3	10%
	4	25%
	5	40%
	6	60%
(15) <u>Permanent Impairments of Upper Digestive Tract, Stomach, Esophagus or Pancreas</u>		
Category	1	0%
	2	5%
	3	10%
	4	35%
	5	60%
(16) <u>Permanent Impairments of Lower Digestive Tract</u>		
Category	1	0%
	2	5%
	3	15%
	4	30%

(17) <u>Permanent Impairments of Anal Function</u>		
Category	1	0%
	2	5%
	3	15%
	4	25%
(18) <u>Permanent Impairments of Liver and Biliary Tract</u>		
Category	1	0%
	2	5%
	3	20%
	4	40%
	5	60%
(19) <u>Permanent Impairments of the Spleen, Loss of One Kidney, and Surgical Removal of Bladder with Urinary Diversion</u>		
Category	1	15%
	2	10%
	3	20%
(20) <u>Permanent Impairments of Upper Urinary Tract</u>		
Category	1	0%
	2	10%
	3	25%
	4	45%
	5	65%
(21) <u>Additional Permanent Impairments of Upper Urinary Tract Due to Surgical Diversion</u>		
Category	1	10%
	2	15%
(22) <u>Permanent Impairments of Bladder Function</u>		
Category	1	0%
	2	10%
	3	20%
	4	30%
	5	50%
(23) <u>Permanent Anatomical or Functional Loss of Testes</u>		
Category	1	0%
	2	5%
	3	10%
	4	25%
	5	35%

[Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.32.080(2). 94-03-073, § 296-20-680, filed 1/17/94, effective 3/1/94. Statutory Authority: Chapters 34.04 [34.05], 51.04, 51.32 and 51.36 RCW. 90-04-007, § 296-20-680, filed 1/26/90, effective 2/26/90. Statutory Authority: RCW 51.04.020(4), 51.04.030, and 51.16.120(3). 81-01-100 (Order 80-29), § 296-20-680, filed 12/23/80, effective 3/1/81; Order 74-32, § 296-20-680, filed 6/21/74, effective 10/1/74.]

WAC 296-20-690 Permanent impairments of the cervico-dorsal (WAC 296-20-240) and lumbosacral regions (WAC 296-20-280) jointly.

(1) <u>Permanent Cervical and Cervicodorsal Impairment Category 1 Plus Permanent Dorsolumbar and Lumbosacral Impairment</u>		
Category	1	0%
	2	5%
	3	10%
	4	15%
	5	25%
	6	40%
	7	60%
	8	75%

(2) Cervical-Cervicodorsal Category 2 Plus Dorsolumbar-Lumbosacral			296-21-011	<p>92-24-066, filed 12/1/92, effective 1/1/93. Statutory Authority: RCW 51.04.020(4) and 51.04.030.</p> <p>Footnotes. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 91-17-038, § 296-21-011, filed 8/16/91, effective 9/30/91; 87-03-005 (Order 86-47), § 296-21-011, filed 1/8/87; 86-06-032 (Order 86-19), § 296-21-011, filed 2/28/86, effective 4/1/86; 83-16-066 (Order 83-23), § 296-21-011, filed 8/2/83. Statutory Authority: RCW 51.04.020(4), 51.04.030, and 51.16.120(3). 81-24-041 (Order 81-28), § 296-21-011, filed 11/30/81, effective 1/1/82; 81-01-100 (Order 80-29), § 296-21-011, filed 12/23/80, effective 3/1/81; Order 74-7, § 296-21-011, filed 1/30/74.] Repealed by 92-24-066, filed 12/1/92, effective 1/1/93. Statutory Authority: RCW 51.04.020(4) and 51.04.030.</p>
Category	1	10%		
	2	15%		
	3	20%		
	4	25%		
	5	35%		
	6	50%		
	7	70%		
	8	75%		
(3) Cervical Cervicodorsal Category 3 Plus Dorsolumbar-Lumbosacral			296-21-013	<p>Special services and billing procedures. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 91-07-008, § 296-21-013, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-21-013, filed 8/10/89, effective 9/10/89; 87-24-050 (Order 87-23), § 296-21-013, filed 11/30/87, effective 1/1/88; 87-16-004 (Order 87-18), § 296-21-013, filed 7/23/87; 86-06-032 (Order 86-19), § 296-21-013, filed 2/28/86, effective 4/1/86; 83-16-066 (Order 83-23), § 296-21-013, filed 8/2/83. Statutory Authority: RCW 51.04.020(4), 51.04.030, and 51.16.120(3). 81-24-041 (Order 81-28), § 296-21-013, filed 11/30/81, effective 1/1/82; 81-01-100 (Order 80-29), § 296-21-013, filed 12/23/80, effective 3/1/81; Order 74-39, § 296-21-013, filed 11/22/74, effective 1/1/75; Order 74-7, § 296-21-013, filed 1/30/74.] Repealed by 92-24-066, filed 12/1/92, effective 1/1/93. Statutory Authority: RCW 51.04.020(4) and 51.04.030.</p>
Category	1	20%		
	2	25%		
	3	30%		
	4	35%		
	5	45%		
	6	55%		
	7	70%		
	8	75%		
(4) Cervical-Cervicodorsal Category 4 Plus Dorsolumbar-Lumbosacral			296-21-014	<p>Unlisted service or procedure. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 89-17-039 (Order 89-09), § 296-21-014, filed 8/10/89, effective 9/10/89. Statutory Authority: RCW 51.04.020(4), 51.04.030, and 51.16.120(3). 81-01-100 (Order 80-29), § 296-21-014, filed 12/23/80, effective 3/1/81; Order 76-34, § 296-21-014, filed 11/24/76, effective 1/1/77.] Repealed by 92-24-066, filed 12/1/92, effective 1/1/93. Statutory Authority: RCW 51.04.020(4) and 51.04.030.</p>
Category	1	25%		
	2	30%		
	3	35%		
	4	40%		
	5	45%		
	6	55%		
	7	70%		
	8	80%		
(5) Cervical-Cervicodorsal Category 5 Plus Dorsolumbar-Lumbosacral			296-21-01401	<p>Special report. [Order 76-34, § 296-21-01401, filed 11/24/76, effective 1/1/77.] Repealed by 92-24-066, filed 12/1/92, effective 1/1/93. Statutory Authority: RCW 51.04.020(4) and 51.04.030.</p>
Category	1	35%		
	2	40%		
	3	45%		
	4	50%		
	5	55%		
	6	65%		
	7	70%		
	8	80%		

[Order 74-32, § 296-20-690, filed 6/21/74, effective 10/1/74.]

Chapter 296-21 WAC

REIMBURSEMENT POLICIES: PSYCHIATRIC SERVICES, BIOFEEDBACK, PHYSICAL MEDICINE

WAC

SPECIFIC THERAPEUTIC PROCEDURES

296-21-270	Psychiatric services.
296-21-280	Biofeedback rules.
296-21-290	Physical medicine.

DISPOSITION OF SECTIONS FORMERLY CODIFIED IN THIS CHAPTER

296-21-010	General information and instructions. [Statutory Authority: RCW 51.04.020(4), 51.04.030, and 51.16.120(3). 81-24-041 (Order 81-28), § 296-21-010, filed 11/30/81, effective 1/1/82; 81-01-100 (Order 80-29), § 296-21-010, filed 12/23/80, effective 3/1/81; Order 74-7, § 296-21-010, filed 1/30/74; Order 70-12, § 296-21-010, filed 12/1/70, effective 1/1/71; Order 68-7, § 296-21-010, filed 11/27/68, effective 1/1/69.] Repealed by	296-21-020	Home or nursing (convalescent) home visits. [Order 68-7, § 296-21-020, filed 11/27/68, effective 1/1/69.] Repealed by Order 74-7, filed 1/30/74.
		296-21-025	Hospital visits. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 87-16-004 (Order 87-18), § 296-21-025, filed 7/23/87. Statutory Authority: RCW 51.04.020(4), 51.04.030, and 51.16.120(3). 81-24-041 (Order 81-28), § 296-21-025, filed 11/30/81, effective 1/1/82; 81-01-100 (Order 80-29), § 296-21-025, filed 12/23/80, effective 3/1/81; Order 76-34, § 296-21-025, filed 11/24/76, effective 1/1/77; Order 74-39, § 296-21-025, filed 11/22/74, effective 4/1/75; Order 74-7, § 296-21-025, filed 1/30/74; Order 70-12, § 296-21-025, filed 12/1/70, effective 1/1/71; Order 68-7, § 296-21-025, filed 11/27/68, effective 1/1/69.] Repealed by 94-14-044, filed 6/29/94, effective 7/30/94. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.
		296-21-026	Extended care facility, convalescent hospital, and nursing home. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 87-16-004 (Order 87-18), § 296-21-026, filed 7/23/87; Order 76-34, § 296-21-026, filed 11/24/76, effective 1/1/77; Order 74-39, § 296-21-026, filed 11/22/74, effective 4/1/75; Order 74-7, § 296-21-026, filed 1/30/74.] Repealed by 94-14-044, filed

	6/29/94, effective 7/30/94. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.		
296-21-027	Emergency room service. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 91-07-008, § 296-21-027, filed 3/8/91, effective 5/1/91; 87-16-004 (Order 87-18), § 296-21-027, filed 7/23/87; 86-06-032 (Order 86-19), § 296-21-027, filed 2/28/86, effective 4/1/86. Statutory Authority: RCW 51.04.020(4), 51.04.030, and 51.16-120(3). 81-24-041 (Order 81-28), § 296-21-027, filed 11/30/81, effective 1/1/82; 81-01-100 (Order 80-29), § 296-21-027, filed 12/23/80, effective 3/1/81; Order 76-34, § 296-21-027, filed 11/24/76, effective 1/1/77; Order 74-39, § 296-21-027, filed 11/22/74, effective 4/1/75; Order 74-7, § 296-21-027, filed 1/30/74.] Repealed by 94-14-044, filed 6/29/94, effective 7/30/94. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.	296-21-050	Psychiatric services. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 91-07-008, § 296-21-050, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-21-050, filed 8/10/89, effective 9/10/89; 86-06-032 (Order 86-19), § 296-21-050, filed 2/28/86, effective 4/1/86. Statutory Authority: RCW 51.04.020(4), 51.04.030, and 51.16.120(3). 81-24-041 (Order 81-28), § 296-21-050, filed 11/30/81, effective 1/1/82; 81-01-100 (Order 80-29), § 296-21-050, filed 12/23/80, effective 3/1/81; Order 74-7, § 296-21-050, filed 1/30/74; Order 68-7, § 296-21-050, filed 11/27/68, effective 1/1/69.] Repealed by 92-24-066, filed 12/1/92, effective 1/1/93. Statutory Authority: RCW 51.04.020(4) and 51.04.030.
296-21-030	Consultations. [Statutory Authority: RCW 51.04.020 (4) and 51.04.030. 89-17-039 (Order 89-09), § 296-21-030, filed 8/10/89, effective 9/10/89; 87-16-004 (Order 87-18), § 296-21-030, filed 7/23/87; 86-06-032 (Order 86-19), § 296-21-030, filed 2/28/86, effective 4/1/86. Statutory Authority: RCW 51.04.020(4), 51.04.030, and 51.16.120(3). 81-24-041 (Order 81-28), § 296-21-030, filed 11/30/81, effective 1/1/82; 81-01-100 (Order 80-29), § 296-21-030, filed 12/23/80, effective 3/1/81; Order 74-7, § 296-21-030, filed 1/30/74; Order 70-12, § 296-21-030, filed 12/1/70, effective 1/1/71; Order 68-7, § 296-21-030, filed 11/27/68, effective 1/1/69.] Repealed by 94-14-044, filed 6/29/94, effective 7/30/94. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.	296-21-0501	Biofeedback rules. [Statutory Authority: RCW 51.04.-020(4) and 51.04.030. 91-07-008, § 296-21-0501, filed 3/8/91, effective 5/1/91; 86-20-074 (Order 86-36), § 296-21-0501, filed 10/1/86, effective 11/1/86. Statutory Authority: RCW 51.04.020(4), 51.04.030, and 51.16.-120(3). 81-24-041 (Order 81-28), § 296-21-0501, filed 11/30/81, effective 1/1/82; 81-01-100 (Order 80-29), § 296-21-0501, filed 12/23/80, effective 3/1/81.] Repealed by 92-24-066, filed 12/1/92, effective 1/1/93. Statutory Authority: RCW 51.04.020(4) and 51.04.030.
296-21-035	Independent medical examinations. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 89-08-001 (Order 89-01), § 296-21-035, filed 3/23/89, effective 9/1/89; 88-14-012 (Order 88-09), § 296-21-035, filed 6/24/88; 87-16-004 (Order 87-18), § 296-21-035, filed 7/23/87; Order 74-7, § 296-21-035, filed 1/30/74; Order 68-7, § 296-21-035, filed 11/27/68, effective 1/1/69.] Repealed by 92-24-066, filed 12/1/92, effective 1/1/93. Statutory Authority: RCW 51.04.020(4) and 51.04.030.	296-21-0502	Biofeedback. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 86-20-074 (Order 86-36), § 296-21-0502, filed 10/1/86, effective 11/1/86; 86-06-032 (Order 86-19), § 296-21-0502, filed 2/28/86, effective 4/1/86. Statutory Authority: RCW 51.04.020(4), 51.04.030, and 51.16.120(3). 81-01-100 (Order 80-29), § 296-21-0502, filed 12/23/80, effective 3/1/81.] Repealed by 92-24-066, filed 12/1/92, effective 1/1/93. Statutory Authority: RCW 51.04.020(4) and 51.04.030.
296-21-037	Examination reports. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 89-08-001 (Order 89-01), § 296-21-037, filed 3/23/89, effective 9/1/89.] Repealed by 92-24-066, filed 12/1/92, effective 1/1/93. Statutory Authority: RCW 51.04.020(4) and 51.04.030.	296-21-055	Other services. [Order 70-12, § 296-21-055, filed 12/1/70, effective 1/1/71; Order 68-7, § 296-21-055, filed 11/27/68, effective 1/1/69.] Repealed by Order 74-7, filed 1/30/74.
296-21-040	Independent medical examinations examiner. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 91-17-038, § 296-21-040, filed 8/16/91, effective 9/30/91; 89-08-001 (Order 89-01), § 296-21-040, filed 3/23/89, effective 9/1/89; 87-16-004 (Order 87-18), § 296-21-040, filed 7/23/87; 86-06-032 (Order 86-19), § 296-21-040, filed 2/28/86, effective 4/1/86; Order 75-39, § 296-21-040, filed 11/28/75, effective 1/1/76; Order 74-7, § 296-21-040, filed 1/30/74; Order 68-7, § 296-21-040, filed 11/27/68, effective 1/1/69.] Repealed by 92-24-066, filed 12/1/92, effective 1/1/93. Statutory Authority: RCW 51.04.020(4) and 51.04.030.	296-21-057	Monitoring services. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 89-17-039 (Order 89-09), § 296-21-057, filed 8/10/89, effective 9/10/89; 87-16-004 (Order 87-18), § 296-21-057, filed 7/23/87; 83-16-066 (Order 83-23), § 296-21-057, filed 8/2/83. Statutory Authority: RCW 51.04.020(4), 51.04.030, and 51.16.-120(3). 81-24-041 (Order 81-28), § 296-21-057, filed 11/30/81, effective 1/1/82; 81-01-100 (Order 80-29), § 296-21-057, filed 12/23/80, effective 3/1/81; Order 74-7, § 296-21-057, filed 1/30/74.] Repealed by 92-24-066, filed 12/1/92, effective 1/1/93. Statutory Authority: RCW 51.04.020(4) and 51.04.030.
296-21-045	Independent medical examinations—Two or more examiners. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 89-08-001 (Order 89-01), § 296-21-045, filed 3/23/89, effective 9/1/89; 87-16-004 (Order 87-18), § 296-21-045, filed 7/23/87; 86-06-032 (Order 86-19), § 296-21-045, filed 2/28/86, effective 4/1/86; Order 76-34, § 296-21-045, filed 11/24/76, effective 1/1/77; Order 75-39, § 296-21-045, filed 11/28/75, effective 1/1/76; Order 74-7, § 296-21-045, filed 1/30/74; Order 71-6, § 296-21-045, filed 6/1/71; Order 68-7, § 296-21-045, filed 11/27/68, effective 1/1/69.] Repealed by 92-24-066, filed 12/1/92, effective 1/1/93. Statutory Authority: RCW 51.04.020(4) and 51.04.030.	296-21-060	Specific diagnostic services. [Order 68-7, § 296-21-060, filed 11/27/68, effective 1/1/69.] Repealed by Order 74-7, filed 1/30/74.
296-21-046	Immunization injections. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 89-17-039 (Order 89-09), § 296-21-046, filed 8/10/89, effective 9/10/89; 87-16-004 (Order 87-18), § 296-21-046, filed 7/23/87; 86-06-032 (Order 86-19), § 296-21-046, filed 2/28/86, effective 4/1/86; 83-16-066 (Order 83-23), § 296-21-046, filed 8/2/83.] Repealed by 92-24-066, filed 12/1/92, effective 1/1/93. Statutory Authority: RCW 51.04.020(4) and 51.04.030.	296-21-062	Eye. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 89-17-039 (Order 89-09), § 296-21-062, filed 8/10/89, effective 9/10/89; 86-06-032 (Order 86-19), § 296-21-062, filed 2/28/86, effective 4/1/86; 83-16-066 (Order 83-23), § 296-21-062, filed 8/2/83. Statutory Authority: RCW 51.04.020(4), 51.04.030, and 51.16.120(3). 81-01-100 (Order 80-29), § 296-21-062, filed 12/23/80, effective 3/1/81; Order 74-7, § 296-21-062, filed 1/30/74. Formerly WAC 296-22-400 (part).] Repealed by 92-24-066, filed 12/1/92, effective 1/1/93. Statutory Authority: RCW 51.04.020(4) and 51.04.030.
296-21-047	Therapeutic injections. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 91-07-008, § 296-21-047, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-21-047, filed 8/10/89, effective 9/10/89; 83-16-	296-21-064	Ear. [Statutory Authority: RCW 51.04.020(4), 51.04.-030, and 51.16.120(3). 81-24-041 (Order 81-28), § 296-21-064, filed 11/30/81, effective 1/1/82; 81-01-100 (Order 80-29), § 296-21-064, filed 12/23/80, effective 3/1/81; Order 74-7, § 296-21-064, filed 1/30/74.] Repealed by 92-24-066, filed 12/1/92, effective 1/1/93. Statutory Authority: RCW 51.04.020(4) and 51.04.030.
		296-21-065	Nonsurgical operating room services. [Order 68-7, § 296-21-065, filed 11/27/68, effective 1/1/69.] Repealed by Order 74-7, filed 1/30/74.
		296-21-066	Cardiovascular. [Statutory Authority: RCW 51.04.020 (4) and 51.04.030. 91-07-008, § 296-21-066, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), §

	296-21-066, filed 8/10/89, effective 9/10/89; 87-16-004 (Order 87-18), § 296-21-066, filed 7/23/87; 86-06-032 (Order 86-19), § 296-21-066, filed 2/28/86, effective 4/1/86; 83-16-066 (Order 83-23), § 296-21-066, filed 8/2/83. Statutory Authority: RCW 51.04.020(4), 51.04.030, and 51.16.120(3). 81-01-100 (Order 80-29), § 296-21-066, filed 12/23/80, effective 3/1/81; Order 74-7, § 296-21-066, filed 1/30/74. Formerly WAC 296-21-060 (part).] Repealed by 92-24-066, filed 12/1/92, effective 1/1/93. Statutory Authority: RCW 51.04.020(4) and 51.04.030.	8/16/91, effective 9/30/91; 86-06-032 (Order 86-19), § 296-21-095, filed 2/28/86, effective 4/1/86; 83-16-066 (Order 83-23), § 296-21-095, filed 8/2/83. Statutory Authority: RCW 51.04.020(4), 51.04.030, and 51.16.120(3). 81-24-041 (Order 81-28), § 296-21-095, filed 11/30/81, effective 1/1/82; 81-01-100 (Order 80-29), § 296-21-095, filed 12/23/80, effective 3/1/81; Order 76-34, § 296-21-095, filed 11/24/76, effective 1/1/77; Order 74-39, § 296-21-095, filed 11/22/74, effective 1/1/75; Order 74-7, § 296-21-095, filed 1/30/74; Order 70-12, § 296-21-095, filed 12/1/70, effective 1/1/71; Order 68-7, § 296-21-095, filed 11/27/68, effective 1/1/69.] Repealed by 92-24-066, filed 12/1/92, effective 1/1/93. Statutory Authority: RCW 51.04.020(4) and 51.04.030.	
296-21-070	Pulmonary. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 89-17-039 (Order 89-09), § 296-21-070, filed 8/10/89, effective 9/10/89; 86-06-032 (Order 86-19), § 296-21-070, filed 2/28/86, effective 4/1/86; 83-16-066 (Order 83-23), § 296-21-070, filed 8/2/83. Statutory Authority: RCW 51.04.020(4), 51.04.030, and 51.16.120(3). 81-01-100 (Order 80-29), § 296-21-070, filed 12/23/80, effective 3/1/81; Order 74-7, § 296-21-070, filed 1/30/74; Order 68-7, § 296-21-070, filed 11/27/68, effective 1/1/69.] Repealed by 92-24-066, filed 12/1/92, effective 1/1/93. Statutory Authority: RCW 51.04.020(4) and 51.04.030.	296-21-125	Anesthesia. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 86-06-032 (Order 86-19), § 296-21-125, filed 2/28/86, effective 4/1/86; 83-16-066 (Order 83-23), § 296-21-125, filed 8/2/83. Statutory Authority: RCW 51.04.020(4), 51.04.030, and 51.16.120(3). 81-24-041 (Order 81-28), § 296-21-125, filed 11/30/81, effective 1/1/82; Order 74-7, § 296-21-125, filed 1/30/74; Order 68-7, § 296-21-125, filed 11/27/68, effective 1/1/69.] Repealed by 92-24-066, filed 12/1/92, effective 1/1/93. Statutory Authority: RCW 51.04.020(4) and 51.04.030.
296-21-075	Allergy and clinical immunology. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 91-07-008, § 296-21-075, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-21-075, filed 8/10/89, effective 9/10/89; 87-16-004 (Order 87-18), § 296-21-075, filed 7/23/87; 86-06-032 (Order 86-19), § 296-21-075, filed 2/28/86, effective 4/1/86. Statutory Authority: RCW 51.04.020(4), 51.04.030, and 51.16.120(3). 81-24-041 (Order 81-28), § 296-21-075, filed 11/30/81, effective 1/1/82; 81-01-100 (Order 80-29), § 296-21-075, filed 12/23/80, effective 3/1/81; Order 74-7, § 296-21-075, filed 1/30/74; Order 68-7, § 296-21-075, filed 11/27/68, effective 1/1/69.] Repealed by 92-24-066, filed 12/1/92, effective 1/1/93. Statutory Authority: RCW 51.04.020(4) and 51.04.030.	296-21-128	Special services and billing procedures—Anesthesia. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 88-04-052 (Order 87-29), § 296-21-128, filed 1/29/88; 86-06-032 (Order 86-19), § 296-21-128, filed 2/28/86, effective 4/1/86. Statutory Authority: RCW 51.04.020(4), 51.04.030, and 51.16.120(3). 81-24-041 (Order 81-28), § 296-21-128, filed 11/30/81, effective 1/1/82; Order 74-7, § 296-21-128, filed 1/30/74.] Repealed by 92-24-066, filed 12/1/92, effective 1/1/93. Statutory Authority: RCW 51.04.020(4) and 51.04.030.
296-21-080	Neurology and neuromuscular. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 89-17-039 (Order 89-09), § 296-21-080, filed 8/10/89, effective 9/10/89; 86-06-032 (Order 86-19), § 296-21-080, filed 2/28/86, effective 4/1/86; 83-16-066 (Order 83-23), § 296-21-080, filed 8/2/83. Statutory Authority: RCW 51.04.020(4), 51.04.030, and 51.16.120(3). 81-24-041 (Order 81-28), § 296-21-080, filed 11/30/81, effective 1/1/82; 81-01-100 (Order 80-29), § 296-21-080, filed 12/23/80, effective 3/1/81; Order 74-7, § 296-21-080, filed 1/30/74; Order 68-7, § 296-21-080, filed 11/27/68, effective 1/1/69.] Repealed by 92-24-066, filed 12/1/92, effective 1/1/93. Statutory Authority: RCW 51.04.020(4) and 51.04.030.	296-21-130	Calculation of total anesthesia values. [Order 74-7, § 296-21-130, filed 1/30/74; Order 70-12, § 296-21-130, filed 12/1/70, effective 1/1/71; Order 68-7, § 296-21-130, filed 11/27/68, effective 1/1/69.] Repealed by 92-24-066, filed 12/1/92, effective 1/1/93. Statutory Authority: RCW 51.04.020(4) and 51.04.030.
296-21-085	Specific therapeutic procedures—Miscellaneous. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 89-17-039 (Order 89-09), § 296-21-085, filed 8/10/89, effective 9/10/89; 86-06-032 (Order 86-19), § 296-21-085, filed 2/28/86, effective 4/1/86; Order 75-39, § 296-21-085, filed 11/28/75, effective 1/1/76; Order 74-7, § 296-21-085, filed 1/30/74; Order 68-7, § 296-21-085, filed 11/27/68, effective 1/1/69.] Repealed by 94-14-044, filed 6/29/94, effective 7/30/94. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.	296-21-140	Guidelines. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-21-140, filed 12/1/92, effective 1/1/93.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.
296-21-086	Chemotherapy injections. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 91-07-008, § 296-21-086, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-21-086, filed 8/10/89, effective 9/10/89; 86-06-032 (Order 86-19), § 296-21-086, filed 2/28/86, effective 4/1/86; 83-16-066 (Order 83-23), § 296-21-086, filed 8/2/83.] Repealed by 92-24-066, filed 12/1/92, effective 1/1/93. Statutory Authority: RCW 51.04.020(4) and 51.04.030.	296-21-150	Office or other outpatient services. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-21-150, filed 12/1/92, effective 1/1/93.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.
296-21-090	Special dermatological procedures. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 89-17-039 (Order 89-09), § 296-21-090, filed 8/10/89, effective 9/10/89; 86-06-032 (Order 86-19), § 296-21-090, filed 2/28/86, effective 4/1/86. Statutory Authority: RCW 51.04.020(4), 51.04.030, and 51.16.120(3). 81-01-100 (Order 80-29), § 296-21-090, filed 12/23/80, effective 3/1/81; Order 74-7, § 296-21-090, filed 1/30/74; Order 68-7, § 296-21-090, filed 11/27/68, effective 1/1/69.] Repealed by 92-24-066, filed 12/1/92, effective 1/1/93. Statutory Authority: RCW 51.04.020(4) and 51.04.030.	296-21-160	Hospital inpatient services. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-21-160, filed 12/1/92, effective 1/1/93.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.
296-21-095	Physical medicine. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 91-17-038, § 296-21-095, filed	296-21-170	Consultations. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-21-170, filed 12/1/92, effective 1/1/93.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.
		296-21-180	Emergency department services. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-21-180, filed 12/1/92, effective 1/1/93.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.
		296-21-190	Miscellaneous. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-21-190, filed 12/1/92, effective 1/1/93.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.
		296-21-200	Critical care services. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-21-200, filed 12/1/92, effective 1/1/93.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.
		296-21-210	Nursing facility services. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-21-210, filed 12/1/92, effective 1/1/93.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

- 296-21-230 Case management services. [Statutory Authority: RCW 51.04.020(4) and 51.04.030, 92-24-066, § 296-21-230, filed 12/1/92, effective 1/1/93.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.
- 296-21-240 General instructions. [Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159, 93-16-072, § 296-21-240, filed 8/1/93, effective 9/1/93.] Repealed by 94-14-044, filed 6/29/94, effective 7/30/94. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.
- 296-21-250 Bundled services and supplies. [Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159, 93-16-072, § 296-21-250, filed 8/1/93, effective 9/1/93.] Repealed by 94-14-044, filed 6/29/94, effective 7/30/94. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.
- 296-21-260 Global surgery policy. [Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159, 93-16-072, § 296-21-260, filed 8/1/93, effective 9/1/93.] Repealed by 94-14-044, filed 6/29/94, effective 7/30/94. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.
- 296-21-300 HCPCS codes. [Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159, 93-16-072, § 296-21-300, filed 8/1/93, effective 9/1/93.] Repealed by 94-14-044, filed 6/29/94, effective 7/30/94. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.
- 296-21-310 HCPCS billing modifiers. [Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159, 93-16-072, § 296-21-310, filed 8/1/93, effective 9/1/93.] Repealed by 94-14-044, filed 6/29/94, effective 7/30/94. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.
- 296-21-320 Provider types and services not covered. [Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159, 93-16-072, § 296-21-320, filed 8/1/93, effective 9/1/93.] Repealed by 94-14-044, filed 6/29/94, effective 7/30/94. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

SPECIFIC THERAPEUTIC PROCEDURES

WAC 296-21-270 Psychiatric services. The following rules supplements information contained in the fee schedules regarding coverage and reimbursement for psychiatric services.

Treatment of mental conditions to workers is to be goal directed, time limited, intensive, and limited to conditions caused or aggravated by the industrial condition. Psychiatric services to workers are limited to those provided by psychiatrists and licensed psychologists, and according to department policy. For purposes of this rule, the term "psychiatric" refers to treatment by psychologists as well as psychiatrists.

Initial evaluation, and subsequent treatment must be authorized by department staff, as outlined by department policy. The report of initial evaluation, including test results, and treatment plan are to be sent to the worker's attending provider, as well as the department. A copy of sixty-day narrative reports to the department is also to be sent to the attending provider.

All providers are bound by the medical aid rules in chapter 296-20 WAC. Reporting requirements are defined in chapter 296-20 WAC. In addition, the following are required: Testing results with scores, scales, and profiles; report of raw data sufficient to allow reassessment by a panel or independent medical examiner. Use of the current Diagnostic and Statistical Manual of the American Psychiatric Association axis format in the initial evaluation and sixty-day narrative reports, and explanation of the numerical scales are required.

A report to the department will contain, at least, the following elements:

- Subjective complaints;
- Objective observations;

Assessment of the worker's condition and goals accomplished; and

Plan of care.

The codes, reimbursement levels, and other policies for psychiatric services are listed in the fee schedules.

[Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159, 93-16-072, § 296-21-270, filed 8/1/93, effective 9/1/93.]

WAC 296-21-280 Biofeedback rules. Procedures listed in the fee schedules are for use by medical doctors, osteopathic physicians, licensed psychologists and other qualified providers as determined by department policy. All providers of biofeedback are bound by the medical aid rules and fee schedule for biofeedback services.

Administration of biofeedback treatment is limited to those practitioners who are certified by the Biofeedback Certification Institute of America or who meet the minimum education, experience, and training qualifications to be so certified. Those practitioners wishing to administer biofeedback treatment to workers, must submit a copy of their biofeedback certification or supply evidence of their qualifications to the department or self-insurer.

(1) The department will authorize biofeedback treatment for the following conditions when accepted under the industrial insurance claim:

- (a) Idiopathic Raynaud's disease;
- (b) Temporomandibular joint dysfunction;
- (c) Myofascial pain dysfunction syndrome (MPD);
- (d) Tension headaches;
- (e) Migraine headaches;
- (f) Tinnitus;
- (g) Torticollis;
- (h) Neuromuscular reeducation as result of neurological damage in CVA or spinal cord injury;
- (i) Inflammatory and/or musculoskeletal disorders causally related to the accepted condition.

(2) Twelve biofeedback treatments in a ninety-day period will be authorized for the above conditions when the following is presented:

- (a) An evaluation report documenting:
 - (i) The basis for the claimant's condition;
 - (ii) The condition's relationship to the industrial injury;
 - (iii) An evaluation of the claimant's current functional measurable modalities (i.e., range of motion, up time, walking tolerance, medication intake, etc.);
 - (iv) An outline of the proposed treatment program;
 - (v) An outline of the expected restoration goals.
- (b) No further biofeedback treatments will be authorized or paid for without substantiation of evidence of improvement in measurable, functional modalities (i.e., range of motion, up time, walking tolerance, medication intake, etc.). Only one additional treatment block of twelve treatments per ninety days will be authorized. Requests for biofeedback treatment beyond twenty-four treatments or one hundred eighty days will be granted only after file review by and on the advice of the department's medical consultant.

(c) In addition to treatment, pretreatment and periodic evaluation will be authorized. Follow-up evaluation can be authorized at one, three, six, and twelve months posttreatment.

(d) At the department's option, a concurring opinion may be required regarding relationship of the condition to the industrial injury and/or need for biofeedback treatment.

The codes, reimbursement levels, and other policies for biofeedback services are listed in the fee schedules.

[Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159. 93-16-072, § 296-21-280, filed 8/1/93, effective 9/1/93.]

WAC 296-21-290 Physical medicine. (1) **Whom does the department authorize and pay for physical medicine or physical therapy services?** The department or self-insurer may authorize and pay for physical medicine services from the following providers:

- A medical or osteopathic physician who is "board certified or board qualified" in the field of physical medicine and rehabilitation; or
- A licensed physical therapist; or
- The injured worker's attending doctor, within the limitations listed below.

The physical medicine services must be personally performed by the:

- Physical medicine and rehabilitation physician; or
- Attending doctor; or
- Licensed physical therapist; or
- Physical therapist assistant employed by and serving under the direction of a registered physical therapist, physical medicine and rehabilitation physician, or attending doctor.

Note: Licensed physical therapy provider rules are contained in chapter 296-23 WAC.

(2) **When may the department or self-insurer pay the attending doctor for physical medicine services?** The department or self-insurer may pay the attending doctor to provide physical medicine modalities and/or procedures in the following situations:

(a) The attending doctor's scope of practice includes physical medicine modalities and procedures.

(b) Only the physical medicine modalities and procedures allowed under the department's fee schedules and payment policies will be authorized or paid.

(c) No more than six physical medicine visits may be authorized and paid to the attending doctor. If the worker requires treatment beyond six visits, the worker must be referred to a licensed physical therapist or a board certified or qualified physical medicine and rehabilitation physician for such treatment. Payments will be made in accordance with the department's fee schedules and payment policies.

(d) In remote areas, where no physical medicine and rehabilitation specialist, licensed physical therapist or physical therapist assistant is available, physical medicine visits required by the patient's accepted condition(s) may be authorized and paid to the attending doctor. Payments will be made in accordance with the department's fee schedules and payment policies.

(e) The attending doctor may bill for office visits in addition to the physical medicine services only when a separately identifiable office visit service is provided in addition to the physical medicine service.

(3) **What codes and fees are payable for physical medicine services?**

- The codes, reimbursement levels, and other policies for physical medicine services are listed in the department's

Medical Aid Rules and Fee Schedules. Physicians licensed in physical medicine and licensed physical therapists use CPT and/or HCPCS codes, rules and payment policies as listed in the department's *Medical Aid Rules and Fee Schedules* or provider bulletins.

- Attending doctors must use the local codes, rules and payment policies published in the department's *Medical Aid Rules and Fee Schedules* or provider bulletins.

[Statutory Authority: RCW 51.04.020, 51.04.030, 51.36.080. 00-09-078, § 296-21-290, filed 4/18/00, effective 7/1/00. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159. 93-16-072, § 296-21-290, filed 8/1/93, effective 9/1/93.]

Chapter 296-23 WAC

RADIOLOGY, RADIATION THERAPY, NUCLEAR MEDICINE, PATHOLOGY, HOSPITAL, CHIROPRACTIC, PHYSICAL THERAPY, DRUGLESS THERAPEUTICS AND NURSING— DRUGLESS THERAPEUTICS, ETC.

WAC

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- 296-23-135 General information—Radiology.
- 296-23-140 Custody of X rays.
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- 296-23-165 Miscellaneous services and appliances.
- 296-23-180 Vehicle and home modification.

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- 296-23-205 General instructions—Naturopathic physicians.
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INDEPENDENT MEDICAL EXAMINATION

- 296-23-302 Definitions.
- 296-23-307 Why are independent medical examinations requested?
- 296-23-312 Can a provider conduct independent medical examinations (IMEs) for the department or self-insurer without an active IME provider number from the department?
- 296-23-317 What qualifications must a provider meet to receive an independent medical examination (IME) provider number?

296-23-322	What boards are recognized by the department for independent medical examination (IME) provider approval?		27, filed 11/30/77, effective 1/1/78; Emergency Order 77-26, filed 12/1/77; Emergency Order 77-16, filed 9/6/77.
296-23-327	What other factors may the department's medical director consider in approving or disapproving an application for an independent medical examination (IME) provider number?	296-23-01004	Billing procedures. [Statutory Authority: RCW 51.04.-020(4) and 51.04.030. 89-17-039 (Order 89-09), § 296-23-01004, filed 8/10/89, effective 9/10/89. Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.16.-120(3). 81-01-100 (Order 80-29), § 296-23-01004, filed 12/23/80, effective 3/1/81; Order 77-27, § 296-23-01004, filed 11/30/77, effective 1/1/78; Emergency Order 77-26, § 296-23-01004, filed 12/1/77; Emergency Order 77-16, § 296-23-01004, filed 9/6/77; Order 76-34, § 296-23-01004, filed 11/24/76, effective 1/1/77.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.
296-23-332	What are the requirements for notifying the department or self-insurer if an independent medical examination (IME) provider has a change in status?		
296-23-337	What factors does the department's medical director consider in suspending or terminating an independent medical examination (IME) provider number?		
296-23-342	Are providers entitled to referrals from the department or self-insurer?		
296-23-347	What are the independent medical examination (IME) provider's responsibilities in an examination?	296-23-01005	Duplication of x rays and extra views. [Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.16.-120(3). 81-01-100 (Order 80-29), § 296-23-01005, filed 12/23/80, effective 3/1/81; Order 76-34, § 296-23-01005, filed 11/24/76, effective 1/1/77.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.
296-23-352	Must the independent medical examination (IME) provider address job analyses (JAs) at the request of the department or self-insurer?		
296-23-357	May an independent medical examination (IME) provider offer to provide ongoing treatment to the worker?		
296-23-362	May a worker bring someone with them to an independent medical examination (IME)?	296-23-01006	Radiology, radiation therapy, nuclear medicine and modifiers. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 91-17-038, § 296-23-01006, filed 8/16/91, effective 9/30/91; 89-17-039 (Order 89-09), § 296-23-01006, filed 8/10/89, effective 9/10/89; 87-03-005 (Order 86-47), § 296-23-01006, filed 1/8/87; 86-06-032 (Order 86-19), § 296-23-01006, filed 2/28/86, effective 4/1/86; 83-16-066 (Order 83-23), § 296-23-01006, filed 8/2/83. Statutory Authority: RCW 51.04.-020(4), 51.04.030, and 51.16.120(3). 81-24-041 (Order 81-28), § 296-23-01006, filed 11/30/81, effective 1/1/82; 81-01-100 (Order 80-29), § 296-23-01006, filed 12/23/80, effective 3/1/81; Order 76-34, § 296-23-01006, filed 11/24/76, effective 1/1/77.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.
296-23-367	May the worker videotape or audiotape the independent medical examination?		
296-23-372	Can a worker file a complaint about a provider's conduct during an independent medical examination?		
296-23-377	If an independent medical examination (IME) provider is asked to do an impairment rating examination only, what information must be included in the report?		
296-23-381	What rating systems are used for determining an impairment rating conducted by an independent medical examination (IME) provider?		
296-23-382	What information must be included in an independent medical examination (IME) report?		
296-23-387	What are the responsibilities of an independent medical examination (IME) provider regarding testimony?	296-23-01007	Unlisted service or procedure. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 89-17-039 (Order 89-09), § 296-23-01007, filed 8/10/89, effective 9/10/89; 83-16-066 (Order 83-23), § 296-23-01007, filed 8/2/83. Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.16.120(3). 81-01-100 (Order 80-29), § 296-23-01007, filed 12/23/80, effective 3/1/81; Order 76-34, § 296-23-01007, filed 11/24/76, effective 1/1/77.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.-030 and 1993 c 159.
296-23-392	Is there a fee schedule for independent medical examinations?		
DISPOSITION OF SECTIONS FORMERLY CODIFIED IN THIS CHAPTER			
296-23-010	General information—Radiology. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 89-17-039 (Order 89-09), § 296-23-010, filed 8/10/89, effective 9/10/89. Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.16.120(3). 81-01-100 (Order 80-29), § 296-23-010, filed 12/23/80, effective 3/1/81; Order 76-34, § 296-23-010, filed 11/24/76, effective 1/1/77; Order 74-39, § 296-23-010, filed 11/22/74, effective 1/1/75; Order 74-7, § 296-23-010, filed 1/30/74; Order 71-6, § 296-23-010, filed 6/1/71; Order 70-12, § 296-23-010, filed 12/1/70, effective 1/1/71; Order 68-7, § 296-23-010, filed 11/27/68, effective 1/1/69.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.	296-23-01008	Special report. [Statutory Authority: RCW 51.04.-020(4) and 51.04.030. 92-24-066, § 296-23-01008, filed 12/1/92, effective 1/1/93; Order 76-34, § 296-23-01008, filed 11/24/76, effective 1/1/77.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.
296-23-01001	Injection procedures. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 89-17-039 (Order 89-09), § 296-23-01001, filed 8/10/89, effective 9/10/89. Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.16.120(3). 81-01-100 (Order 80-29), § 296-23-01001, filed 12/23/80, effective 3/1/81; Order 76-34, § 296-23-01001, filed 11/24/76, effective 1/1/77.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.	296-23-013	Footnotes. [Order 74-7, § 296-23-013, filed 1/30/74.] Repealed by 81-24-041 (Order 81-28), filed 11/30/81, effective 1/1/82. Statutory Authority: RCW 51.04.-020(4), 51.04.030 and 51.16.120(3).
296-23-01002	Custody of x rays. [Statutory Authority: RCW 51.04.-020(4), 51.04.030 and 51.16.120(3). 81-24-041 (Order 81-28), § 296-23-01002, filed 11/30/81, effective 1/1/82; 81-01-100 (Order 80-29), § 296-23-01002, filed 12/23/80, effective 3/1/81; Order 77-27, § 296-23-01002, filed 11/30/77, effective 1/1/78; Emergency Order 77-26, § 296-23-01002, filed 12/1/77; Emergency Order 77-16, § 296-23-01002, filed 9/6/77; Order 76-34, § 296-23-01002, filed 11/24/76, effective 1/1/77.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.	296-23-015	Head and neck. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-23-015, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-23-015, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-23-015, filed 8/10/89, effective 9/10/89; 87-16-004 (Order 87-18), § 296-23-015, filed 7/23/87; 86-06-032 (Order 86-19), § 296-23-015, filed 2/28/86, effective 4/1/86; 83-16-066 (Order 83-23), § 296-23-015, filed 8/2/83. Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.16.120(3). 81-24-041 (Order 81-28), § 296-23-015, filed 11/30/81, effective 1/1/82; 81-01-100 (Order 80-29), § 296-23-015, filed 12/23/80, effective 3/1/81; Order 76-34, § 296-23-015, filed 11/24/76, effective 1/1/77; Order 74-39, § 296-23-061 (codified as WAC 296-23-015), filed 11/22/74, effective 1/1/75; Order 74-7, § 296-23-015, filed 1/30/74; Order 68-7, § 296-23-015, filed 11/27/68, effective 1/1/69.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.
296-23-01003	Identification of x-rays. [Order 76-34, § 296-23-01003, filed 11/24/76, effective 1/1/77.] Repealed by Order 77-	296-23-020	Chest. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-23-020, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-23-020, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-23-

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- 004 (Order 87-18), § 296-23-079, filed 7/23/87; 86-06-032 (Order 86-19), § 296-23-079, filed 2/28/86, effective 4/1/86; 83-16-066 (Order 83-23), § 296-23-079, filed 8/2/83. Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.16.120(3). 81-24-041 (Order 81-28), § 296-23-079, filed 11/30/81, effective 1/1/82; 81-01-100 (Order 80-29), § 296-23-079, filed 12/23/80, effective 3/1/81; Order 76-34, § 296-23-079, filed 11/24/76, effective 1/1/77; Order 74-7, § 296-23-079, filed 1/30/74.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.
- 296-23-07901 Diagnostic ultrasound. [Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.16.120(3). 81-01-100 (Order 80-29), § 296-23-07901, filed 12/23/80, effective 3/1/81; Order 75-39, § 296-23-07901, filed 11/28/75, effective 1/1/76.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.
- 296-23-07902 Head and neck. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-23-07902, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-23-07902, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-23-07902, filed 8/10/89, effective 9/10/89; 87-16-004 (Order 87-18), § 296-23-07902, filed 7/23/87; 86-06-032 (Order 86-19), § 296-23-07902, filed 2/28/86, effective 4/1/86; 83-16-066 (Order 83-23), § 296-23-07902, filed 8/2/83. Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.16.120(3). 81-01-100 (Order 80-29), § 296-23-07902, filed 12/23/80, effective 3/1/81; Order 75-39, § 296-23-07902, filed 11/28/75, effective 1/1/76.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.
- 296-23-07903 Heart and chest. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-23-07903, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-23-07903, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-23-07903, filed 8/10/89, effective 9/10/89; 87-16-004 (Order 87-18), § 296-23-07903, filed 7/23/87; 86-06-032 (Order 86-19), § 296-23-07903, filed 2/28/86, effective 4/1/86; 83-16-066 (Order 83-23), § 296-23-07903, filed 8/2/83. Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.16.120(3). 81-01-100 (Order 80-29), § 296-23-07903, filed 12/23/80, effective 3/1/81; Order 75-39, § 296-23-07903, filed 11/28/75, effective 1/1/76.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.
- 296-23-07904 Thorax. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 87-16-004 (Order 87-18), § 296-23-07904, filed 7/23/87; 86-06-032 (Order 86-19), § 296-23-07904, filed 2/28/86, effective 4/1/86. Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.16.120(3). 81-01-100 (Order 80-29), § 296-23-07904, filed 12/23/80, effective 3/1/81; Order 75-39, § 296-23-07904, filed 11/28/75, effective 1/1/76.] Repealed by 89-17-039 (Order 89-09), filed 8/10/89, effective 9/10/89. Statutory Authority: RCW 51.04.020(4) and 51.04.030.
- 296-23-07905 Abdomen and retroperitoneum. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-23-07905, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-23-07905, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-23-07905, filed 8/10/89, effective 9/10/89; 87-16-004 (Order 87-18), § 296-23-07905, filed 7/23/87; 86-06-032 (Order 86-19), § 296-23-07905, filed 2/28/86, effective 4/1/86. Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.16.120(3). 81-01-100 (Order 80-29), § 296-23-07905, filed 12/23/80, effective 3/1/81; Order 75-39, § 296-23-07905, filed 11/28/75, effective 1/1/76.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.
- 296-23-07906 Pelvis, genitalia, and extremities. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-23-07906, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-23-07906, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-23-07906, filed 8/10/89, effective 9/10/89; 87-16-004 (Order 87-18), § 296-23-07906, filed 7/23/87; 86-06-032 (Order 86-19), § 296-23-07906, filed 2/28/86, effective 4/1/86; 83-16-066 (Order 83-23), § 296-23-07906, filed 8/2/83. Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.16.120(3).
- 81-24-041 (Order 81-28), § 296-23-07906, filed 11/30/81, effective 1/1/82; 81-01-100 (Order 80-29), § 296-23-07906, filed 12/23/80, effective 3/1/81; Order 75-39, § 296-23-07906, filed 11/28/75, effective 1/1/76.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.
- 296-23-07907 Vascular studies. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-23-07907, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-23-07907, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-23-07907, filed 8/10/89, effective 9/10/89; 87-16-004 (Order 87-18), § 296-23-07907, filed 7/23/87; 86-06-032 (Order 86-19), § 296-23-07907, filed 2/28/86, effective 4/1/86; 83-16-066 (Order 83-23), § 296-23-07907, filed 8/2/83. Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.16.120(3). 81-01-100 (Order 80-29), § 296-23-07907, filed 12/23/80, effective 3/1/81; Order 75-39, § 296-23-07907, filed 11/28/75, effective 1/1/76.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.
- 296-23-07908 Miscellaneous. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-23-07908, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-23-07908, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-23-07908, filed 8/10/89, effective 9/10/89; 87-16-004 (Order 87-18), § 296-23-07908, filed 7/23/87. Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.16.120(3). 81-01-100 (Order 80-29), § 296-23-07908, filed 12/23/80, effective 3/1/81; Order 75-39, § 296-23-07908, filed 11/28/75, effective 1/1/76.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.
- 296-23-080 Therapeutic radiology—General information and instructions. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-23-080, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-23-080, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-23-080, filed 8/10/89, effective 9/10/89; 87-16-004 (Order 87-18), § 296-23-080, filed 7/23/87; 83-16-066 (Order 83-23), § 296-23-080, filed 8/2/83. Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.16.120(3). 81-24-041 (Order 81-28), § 296-23-080, filed 11/30/81, effective 1/1/82; 81-01-100 (Order 80-29), § 296-23-080, filed 12/23/80, effective 3/1/81; Order 74-7, § 296-23-080, filed 1/30/74; Order 68-7, § 296-23-080, filed 11/27/68, effective 1/1/69.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.
- 296-23-105 Teletherapy. [Order 74-7, § 296-23-105, filed 1/30/74. Formerly WAC 296-23-085.] Repealed by 81-01-100 (Order 80-29), filed 12/23/80, effective 3/1/81. Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.16.120(3).
- 296-23-110 Brachytherapy. [Order 74-7, § 296-23-110, filed 1/30/74. Formerly WAC 296-23-090.] Repealed by 81-01-100 (Order 80-29), filed 12/23/80, effective 3/1/81. Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.16.120(3).
- 296-23-115 Special adjunctive services. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 83-16-066 (Order 83-23), § 296-23-115, filed 8/2/83. Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.16.120(3). 81-01-100 (Order 80-29), § 296-23-115, filed 12/23/80, effective 3/1/81; Order 74-7, § 296-23-115, filed 1/30/74.] Repealed by 87-16-004 (Order 87-18), filed 7/23/87. Statutory Authority: RCW 51.04.020(4) and 51.04.030.
- 296-23-120 Nuclear medicine—General information and instructions. [Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.16.120(3). 81-01-100 (Order 80-29), § 296-23-120, filed 12/23/80, effective 3/1/81; Order 74-7, § 296-23-120, filed 1/30/74.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.
- 296-23-125 Diagnostic. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-23-125, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-23-125, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-23-125, filed 8/10/89, effective 9/10/89; 87-16-004 (Order 87-18), § 296-23-125, filed 7/23/87; 86-06-032 (Order 86-19), § 296-23-125, filed 2/28/86, effective 4/1/86; 83-16-066 (Order 83-23), § 296-23-125, filed 8/2/83.

	Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.16.120(3). 81-01-100 (Order 80-29), § 296-23-125, filed 12/23/80, effective 3/1/81; Order 74-7, § 296-23-125, filed 1/30/74. Formerly WAC 296-23-100.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.		
296-23-130	Therapeutic. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-23-130, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-23-130, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-23-130, filed 8/10/89, effective 9/10/89. Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.16.120(3). 81-01-100 (Order 80-29), § 296-23-130, filed 12/23/80, effective 3/1/81; Order 74-7, § 296-23-130, filed 1/30/74. Formerly WAC 296-23-095.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.	296-23-204	Panel or profile tests. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-23-204, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-23-204, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-23-204, filed 8/10/89, effective 9/10/89; 87-16-004 (Order 87-18), § 296-23-204, filed 7/23/87; 86-06-032 (Order 86-19), § 296-23-204, filed 2/28/86, effective 4/1/86; 83-16-066 (Order 83-23), § 296-23-204, filed 8/2/83. Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.16.120(3). 81-24-041 (Order 81-28), § 296-23-204, filed 11/30/81, effective 1/1/82; 81-01-100 (Order 80-29), § 296-23-204, filed 12/23/80, effective 3/1/81; Order 74-39, § 296-23-204, filed 11/22/74, effective 1/1/75; Order 74-7, § 296-23-204, filed 1/30/74.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.
296-23-150	Low osmolar contrast media. [Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159. 93-16-072, § 296-23-150, filed 8/1/93, effective 9/1/93.] Repealed by 94-14-044, filed 6/29/94, effective 7/30/94. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.		
296-23-170	Nursing services. [Statutory Authority: RCW 51.04.-020, 51.04.030, 51.32.060, 51.32.072, and 7.68.070. 01-18-041, § 296-23-170, filed 8/29/01, effective 10/1/01. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159. 93-16-072, § 296-23-170, filed 8/1/93, effective 9/1/93.] Repealed by 02-21-108, filed 10/22/02, effective 12/1/02. Statutory Authority: RCW 51.04.020.	296-23-208	Urinalysis. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-23-208, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-23-208, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-23-208, filed 8/10/89, effective 9/10/89; 86-06-032 (Order 86-19), § 296-23-208, filed 2/28/86, effective 4/1/86. Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.16.120(3). 81-24-041 (Order 81-28), § 296-23-208, filed 11/30/81, effective 1/1/82; 81-01-100 (Order 80-29), § 296-23-208, filed 12/23/80, effective 3/1/81; Order 74-7, § 296-23-208, filed 1/30/74. Formerly WAC 296-23-245.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.
296-23-175	Stimulators. [Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159. 93-16-072, § 296-23-175, filed 8/1/93, effective 9/1/93.] Repealed by 02-21-108, filed 10/22/02, effective 12/1/02. Statutory Authority: RCW 51.04.020.		
296-23-185	Drug and alcohol rehabilitation services. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 96-10-086, § 296-23-185, filed 5/1/96, effective 7/1/96. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159. 93-16-072, § 296-23-185, filed 8/1/93, effective 9/1/93.] Repealed by 02-21-108, filed 10/22/02, effective 12/1/02. Statutory Authority: RCW 51.04.020.	296-23-210	Chiropractic office visits and special services. [Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159. 93-16-072, § 296-23-210, filed 8/1/93, effective 9/1/93.] Repealed by 97-24-044, filed 11/26/97, effective 1/1/98. Statutory Authority: RCW 51.04.020, 51.04.030, 51.36.080 and 51.36.110.
296-23-190	General instructions—Chiropractic. [Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159. 93-16-072, § 296-23-190, filed 8/1/93, effective 9/1/93.] Repealed by 97-24-044, filed 11/26/97, effective 1/1/98. Statutory Authority: RCW 51.04.020, 51.04.030, 51.36.080 and 51.36.110.	296-23-212	Chemistry and toxicology. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-23-212, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-23-212, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-23-212, filed 8/10/89, effective 9/10/89; 87-16-004 (Order 87-18), § 296-23-212, filed 7/23/87; 87-03-005 (Order 86-47), § 296-23-212, filed 1/8/87; 86-06-032 (Order 86-19), § 296-23-212, filed 2/28/86, effective 4/1/86; 83-16-066 (Order 83-23), § 296-23-212, filed 8/2/83. Statutory Authority: RCW 51.04.020(4), 51.04.030, and 51.16.120(3). 81-24-041 (Order 81-28), § 296-23-212, filed 11/30/81, effective 1/1/82; 81-01-100 (Order 80-29), § 296-23-212, filed 12/23/80, effective 3/1/81; Order 74-7, § 296-23-212, filed 1/30/74.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.
296-23-200	Pathology general information and instruction. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 89-17-039 (Order 89-09), § 296-23-200, filed 8/10/89, effective 9/10/89. Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.16.120(3). 81-24-041 (Order 81-28), § 296-23-200, filed 11/30/81, effective 1/1/82; 81-01-100 (Order 80-29), § 296-23-200, filed 12/23/80, effective 3/1/81; Order 74-7, § 296-23-200, filed 1/30/74; Order 70-12, § 296-23-200, filed 12/1/70, effective 1/1/71; Order 68-7, § 296-23-200, filed 11/27/68, effective 1/1/69.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.	296-23-216	Hematology. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-23-216, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-23-216, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-23-216, filed 8/10/89, effective 9/10/89; 87-16-004 (Order 87-18), § 296-23-216, filed 7/23/87; 86-06-032 (Order 86-19), § 296-23-216, filed 2/28/86, effective 4/1/86. Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.16.120(3). 81-24-041 (Order 81-28), § 296-23-216, filed 11/30/81, effective 1/1/82; 81-01-100 (Order 80-29), § 296-23-216, filed 12/23/80, effective 3/1/81; Order 74-7, § 296-23-216, filed 1/30/74. Formerly WAC 296-23-210.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.
296-23-201	Unlisted service or procedure. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 86-06-032 (Order 86-19), § 296-23-201, filed 2/28/86, effective 4/1/86. Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.16.120(3). 81-01-100 (Order 80-29), § 296-23-201, filed 12/23/80, effective 3/1/81; Order 76-34, § 296-23-201, filed 11/24/76, effective 1/1/77.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.		
296-23-20101	Special report. [Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.16.120(3). 81-01-100 (Order 80-29), § 296-23-20101, filed 12/23/80, effective 3/1/81; Order 76-34, § 296-23-20101, filed 11/24/76, effective 1/1/77.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.	296-23-221	Immunology. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-23-221, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-23-221, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-23-221, filed 8/10/89, effective 9/10/89; 87-16-004 (Order 87-18), § 296-23-221, filed 7/23/87; 86-06-032 (Order 86-19), § 296-23-221, filed 2/28/86, effective 4/1/86; 83-16-066 (Order 83-23), § 296-23-221, filed 8/2/83.
296-23-20102	Pathology modifier. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 91-17-038, § 296-23-20102, filed 8/16/91, effective 9/30/91; 89-17-039 (Order 89-09), § 296-23-20102, filed 8/10/89, effective 9/10/89; 87-03-005 (Order 86-47), § 296-23-20102,		

	Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.16.120(3). 81-24-041 (Order 81-28), § 296-23-221, filed 11/30/81, effective 1/1/82; 81-01-100 (Order 80-29), § 296-23-221, filed 12/23/80, effective 3/1/81; Order 74-7, § 296-23-221, filed 1/30/74.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.		§ 296-23-265, filed 8/1/93, effective 9/1/93.] Repealed by 04-04-029, filed 1/27/04, effective 3/1/04. Statutory Authority: RCW 51.32.055, 51.32.112, 51.32.114, 51.36.060, and 51.36.070.
296-23-224	Microbiology. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-23-224, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-23-224, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-23-224, filed 8/10/89, effective 9/10/89; 87-16-004 (Order 87-18), § 296-23-224, filed 7/23/87; 86-06-032 (Order 86-19), § 296-23-224, filed 2/28/86, effective 4/1/86. Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.16.120(3). 81-24-041 (Order 81-28), § 296-23-224, filed 11/30/81, effective 1/1/82; 81-01-100 (Order 80-29), § 296-23-224, filed 12/23/80, effective 3/1/81; Order 74-7, § 296-23-224, filed 1/30/74. Formerly WAC 296-23-205.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.	296-23-26501	How do doctors become approved examiners? [Statutory Authority: RCW 51.04.020, 51.04.030, 51.32.112, 51.32.114 and 51.36.015. 97-09-036, § 296-23-26501, filed 4/14/97 effective 5/15/97.] Repealed by 04-04-029, filed 1/27/04, effective 3/1/04. Statutory Authority: RCW 51.32.055, 51.32.112, 51.32.114, 51.36.060, and 51.36.070.
	Work hardening. [Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159. 93-16-072, § 296-23-225, filed 8/1/93, effective 9/1/93.] Repealed by 02-21-108, filed 10/22/02, effective 12/1/02. Statutory Authority: RCW 51.04.020.	296-23-26502	Where can doctors get an application to become an approved examiner and other information about independent medical examinations? [Statutory Authority: RCW 51.04.020, 51.04.030, 51.32.112, 51.32.114 and 51.36.015. 97-09-036, § 296-23-26502, filed 4/14/97 effective 5/15/97.] Repealed by 04-04-029, filed 1/27/04, effective 3/1/04. Statutory Authority: RCW 51.32.055, 51.32.112, 51.32.114, 51.36.060, and 51.36.070.
296-23-225		296-23-26503	What factors does the medical director consider in approving, suspending or removing doctors from the approved examiners list? [Statutory Authority: RCW 51.04.020, 51.04.030, 51.32.112, 51.32.114 and 51.36.015. 97-09-036, § 296-23-26503, filed 4/14/97 effective 5/15/97.] Repealed by 04-04-029, filed 1/27/04, effective 3/1/04. Statutory Authority: RCW 51.32.055, 51.32.112, 51.32.114, 51.36.060, and 51.36.070.
296-23-228	Anatomic pathology. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-23-228, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-23-228, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-23-228, filed 8/10/89, effective 9/10/89; 87-16-004 (Order 87-18), § 296-23-228, filed 7/23/87; 86-06-032 (Order 86-19), § 296-23-228, filed 2/28/86, effective 4/1/86; 83-16-066 (Order 83-23), § 296-23-228, filed 8/2/83. Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.16.120(3). 81-24-041 (Order 81-28), § 296-23-228, filed 11/30/81, effective 1/1/82; 81-01-100 (Order 80-29), § 296-23-228, filed 12/23/80, effective 3/1/81; Order 74-7, § 296-23-228, filed 1/30/74. Formerly WAC 296-23-240.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.	296-23-26504	What happens if an examiner is suspended or removed from the approved examiner list by the medical director? [Statutory Authority: RCW 51.04.020, 51.04.030, 51.32.112, 51.32.114 and 51.36.015. 97-09-036, § 296-23-26504, filed 4/14/97 effective 5/15/97.] Repealed by 04-04-029, filed 1/27/04, effective 3/1/04. Statutory Authority: RCW 51.32.055, 51.32.112, 51.32.114, 51.36.060, and 51.36.070.
	Anatomic pathology. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-23-231, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-23-231, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-23-231, filed 8/10/89, effective 9/10/89.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.	296-23-26505	Is there a fee schedule for independent medical examinations? [Statutory Authority: RCW 51.04.020, 51.04.030, 51.32.112, 51.32.114 and 51.36.015. 97-09-036, § 296-23-26505, filed 4/14/97 effective 5/15/97.] Repealed by 04-04-029, filed 1/27/04, effective 3/1/04. Statutory Authority: RCW 51.32.055, 51.32.112, 51.32.114, 51.36.060, and 51.36.070.
296-23-231		296-23-26506	Can a worker file a complaint about an independent medical examiner's conduct? [Statutory Authority: RCW 51.04.020, 51.04.030, 51.32.112, 51.32.114 and 51.36.015. 97-09-036, § 296-23-26506, filed 4/14/97 effective 5/15/97.] Repealed by 04-04-029, filed 1/27/04, effective 3/1/04. Statutory Authority: RCW 51.32.055, 51.32.112, 51.32.114, 51.36.060, and 51.36.070.
296-23-232	Miscellaneous. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-23-232, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-23-232, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-23-232, filed 8/10/89, effective 9/10/89; 87-16-004 (Order 87-18), § 296-23-232, filed 7/23/87; 86-06-032 (Order 86-19), § 296-23-232, filed 2/28/86, effective 4/1/86. Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.16.120(3). 81-01-100 (Order 80-29), § 296-23-232, filed 12/23/80, effective 3/1/81; Order 74-7, § 296-23-232, filed 1/30/74.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.	296-23-267	When may attending doctors perform impairment rating examinations? [Statutory Authority: RCW 51.04.020, 51.04.030, 51.32.112, 51.32.114 and 51.36.015. 97-09-036, § 296-23-267, filed 4/14/97 effective 5/15/97.] Repealed by 04-04-029, filed 1/27/04, effective 3/1/04. Statutory Authority: RCW 51.32.055, 51.32.112, 51.32.114, 51.36.060, and 51.36.070.
	Independent medical examinations. [Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159. 93-16-072, § 296-23-255, filed 8/1/93, effective 9/1/93.] Repealed by 04-04-029, filed 1/27/04, effective 3/1/04. Statutory Authority: RCW 51.32.055, 51.32.112, 51.32.114, 51.36.060, and 51.36.070.	296-23-270	Independent medical examinations two or more examiners. [Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159. 93-16-072, § 296-23-270, filed 8/1/93, effective 9/1/93.] Repealed by 04-04-029, filed 1/27/04, effective 3/1/04. Statutory Authority: RCW 51.32.055, 51.32.112, 51.32.114, 51.36.060, and 51.36.070.
296-23-255		296-23-300	General statement. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 86-20-074 (Order 86-36), § 296-23-300, filed 10/1/86, effective 11/1/86. Statutory Authority: RCW 51.04.020(4), 51.04.030, and 51.16.120(3). 81-01-100 (Order 80-29), § 296-23-300, filed 12/23/80, effective 3/1/81; Order 75-39, § 296-23-300, filed 11/28/75, effective 1/1/76; Order 68-7, § 296-23-300, filed 11/27/68, effective 1/1/69.] Repealed by 87-03-005 (Order 86-47), filed 1/8/87. Statutory Authority: RCW 51.04.020(4) and 51.04.030.
296-23-260	Examination reports. [Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159. 93-16-072, § 296-23-260, filed 8/1/93, effective 9/1/93.] Repealed by 04-04-029, filed 1/27/04, effective 3/1/04. Statutory Authority: RCW 51.32.055, 51.32.112, 51.32.114, 51.36.060, and 51.36.070.	296-23-301	Rates for daily and ancillary services. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 86-20-074 (Order 86-36), § 296-23-301, filed 10/1/86, effective 11/1/86; 86-04-035 (Order 86-15), § 296-23-301, filed 1/30/86. Statutory Authority: RCW 51.04.020(4), 51.04.030, and 51.16.120(3). 81-24-041 (Order 81-28), § 296-23-301, filed 11/30/81, effective 1/1/82; 81-01-100 (Order 80-29), § 296-23-301, filed 12/23/80, effective 3/1/81; Order 76-34, § 296-23-301, filed 11/24/76, effective 1/1/77; Order 75-39, § 296-23-301, filed
296-23-265	Who may perform independent medical examinations? [Statutory Authority: RCW 51.04.020, 51.04.030, 51.32.112, 51.32.114 and 51.36.015. 97-09-036, § 296-23-265, filed 4/14/97 effective 5/15/97. Statutory Authority: RCW 51.32.112. 95-04-056, § 296-23-265, filed 1/26/95, effective 3/1/95. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159. 93-16-072,		

	11/28/75, effective 1/1/76.] Repealed by 87-03-005 (Order 86-47), filed 1/8/87. Statutory Authority: RCW 51.04.020(4) and 51.04.030.	
296-23-305	Questionable beneficiary. [Statutory Authority: RCW 51.04.020(4), 51.04.030, and 51.16.120(3). 81-01-100 (Order 80-29), § 296-23-305, filed 12/23/80, effective 3/1/81; Order 76-34, § 296-23-305, filed 11/24/76, effective 1/1/77; Order 70-12, § 296-23-305, filed 12/1/70, effective 1/1/71; Order 68-7, § 296-23-305, filed 11/27/68, effective 1/1/69.] Repealed by 87-03-005 (Order 86-47), filed 1/8/87. Statutory Authority: RCW 51.04.020(4) and 51.04.030.	
296-23-310	Refund of incorrect payments. [Statutory Authority: RCW 51.04.020(4), 51.04.030, and 51.16.120(3). 81-01-100 (Order 80-29), § 296-23-310, filed 12/23/80, effective 3/1/81; Order 68-7, § 296-23-310, filed 11/27/68, effective 1/1/69.] Repealed by 87-03-005 (Order 86-47), filed 1/8/87. Statutory Authority: RCW 51.04.020(4) and 51.04.030.	296-23-357
296-23-315	Treatment of unrelated conditions. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 83-16-066 (Order 83-23), § 296-23-315, filed 8/2/83; Order 70-12, § 296-23-315, filed 12/1/70, effective 1/1/71; Order 68-7, § 296-23-315, filed 11/27/68, effective 1/1/69.] Repealed by 87-03-005 (Order 86-47), filed 1/8/87. Statutory Authority: RCW 51.04.020(4) and 51.04.030.	
296-23-320	Private room—Critical cases. [Order 74-7, § 296-23-320, filed 1/30/74; Order 68-7, § 296-23-320, filed 11/27/68, effective 1/1/69.] Repealed by Order 74-39, filed 11/22/74 and Order 75-39, filed 11/28/75.	296-23-360
296-23-325	Isolation of infected cases. [Order 70-12, § 296-23-325, filed 12/1/70, effective 1/1/71; Order 68-7, § 296-23-325, filed 11/27/68, effective 1/1/69.] Repealed by Order 74-39, filed 11/22/74 and Order 75-39, filed 11/28/75.	296-23-365
296-23-330	Closed claims. [Statutory Authority: RCW 51.04.020(4), 51.04.030, and 51.16.120(3). 81-01-100 (Order 80-29), § 296-23-330, filed 12/23/80, effective 3/1/81; Order 74-7, § 296-23-330, filed 1/30/74; Order 70-12, § 296-23-330, filed 12/1/70, effective 1/1/71; Order 68-7, § 296-23-330, filed 11/27/68, effective 1/1/69.] Repealed by 87-03-005 (Order 86-47), filed 1/8/87. Statutory Authority: RCW 51.04.020(4) and 51.04.030.	296-23-370
296-23-335	RX's take home. [Statutory Authority: RCW 51.04.020(4), 51.04.030, and 51.16.120(3). 81-01-100 (Order 80-29), § 296-23-335, filed 12/23/80, effective 3/1/81; Order 76-34, § 296-23-335, filed 11/24/76, effective 1/1/77; Order 75-39, § 296-23-335, filed 11/28/75, effective 1/1/76; Order 68-7, § 296-23-335, filed 11/27/68, effective 1/1/69.] Repealed by 87-03-005 (Order 86-47), filed 1/8/87. Statutory Authority: RCW 51.04.020(4) and 51.04.030.	296-23-375
296-23-340	Routine laboratory procedures on admission. [Statutory Authority: RCW 51.04.020(4), 51.04.030, and 51.16.120(3). 81-01-100 (Order 80-29), § 296-23-340, filed 12/23/80, effective 3/1/81; Order 76-34, § 296-23-340, filed 11/24/76, effective 1/1/77; Order 75-39, § 296-23-340, filed 11/28/75, effective 1/1/76; Order 74-39, § 296-23-340, filed 11/22/74, effective 1/1/75; Order 68-7, § 296-23-340, filed 11/27/68, effective 1/1/69.] Repealed by 87-03-005 (Order 86-47), filed 1/8/87. Statutory Authority: RCW 51.04.020(4) and 51.04.030.	296-23-380
296-23-345	Per diem rate. [Order 68-7, § 296-23-345, filed 11/27/68, effective 1/1/69.] Repealed by Order 76-34, filed 11/24/76, effective 1/1/77.	296-23-385
296-23-350	Bed accommodations. [Order 74-39, § 296-23-350, filed 11/22/74, effective 1/1/75; Order 74-7, § 296-23-350, filed 1/30/74; Order 68-7, § 296-23-350, filed 11/27/68, effective 1/1/69.] Repealed by Order 75-39, filed 11/28/75, effective 1/1/76.	296-23-390
296-23-355	Rate affidavit. [Order 75-39, § 296-23-355, filed 11/28/75, effective 1/1/76; Order 74-7, § 296-23-355, filed 1/30/74; Order 70-12, § 296-23-355, filed 12/1/70, effective 1/1/71; Order 68-7, § 296-23-355, filed 11/27/68, effective 1/1/69.] Repealed by Order 76-34, filed 11/24/76, effective 1/1/77.	296-23-395
296-23-356	Billing procedures. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 86-20-074 (Order 86-36), § 296-23-356, filed 10/1/86, effective 11/1/86; 83-16-066 (Order 83-23), § 296-23-356, filed 8/2/83. Statutory Authority: RCW 51.04.020(4), 51.04.030, and 51.16.120(3). 81-24-041 (Order 81-28), § 296-23-356, filed 11/30/81, effective 1/1/82; 81-01-100 (Order 80-29), § 296-23-356, filed 12/23/80, effective 3/1/81;	296-23-400
	Order 77-27, § 296-23-356, filed 11/30/77, effective 1/1/78; Emergency Order 77-26, § 296-23-356, filed 12/1/77; Emergency Order 77-16, § 296-23-356, filed 9/6/77; Order 76-34, § 296-23-356, filed 11/24/76, effective 1/1/77; Order 75-39, § 296-23-356, filed 11/28/75, effective 1/1/76; Order 74-39, § 296-23-356, filed 11/22/74, effective 1/1/75; Order 74-7, § 296-23-356, filed 1/30/74; Order 71-6, § 296-23-356, filed 6/1/71; Order 70-12, § 296-23-356, filed 12/1/70, effective 1/1/71. Formerly WAC 296-23-355 (part).] Repealed by 87-03-005 (Order 86-47), filed 1/8/87. Statutory Authority: RCW 51.04.020(4) and 51.04.030.	
	X rays. [Statutory Authority: RCW 51.04.020(4), 51.04.030, and 51.16.120(3). 81-24-041 (Order 81-28), § 296-23-357, filed 11/30/81, effective 1/1/82; 81-01-100 (Order 80-29), § 296-23-357, filed 12/23/80, effective 3/1/81; Order 77-27, § 296-23-357, filed 11/30/77, effective 1/1/78; Emergency Order 77-26, § 296-23-357, filed 12/1/77; Emergency Order 77-16, § 296-23-357, filed 9/6/77; Order 76-34, § 296-23-357, filed 11/24/76, effective 1/1/77; Order 74-7, § 296-23-357, filed 1/30/74.] Repealed by 87-03-005 (Order 86-47), filed 1/8/87. Statutory Authority: RCW 51.04.020(4) and 51.04.030.	296-23-405
	Hospital daily service charge. [Order 74-7, § 296-23-360, filed 1/30/74; Order 68-7, § 296-23-360, filed 11/27/68, effective 1/1/69.] Repealed by Order 76-34, filed 11/24/76, effective 1/1/77.	
	Drugs. [Order 74-7, § 296-23-365, filed 1/30/74; Order 68-7, § 296-23-365, filed 11/27/68, effective 1/1/69.] Repealed by Order 76-34, filed 11/24/76, effective 1/1/77.	296-23-410
	Dressing room and emergency room. [Order 74-39, § 296-23-370, filed 11/22/74, effective 4/1/75; Order 74-7, § 296-23-370, filed 1/30/74; Order 68-7, § 296-23-370, filed 11/27/68, effective 1/1/69.] Repealed by Order 76-34, filed 11/24/76, effective 1/1/77.	296-23-412
	Anesthetic material. [Order 74-7, § 296-23-375, filed 1/30/74; Order 68-7, § 296-23-375, filed 11/27/68, effective 1/1/69.] Repealed by Order 76-34, filed 11/24/76, effective 1/1/77.	
	Anesthetic administration—General. [Order 74-39, § 296-23-380, filed 11/22/74, effective 4/1/75; Order 74-7, § 296-23-380, filed 1/30/74; Order 68-7, § 296-23-380, filed 11/27/68, effective 1/1/69.] Repealed by Order 76-34, filed 11/24/76, effective 1/1/77.	
	Anesthetic administration—Other. [Order 74-7, § 296-23-385, filed 1/30/74; Order 68-7, § 296-23-385, filed 11/27/68, effective 1/1/69.] Repealed by Order 76-34, filed 11/24/76, effective 1/1/77.	
	Surgery. [Order 74-39, § 296-23-390, filed 11/22/74, effective 4/1/75; Order 74-7, § 296-23-390, filed 1/30/74; Order 68-7, § 296-23-390, filed 11/27/68, effective 1/1/69.] Repealed by Order 76-34, filed 11/24/76, effective 1/1/77.	
	Recovery room—Use of. [Order 74-7, § 296-23-395, filed 1/30/74; Order 68-7, § 296-23-395, filed 11/27/68, effective 1/1/69.] Repealed by 81-24-041 (Order 81-28), filed 11/30/81, effective 1/1/82. Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.16.120(3).	
	Oxygen. [Order 74-7, § 296-23-400, filed 1/30/74; Order 68-7, § 296-23-400, filed 11/27/68, effective 1/1/69.] Repealed by Order 76-34, filed 11/24/76, effective 1/1/77.	
	Parenteral fluid therapy. [Order 74-7, § 296-23-405, filed 1/30/74; Order 68-7, § 296-23-405, filed 11/27/68, effective 1/1/69.] Repealed by Order 76-34, filed 11/24/76, effective 1/1/77.	
	Use of cast room for application of casts. [Order 74-7, § 296-23-410, filed 1/30/74; Order 68-7, § 296-23-410, filed 11/27/68, effective 1/1/69.] Repealed by Order 76-34, filed 11/24/76, effective 1/1/77.	
	General information and instructions. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 83-16-066 (Order 83-23), § 296-23-412, filed 8/2/83.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.	
	Cast—Materials only. [Order 74-7, § 296-23-415, filed 1/30/74; Order 68-7, § 296-23-415, filed 11/27/68, effective 1/1/69.] Repealed by Order 76-34, filed 11/24/76, effective 1/1/77.	
	Fracture appliances. [Order 74-7, § 296-23-420, filed 1/30/74; Order 68-7, § 296-23-420, filed 11/27/68,	

	effective 1/1/69.] Repealed by Order 76-34, filed 11/24/76, effective 1/1/77.		
296-23-421	Diagnostic services. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 89-17-039 (Order 89-09), § 296-23-421, filed 8/10/89, effective 9/10/89; 86-06-032 (Order 86-19), § 296-23-421, filed 2/28/86, effective 4/1/86; 83-16-066 (Order 83-23), § 296-23-421, filed 8/2/83.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.	296-23-500	Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.
296-23-425	Laboratory. [Order 74-7, § 296-23-425, filed 1/30/74; Order 68-7, § 296-23-425, filed 11/27/68, effective 1/1/69.] Repealed by Order 76-34, filed 11/24/76, effective 1/1/77.	296-23-50001	Miscellaneous services and appliances. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 87-22-052 (Order 87-22), § 296-23-500, filed 11/2/87; 83-24-016 (Order 83-35), § 296-23-500, filed 11/30/83, effective 1/1/84.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.
296-23-430	Preventive services. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 89-17-039 (Order 89-09), § 296-23-430, filed 8/10/89, effective 9/10/89; 86-06-032 (Order 86-19), § 296-23-430, filed 2/28/86, effective 4/1/86; 83-16-066 (Order 83-23), § 296-23-430, filed 8/2/83.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.	296-23-50002	Nursing services and attendant care. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-05-041, § 296-23-50001, filed 2/13/92, effective 3/15/92; 86-06-032 (Order 86-19), § 296-23-50001, filed 2/28/86, effective 4/1/86; 83-24-016 (Order 83-35), § 296-23-50001, filed 11/30/83, effective 1/1/84.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.
296-23-440	Restorative services. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 89-17-039 (Order 89-09), § 296-23-440, filed 8/10/89, effective 9/10/89; 86-06-032 (Order 86-19), § 296-23-440, filed 2/28/86, effective 4/1/86; 83-16-066 (Order 83-23), § 296-23-440, filed 8/2/83.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.	296-23-50003	Transportation services. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 91-07-008, § 296-23-50002, filed 3/8/91, effective 5/1/91; 86-06-032 (Order 86-19), § 296-23-50002, filed 2/28/86, effective 4/1/86; 83-24-016 (Order 83-35), § 296-23-50002, filed 11/30/83, effective 1/1/84.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.
296-23-450	Endodontics. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 89-17-039 (Order 89-09), § 296-23-450, filed 8/10/89, effective 9/10/89; 86-06-032 (Order 86-19), § 296-23-450, filed 2/28/86, effective 4/1/86; 83-16-066 (Order 83-23), § 296-23-450, filed 8/2/83.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.	296-23-50004	Hearing aids and masking devices. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 86-06-032 (Order 86-19), § 296-23-50003, filed 2/28/86, effective 4/1/86; 83-24-016 (Order 83-35), § 296-23-50003, filed 11/30/83, effective 1/1/84.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.
296-23-460	Periodontics. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 89-17-039 (Order 89-09), § 296-23-460, filed 8/10/89, effective 9/10/89; 86-06-032 (Order 86-19), § 296-23-460, filed 2/28/86, effective 4/1/86; 83-16-066 (Order 83-23), § 296-23-460, filed 8/2/83.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.	296-23-50005	Eyeglasses and contact lenses. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 86-06-032 (Order 86-19), § 296-23-50004, filed 2/28/86, effective 4/1/86; 83-24-016 (Order 83-35), § 296-23-50004, filed 11/30/83, effective 1/1/84.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.
296-23-470	Prosthodontics, removable—including routine postdelivery care. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 89-17-039 (Order 89-09), § 296-23-470, filed 8/10/89, effective 9/10/89; 86-06-032 (Order 86-19), § 296-23-470, filed 2/28/86, effective 4/1/86; 83-16-066 (Order 83-23), § 296-23-470, filed 8/2/83.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.	296-23-50006	Orthotics and prosthetics. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 86-06-032 (Order 86-19), § 296-23-50005, filed 2/28/86, effective 4/1/86; 83-24-016 (Order 83-35), § 296-23-50005, filed 11/30/83, effective 1/1/84.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.
296-23-480	Prosthodontics, fixed. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 89-17-039 (Order 89-09), § 296-23-480, filed 8/10/89, effective 9/10/89; 86-06-032 (Order 86-19), § 296-23-480, filed 2/28/86, effective 4/1/86; 83-16-066 (Order 83-23), § 296-23-480, filed 8/2/83.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.	296-23-50007	Medical supplies. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 86-06-032 (Order 86-19), § 296-23-50006, filed 2/28/86, effective 4/1/86; 83-24-016 (Order 83-35), § 296-23-50006, filed 11/30/83, effective 1/1/84.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.
296-23-485	Orthodontics. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 89-17-039 (Order 89-09), § 296-23-485, filed 8/10/89, effective 9/10/89; 86-06-032 (Order 86-19), § 296-23-485, filed 2/28/86, effective 4/1/86.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.	296-23-50008	Pulmonary and respiratory services and supplies. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 83-24-016 (Order 83-35), § 296-23-50007, filed 11/30/83, effective 1/1/84.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.
296-23-490	Oral surgery. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 89-17-039 (Order 89-09), § 296-23-490, filed 8/10/89, effective 9/10/89; 86-06-032 (Order 86-19), § 296-23-490, filed 2/28/86, effective 4/1/86; 83-16-066 (Order 83-23), § 296-23-490, filed 8/2/83.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.	296-23-50009	Hospital beds and accessories. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 86-06-032 (Order 86-19), § 296-23-50008, filed 2/28/86, effective 4/1/86; 83-24-016 (Order 83-35), § 296-23-50008, filed 11/30/83, effective 1/1/84.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.
296-23-495	Adjunctive general services, anesthesia and professional consultation. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 89-17-039 (Order 89-09), § 296-23-495, filed 8/10/89, effective 9/10/89; 86-06-032 (Order 86-19), § 296-23-495, filed 2/28/86, effective 4/1/86; 83-16-066 (Order 83-23), § 296-23-495, filed 8/2/83.]	296-23-50010	Traction equipment. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 86-06-032 (Order 86-19), § 296-23-50009, filed 2/28/86, effective 4/1/86; 83-24-016 (Order 83-35), § 296-23-50009, filed 11/30/83, effective 1/1/84.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.
		296-23-50011	Canes. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 83-24-016 (Order 83-35), § 296-23-50010, filed 11/30/83, effective 1/1/84.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.
			Crutches. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 83-24-016 (Order 83-35), § 296-23-50011, filed 11/30/83, effective 1/1/84.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

296-23-50012	Walkers. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 86-06-032 (Order 86-19), § 296-23-50012, filed 2/28/86, effective 4/1/86; 83-24-016 (Order 83-35), § 296-23-50012, filed 11/30/83, effective 1/1/84.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.	81-01-100 (Order 80-29), filed 12/23/80, effective 3/1/81. Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.16.120(3).
296-23-50013	Wheelchairs. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 86-06-032 (Order 86-19), § 296-23-50013, filed 2/28/86, effective 4/1/86; 83-24-016 (Order 83-35), § 296-23-50013, filed 11/30/83, effective 1/1/84.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.	296-23-61007 Treatment beyond 60 days. [Order 76-34, § 296-23-61007, filed 11/24/76, effective 1/1/77.] Repealed by 81-01-100 (Order 80-29), filed 12/23/80, effective 3/1/81. Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.16.120(3).
296-23-50014	Stimulators. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 87-22-052 (Order 87-22), § 296-23-50014, filed 11/2/87; 86-06-032 (Order 86-19), § 296-23-50014, filed 2/28/86, effective 4/1/86; 83-24-016 (Order 83-35), § 296-23-50014, filed 11/30/83, effective 1/1/84.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.	296-23-61008 Doctor's supplemental report. [Order 76-34, § 296-23-61008, filed 11/24/76, effective 1/1/77.] Repealed by 81-01-100 (Order 80-29), filed 12/23/80, effective 3/1/81. Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.16.120(3).
296-23-50015	Vehicle and home modification. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 83-24-016 (Order 83-35), § 296-23-50015, filed 11/30/83, effective 1/1/84.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.	296-23-61009 Transfer of practitioners. [Order 77-27, § 296-23-61009, filed 11/30/77, effective 1/1/78; Emergency Order 77-26, § 296-23-61009, filed 12/1/77; Emergency Order 77-16, § 296-23-61009, filed 9/6/77; Order 76-34, § 296-23-61009, filed 11/24/76, effective 1/1/77.] Repealed by 81-01-100 (Order 80-29), filed 12/23/80, effective 3/1/81. Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.16.120(3).
296-23-50016	Drug and alcohol rehabilitation services. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 86-06-032 (Order 86-19), § 296-23-50016, filed 2/28/86, effective 4/1/86.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.	296-23-61010 Concurrent treatment. [Order 76-34, § 296-23-61010, filed 11/24/76, effective 1/1/77.] Repealed by 81-01-100 (Order 80-29), filed 12/23/80, effective 3/1/81. Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.16.120(3).
296-23-510	Osteopathic office visits. [Order 68-7, § 296-23-510, filed 11/27/68, effective 1/1/69.] Repealed by Order 70-12, filed 12/1/70, effective 1/1/71.	296-23-61011 Billing procedures. [Order 77-27, § 296-23-61011, filed 11/30/77, effective 1/1/78; Emergency Order 77-26, § 296-23-61011, filed 12/1/77; Emergency Order 77-16, § 296-23-61011, filed 9/6/77; Order 76-34, § 296-23-61011, filed 11/24/76, effective 1/1/77.] Repealed by 81-01-100 (Order 80-29), filed 12/23/80, effective 3/1/81. Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.16.120(3).
296-23-515	Osteopathic hospital visits. [Order 68-7, § 296-23-515, filed 11/27/68, effective 1/1/69.] Repealed by Order 70-12, filed 12/1/70, effective 1/1/71.	296-23-615 Office visits and special services. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 87-16-004 (Order 87-18), § 296-23-615, filed 7/23/87; 83-16-066 (Order 83-23), § 296-23-615, filed 8/2/83. Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.16.120(3). 81-24-041 (Order 81-28), § 296-23-615, filed 11/30/81, effective 1/1/82; 81-01-100 (Order 80-29), § 296-23-615, filed 12/23/80, effective 3/1/81; Order 76-34, § 296-23-615, filed 11/24/76, effective 1/1/77; Order 75-39, § 296-23-615, filed 11/28/75, effective 1/1/76; Order 74-39, § 296-23-615, filed 11/22/74, effective 4/1/75; Order 74-7, § 296-23-615, filed 1/30/74; Order 68-7, § 296-23-615, filed 11/27/68, effective 1/1/69.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.
296-23-610	General instructions. [Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.16.120(3). 81-24-041 (Order 81-28), § 296-23-610, filed 11/30/81, effective 1/1/82; 81-01-100 (Order 80-29), § 296-23-610, filed 12/23/80, effective 3/1/81; Order 76-34, § 296-23-610, filed 11/24/76, effective 1/1/77; Order 75-39, § 296-23-610, filed 11/28/75, effective 1/1/76; Order 74-39, § 296-23-610, filed 11/22/74, effective 1/1/75; Order 74-7, § 296-23-610, filed 1/30/74; Order 71-6, § 296-23-610, filed 6/1/71; Order 70-12, § 296-23-610, filed 12/1/70, effective 1/1/71; Order 68-7, § 296-23-610, filed 11/27/68, effective 1/1/69.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.	296-23-620 Chiropractic consultations. [Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.16.120(3). 81-01-100 (Order 80-29), § 296-23-620, filed 12/23/80, effective 3/1/81; Order 76-34, § 296-23-620, filed 11/24/76, effective 1/1/77; Order 74-7, § 296-23-620, filed 1/30/74; Order 68-7, § 296-23-620, filed 11/27/68, effective 1/1/69.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.
296-23-61001	Who may treat. [Order 76-34, § 296-23-61001, filed 11/24/76, effective 1/1/77.] Repealed by 81-01-100 (Order 80-29), filed 12/23/80, effective 3/1/81. Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.16.120(3).	296-23-710 Physical therapy rules. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 89-08-002 (Order 89-01), § 296-23-710, filed 3/23/89, effective 5/1/89; 86-06-032 (Order 86-19), § 296-23-710, filed 2/28/86, effective 4/1/86. Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.16.120(3). 81-24-041 (Order 81-28), § 296-23-710, filed 11/30/81, effective 1/1/82; 81-01-100 (Order 80-29), § 296-23-710, filed 12/23/80, effective 3/1/81; Order 75-39, § 296-23-710, filed 11/28/75, effective 1/1/76; Order 74-39, § 296-23-710, filed 11/22/74, effective 1/1/75; Order 74-7, § 296-23-710, filed 1/30/74; Order 71-6, § 296-23-710, filed 6/1/71; Order 70-12, § 296-23-710, filed 12/1/70, effective 1/1/71; Order 68-7, § 296-23-710, filed 11/27/68, effective 1/1/69.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.
296-23-61002	Acceptance of rules and fees. [Order 76-34, § 296-23-61002, filed 11/24/76, effective 1/1/77.] Repealed by 81-01-100 (Order 80-29), filed 12/23/80, effective 3/1/81. Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.16.120(3).	296-23-715 Modalities. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 87-16-004 (Order 87-18), § 296-23-715, filed 7/23/87; 83-16-066 (Order 83-23), § 296-23-715, filed 8/2/83. Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.16.120(3). 81-01-100 (Order 80-29), § 296-23-715, filed 12/23/80, effective 3/1/81; Order 74-7, § 296-23-715, filed 1/30/74; Order 68-7, § 296-23-715, filed 11/27/68, effective 1/1/69.] Repealed by 93-
296-23-61003	Penalties. [Order 76-34, § 296-23-61003, filed 11/24/76, effective 1/1/77.] Repealed by 81-01-100 (Order 80-29), filed 12/23/80, effective 3/1/81. Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.16.120(3).	
296-23-61004	Initial treatment and report of accident. [Order 76-34, § 296-23-61004, filed 11/24/76, effective 1/1/77.] Repealed by 81-01-100 (Order 80-29), filed 12/23/80, effective 3/1/81. Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.16.120(3).	
296-23-61005	Treatment following initial treatment. [Order 77-27, § 296-23-61005, filed 11/30/77, effective 1/1/78; Emergency Order 77-26, § 296-23-61005, filed 12/1/77; Emergency Order 77-16, § 296-23-61005, filed 9/6/77; Order 76-34, § 296-23-61005, filed 11/24/76, effective 1/1/77.] Repealed by 81-01-100 (Order 80-29), filed 12/23/80, effective 3/1/81. Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.16.120(3).	
296-23-61006	Rejected and closed claims. [Order 76-34, § 296-23-61006, filed 11/24/76, effective 1/1/77.] Repealed by	

296-23-720	16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159. Procedures. [Statutory Authority: RCW 51.04.020(4) and 51.04.030, 86-06-032 (Order 86-19), § 296-23-720, filed 2/28/86, effective 4/1/86; 83-16-066 (Order 83-23), § 296-23-720, filed 8/2/83. Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.16.120(3). 81-01-100 (Order 80-29), § 296-23-720, filed 12/23/80, effective 3/1/81; Order 76-34, § 296-23-720, filed 11/24/76, effective 1/1/77; Order 74-7, § 296-23-720, filed 1/30/74.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.	296-23-81009	3/1/81. Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.16.120(3). Transfer of practitioners. [Order 77-27, § 296-23-81009, filed 11/30/77, effective 1/1/78; Emergency Order 77-26, § 296-23-81009, filed 12/1/77; Emergency Order 77-16, § 296-23-81009, filed 9/6/77; Order 76-34, § 296-23-81009, filed 11/24/76, effective 1/1/77.] Repealed by 81-01-100 (Order 80-29), filed 12/23/80, effective 3/1/81. Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.16.120(3).
296-23-725	Tests and measurements. [Statutory Authority: RCW 51.04.020(4) and 51.04.030, 91-17-038, § 296-23-725, filed 8/16/91, effective 9/30/91; 87-08-004 (Order 87-09), § 296-23-725, filed 3/20/87; 86-06-032 (Order 86-19), § 296-23-725, filed 2/28/86, effective 4/1/86; 83-16-066 (Order 83-23), § 296-23-725, filed 8/2/83. Statutory Authority: RCW 51.04.020(4), 51.04.030, and 51.16.120(3). 81-01-100 (Order 80-29), § 296-23-725, filed 12/23/80, effective 3/1/81; Order 74-7, § 296-23-725, filed 1/30/74.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.	296-23-81010	Concurrent treatment. [Order 76-34, § 296-23-81010, filed 11/24/76, effective 1/1/77.] Repealed by 81-01-100 (Order 80-29), filed 12/23/80, effective 3/1/81. Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.16.120(3).
296-23-730	Work hardening. [Statutory Authority: RCW 51.04.020(4) and 51.04.030, 89-08-002 (Order 89-01), § 296-23-730, filed 3/23/89, effective 5/1/89.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.	296-23-81011	Billing procedures. [Order 77-27, § 296-23-81011, filed 11/30/77, effective 1/1/78; Emergency Order 77-26, § 296-23-81011, filed 12/1/77; Emergency Order 77-16, § 296-23-81011, filed 9/6/77; Order 76-34, § 296-23-81011, filed 11/24/76, effective 1/1/77.] Repealed by 81-01-100 (Order 80-29), filed 12/23/80, effective 3/1/81. Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.16.120(3).
296-23-810	General instructions. [Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.16.120(3). 81-01-100 (Order 80-29), § 296-23-810, filed 12/23/80, effective 3/1/81; Order 76-34, § 296-23-810, filed 11/24/76, effective 1/1/77; Order 75-39, § 296-23-810, filed 11/28/75, effective 1/1/76; Order 74-39, § 296-23-810, filed 11/22/74, effective 1/1/75; Order 74-7, § 296-23-810, filed 1/30/74; Order 71-6, § 296-23-810, filed 6/1/71; Order 70-12, § 296-23-810, filed 12/1/70, effective 1/1/71; Order 68-7, § 296-23-810, filed 11/27/68, effective 1/1/69.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.	296-23-811	Office visits and special services. [Statutory Authority: RCW 51.04.020(4) and 51.04.030, 87-16-004 (Order 87-18), § 296-23-811, filed 7/23/87. Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.16.120(3). 81-24-041 (Order 81-28), § 296-23-811, filed 11/30/81, effective 1/1/82; 81-01-100 (Order 80-29), § 296-23-811, filed 12/23/80, effective 3/1/81; Order 76-34, § 296-23-811, filed 11/24/76, effective 1/1/77; Order 75-39, § 296-23-811, filed 11/28/75, effective 1/1/76; Order 74-39, § 296-23-811, (codified as WAC 296-23-811), filed 11/22/74, effective 4/1/75; Order 74-7, § 296-23-811, filed 1/30/74; Order 68-7, § 296-23-811, filed 11/27/68, effective 1/1/69.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.
296-23-81001	Who may treat. [Order 76-34, § 296-23-81001, filed 11/24/76, effective 1/1/77.] Repealed by 81-01-100 (Order 80-29), filed 12/23/80, effective 3/1/81. Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.16.120(3).	296-23-900	Licensed nursing rules. [Statutory Authority: RCW 51.04.020(4) and 51.04.030, 90-18-028, § 296-23-900, filed 8/27/90, effective 9/27/90; 89-17-039 (Order 89-09), § 296-23-900, filed 8/10/89, effective 9/10/89; 86-20-074 (Order 86-36), § 296-23-900, filed 10/1/86, effective 11/1/86; 83-16-066 (Order 83-23), § 296-23-900, filed 8/2/83. Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.16.120(3). 81-01-100 (Order 80-29), § 296-23-900, filed 12/23/80, effective 3/1/81; Order 74-39, § 296-23-900, filed 11/22/74, effective 4/1/75; Order 74-7, § 296-23-900, filed 1/30/74.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.
296-23-81002	Acceptance of rules and fees. [Order 76-34, § 296-23-81002, filed 11/24/76, effective 1/1/77.] Repealed by 81-01-100 (Order 80-29), filed 12/23/80, effective 3/1/81. Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.16.120(3).	296-23-910	Licensed nursing billing instructions. [Statutory Authority: RCW 51.04.020(4) and 51.04.030, 90-18-028, § 296-23-910, filed 8/27/90, effective 9/27/90; 86-20-074 (Order 86-36), § 296-23-910, filed 10/1/86, effective 11/1/86; 86-06-032 (Order 86-19), § 296-23-910, filed 2/28/86, effective 4/1/86. Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.16.120(3). 81-01-100 (Order 80-29), § 296-23-910, filed 12/23/80, effective 3/1/81; Order 74-7, § 296-23-910, filed 1/30/74.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.
296-23-81003	Penalties. [Order 76-34, § 296-23-81003, filed 11/24/76, effective 1/1/77.] Repealed by 81-01-100 (Order 80-29), filed 12/23/80, effective 3/1/81. Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.16.120(3).	296-23-940	Vocational service providers. [Statutory Authority: RCW 51.04.020(4) and 51.04.030, 82-24-050 (Order 82-39), § 296-23-940, filed 11/29/82, effective 1/1/83.] Repealed by 86-06-032 (Order 86-19), filed 2/28/86, effective 4/1/86. Statutory Authority: RCW 51.04.020(4) and 51.04.030.
296-23-81004	Initial treatment and report of accident. [Order 76-34, § 296-23-81004, filed 11/24/76, effective 1/1/77.] Repealed by 81-01-100 (Order 80-29), filed 12/23/80, effective 3/1/81. Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.16.120(3).	296-23-9401	Reasons for holding provider ineligible for referral. [Statutory Authority: RCW 51.04.020(4) and 51.04.030, 82-24-050 (Order 82-39), § 296-23-9401, filed 11/29/82, effective 1/1/83.] Repealed by 86-06-032 (Order 86-19), filed 2/28/86, effective 4/1/86. Statutory Authority: RCW 51.04.020(4) and 51.04.030.
296-23-81005	Treatment following initial treatment. [Order 77-27, § 296-23-81005, filed 11/30/77, effective 1/1/78; Emergency Order 77-26, § 296-23-81005, filed 12/1/77; Emergency Order 77-16, § 296-23-81005, filed 9/6/77; Order 76-34, § 296-23-81005, filed 11/24/76, effective 1/1/77.] Repealed by 81-01-100 (Order 80-29), filed 12/23/80, effective 3/1/81. Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.16.120(3).	296-23-9402	Time lines. [Statutory Authority: RCW 51.04.020(4) and 51.04.030, 82-24-050 (Order 82-39), § 296-23-9402, filed 11/29/82, effective 1/1/83.] Repealed by 86-06-032 (Order 86-19), filed 2/28/86, effective 4/1/86. Statutory Authority: RCW 51.04.020(4) and 51.04.030.
296-23-81006	Rejected and closed claims. [Order 76-34, § 296-23-81006, filed 11/24/76, effective 1/1/77.] Repealed by 81-01-100 (Order 80-29), filed 12/23/80, effective 3/1/81. Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.16.120(3).	296-23-9403	Services requiring authorization. [Statutory Authority: RCW 51.04.020(4) and 51.04.030, 82-24-050 (Order 82-39), § 296-23-9403, filed 11/29/82, effective 1/1/83.]
296-23-81007	Treatment beyond 60 days. [Order 76-34, § 296-23-81007, filed 11/24/76, effective 1/1/77.] Repealed by 81-01-100 (Order 80-29), filed 12/23/80, effective 3/1/81. Statutory Authority: RCW 51.04.020(4), 51.04.030 and 51.16.120(3).		
296-23-81008	Doctor's supplemental report. [Order 76-34, § 296-23-81008, filed 11/24/76, effective 1/1/77.] Repealed by 81-01-100 (Order 80-29), filed 12/23/80, effective		

- Repealed by 86-06-032 (Order 86-19), filed 2/28/86, effective 4/1/86. Statutory Authority: RCW 51.04.020(4) and 51.04.030.
- 296-23-9408 Vocational fee schedule. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 83-16-066 (Order 83-23), § 296-23-9408, filed 8/2/83. Statutory Authority: RCW 51.04.020(4) and 51.04.030. 82-24-050 (Order 82-39), § 296-23-9408, filed 11/29/82, effective 1/1/83.] Repealed by 83-24-016 (Order 83-35), filed 11/30/83, effective 1/1/84. Statutory Authority: RCW 51.04.020(4) and 51.04.030.
- 296-23-9409 Vocational services. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 83-24-016 (Order 83-35), § 296-23-9409, filed 11/30/83, effective 1/1/84.] Repealed by 86-06-032 (Order 86-19), filed 2/28/86, effective 4/1/86. Statutory Authority: RCW 51.04.020(4) and 51.04.030.
- 296-23-9410 Retraining service. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 83-24-016 (Order 83-35), § 296-23-9410, filed 11/30/83, effective 1/1/84.] Repealed by 86-06-032 (Order 86-19), filed 2/28/86, effective 4/1/86. Statutory Authority: RCW 51.04.020(4) and 51.04.030.
- 296-23-950 Massage therapy rules. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 86-06-032 (Order 86-19), § 296-23-950, filed 2/28/86, effective 4/1/86.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.
- 296-23-960 Massage—Modalities. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 86-20-074 (Order 86-36), § 296-23-960, filed 10/1/86, effective 11/1/86; 86-06-032 (Order 86-19), § 296-23-960, filed 2/28/86, effective 4/1/86.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.
- 296-23-970 Occupational therapy rules. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 89-08-002 (Order 89-01), § 296-23-970, filed 3/23/89, effective 5/1/89; 86-06-032 (Order 86-19), § 296-23-970, filed 2/28/86, effective 4/1/86.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.
- 296-23-980 Occupational therapy services. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 91-17-038, § 296-23-980, filed 8/16/91, effective 9/30/91; 87-08-004 (Order 87-09), § 296-23-980, filed 3/20/87; 86-20-074 (Order 86-36), § 296-23-980, filed 10/1/86, effective 11/1/86; 86-06-032 (Order 86-19), § 296-23-980, filed 2/28/86, effective 4/1/86.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.
- 296-23-990 Work hardening. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 89-08-002 (Order 89-01), § 296-23-990, filed 3/23/89, effective 5/1/89.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.

RADIOLOGY

WAC 296-23-135 General information—Radiology.

(1) Rules and billing procedures pertaining to all practitioners rendering services to workers are presented in the general instruction section beginning with WAC 296-20-010.

(2) Billing codes, reimbursement levels, and supporting policies are listed in the fee schedules.

(3) Refer to WAC 296-20-132 and 296-20-135 for information regarding use of the conversion factors.

(4) Refer to the fee schedules for information on use of coding modifiers.

(5) The values listed in the fee schedules only apply when these services are performed by or under the responsible supervision of a doctor.

[Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159. 94-14-044, § 296-23-135, filed 6/29/94, effective 7/30/94; 93-16-072, § 296-23-135, filed 8/1/93, effective 9/1/93.]

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WAC 296-23-140 Custody of X rays. (1) Radiographs should not be sent to the department or self-insurer unless they are requested for comparison and interpretation in determining a permanent disability, administrative or legal decisions, and for cases in litigation. X rays must be retained for a period of ten years by the radiologist or the attending doctor.

(2) X rays must be made available upon request to consultants, to medical examiners, to the department, to self-insurers, and/or the board of industrial insurance appeals.

(3) In cases where the worker transfers from one doctor to another, the former attending doctor will immediately forward all films in his possession to the new attending doctor.

(4) When a doctor's office is closed because of death, retirement, or upon leaving the state, department approved custodial arrangements must be made to insure availability on request. If a radiological office is closed for any of the previously listed reasons or because the partnership or corporation is being dissolved, disposition of X rays for industrial injuries will be handled in the same manner. In the event custodial arrangements are to be made, the department must approve the arrangements prior to transfer of X rays to the custodian so as to assure their availability to the department or self-insurer upon request.

(5) Refer to chapter 296-20 WAC (including WAC 296-20-125) and to chapter 296-21 WAC for additional information.

[Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159. 93-16-072, § 296-23-140, filed 8/1/93, effective 9/1/93.]

WAC 296-23-145 Duplication of X rays and extra views. Every attempt should be made to minimize the number of X rays taken for workers. The attending doctor or any other person or institution having possession of X rays which pertain to the injury and are deemed to be needed for diagnostic or treatment purposes should make these X rays available upon request.

The department or self-insurer will not authorize or pay for additional X rays when recent X rays are available except when presented with adequate information regarding the need to re-X ray.

[Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159. 93-16-072, § 296-23-145, filed 8/1/93, effective 9/1/93.]

PATHOLOGY

WAC 296-23-155 Pathology general information and instructions. (1) Rules and billing procedures pertaining to all practitioners rendering service to workers are presented in general information section beginning with WAC 296-20-010.

(2) Refer to WAC 296-20-132 and 296-20-135 for information regarding use of the conversion factors.

(3) Refer to the fee schedules for information on use of coding modifiers.

(4) Billing codes, reimbursement levels, and supporting policies are listed in the fee schedules.

(5) The reimbursement levels listed in the fee schedules apply only when the services are performed by or under the responsible supervision of a physician. Unless otherwise specified, the listed values include the collection and han-

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dling of the specimens by the laboratory performing the procedure. SERVICES IN PATHOLOGY AND LABORATORY are provided by the pathologist or by technologists under responsible supervision of a physician.

(6) Laboratory procedures performed by other than the billing physician shall be billed at the value charged that physician by the reference (outside) laboratory under the individual procedure number or the panel procedure number listed under "PANEL OR PROFILE TESTS" (see modifier -90).

(7) The department or self-insurer may deny payment for lab procedures which are determined to be excessive or unnecessary for management of the injury or conditions.

(8) Separate or multiple procedures: It is appropriate to designate multiple procedures that are rendered on the same date by separate entries.

[Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159, 94-14-044, § 296-23-155, filed 6/29/94, effective 7/30/94; 93-16-072, § 296-23-155, filed 8/1/93, effective 9/1/93.]

DENTAL

WAC 296-23-160 General information and instructions. (1) The department or self-insurer is responsible only for repair or replacement of teeth injured or prosthodontics broken as a result of an industrial injury.

(2) Information pertaining to industrial claims is explained in WAC 296-20-010.

(3) Information pertaining to reports of accident is outlined in WAC 296-20-025.

(4) Information pertaining to the care of workers is explained in WAC 296-20-110.

(5) An estimate of cost is not needed prior to authorization of dental work unless indicated due to the extensive nature of the dental work. The department or self-insurer reserves the right to review all charges billed.

(6) Billing instructions are listed in WAC 296-20-125. Bills for services must be itemized, specifying tooth numbers and materials used. No services will be paid on rejected or closed claims except those rendered in conjunction with a reopening application.

(7) Billing codes, billing modifiers, reimbursement levels, and supporting policies are listed in the fee schedules.

[Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159, 93-16-072, § 296-23-160, filed 8/1/93, effective 9/1/93.]

MISCELLANEOUS SERVICES AND APPLIANCES

WAC 296-23-165 Miscellaneous services and appliances. (1) The department or self-insurer will reimburse for certain proper and necessary miscellaneous services and items needed as a result of an industrial accident. Nursing care, attendant services, transportation, hearing aids, eyeglasses, orthotics and prosthetics, braces, medical supplies, oxygen systems, walking aids, and durable medical equipment are included in this classification.

(a) When a fee maximum has been established, the rate of reimbursement for miscellaneous services and items will be the supplier's usual and customary charge or the department's current fee maximum, whichever is less. In no case may a supplier or provider charge a worker the difference

between the fee maximum and their usual and customary charge.

(b) When the department or self-insurer has established a purchasing contract with a qualified supplier through an open competitive request for proposal process, the department or self-insurer will require that workers obtain specific groups of items from the contractor. When items are obtained from a contractor, the contractor will be paid at the rates established in the contract. When a purchasing contract for a selected group of items exists, suppliers who are not named in the contract will be denied reimbursement if they provide a contracted item to a worker. The noncontracting supplier, not the worker, will be financially responsible for providing an item to a worker when it should have been supplied by a contractor. This rule may be waived by an authorized representative of the department or self-insurer in special cases where a worker's attending doctor recommends that an item be obtained from another source for medical reasons or reasons of availability. In such cases, the department may authorize reimbursement to a supplier who is not named in a contract. Items or services may be provided on an emergency basis without prior authorization, but will be reviewed for appropriateness to the accepted industrial condition and medical necessity on a retrospective basis.

(2) The department or self-insurer will inform providers and suppliers of the selected groups of items for which purchasing contracts have been established, including the beginning and ending dates of the contracts.

(3) Prior authorization by an authorized representative of the department or self-insurer will be required for reimbursement of selected items and services which are provided to workers. Payment will be denied for selected items or services supplied without prior authorization. The supplier, not the worker, will be financially responsible for providing selected items or services to workers without prior authorization. In cases where a worker's doctor recommends rental or purchase of a contracted item from a supplier who lacks a contract agreement, prior authorization will be required.

The decision to grant or deny prior authorization for reimbursement of selected services or items will be based on the following criteria:

(a) The worker is eligible for coverage.

(b) The service or item prescribed is appropriate and medically necessary for treatment of the worker's accepted industrial condition.

(4) The decision to rent or purchase an item will be made based on a comparison of the projected rental costs of the item with its purchase price. An authorized representative of the department or self-insurer will decide whether to rent or purchase certain items provided they are appropriate and medically necessary for treatment of the worker's accepted condition. Decisions to rent or purchase items will be based on the following information:

(a) Purchase price of the item.

(b) Monthly rental fee.

(c) The prescribing doctor's estimate of how long the item will be needed.

(5) The department will review the medical necessity, appropriateness, and quality of items and services provided to workers.

(6) The department's STATEMENT FOR MISCELLANEOUS SERVICES form or electronic transfer format specifications must be used for billing the department for miscellaneous services, equipment, supplies, appliances, and transportation. Bills must be itemized according to instructions in WAC 296-20-125 and the department or self-insurer's billing instructions. Bills for medical appliances and equipment must include the type of item, manufacturer name, model name and number, and serial number.

(7) All miscellaneous materials, supplies and services must be billed using the appropriate HCPCS Level II codes and billing modifiers. HCPCS codes are listed in the fee schedules.

[Statutory Authority: RCW 51.04.020, 51.04.030, 51.32.060, 51.32.072, and 7.68.070, 01-18-041, § 296-23-165, filed 8/29/01, effective 10/1/01. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159. 93-16-072, § 296-23-165, filed 8/1/93, effective 9/1/93.]

WAC 296-23-180 Vehicle and home modification.

Requires prior approval from the assistant director for industrial insurance.

[Statutory Authority: RCW 51.04.020(4) and 51.04.030. 96-10-086, § 296-23-180, filed 5/1/96, effective 7/1/96. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159. 93-16-072, § 296-23-180, filed 8/1/93, effective 9/1/93.]

CHIROPRACTIC

WAC 296-23-195 Chiropractic consultations. See WAC 296-20-035, 296-20-045, and 296-20-051 for rules pertaining to consultation.

Chiropractic consultation requires prior notification to the department or self-insurer. Consultants must be from an approved list of chiropractic consultants.

The codes and reimbursement levels for chiropractic consultations services are listed in the fee schedules.

[Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159. 93-16-072, § 296-23-195, filed 8/1/93, effective 9/1/93.]

NATUROPATHIC PHYSICIANS

WAC 296-23-205 General instructions—Naturopathic physicians. (1) Refer to WAC 296-20-010 through 296-20-125 regarding general rules and billing procedures.

(2) Refer to WAC 296-20-132 and 296-20-135 regarding the use of conversion factors.

(3) In addition to general rules found in WAC 296-20-010 through 296-20-125, the following rules apply to naturopathic physicians:

(a) If the naturopathic physician is dual licensed, all treatment rendered by the practitioner must be billed as "treatment of the day." Further, the practitioner must elect and notify the department or self-insurer, which type of treatment he is providing for the injured worker, and abide by rules pertaining to area of elected treatment.

(b) Naturopathic physicians utilizing hydro-, mechano-, and/or electro-therapy modalities cannot bill for those services in addition to office visit services. Office visit includes treatment of the day.

(c) No more than one office visit will be allowed per day, except on the initial and next two subsequent visits. The

attending doctor must submit a detailed report regarding the need for the additional treatment.

(d) If necessary, X rays may be taken immediately prior to and following the initial naturopathic physician treatment without prior authorization.

(e) X rays immediately prior to and following each subsequent naturopathic physician treatment will be disallowed, unless previously authorized.

(f) Prior authorization must be obtained for X rays subsequent to initial treatment.

(g) Payment will not be made for excessive or unnecessary X rays. No payment will be made for X rays taken on rejected or closed claims, except those taken in conjunction with a reopening application.

(h) See chapter 296-23 WAC for custody requirements for X rays.

(4) Drugless therapy as a maintenance or supportive measure will not be authorized or paid.

(5) Treatment beyond the first twenty treatments or sixty days, whichever occurs first, will not be authorized without submission of a consultation report or a comprehensive comparative exam report regarding need for further care.

[Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159. 93-16-072, § 296-23-205, filed 8/1/93, effective 9/1/93.]

WAC 296-23-215 Office visits and special services—Naturopathic physicians. Definitions:

Routine office visit: A level of service pertaining to the evaluation and treatment of a condition requiring only an abbreviated history and exam.

Extended office visit: A level of service pertaining to an evaluation of patient with a new or existing problem requiring a detailed history, review of records, exam, and a formal conference with patient or family to evaluate and/or adjust therapeutic treatment management and progress.

Comprehensive office visit: A level of service pertaining to an indepth evaluation of a patient with a new or existing problem, requiring development or complete reevaluation of treatment data; includes recording of chief complaints and present illness, family history, past treatment history, personal history, system review; and a complete exam to evaluate and determine appropriate therapeutic treatment management and progress.

Reporting:

Reporting requirements are outlined in WAC 296-20-06101. The department or self-insurer will accept a brief narrative report of treatment received and the patient's progress as supporting documentation for billings in lieu of routine follow-up office notes.

Modifiers:

-22 Unusual services: When treatment services provided are greater than that usually required for listed procedures. Use of this modifier must be based on the injured worker's need for extended or unusual care. A report is required. The modifier -22 should be added to the procedure number.

-52 Reduced services: Under certain circumstances no treatment may be given, in these cases the procedure should be reduced by ten units and modifier -52 should be added to the procedure number.

Material supplied by doctor:

Department or self-insurer will reimburse the doctor for materials supplied, i.e., cervical collars, heel lifts, etc., at cost only. See RCW 19.68.010, professional license statutes.

All supplies and materials must be billed using HCPCS Level II codes as listed in the fee schedules.

The codes and reimbursement levels are listed in the fee schedules.

[Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159. 93-16-072, § 296-23-215, filed 8/1/93, effective 9/1/93.]

PHYSICAL THERAPY

WAC 296-23-220 Physical therapy rules. Practitioners should refer to WAC 296-20-010 through 296-20-125 for general information and rules pertaining to the care of workers.

Refer to WAC 296-20-132 and 296-20-135 regarding the use of conversion factors.

All supplies and materials must be billed using HCPCS Level II codes. Refer to chapter 296-21 WAC for additional information. HCPCS codes are listed in the fee schedules.

Refer to chapter 296-20 WAC (WAC 296-20-125) and to the department's billing instructions for additional information.

Physical therapy treatment will be reimbursed only when ordered by the worker's attending doctor and rendered by a licensed physical therapist or a physical therapist assistant serving under the direction of a licensed physical therapist. In addition, physician assistants may order physical therapy under these rules for the attending doctor. Doctors rendering physical therapy should refer to WAC 296-21-290.

The department or self-insurer will review the quality and medical necessity of physical therapy services provided to workers. Practitioners should refer to WAC 296-20-01002 for the department's rules regarding medical necessity and to WAC 296-20-024 for the department's rules regarding utilization review and quality assurance.

The department or self-insurer will pay for a maximum of one physical therapy visit per day. When multiple treatments (different billing codes) are performed on one day, the department or self-insurer will pay either the sum of the individual fee maximums, the provider's usual and customary charge, or \$109.92 whichever is less. These limits will not apply to physical therapy that is rendered as part of a physical capacities evaluation, work hardening program, or pain management program, provided a qualified representative of the department or self-insurer has authorized the service.

The department will publish specific billing instructions, utilization review guidelines, and reporting requirements for physical therapists who render care to workers.

Use of diaphuse or similar machines on workers is not authorized. See WAC 296-20-03002 for further information.

A physical therapy progress report must be submitted to the attending doctor and the department or the self-insurer following twelve treatment visits or one month, whichever occurs first. Physical therapy treatment beyond initial twelve treatments will be authorized only upon substantiation of improvement in the worker's condition. An outline of the proposed treatment program, the expected restoration goals, and the expected length of treatment will be required.

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Physical therapy services rendered in the home and/or places other than the practitioner's usual and customary office, clinic, or business facilities will be allowed only upon prior authorization by the department or self-insurer.

No inpatient physical therapy treatment will be allowed when such treatment constitutes the only or major treatment received by the worker. See WAC 296-20-030 for further information.

The department may discount maximum fees for treatment performed on a group basis in cases where the treatment provided consists of a nonindividualized course of therapy (e.g., pool therapy; group aerobics; and back classes).

Biofeedback treatment may be rendered on doctor's orders only. The extent of biofeedback treatment is limited to those procedures allowed within the scope of practice of a licensed physical therapist. See chapter 296-21 WAC for rules pertaining to conditions authorized and report requirements.

Billing codes and reimbursement levels are listed in the fee schedules.

[Statutory Authority: RCW 51.04.020(1) and 51.04.030. 06-09-071, § 296-23-220, filed 4/18/06, effective 7/1/06. Statutory Authority: RCW 51.04.020 and 51.04.030. 05-18-030, § 296-23-220, filed 8/30/05, effective 10/1/05. Statutory Authority: RCW 51.04.020(1) and 51.04.030. 05-09-062, § 296-23-220, filed 4/19/05, effective 7/1/05; 04-09-100, § 296-23-220, filed 4/20/04, effective 7/1/04; 03-14-043, § 296-23-220, filed 6/24/03, effective 8/1/03; 02-10-129, § 296-23-220, filed 5/1/02, effective 7/1/02; 01-10-026, § 296-23-220, filed 4/24/01, effective 7/1/01; 00-09-077, § 296-23-220, filed 4/18/00, effective 7/1/00. Statutory Authority: RCW 51.04.020(4) and 51.04.030. 99-10-043, § 296-23-220, filed 4/30/99, effective 7/1/99; 98-09-125, § 296-23-220, filed 4/22/98, effective 7/1/98; 97-10-017, § 296-23-220, filed 4/28/97, effective 7/1/97; 96-10-086, § 296-23-220, filed 5/1/96, effective 7/1/96; 95-05-072, § 296-23-220, filed 2/15/95, effective 3/18/95. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159. 94-02-045, § 296-23-220, filed 12/30/93, effective 3/1/94; 93-16-072, § 296-23-220, filed 8/1/93, effective 9/1/93.]

OCCUPATIONAL THERAPY

WAC 296-23-230 Occupational therapy rules. Practitioners should refer to WAC 296-20-010 through 296-20-125 for general information and rules pertaining to the care of workers.

Refer to WAC 296-20-132 and 296-20-135 for information regarding the conversion factors.

All supplies and materials must be billed using HCPCS Level II codes, refer to the department's billing instructions for additional information.

Occupational therapy treatment will be reimbursed only when ordered by the worker's attending doctor and rendered by a licensed occupational therapist or an occupational therapist assistant serving under the direction of a licensed occupational therapist. In addition, physician assistants may order occupational therapy under these rules for the attending doctor. Vocational counselors assigned to injured workers by the department or self-insurer may request an occupational therapy evaluation. However, occupational therapy treatment must be ordered by the worker's attending doctor or by the physician assistant.

An occupational therapy progress report must be submitted to the attending doctor and the department or self-insurer following twelve treatment visits or one month, whichever occurs first. Occupational therapy treatment beyond the initial twelve treatments will be authorized only upon substanti-

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ation of improvement in the worker's condition. An outline of the proposed treatment program, the expected restoration goals, and the expected length of treatment will be required.

The department or self-insurer will review the quality and medical necessity of occupational therapy services. Practitioners should refer to WAC 296-20-01002 for the department's definition of medically necessary and to WAC 296-20-024 for the department's rules regarding utilization review and quality assurance.

The department will pay for a maximum of one occupational therapy visit per day. When multiple treatments (different billing codes) are performed on one day, the department or self-insurer will pay either the sum of the individual fee maximums, the provider's usual and customary charge, or \$109.92 whichever is less. These limits will not apply to occupational therapy which is rendered as part of a physical capacities evaluation, work hardening program, or pain management program, provided a qualified representative of the department or self-insurer has authorized the service.

The department will publish specific billing instructions, utilization review guidelines, and reporting requirements for occupational therapists who render care to workers.

Occupational therapy services rendered in the worker's home and/or places other than the practitioner's usual and customary office, clinic, or business facility will be allowed only upon prior authorization by the department or self-insurer.

No inpatient occupational therapy treatment will be allowed when such treatment constitutes the only or major treatment received by the worker. See WAC 296-20-030 for further information.

The department may discount maximum fees for treatment performed on a group basis in cases where the treatment provided consists of a nonindividualized course of therapy (e.g., pool therapy; group aerobics; and back classes).

Billing codes, reimbursement levels, and supporting policies for occupational therapy services are listed in the fee schedules.

[Statutory Authority: RCW 51.04.020(1) and 51.04.030. 06-09-071, § 296-23-230, filed 4/18/06, effective 7/1/06. Statutory Authority: RCW 51.04.020 and 51.04.030. 05-18-030, § 296-23-230, filed 8/30/05, effective 10/1/05. Statutory Authority: RCW 51.04.020(1) and 51.04.030. 05-09-062, § 296-23-230, filed 4/19/05, effective 7/1/05; 04-09-100, § 296-23-230, filed 4/20/04, effective 7/1/04; 03-14-043, § 296-23-230, filed 6/24/03, effective 8/1/03; 02-10-129, § 296-23-230, filed 5/1/02, effective 7/1/02; 01-10-026, § 296-23-230, filed 4/24/01, effective 7/1/01; 00-09-077, § 296-23-230, filed 4/18/00, effective 7/1/00. Statutory Authority: RCW 51.04.020(4) and 51.04.030. 99-10-043, § 296-23-230, filed 4/30/99, effective 7/1/99; 98-09-125, § 296-23-230, filed 4/22/98, effective 7/1/98; 97-10-017, § 296-23-230, filed 4/28/97, effective 7/1/97; 96-10-086, § 296-23-230, filed 5/1/96, effective 7/1/96; 95-05-072, § 296-23-230, filed 2/15/95, effective 3/18/95. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159. 94-02-045, § 296-23-230, filed 12/30/93, effective 3/1/94; 93-16-072, § 296-23-230, filed 8/1/93, effective 9/1/93.]

WAC 296-23-235 Work hardening. The department will publish billing instructions, reimbursement limits, quality assurance standards, utilization review guidelines, admission criteria, outcome criteria, measures of effectiveness, minimum staffing levels, certification requirements, special reporting requirements, and other criteria that will ensure workers receive good quality services at cost-effective payment levels. Providers will be required to meet the department's

requirements in order to qualify as a work hardening provider. The department may also establish a competitive or other appropriate selection process for work hardening providers. Providers should refer to WAC 296-20-12050 regarding special programs.

Billing codes, reimbursement levels, and supporting policies for work hardening services are listed in the fee schedules.

[Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159. 93-16-072, § 296-23-235, filed 8/1/93, effective 9/1/93.]

NURSING

WAC 296-23-240 Licensed nursing rules. (1) Registered nurses and licensed practical nurses may perform private duty nursing care in industrial injury cases when the attending physician deems this care necessary. Registered nurses may be reimbursed for services as outlined by department policy. (See chapter 296-20 WAC for home nursing rules.)

(2) Advanced registered nurse practitioners (ARNPs) may perform advanced and specialized levels of nursing care on a fee for service basis in industrial injury cases within the limitations of this section. ARNPs may be reimbursed for services as outlined by department policy.

(3) In order to treat workers under the Industrial Insurance Act, the advanced registered nurse practitioner must be:

(a) Recognized by the Washington state board of nursing or other government agency as an advanced registered nurse practitioner (ARNP). For out-of-state nurses an equivalent title and training may be approved at the department's discretion.

(b) Capable of providing the department with evidence and documentation of a reliable and rapid system of obtaining physician consultations.

(4) Billing procedures outlined in the medical aid rules and fee schedules apply to all nurses.

[Statutory Authority: 2004 c 65 and 2004 c 163. 04-22-085, § 296-23-240, filed 11/2/04, effective 12/15/04. Statutory Authority: RCW 51.04.020. 03-21-069, § 296-23-240, filed 10/14/03, effective 12/1/03. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159. 93-16-072, § 296-23-240, filed 8/1/93, effective 9/1/93.]

WAC 296-23-241 Can advanced registered nurse practitioners independently perform the functions of an attending physician? Advanced registered nurse practitioners (ARNPs) may for the period of July 1, 2004, through June 30, 2007, independently perform the functions of an attending physician under the Industrial Insurance Act, with the exception of rating permanent impairment. These functions are referenced in the medical aid rules as those of a physician, attending physician, or attending doctor and include, but are not limited to:

- Completing and signing the report of accident or physician's initial report, where applicable;
- Certifying time-loss compensation;
- Completing and submitting all required or requested reports;
- Referring workers for consultations;
- Performing consultations;

- Facilitating early return to work offered by and performed for the employer(s) of record;
- Doing all that is possible to expedite the vocational process, including making an estimate of the worker's physical or mental capacities that affect the worker's employability.

ARNPs can state whether a worker has permanent impairment, such as on the department's physician's final report (PFR). ARNPs cannot rate permanent impairment or perform independent medical examinations (IMEs).

WAC 296-23-241 expires on June 30, 2007.

[Statutory Authority: 2004 c 65 and 2004 c 163. 04-22-085, § 296-23-241, filed 11/2/04, effective 12/15/04.]

WAC 296-23-245 Licensed nursing billing instructions. (1) Registered nurses may be required to obtain provider account numbers from the department as outlined by department policy.

(2) Advanced registered nurse practitioners must obtain provider account numbers from the department.

(3) Refer to WAC 296-20-132 and 296-20-135 for information regarding the conversion factors.

(4) Refer to the department's billing instructions for additional information.

(5) Services performed by advanced registered nurse practitioners must be billed using the appropriate procedure code number listed in the fee schedules preceded by a Type of Service Code "N." The rate of reimbursement for the services billed by advanced registered nurse practitioners will be ninety percent of the value listed in the fee schedules.

(6) Refer to WAC 296-20-303 for rules regarding home attendant services.

[Statutory Authority: RCW 51.04.020, 51.04.030, 51.32.060, 51.32.072, and 7.68.070. 01-18-041, § 296-23-245, filed 8/29/01, effective 10/1/01. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159. 93-16-072, § 296-23-245, filed 8/1/93, effective 9/1/93.]

ATTENDANT SERVICES

WAC 296-23-246 Attendant services. (1) **What are attendant services?** Attendant services are proper and necessary personal care services provided to maintain the injured worker in his or her residence.

(2) **Who may receive attendant services?** Workers who are temporarily or permanently totally disabled and rendered physically helpless by the nature of their industrial injury or occupational disease may receive attendant services.

(3) **Is prior authorization required for attendant services?** Yes. To be covered by the department, attendant services must be requested by the attending physician and authorized by the department before care begins.

(4) **What attendant services does the department cover?** The department covers proper and necessary attendant services that are provided consistent with the injured worker's needs, abilities and safety. Only attendant services that are necessary due to the physical restrictions caused by the accepted industrial injury or occupational disease are covered.

The following are examples of attendant services that may be covered:

- Bathing and personal hygiene;

- Dressing;
- Administration of medications;
- Specialized skin care, including changing or caring for dressings or ostomies;
- Tube feeding;
- Feeding assistance (not meal preparation);
- Mobility assistance, including walking, toileting and other transfers;
- Turning and positioning;
- Bowel and incontinent care; and
- Assistance with basic range of motion exercises.

Services the department considers everyday environmental needs, unrelated to the medical care of the worker are not covered. The following chore services are examples of services that are not covered: Housecleaning, laundry, shopping, meal planning and preparation, transportation of the injured worker, errands for the injured worker, recreational activities, yard work, and child care.

(5) **Who may provide attendant services?** Attendant services provided on or after June 1, 2002, must be provided through an agency licensed, certified or registered to provide home care or home health services.

EXCEPTION: A worker who received department approved attendant services from a spouse prior to October 1, 2001, may continue to receive attendant services from that spouse as long as all of the following criteria are met. The attendant service spouse provider:

- (a) Had an active provider account with the department on September 30, 2001; and
- (b) Maintains an active provider account with the department; and
- (c) Remains legally married to the injured worker; and
- (d) Allows the department or its designee to perform periodic independent nursing evaluations in the worker's residence.

(6) **What are the treatment limits for attendant services?** The department will determine the maximum hours of authorized attendant care services based on an independent nursing assessment of the worker's care needs.

Spouses eligible to provide attendant services are limited to a maximum of seventy hours of attendant services per week or to the maximum hours authorized for the worker, whichever is less. Workers who are receiving attendant services from spouses and whose care needs exceed seventy hours per week must receive attendant services in excess of seventy hours from an agency eligible to provide attendant services.

EXCEPTION: The department may exempt a spouse from the seventy-hour limit if, after review by the department and based on independent nursing assessment:

- (a) The injured worker is receiving proper and necessary care; and
- (b) The worker's care needs exceed seventy hours per week; and
- (c) No eligible agency provider is available.

(7) **Will the department review attendant services?** Yes. The department or its designee will perform periodic independent nursing evaluations of attendant services. Evaluations may include, but are not limited to, on-site review of the injured worker and review of medical records.

[Statutory Authority: RCW 51.04.020. 03-21-069, recodified as § 296-23-246, filed 10/14/03, effective 12/1/03. Statutory Authority: RCW 51.04.020, 51.04.030, 51.32.060, 51.32.072, and 7.68.070. 01-18-041, § 296-20-303, filed 8/29/01, effective 10/1/01.]

WAC 296-23-250 Massage therapy rules. Practitioners should refer to WAC 296-20-010 through 296-20-125 for general information and rules pertaining to the care of workers. See WAC 296-20-125 for billing instructions.

Refer to WAC 296-20-132 and 296-20-135 for information regarding use of the conversion factors.

Massage therapy treatment will be permitted when given by a licensed massage practitioner only upon written orders from the worker's attending doctor. In addition, physician assistants may order massage therapy under these rules for the attending doctor.

A progress report must be submitted to the attending doctor and the department or the self-insurer following six treatment visits or one month, whichever comes first. Massage therapy treatment beyond the initial six treatments will be authorized only upon substantiation of improvement in the worker's condition in terms of functional modalities, i.e., range of motion; sitting and standing tolerance; reduction in medication; etc. In addition, an outline of the proposed treatment program, the expected restoration goals, and the expected length of treatment will be required.

Massage therapy in the home and/or places other than the practitioners usual and customary business facilities will be allowed only upon prior justification and authorization by the department or self-insurer.

No inpatient massage therapy treatment will be allowed when such treatment constitutes the only or major treatment received by the worker. See WAC 296-20-030 for further information.

Massage therapy treatments exceeding once per day must be justified by attending doctor.

Billing codes, reimbursement levels, and supporting policies for massage therapy services are listed in the fee schedules.

[Statutory Authority: RCW 51.04.020 and 51.04.030. 05-18-030, § 296-23-250, filed 8/30/05, effective 10/1/05. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159. 93-16-072, § 296-23-250, filed 8/1/93, effective 9/1/93.]

INDEPENDENT MEDICAL EXAMINATION

WAC 296-23-302 Definitions. Direct patient care. For the purpose of meeting the qualifications of an independent medical examination (IME) provider, direct patient care means face-to-face contact with the patient for the purpose of evaluation and management of care that includes, but is not limited to:

- History taking and review of systems;
- Physical examination;
- Medical decision making;
- Coordination of care with other providers and agencies.

This does not include time spent in independent medical examinations.

Impairment rating examination. An examination to determine whether or not the injured/ill worker has any permanent impairment(s) as a result of the industrial injury or illness after the worker has reached maximum medical improvement. An impairment rating may be a component of an IME.

Independent medical examination (IME). An objective medical examination requested by the department or self-

insurer to establish medical facts about a worker's physical condition.

Independent medical examination (IME) provider. A firm, partnership, corporation, or individual doctor who has been approved and given an independent medical examination (IME) provider number by the department to perform IMEs.

Medical director. A licensed doctor in the firm, partnership, corporation or other legal entity responsible to provide oversight on quality of independent medical examinations, impairment ratings and reports.

Medical examiners' handbook. A handbook distributed by the department containing department policy and information to assist doctors who perform independent medical examinations and impairment rating examinations.

Provider number. A unique number(s) assigned to a provider by the department of labor and industries. The number identifies the provider and is linked to a tax identification number that has been designated by the provider for payment purposes. A provider may have more than one provider number assigned by the department.

[Statutory Authority: RCW 51.32.055, 51.32.112, 51.32.114, 51.36.060, and 51.36.070. 04-04-029, § 296-23-302, filed 1/27/04, effective 3/1/04.]

WAC 296-23-307 Why are independent medical examinations requested? Independent medical examinations (IMEs) are requested by the department or the self-insurer. Generally, IMEs are ordered for one or more of the following reasons, including, but not limited to:

- (1) Establish a diagnosis;
- (2) Outline a program of treatment;
- (3) Evaluate what, if any, conditions are related to the claimed industrial injury or occupational disease/illness;
- (4) Determine whether an industrial injury or occupational disease/illness has aggravated a preexisting condition and the extent or duration of that aggravation;
- (5) Establish when the accepted industrial injury or occupational disease/illness has reached maximum medical improvement;
- (6) Establish an impairment rating;
- (7) Evaluate whether the industrial injury or occupational disease/illness has worsened; or
- (8) Evaluate the worker's mental and/or physical restrictions as well as the worker's ability to work.

[Statutory Authority: RCW 51.32.055, 51.32.112, 51.32.114, 51.36.060, and 51.36.070. 04-04-029, § 296-23-307, filed 1/27/04, effective 3/1/04.]

WAC 296-23-312 Can a provider conduct independent medical examinations (IMEs) for the department or self-insurer without an active IME provider number from the department? No. Only doctors who possess an active IME provider number can provide independent medical examinations for the department or self-insurer. Providers must submit an IME provider application and be approved by the department to receive this number.

[Statutory Authority: RCW 51.32.055, 51.32.112, 51.32.114, 51.36.060, and 51.36.070. 04-04-029, § 296-23-312, filed 1/27/04, effective 3/1/04.]

WAC 296-23-317 What qualifications must a provider meet to receive an independent medical examina-

tion (IME) provider number? In order to ensure high quality independent medical examinations, the department shall only approve an IME provider number for persons, firms, partnerships, corporations or other legal entities that meet the following qualification requirements:

(1) Providers who wish to bill or get paid for independent medical examinations or related services must apply for and receive an IME provider number. Issuance of an IME provider number does not guarantee IME referrals.

Doctors licensed to practice:					
Examiner is:	Medicine & surgery	Osteopathic medicine & surgery	Podiatric medicine & surgery	Chiropractic	Dentistry
In Washington	Yes	Yes	Yes	Yes	Yes
Not in Washington	Yes	Yes	Yes	No	Yes

(4) A provider licensed to practice chiropractic in Washington must also meet all the following requirements:

(a) Be a chiropractic consultant for the department for at least two years;

(b) Take an impairment rating course approved by the department; and

(c) Attend the department's chiropractic consultant and examiners' seminar during the twenty-four months prior to application.

(5) Business requirements:

(a) Providers must conduct independent medical examinations only in a professional office suitable for medical, dental, podiatric, chiropractic or psychiatric examinations where the primary use of the examination site is for medical services; not residential, commercial, educational or retail in nature. The site must have, at a minimum, adequate access, climate control, light, space and equipment to provide for the comfort and safety of the injured/ill worker and provide the privacy necessary for workers to discuss their medical issues.

(b) Providers must comply with all federal and state laws, regulations and other requirements with regard to business operations, including specific requirements for business operations for the provision of medical services.

(c) Providers must have a private disrobing area and adequate provision of examination gowns.

(d) Providers must have telephone answering capability during regular business hours, Monday through Friday, in order to facilitate scheduling of independent medical examinations and means for workers to contact the provider regarding their scheduled examination. If the office is open on Saturday, telephone access must be available.

(e) In order to be assigned an IME provider number, an IME firm, partnership, corporation or other legal entity must have a medical director. The medical director must be a licensed provider and be responsible to provide oversight on the quality of independent medical examinations, impairment ratings and reports.

[Statutory Authority: RCW 51.32.055, 51.32.112, 51.32.114, 51.36.060, and 51.36.070. 04-04-029, § 296-23-317, filed 1/27/04, effective 3/1/04.]

WAC 296-23-322 What boards are recognized by the department for independent medical examination (IME) provider approval? The department accepts certifications

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(2) Providers must have and maintain a current license to practice in the state in which they conduct IMEs and meet at least one of the two following requirements:

(a) Board certification in their medical specialty; or

(b) A minimum of an average of eight hours per week over the past two years of direct patient care in their medical specialty (excluding IMEs).

(3) Only providers in the following practice specialties who meet all other requirements may perform IMEs;

from boards recognized by the following as meeting the board certification requirements in WAC 296-23-317:

(1) American Board of Medical Specialties;

(2) American Osteopathic Association (AOA) Bureau of Osteopathic Specialties;

(3) American Podiatric Medical Association;

(4) American Dental Association.

[Statutory Authority: RCW 51.32.055, 51.32.112, 51.32.114, 51.36.060, and 51.36.070. 04-04-029, § 296-23-322, filed 1/27/04, effective 3/1/04.]

WAC 296-23-327 What other factors may the department's medical director consider in approving or disapproving an application for an independent medical examination (IME) provider number? The department's medical director considers other factors in approving or disapproving an IME application, including, but not limited to, the following:

(1) Complaints about the provider;

(2) Quality of reports;

(3) Timeliness of reports;

(4) Charges regarding any crime, gross misdemeanor, felony or violation of statutes or rules by any administrative agency, court or board;

(5) Convictions of any crime, gross misdemeanor, felony or violation of statutes or rules by any administrative agency, court or board.

[Statutory Authority: RCW 51.32.055, 51.32.112, 51.32.114, 51.36.060, and 51.36.070. 04-04-029, § 296-23-327, filed 1/27/04, effective 3/1/04.]

WAC 296-23-332 What are the requirements for notifying the department or self-insurer if an independent medical examination (IME) provider has a change in status? Providers must immediately notify the department of any change in status that might affect their qualifications for an independent medical examination (IME) provider number. The notification must be in writing. Providers must include a copy of any charges or final orders if applicable. Changes in status include, but are not limited to:

(1) Changes in time spent in direct patient care;

(2) Loss or restriction of hospital admitting or practice privileges;

(3) Changes affecting business requirements (WAC 296-23-317);

(4) Loss of board certification;

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(5) Charges regarding any crime, gross misdemeanor, felony or violation of statutes or rules by any administrative agency, court or board;

(6) Convictions of any crime, gross misdemeanor, felony or violation of statutes or rules by any administrative agency, court or board;

(7) Temporary or permanent probation, suspension, revocation, or limitation placed on their license to practice by any court, board, or administrative agency in any state or foreign jurisdiction.

[Statutory Authority: RCW 51.32.055, 51.32.112, 51.32.114, 51.36.060, and 51.36.070. 04-04-029, § 296-23-332, filed 1/27/04, effective 3/1/04.]

WAC 296-23-337 What factors does the department's medical director consider in suspending or terminating an independent medical examination (IME) provider number? The department's medical director may consider several factors in suspending or terminating an IME provider number. Examples include, but are not limited to:

- (1) Complaints about the provider;
- (2) Disciplinary proceedings or actions;
- (3) Proceedings in any court dealing with the provider's professional conduct, quality of care and criminal actions;
- (4) Ability to effectively convey and substantiate medical opinions and conclusions concerning workers;
- (5) Untimely reports;
- (6) Substandard quality of reports or failure to comply with current department policy on report contents;
- (7) Unavailability or lack of willingness to responsibly communicate with the department or self-insurer;
- (8) Unavailability or lack of willingness to testify on behalf of the department or self-insurer, worker, or employer;
- (9) Failure to stay current in the area of specialty and in the areas of impairment rating, performance of IMEs, industrial injury and occupational disease/illness, industrial insurance statutes, regulations and policies;
- (10) Failure to continue to maintain the criteria to be an IME provider;
- (11) Misrepresentation of information provided to the department;
- (12) Failure to inform the department of changes affecting the provider's status as an IME provider;
- (13) Failure to comply with the department's orders, statutes, rules, or policies; and
- (14) Failure to accept the department fee schedule rate for testimony or independent medical examinations.

[Statutory Authority: RCW 51.32.055, 51.32.112, 51.32.114, 51.36.060, and 51.36.070. 04-04-029, § 296-23-337, filed 1/27/04, effective 3/1/04.]

WAC 296-23-342 Are providers entitled to referrals from the department or self-insurer? No. The department or self-insured employer refers industrially injured or ill workers for independent medical examination (IME) services at their sole discretion. No provider is entitled to referrals from the referral source.

[Statutory Authority: RCW 51.32.055, 51.32.112, 51.32.114, 51.36.060, and 51.36.070. 04-04-029, § 296-23-342, filed 1/27/04, effective 3/1/04.]

[Title 296 WAC—p. 622]

WAC 296-23-347 What are the independent medical examination (IME) provider's responsibilities in an examination? (1) The IME provider's responsibilities prior to the examination are to:

- (a) Be familiar with the contents of the medical examiner's handbook;
- (b) Review all claim documents provided by the department or self-insured employer;
- (c) Contact the worker prior to the examination to confirm the appointment date, time and location; and
- (d) Review the purpose of the examination and the questions to be answered in the examination report.

(2) The IME provider's responsibilities during the examination are to:

- (a) Introduce himself or herself to the worker;
- (b) Verify the identity of the worker;
- (c) Let the worker know that the claim documents from the department or self-insurer have been reviewed;
- (d) Explain the examination process and answer the worker's questions about the examination process;
- (e) Advise the worker that he/she should not perform any activities beyond their physical capabilities;
- (f) Allow the worker to remain fully dressed while taking the history;
- (g) Ensure adequate draping and privacy if the worker needs to remove clothing for the examination;
- (h) Refrain from expressing personal opinions about the worker, the employer, the attending doctor, or the care the worker has received;
- (i) Conduct an examination that is unbiased, sound and sufficient to achieve the purpose and reason the examination was requested;
- (j) Conduct the examination with dignity and respect for the worker;
- (k) Ask if there is any further information the worker would like to provide; and
- (l) Close the examination by telling the worker that the examination is over.

(3) The IME provider's responsibilities following the examination are to:

- (a) Send a complete IME report to the department or self-insurer within fourteen calendar days of the examination date, or within fourteen calendar days of receipt of the results of any special tests or studies requested as a part of the examination. Reports received after fourteen calendar days may be paid at a lower rate per the fee schedule. The report must meet the requirements of WAC 296-23-382; and
- (b) The claim file information received from the department or self-insurer should be disposed of in a manner used for similar health records containing private information after completion of the IME or any follow-up test results are received. IME reports should be retained per WAC 296-20-02005.

[Statutory Authority: RCW 51.32.055, 51.32.112, 51.32.114, 51.36.060, and 51.36.070. 04-04-029, § 296-23-347, filed 1/27/04, effective 3/1/04.]

WAC 296-23-352 Must the independent medical examination (IME) provider address job analyses (JAs) at the request of the department or self-insurer? Job analyses (JAs) sent to the IME provider at the time of the IME referral must be completed and submitted with the IME

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report. JAs submitted within sixty calendar days after the IME must be completed and returned within fourteen calendar days of receipt of the JAs.

[Statutory Authority: RCW 51.32.055, 51.32.112, 51.32.114, 51.36.060, and 51.36.070. 04-04-029, § 296-23-352, filed 1/27/04, effective 3/1/04.]

WAC 296-23-357 May an independent medical examination (IME) provider offer to provide ongoing treatment to the worker? No. However, if a worker voluntarily approaches an IME provider who has previously examined the worker and asks to be treated by that provider, the provider can treat the worker. The provider must document that the worker was aware of other treatment options.

[Statutory Authority: RCW 51.32.055, 51.32.112, 51.32.114, 51.36.060, and 51.36.070. 04-04-029, § 296-23-357, filed 1/27/04, effective 3/1/04.]

WAC 296-23-362 May a worker bring someone with them to an independent medical examination (IME)? (1) Workers can bring an adult friend or family member to the IME to provide comfort and reassurance. That accompanying person may attend the physical examination but may not attend a psychiatric examination.

(2) The accompanying person cannot be compensated for attending the examination by anyone in any manner.

(3) The worker may not bring an interpreter to the examination. If interpretive services are needed, the department or self-insurer will provide an interpreter.

(4) The purpose of the IME is to provide information to assist in the determination of the level of any permanent impairment not to conduct an adversarial procedure. Therefore, the accompanying person cannot be:

(a) The worker's attorney, paralegal, any other legal representative, or any other personnel employed by the worker's attorney or legal representative; or

(b) The worker's attending doctor, any other provider involved in the worker's care, or any other personnel employed by the attending doctor or other provider involved in the worker's care.

The department may designate other conditions under which the accompanying person is allowed to be present during the IME.

[Statutory Authority: RCW 51.32.055, 51.32.112, 51.32.114, 51.36.060, and 51.36.070. 04-04-029, § 296-23-362, filed 1/27/04, effective 3/1/04.]

WAC 296-23-367 May the worker videotape or audiotape the independent medical examination? The use of recording equipment of any kind by the worker or accompanying person is not allowed.

[Statutory Authority: RCW 51.32.055, 51.32.112, 51.32.114, 51.36.060, and 51.36.070. 04-04-029, § 296-23-367, filed 1/27/04, effective 3/1/04.]

WAC 296-23-372 Can a worker file a complaint about a provider's conduct during an independent medical examination? Workers can send written complaints about a provider's conduct during an independent medical examination to the self-insurer or department. Based on the nature of the complaint, the department may refer the complaint to the department of health.

[Statutory Authority: RCW 51.32.055, 51.32.112, 51.32.114, 51.36.060, and 51.36.070. 04-04-029, § 296-23-372, filed 1/27/04, effective 3/1/04.]

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WAC 296-23-377 If an independent medical examination (IME) provider is asked to do an impairment rating examination only, what information must be included in the report? When doing an impairment rating examination, the IME provider must first review the determination by the attending doctor that the worker has reached maximum medical improvement (MMI).

(1) If, after reviewing the records, taking a history from the worker and performing the examination, the IME provider concurs with the attending doctor's determination of MMI, the impairment rating report must, at a minimum, contain the following:

(a) A statement of concurrence with the attending doctor's determination of MMI;

(b) Pertinent details of the physical or psychiatric examination performed (both positive and negative findings);

(c) Results of any pertinent diagnostic tests performed (both positive and negative findings). Include copies of pertinent tests with the report;

(d) An impairment rating consistent with the findings and a statement of the system on which the rating was based (for example, the *AMA Guides to the Evaluation of Permanent Impairment* and edition used, or the Washington state category rating system - refer to WAC 296-20-19000 through 296-20-19030 and WAC 296-20-200 through 296-20-690); and

(e) The rationale for the rating, supported by specific references to the clinical findings, especially objective findings and supporting documentation including the specific rating system, tables, figures and page numbers on which the rating was based.

(2) If, after review of the records, a history from the worker and the examination, the IME provider does not concur with the attending doctor's determination of MMI, an IME report must be completed. (See WAC 296-23-382.)

[Statutory Authority: RCW 51.32.055, 51.32.112, 51.32.114, 51.36.060, and 51.36.070. 04-04-029, § 296-23-377, filed 1/27/04, effective 3/1/04.]

WAC 296-23-381 What rating systems are used for determining an impairment rating conducted by an independent medical examination (IME) provider? The following table provides guidance regarding the rating systems generally used. These rating systems or others adopted through department policies should be used to conduct an impairment rating.

Overview of Systems for Rating Impairment

Rating System	Used for These Conditions	Form of the Rating
RCW 51.32.080	Specified disabilities: Loss by amputation, total loss of vision or hearing	Supply the level of amputation
<i>AMA Guides to the Evaluation of Permanent Impairment</i>	Loss of function of extremities, partial loss of vision or hearing	Determine the percentage of loss of function, as compared to amputation value listed in RCW 51.32.080

[Title 296 WAC—p. 623]

Overview of Systems for Rating Impairment

Category Rating System	Spine, neurologic system, mental health, respiratory, taste and smell, speech, skin, or disorders affecting other internal organs	Select the category that most accurately indicates overall impairment
Total Bodily Impairment (TBI)	Impairments not addressed by any of the rating systems above, and claims prior to 1971	Supply the percentage of TBI

[Statutory Authority: RCW 51.32.055, 51.32.112, 51.32.114, 51.36.060, and 51.36.070. 04-04-029, § 296-23-381, filed 1/27/04, effective 3/1/04.]

WAC 296-23-382 What information must be included in an independent medical examination (IME) report? (1) It is the department's intention to purchase objective examinations to ensure that sure and certain determinations are made of all benefits to which the worker might be entitled. The independent medical examination report must:

(a) Contain objective, sound and sufficient medical information;

(b) Document the review of the claim documents provided by the department or self-insurer;

(c) Document the worker's history and the clinical findings;

(d) Answer all the written questions posed by the department or self-insurer or include a description of what would be needed to address the questions;

(e) Include objective conclusions and recommendations supported by underlying rationale that links the medical history and clinical findings;

(f) Be in compliance with current department reporting policies; and

(g) Be signed by the IME provider performing the examination.

(2) An impairment rating report may be requested as a component of an IME. Impairment rating reports are to be done as specified in WAC 296-20-200 and 296-20-2010 (2)(a) through (e) and 296-23-377.

[Statutory Authority: RCW 51.32.055, 51.32.112, 51.32.114, 51.36.060, and 51.36.070. 04-04-029, § 296-23-382, filed 1/27/04, effective 3/1/04.]

WAC 296-23-387 What are the responsibilities of an independent medical examination (IME) provider regarding testimony? IME providers must make themselves reasonably available to testify at the board of industrial insurance appeals or by deposition. In signing the application to be an independent medical examination provider, the provider agrees to perform examinations and be available to testify and to answer questions about the medical facts of the case at rates established under the authority of Washington industrial insurance law. Failure to comply with this requirement may result in termination of the IME provider number.

[Statutory Authority: RCW 51.32.055, 51.32.112, 51.32.114, 51.36.060, and 51.36.070. 04-04-029, § 296-23-387, filed 1/27/04, effective 3/1/04.]

[Title 296 WAC—p. 624]

WAC 296-23-392 Is there a fee schedule for independent medical examinations? The maximum fee schedule for performing independent medical examinations is published by the department in the *Medical Aid Rules and Fee Schedule* available from the department.

[Statutory Authority: RCW 51.32.055, 51.32.112, 51.32.114, 51.36.060, and 51.36.070. 04-04-029, § 296-23-392, filed 1/27/04, effective 3/1/04.]

Chapter 296-23A WAC HOSPITALS

WAC

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- 296-23A-0440 How does the department calculate the base price for DRG hospitals, except major teaching hospitals?

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296-23A-0450	What cases does the department exclude from base price calculations?		93-16-072, § 296-23A-110, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020(4) and 51.04.030. 87-03-005 (Order 86-47), § 296-23A-110, filed 1/8/87.] Repealed by 97-06-066, filed 2/28/97, effective 4/1/97. Statutory Authority: RCW 51.04.020, 51.04.030 and 51.36.080.
296-23A-0460	How does the department calculate the diagnosis-related-group (DRG) per case payment rate for a particular hospital?		
296-23A-0470	Which exclusions and exceptions apply to diagnosis-related-group (DRG) payments for hospital services?	296-23A-115	Hospital outpatient services conversion factors. [Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159. 93-16-072, § 296-23A-115, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020(4) and 51.04.030. 91-02-063, § 296-23A-115, filed 12/28/90, effective 1/28/91; 88-24-011 (Order 88-28), § 296-23A-115, filed 12/1/88, effective 1/1/89; 87-03-005 (Order 86-47), § 296-23A-115, filed 1/8/87.] Repealed by 97-06-066, filed 2/28/97, effective 4/1/97. Statutory Authority: RCW 51.04.020, 51.04.030 and 51.36.080.
296-23A-0480	Which hospitals does the department exclude from diagnosis-related-group (DRG) payments?		
296-23A-0490	Which hospital services does the department include in diagnosis-related-group (DRG) rates?		
296-23A-0500	When does a case qualify for high outlier status?		
296-23A-0520	How does the department pay for high outlier cases?		
296-23A-0530	How does a case qualify for low outlier status?		
296-23A-0540	How does the department pay for low outlier cases?		
296-23A-0550	Under what circumstances will the department pay for interim bills?	296-23A-120	Questionable eligibility. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 87-03-005 (Order 86-47), § 296-23A-120, filed 1/8/87.] Repealed by 97-06-066, filed 2/28/97, effective 4/1/97. Statutory Authority: RCW 51.04.020, 51.04.030 and 51.36.080.
296-23A-0560	How does the department define and pay for hospital readmissions?		
296-23A-0570	How does the department define a transfer case?		
296-23A-0575	How does the department pay a transferring hospital for a transfer case?	296-23A-125	Refund of incorrect payments. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 87-03-005 (Order 86-47), § 296-23A-125, filed 1/8/87.] Repealed by 97-06-066, filed 2/28/97, effective 4/1/97. Statutory Authority: RCW 51.04.020, 51.04.030 and 51.36.080.
296-23A-0580	How does the department pay the receiving hospital for a transfer case?		
PART 3 - REQUESTING A HOSPITAL RATE ADJUSTMENT			
296-23A-0600	How can a hospital request a rate adjustment?	296-23A-130	Treatment of unrelated illness or injury. [Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159. 93-16-072, § 296-23A-130, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020(4) and 51.04.030. 87-03-005 (Order 86-47), § 296-23A-130, filed 1/8/87.] Repealed by 97-06-066, filed 2/28/97, effective 4/1/97. Statutory Authority: RCW 51.04.020, 51.04.030 and 51.36.080.
296-23A-0610	Where must hospitals submit requests for rate adjustments?		
296-23A-0620	What action will the department take upon receipt of a request for a rate adjustment?		
PART 4 - AMBULATORY PAYMENT CLASSIFICATION PAYMENT METHODS AND POLICIES			
296-23A-0700	What is the "ambulatory payment classification" (APC) payment system?	296-23A-135	Closed claims. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 87-03-005 (Order 86-47), § 296-23A-135, filed 1/8/87.] Repealed by 97-06-066, filed 2/28/97, effective 4/1/97. Statutory Authority: RCW 51.04.020, 51.04.030 and 51.36.080.
296-23A-0710	Definitions.		
296-23A-0720	How does the department calculate the hospital-specific per APC rate used for paying outpatient services under the outpatient prospective payment system (OPPS)?	296-23A-140	Take-home Rx's. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 87-03-005 (Order 86-47), § 296-23A-140, filed 1/8/87.] Repealed by 97-06-066, filed 2/28/97, effective 4/1/97. Statutory Authority: RCW 51.04.020, 51.04.030 and 51.36.080.
296-23A-0730	How does the department determine the APC relative weights?		
296-23A-0740	How does the department calculate payments for covered outpatient services through the outpatient prospective payment system (OPPS)?	296-23A-145	Routine laboratory procedures on admission. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 87-03-005 (Order 86-47), § 296-23A-145, filed 1/8/87.] Repealed by 97-06-066, filed 2/28/97, effective 4/1/97. Statutory Authority: RCW 51.04.020, 51.04.030 and 51.36.080.
296-23A-0750	What exclusions and exceptions apply to ambulatory-payment-classification (APC) payments for hospital services?		
296-23A-0770	How will excluded outpatient services and hospitals be paid?	296-23A-150	Billing procedures. [Statutory Authority: RCW 51.04.-020, 51.04.030 and 1993 c 159. 93-16-072, § 296-23A-150, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020(4) and 51.04.030. 90-04-057, § 296-23A-150, filed 2/2/90, effective 3/5/90; 87-16-004 (Order 87-18), § 296-23A-150, filed 7/23/87; 87-03-005 (Order 86-47), § 296-23A-150, filed 1/8/87.] Repealed by 97-06-066, filed 2/28/97, effective 4/1/97. Statutory Authority: RCW 51.04.020, 51.04.030 and 51.36.080.
296-23A-0780	What information needs to be submitted for the hospital to be paid for outpatient services?		
DISPOSITION OF SECTIONS FORMERLY CODIFIED IN THIS CHAPTER			
296-23A-100	General information. [Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159. 93-16-072, § 296-23A-100, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020(4) and 51.04.030. 87-16-004 (Order 87-18), § 296-23A-100, filed 7/23/87; 87-03-005 (Order 86-47), § 296-23A-100, filed 1/8/87.] Repealed by 97-06-066, filed 2/28/97, effective 4/1/97. Statutory Authority: RCW 51.04.020, 51.04.030 and 51.36.080.	296-23A-155	New hospitals. [Statutory Authority: RCW 51.04.020 (4) and 51.04.030. 87-24-050 (Order 87-23), § 296-23A-155, filed 11/30/87, effective 1/1/88.] Repealed by 97-06-066, filed 2/28/97, effective 4/1/97. Statutory Authority: RCW 51.04.020, 51.04.030 and 51.36.080.
296-23A-105	Payment for hospital inpatient and outpatient services. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-23A-105, filed 12/1/92, effective 1/1/93; 87-24-050 (Order 87-23), § 296-23A-105, filed 11/30/87, effective 1/1/88; 87-03-005 (Order 86-47), § 296-23A-105, filed 1/8/87.] Repealed by 97-06-066, filed 2/28/97, effective 4/1/97. Statutory Authority: RCW 51.04.020, 51.04.030 and 51.36.080.	296-23A-160	Excluded and included services. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-23A-160, filed 12/1/92, effective 1/1/93; 87-24-050 (Order 87-23), § 296-23A-160, filed 11/30/87, effective 1/1/88.] Repealed by 97-06-066, filed 2/28/97, effective 4/1/97. Statutory Authority: RCW 51.04.020, 51.04.030 and 51.36.080.
296-23A-106	Reimbursement for inpatient services by per case rates and percentage of allowed charges. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-23A-106, filed 12/1/92, effective 1/1/93.] Repealed by 97-06-066, filed 2/28/97, effective 4/1/97. Statutory Authority: RCW 51.04.020, 51.04.030 and 51.36.080.	296-23A-165	Out-of-state hospitals. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 87-24-050 (Order 87-23), § 296-23A-165, filed 11/30/87, effective 1/1/88.] Repealed by 97-06-066, filed 2/28/97, effective 4/1/97. Statutory Authority: RCW 51.04.020, 51.04.030 and 51.36.080.
296-23A-110	Hospital outpatient fee schedule information. [Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.	296-23A-170	Outliers. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-23A-170, filed 12/1/92, effective 1/1/93; 90-04-057, § 296-23A-170, filed 2/2/90, effective 3/5/90; 87-24-050 (Order 87-23), § 296-23A-170, filed 11/30/87, effective 1/1/88.] Repealed by 97-06-066, filed 2/28/97, effective 4/1/97.

	Statutory Authority: RCW 51.04.020, 51.04.030 and 51.36.080.		Statutory Authority: RCW 51.04.020, 51.04.-030 and 1993 c 159.
296-23A-175	Interim bills. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 87-24-050 (Order 87-23), § 296-23A-175, filed 11/30/87, effective 1/1/88.] Repealed by 97-06-066, filed 2/28/97, effective 4/1/97. Statutory Authority: RCW 51.04.020, 51.04.030 and 51.36.080.	296-23A-242	Chest. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-23A-242, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-23A-242, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-23A-242, filed 8/10/89, effective 9/10/89; 87-03-005 (Order 86-47), § 296-23A-242, filed 1/8/87.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.
296-23A-180	Readmissions. [Statutory Authority: RCW 51.04.020 (4) and 51.04.030. 87-24-050 (Order 87-23), § 296-23A-180, filed 11/30/87, effective 1/1/88.] Repealed by 97-06-066, filed 2/28/97, effective 4/1/97. Statutory Authority: RCW 51.04.020, 51.04.030 and 51.36.080.	296-23A-244	Spine and pelvis. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-23A-244, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-23A-244, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-23A-244, filed 8/10/89, effective 9/10/89; 87-16-004 (Order 87-18), § 296-23A-244, filed 7/23/87; 87-03-005 (Order 86-47), § 296-23A-244, filed 1/8/87.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.
296-23A-185	Transfers. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 87-24-050 (Order 87-23), § 296-23A-185, filed 11/30/87, effective 1/1/88.] Repealed by 97-06-066, filed 2/28/97, effective 4/1/97. Statutory Authority: RCW 51.04.020, 51.04.030 and 51.36.080.	296-23A-246	Upper extremities. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-23A-246, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-23A-246, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-23A-246, filed 8/10/89, effective 9/10/89; 87-16-004 (Order 87-18), § 296-23A-246, filed 7/23/87; 87-03-005 (Order 86-47), § 296-23A-246, filed 1/8/87.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.
296-23A-190	Adjustment of rates. [Statutory Authority: RCW 51.04.-020(4) and 51.04.030. 92-24-066, § 296-23A-190, filed 12/1/92, effective 1/1/93; 87-24-050 (Order 87-23), § 296-23A-190, filed 11/30/87, effective 1/1/88.] Repealed by 97-06-066, filed 2/28/97, effective 4/1/97. Statutory Authority: RCW 51.04.020, 51.04.030 and 51.36.080.	296-23A-248	Lower extremities. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-23A-248, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-23A-248, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-23A-248, filed 8/10/89, effective 9/10/89; 87-03-005 (Order 86-47), § 296-23A-248, filed 1/8/87.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.
296-23A-200	General information—Hospital outpatient radiology. [Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159. 93-16-072, § 296-23A-200, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.-020(4) and 51.04.030. 87-03-005 (Order 86-47), § 296-23A-200, filed 1/8/87.] Repealed by 97-06-066, filed 2/28/97, effective 4/1/97. Statutory Authority: RCW 51.04.020, 51.04.030 and 51.36.080.	296-23A-250	Abdomen. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-23A-250, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-23A-250, filed 3/8/91, effective 5/1/91; 87-03-005 (Order 86-47), § 296-23A-250, filed 1/8/87.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.
296-23A-205	Billing procedures. [Statutory Authority: RCW 51.04.-020, 51.04.030 and 1993 c 159. 93-16-072, § 296-23A-205, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020(4) and 51.04.030. 91-17-038, § 296-23A-205, filed 8/16/91, effective 9/30/91; 89-17-039 (Order 89-09), § 296-23A-205, filed 8/10/89, effective 9/10/89; 87-03-005 (Order 86-47), § 296-23A-205, filed 1/8/87.] Repealed by 97-06-066, filed 2/28/97, effective 4/1/97. Statutory Authority: RCW 51.04.020, 51.04.-030 and 51.36.080.	296-23A-252	Gastrointestinal tract. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-23A-252, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-23A-252, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-23A-252, filed 8/10/89, effective 9/10/89; 87-16-004 (Order 87-18), § 296-23A-252, filed 7/23/87; 87-03-005 (Order 86-47), § 296-23A-252, filed 1/8/87.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.
296-23A-210	Injection procedures. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 87-03-005 (Order 86-47), § 296-23A-210, filed 1/8/87.] Repealed by 97-06-066, filed 2/28/97, effective 4/1/97. Statutory Authority: RCW 51.04.020, 51.04.030 and 51.36.080.	296-23A-254	Urinary tract. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-23A-254, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-23A-254, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-23A-254, filed 8/10/89, effective 9/10/89; 87-16-004 (Order 87-18), § 296-23A-254, filed 7/23/87; 87-03-005 (Order 86-47), § 296-23A-254, filed 1/8/87.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.
296-23A-215	Responsibility for X rays. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 87-03-005 (Order 86-47), § 296-23A-215, filed 1/8/87.] Repealed by 97-06-066, filed 2/28/97, effective 4/1/97. Statutory Authority: RCW 51.04.020, 51.04.030 and 51.36.080.	296-23A-256	Gynecological and obstetrical. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-23A-256, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-23A-256, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-23A-256, filed 8/10/89, effective 9/10/89; 87-16-004 (Order 87-18), § 296-23A-256, filed 7/23/87; 87-03-005 (Order 86-47), § 296-23A-256, filed 1/8/87.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.
296-23A-220	Duplication of X rays. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 87-03-005 (Order 86-47), § 296-23A-220, filed 1/8/87.] Repealed by 97-06-066, filed 2/28/97, effective 4/1/97. Statutory Authority: RCW 51.04.020, 51.04.030 and 51.36.080.	296-23A-258	Vascular system. [Statutory Authority: RCW 51.04.020 (4) and 51.04.030. 92-24-066, § 296-23A-258, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-23A-258, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-23A-258, filed 8/10/89, effective 9/10/89; 87-16-004 (Order 87-18), § 296-23A-258, filed 7/23/87; 87-03-005 (Order 86-47), § 296-23A-258, filed 1/8/87.]
296-23A-225	Additional views. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 87-03-005 (Order 86-47), § 296-23A-225, filed 1/8/87.] Repealed by 97-06-066, filed 2/28/97, effective 4/1/97. Statutory Authority: RCW 51.04.020, 51.04.030 and 51.36.080.		
296-23A-230	Unlisted service or procedure. [Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159. 93-16-072, § 296-23A-230, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020(4) and 51.04.030. 87-03-005 (Order 86-47), § 296-23A-230, filed 1/8/87.] Repealed by 97-06-066, filed 2/28/97, effective 4/1/97. Statutory Authority: RCW 51.04.020, 51.04.030 and 51.36.080.		
296-23A-235	Special report. [Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159. 93-16-072, § 296-23A-235, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020(4) and 51.04.030. 87-03-005 (Order 86-47), § 296-23A-235, filed 1/8/87.] Repealed by 97-06-066, filed 2/28/97, effective 4/1/97. Statutory Authority: RCW 51.04.020, 51.04.030 and 51.36.080.		
296-23A-240	Head and neck. [Statutory Authority: RCW 51.04.-020(4) and 51.04.030. 92-24-066, § 296-23A-240, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-23A-240, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-23A-240, filed 8/10/89, effective 9/10/89; 87-03-005 (Order 86-47), § 296-23A-240, filed 1/8/87.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93.		

	Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.		
296-23A-260	Miscellaneous. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-23A-260, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-23A-260, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-23A-260, filed 8/10/89, effective 9/10/89; 87-16-004 (Order 87-18), § 296-23A-260, filed 7/23/87; 87-03-005 (Order 86-47), § 296-23A-260, filed 1/8/87.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.	296-23A-330	Urinalysis. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-23A-330, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-23A-330, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-23A-330, filed 8/10/89, effective 9/10/89; 87-03-005 (Order 86-47), § 296-23A-330, filed 1/8/87.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.
296-23A-262	Diagnostic ultrasound. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-23A-262, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-23A-262, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-23A-262, filed 8/10/89, effective 9/10/89; 87-16-004 (Order 87-18), § 296-23A-262, filed 7/23/87; 87-03-005 (Order 86-47), § 296-23A-262, filed 1/8/87.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.	296-23A-335	Chemistry and toxicology. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-23A-335, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-23A-335, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-23A-335, filed 8/10/89, effective 9/10/89; 87-16-004 (Order 87-18), § 296-23A-335, filed 7/23/87; 87-03-005 (Order 86-47), § 296-23A-335, filed 1/8/87.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.
296-23A-264	Therapeutic radiology. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-23A-264, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-23A-264, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-23A-264, filed 8/10/89, effective 9/10/89; 87-03-005 (Order 86-47), § 296-23A-264, filed 1/8/87.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.	296-23A-340	Hematology. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-23A-340, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-23A-340, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-23A-340, filed 8/10/89, effective 9/10/89; 87-16-004 (Order 87-18), § 296-23A-340, filed 7/23/87; 87-03-005 (Order 86-47), § 296-23A-340, filed 1/8/87.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.
296-23A-266	Nuclear medicine. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-23A-266, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-23A-266, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-23A-266, filed 8/10/89, effective 9/10/89; 87-16-004 (Order 87-18), § 296-23A-266, filed 7/23/87; 87-03-005 (Order 86-47), § 296-23A-266, filed 1/8/87.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.	296-23A-345	Immunology. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-23A-345, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-23A-345, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-23A-345, filed 8/10/89, effective 9/10/89; 87-16-004 (Order 87-18), § 296-23A-345, filed 7/23/87; 87-03-005 (Order 86-47), § 296-23A-345, filed 1/8/87.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.
296-23A-268	Therapeutic. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-23A-268, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-23A-268, filed 3/8/91, effective 5/1/91; 87-03-005 (Order 86-47), § 296-23A-268, filed 1/8/87.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.	296-23A-350	Microbiology. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-23A-350, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-23A-350, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-23A-350, filed 8/10/89, effective 9/10/89; 87-03-005 (Order 86-47), § 296-23A-350, filed 1/8/87.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.
296-23A-300	General information—Hospital outpatient pathology and laboratory. [Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159. 93-16-072, § 296-23A-300, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020(4) and 51.04.030. 89-17-039 (Order 89-09), § 296-23A-300, filed 8/10/89, effective 9/10/89; 87-03-005 (Order 86-47), § 296-23A-300, filed 1/8/87.] Repealed by 97-06-066, filed 2/28/97, effective 4/1/97. Statutory Authority: RCW 51.04.020, 51.04.030 and 51.36.080.	296-23A-355	Cytopathology. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-23A-355, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-23A-355, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-23A-355, filed 8/10/89, effective 9/10/89; 87-16-004 (Order 87-18), § 296-23A-355, filed 7/23/87; 87-03-005 (Order 86-47), § 296-23A-355, filed 1/8/87.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.
296-23A-310	Billing procedures. [Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159. 93-16-072, § 296-23A-310, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020(4) and 51.04.030. 87-03-005 (Order 86-47), § 296-23A-310, filed 1/8/87.] Repealed by 97-06-066, filed 2/28/97, effective 4/1/97. Statutory Authority: RCW 51.04.020, 51.04.030 and 51.36.080.	296-23A-360	Miscellaneous. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-23A-360, filed 12/1/92, effective 1/1/93; 91-07-008, § 296-23A-360, filed 3/8/91, effective 5/1/91; 89-17-039 (Order 89-09), § 296-23A-360, filed 8/10/89, effective 9/10/89; 87-16-004 (Order 87-18), § 296-23A-360, filed 7/23/87; 87-03-005 (Order 86-47), § 296-23A-360, filed 1/8/87.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.
296-23A-315	Unlisted service or procedure. [Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159. 93-16-072, § 296-23A-315, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020(4) and 51.04.030. 87-03-005 (Order 86-47), § 296-23A-315, filed 1/8/87.] Repealed by 97-06-066, filed 2/28/97, effective 4/1/97. Statutory Authority: RCW 51.04.020, 51.04.030 and 51.36.080.	296-23A-400	Hospital outpatient physical therapy rules. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 96-10-086, § 296-23A-400, filed 5/1/96, effective 7/1/96; 95-05-072, § 296-23A-400, filed 2/15/95, effective 3/18/95. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159. 94-02-045, § 296-23A-400, filed 12/30/93, effective 3/1/94; 93-16-072, § 296-23A-400, filed 8/1/93, effective 9/1/93. Statutory Authority:
296-23A-320	Special report. [Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159. 93-16-072, § 296-23A-320, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020(4) and 51.04.030. 87-03-005 (Order 86-47), § 296-23A-320, filed 1/8/87.] Repealed by 97-06-066, filed 2/28/97, effective 4/1/97. Statutory Authority: RCW 51.04.020, 51.04.030 and 51.36.080.		
296-23A-325	Panel or profile tests. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 92-24-066, § 296-23A-		

- RCW 51.04.020(4) and 51.04.030. 89-08-002 (Order 89-01), § 296-23A-400, filed 3/23/89, effective 5/1/89; 87-03-005 (Order 86-47), § 296-23A-400, filed 1/8/87.] Repealed by 97-06-066, filed 2/28/97, effective 4/1/97. Statutory Authority: RCW 51.04.020, 51.04.030 and 51.36.080.
- 296-23A-410 Muscle testing. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 87-03-005 (Order 86-47), § 296-23A-410, filed 1/8/87.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.
- 296-23A-415 Modalities. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 87-03-005 (Order 86-47), § 296-23A-415, filed 1/8/87.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.
- 296-23A-420 Procedures. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 87-03-005 (Order 86-47), § 296-23A-420, filed 1/8/87.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.
- 296-23A-425 Tests and measurements. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 91-17-038, § 296-23A-425, filed 8/16/91, effective 9/30/91; 87-16-004 (Order 87-18), § 296-23A-425, filed 7/23/87; 87-03-005 (Order 86-47), § 296-23A-425, filed 1/8/87.] Repealed by 93-16-072, filed 8/1/93, effective 9/1/93. Statutory Authority: RCW 51.04.020, 51.04.030 and 1993 c 159.
- 296-23A-430 Work hardening. [Statutory Authority: RCW 51.04.020(4) and 51.04.030. 89-08-002 (Order 89-01), § 296-23A-430, filed 3/23/89, effective 5/1/89.] Repealed by 97-06-066, filed 2/28/97, effective 4/1/97. Statutory Authority: RCW 51.04.020, 51.04.030 and 51.36.080.

PART 1 - GENERAL INFORMATION

WAC 296-23A-0100 Where can I find general information and rules pertaining to the care of workers? Hospitals may find general information and rules pertaining to the care of workers in chapters 296-20, 296-21 and 296-23 WAC, department bulletins and other department publications. This list is not exhaustive and hospitals remain responsible for other applicable rules.

[Statutory Authority: RCW 51.04.020, 51.04.030 and 51.36.080. 97-06-066, § 296-23A-0100, filed 2/28/97, effective 4/1/97.]

WAC 296-23A-0110 When will the department or self-insurer pay for hospital services? The department or self-insurer will pay for hospital services when proper and necessary for the treatment of the accepted occupational disease or injury.

See WAC 296-20-01002 for the definition of medically necessary.

See WAC 296-20-075 for further rules regarding hospitalization.

See WAC 296-20-03001 for treatment requiring authorization.

See WAC 296-20-03002 for treatment not authorized.

[Statutory Authority: RCW 51.04.020, 51.04.030 and 51.36.080. 97-06-066, § 296-23A-0110, filed 2/28/97, effective 4/1/97.]

WAC 296-23A-0120 What services are subject to review by the department or self-insurer? The department uses utilization review criteria and all hospital inpatient and outpatient services and billed charges are subject to review by the department, self-insurer or a representative chosen by the department or self-insurer.

[Statutory Authority: RCW 51.04.020, 51.04.030 and 51.36.080. 97-06-066, § 296-23A-0120, filed 2/28/97, effective 4/1/97.]

[Title 296 WAC—p. 628]

WAC 296-23A-0130 How does the department establish hospital payment rates? The department will establish and update hospital payment rates, methods and policies in consultation with interested persons at times determined by the department. The department will publish a description of payment methods, rates, and policies for hospital services at least thirty calendar days prior to implementation.

[Statutory Authority: RCW 51.04.020, 51.04.030 and 51.36.080. 97-06-066, § 296-23A-0130, filed 2/28/97, effective 4/1/97.]

WAC 296-23A-0140 How can interested persons request advance notice of changes to hospital payment rates, methods and policies? The department will give at least thirty calendar days notice to interested persons who request advance notice of changes to hospital payment rates, methods and policies. Interested persons may request advance notice by contacting the department at the following address:

Department of Labor and Industries
Health Services Analysis
Mailing List for Hospital Payment Rates
P.O. Box 44322
Olympia, Washington 98504-4322

[Statutory Authority: RCW 51.04.020, 51.04.030 and 51.36.080. 97-06-066, § 296-23A-0140, filed 2/28/97, effective 4/1/97.]

PART 1.1 - SUBMITTING BILLS

WAC 296-23A-0150 How must hospitals submit bills for hospital services? Hospitals must submit bills for hospital services using the current National Uniform Billing Form (billing form), or electronically using department file format specifications. Providers using the paper billing form must follow both the billing instructions provided by the department and the Washington state version of the *National Uniform Billing Data Element Specifications* as adopted by the National Uniform Billing Committee.

[Statutory Authority: RCW 51.04.020, 51.04.030 and 51.36.080. 97-06-066, § 296-23A-0150, filed 2/28/97, effective 4/1/97.]

WAC 296-23A-0160 How must hospitals submit charges for ambulance and professional services? Hospitals must submit charges for ambulance services and professional services provided by hospital staff physicians on the Health Insurance Claim Form, HCFA 1500 using the provider account number(s) assigned by the department for these services. Hospitals using any of the electronic transfer options must follow department instructions for electronic billing.

[Statutory Authority: RCW 51.04.020, 51.04.030 and 51.36.080. 97-06-066, § 296-23A-0160, filed 2/28/97, effective 4/1/97.]

WAC 296-23A-0170 How must hospitals bill the department or self-insurer for preadmission services? Preadmission services performed in a hospital outpatient setting within one day prior to hospital admission must be billed as hospital inpatient services.

[Statutory Authority: RCW 51.04.020, 51.04.030 and 51.36.080. 97-06-066, § 296-23A-0170, filed 2/28/97, effective 4/1/97.]

PART 1.2 - SUPPORTING DOCUMENTATION REQUIREMENTS

WAC 296-23A-0180 What supporting documentation must hospitals send for hospital services? Hospitals must send the following supporting documentation for hospital services:

- Admission history and physical examination
- Discharge summary for stays over forty-eight hours
- Emergency room reports
- Operative reports
- Anesthesia records
- Other documentation as requested by the department or self-insurer.

Hospitals must place the worker's name and claim number on the upper right-hand corner of each page of supporting documentation submitted.

[Statutory Authority: RCW 51.04.020, 51.04.030 and 51.36.080. 97-06-066, § 296-23A-0180, filed 2/28/97, effective 4/1/97.]

WAC 296-23A-0190 Where must hospitals send supporting documentation for hospital services for state fund claims? Do not submit supporting documentation with the bill for services. Hospitals must send supporting documentation for hospital services for state fund claims to:

Department of Labor and Industries
Claims Section
P.O. Box 44291
Olympia, WA 98504-4291

[Statutory Authority: RCW 51.04.020, 51.04.030 and 51.36.080. 97-06-066, § 296-23A-0190, filed 2/28/97, effective 4/1/97.]

WAC 296-23A-0195 When must providers using electronic medium submit supporting documentation? Providers using any of the electronic transfer options provided by the department must send the department or self-insurer the required supporting documentation within thirty calendar days of the date billing information was sent to the department on electronic medium. Providers must comply with the electronic billing instructions supplied by the department regarding the submission of hospital bill documentation.

[Statutory Authority: RCW 51.04.020, 51.04.030 and 51.36.080. 97-06-066, § 296-23A-0195, filed 2/28/97, effective 4/1/97.]

PART 2 - PAYMENT METHODS FOR HOSPITAL SERVICES

WAC 296-23A-0200 How does the department pay for hospital inpatient services? The department will pay for hospital inpatient services according to the following table:

<i>Hospital Type or Location</i>	<i>Do Diagnosis Related Group (DRG) payment methods apply?</i>	<i>Do per diem payment methods apply?</i>	<i>Do percent of allowed charges (POAC) payment methods apply to hospital inpatient services?</i>
Children's Hospitals	No	No	Yes, paid 100% of allowed charges
Chronic Pain Management Program	Exempt, paid per department agreement.	Exempt, paid per department agreement.	Exempt, paid per department agreement.
Health Maintenance Organizations	No	No	Yes, paid 100% of allowed charges
Military	No	No	Yes, paid 100% of allowed charges
Veterans Administration	No	No	Yes, paid 100% of allowed charges
State psychiatric facility	No	No	Yes, paid 100% of allowed charges
All other Washington hospitals	Yes	Yes, statewide average per diem rates apply for designated categories: Chemical dependency, psychiatric, rehabilitation, low volume medical, and low volume surgical DRGs	Yes, applies to low cost outlier payments and high cost outlier payments above the high cost outlier threshold

[Statutory Authority: RCW 51.04.030 and 51.12.330. 06-12-073, § 296-23A-0200, filed 6/6/06, effective 7/7/06. Statutory Authority: RCW 51.04.020, 51.04.030, 51.36.080. 00-06-027, § 296-23A-0200, filed 2/24/00, effective 3/26/00; 97-06-066, § 296-23A-0200, filed 2/28/97, effective 4/1/97.]

WAC 296-23A-0210 How do self-insurers pay for hospital inpatient services? Self-insurers will pay for hospital inpatient services using percent of allowed charges (POAC) factors, according to the following table:

<i>Hospital Type or Location</i>	<i>Do percent of allowed charges (POAC) payment methods apply to hospital inpatient services?</i>
Military, Veteran's Administration, Health Maintenance Organizations, State Psychiatric Facilities, Children's Hospitals	Yes, paid 100% of allowed charges
All other Washington hospitals	Yes, paid the hospital specific POAC factor

[Statutory Authority: RCW 51.04.020, 51.04.030, 51.36.080. 00-06-027, § 296-23A-0210, filed 2/24/00, effective 3/26/00; 97-06-066, § 296-23A-0210, filed 2/28/97, effective 4/1/97.]

WAC 296-23A-0220 How does the department pay for hospital outpatient services? The department will pay for hospital outpatient services according to the following table:

<i>Hospital Type or Service Location</i>	<i>Does the Ambulatory Payment Classification System apply?</i>	<i>Do percent of allowed charges (POAC) payment methods apply?</i>	<i>Do the department's Medical Aid Rules and Fee Schedules apply to hospital outpatient radiology, laboratory, pathology, occupational therapy, and physical therapy services?</i>
Children's hospitals	No	Yes, paid 100% of allowed charges	Yes
Chronic Pain Management Program	No	Exempt, paid per department agreement	Exempt, paid per department agreement
Health Maintenance Organizations	Yes, paid statewide average per APC rate	Yes, applies to certain hospital outpatient services excluded from OPPS except radiology, laboratory, pathology, occupational therapy, and physical therapy	Yes
Military	No	Yes, paid 100% of allowed charges	No, paid 100% of allowed charges
Veterans Administration	No	Yes, paid 100% of allowed charges	No, paid 100% of allowed charges
State psychiatric facility	No	Yes, paid 100% of allowed charges	Yes
Other psychiatric hospitals	No	Yes, applies to hospital outpatient services except radiology, laboratory, pathology, occupational therapy, and physical therapy	Yes
Rehabilitation hospitals	No	Yes, applies to hospital outpatient services except radiology, laboratory, pathology, occupational therapy, and physical therapy	Yes
Cancer hospitals	No	Yes, applies to hospital outpatient services except radiology, laboratory, pathology, occupational therapy, and physical therapy	Yes
Critical access hospitals	No	Yes, applies to hospital outpatient services except radiology, laboratory, pathology, occupational therapy, and physical therapy	Yes
All other Washington hospitals	Yes	Yes, applies to certain hospital outpatient services excluded from OPPS except radiology, laboratory, pathology, occupational therapy, and physical therapy	Yes

Hospitals are reimbursed only for the technical component of rates listed in the fee schedules, for outpatient radiology, pathology and laboratory services.

See chapter 296-23 WAC for rules on radiology, pathology, laboratory, physical therapy, occupational therapy, and work hardening services.

See WAC 296-23A-700 for rules on prospective payment system for hospital outpatient services.

See WAC 296-20-132 and 296-20-135 for information on the conversion factor used for certain hospital outpatient services.

[Statutory Authority: RCW 51.04.030 and 51.12.330. 06-12-073, § 296-23A-0220, filed 6/6/06, effective 7/7/06. Statutory Authority: RCW 51.04.020, 51.04.030, 51.36.080, 51.36.085. 01-24-045, § 296-23A-0220, filed 11/29/01, effective 1/1/02. Statutory Authority: RCW 51.04.020, 51.04.030, 51.36.080. 00-06-027, § 296-23A-0220, filed 2/24/00, effective 3/26/00; 97-06-066, § 296-23A-0220, filed 2/28/97, effective 4/1/97.]

WAC 296-23A-0221 How does the self-insurer pay for hospital outpatient services? The self-insurer will pay for hospital outpatient services according to the following table:

<i>Hospital Type or Service Location</i>	<i>Do percent of allowed charges (POAC) payment methods apply?</i>	<i>Do the department's Medical Aid Rules and Fee Schedules apply to hospital outpatient radiology, laboratory, pathology, occupational therapy, and physical therapy services?</i>
Children's hospitals	Yes, paid 100% of allowed charges	Yes
Chronic Pain Management Program	Not Applicable	Not Applicable
Health Maintenance Organizations	Yes, paid 100% of allowed charges	Yes
Military	Yes, paid 100% of allowed charges	No, paid 100% of allowed charges
Veterans Administration	Yes, paid 100% of allowed charges	No, paid 100% of allowed charges
State psychiatric facility	Yes, paid 100% of allowed charges	Yes
Other psychiatric hospitals	Yes, applies to hospital outpatient services except radiology, laboratory, pathology, occupational therapy, and physical therapy	Yes
Rehabilitation hospitals	Yes, applies to hospital outpatient services except radiology, laboratory, pathology, occupational therapy, and physical therapy	Yes
Cancer hospitals	Yes, applies to hospital outpatient services except radiology, laboratory, pathology, occupational therapy, and physical therapy	Yes
All other Washington hospitals	Yes, applies to hospital outpatient services except radiology, laboratory, pathology, occupational therapy, and physical therapy	Yes

Hospitals are reimbursed only for the technical component of rates listed in the fee schedules, for outpatient radiology, pathology and laboratory services.

See chapter 296-23 WAC for rules on radiology, pathology, laboratory, physical therapy, occupational therapy, and work hardening services.

See WAC 296-23A-700 for rules on the prospective payment system for hospital outpatient services.

See WAC 296-20-132 and 296-20-135 for information on the conversion factor used for certain hospital outpatient services.

[Statutory Authority: RCW 51.04.030 and 51.12.330. 06-12-073, § 296-23A-0221, filed 6/6/06, effective 7/7/06. Statutory Authority: RCW 51.04.020, 51.04.030, 51.36.080, 51.36.085. 01-24-045, § 296-23A-0221, filed 11/29/01, effective 1/1/02.]

WAC 296-23A-0230 How does the department or self-insurer pay out-of-state hospitals for hospital services? The department or self-insurer pays out-of-state hospitals for hospital services using a percent of allowed charges (POAC) factor or department fee schedule. The POAC factor may differ for services performed in inpatient and outpatient settings. Payment rates to hospitals located outside of Washington state are calculated by multiplying the out-of-state percent of allowed charges factor (POAC) by the allowed charges.

Amount paid = (out-of-state POAC Factor) X (Allowed Charges).

Out-of-state hospital providers should bill and the department or self-insurer will pay out-of-state hospitals services according to the following table:

<i>Hospital Professional and Ambulance Services</i>	<i>Hospital Outpatient Services</i>	<i>Hospital Inpatient Services</i>
Professional and ambulance services should be billed with CPT and HCPCS codes on HCFA 1500 forms under separate provider numbers. These services will be paid using the fee schedule rates and payment policies stated in the Washington Medical Aid Rules and Fee Schedules.	All hospital outpatient services should be billed on UB forms under the hospital provider number with revenue codes. These services will be paid at the out-of-state percent of allowed charges (POAC) factor as stated in the Washington Medical Aid Rules and Fee Schedules.	All hospital inpatient services should be billed on UB forms under the hospital provider number using revenue codes. These services will be paid at the out-of-state percent of allowed charges (POAC) factor as stated in the Washington Medical Aid Rules and Fee Schedules.

<i>Hospital Professional and Ambulance Services</i>	<i>Hospital Outpatient Services</i>	<i>Hospital Inpatient Services</i>
Military and veteran's administration professional and ambulance services should be billed on HCFA 1500 forms and will be paid at 100% of allowed charges.	Military, veteran's administration, health maintenance organization, children's, and state-run psychiatric hospitals will be paid at 100% of allowed charges for outpatient hospital services.	Military, veteran's administration, health maintenance organization, children's, and state-run psychiatric hospitals will be paid at 100% of allowed charges for inpatient hospital services.

[Statutory Authority: RCW 51.04.020, 51.04.030, 51.36.080. 00-09-078, § 296-23A-0230, filed 4/18/00, effective 7/1/00; 97-06-066, § 296-23A-0230, filed 2/28/97, effective 4/1/97.]

WAC 296-23A-0240 How does the department define and pay a new hospital? New hospitals are those open for less than one year prior to the implementation of the department's most recent hospital payment rates. The department will pay new hospitals according to the following table:

<i>Hospital Type or Location</i>	<i>What Diagnosis Related Group (DRG) base price applies?</i>	<i>What Per Diem Payment Rates Apply?</i>	<i>What percent of allowed charges (POAC) factor applies?</i>
Military, Veterans Administration, State Psychiatric, Health Maintenance Organization, Children's,	Exempt	Exempt	Paid 100% of allowed charges
Chronic Pain Management Program	Exempt, paid per department agreement	Exempt, paid per department agreement	Exempt, Paid per department agreement
Other Washington Hospital	Weighted median case-mix adjusted average cost per case for Washington DRG hospitals, except major teaching hospitals	Washington statewide average per diem rates	Washington statewide average POAC

A new hospital will be paid using its hospital-specific POAC within three years of receiving a provider account number(s) from the department.

[Statutory Authority: RCW 51.04.030 and 51.12.330. 06-12-073, § 296-23A-0240, filed 6/6/06, effective 7/7/06. Statutory Authority: RCW 51.04.020, 51.04.030, 51.36.080. 00-06-027, § 296-23A-0240, filed 2/24/00, effective 3/26/00; 97-06-066, § 296-23A-0240, filed 2/28/97, effective 4/1/97.]

WAC 296-23A-0250 Does a change in hospital ownership affect a hospital's payment rate? A change in ownership does not constitute the creation of a new hospital. If a hospital changes ownership, rates will remain the same as those payable to the previous owner.

[Statutory Authority: RCW 51.04.020, 51.04.030 and 51.36.080. 97-06-066, § 296-23A-0250, filed 2/28/97, effective 4/1/97.]

PART 2.1 - PERCENT OF ALLOWED CHARGES (POAC) PAYMENT METHODS AND POLICIES

WAC 296-23A-0300 When do percent of allowed charges (POAC) payment factors apply? The department may designate from time to time, those hospitals and hospital services to be paid using POAC factors.

[Statutory Authority: RCW 51.04.020, 51.04.030 and 51.36.080. 97-06-066, § 296-23A-0300, filed 2/28/97, effective 4/1/97.]

WAC 296-23A-0310 What is the method for calculating percent of allowed charges (POAC) factors? POAC factors are based on Medicare cost report data and are calculated by dividing adjusted operating expenses by adjusted patient revenues. The department will allow costs for graduate medical education and charity care. Allowable costs for charity care shall not exceed a maximum of two percent of the facility's total allowable costs. A hospital's POAC factor shall not exceed one hundred percent of allowed charges.

[Title 296 WAC—p. 632]

Payment rates are calculated by multiplying the POAC factor by the allowed charges.

Amount Paid = (POAC Factor) X (Allowed Charges)

Each hospital will be notified of their revised POAC factor thirty days prior to implementation. Incorrect data or erroneous calculations can be appealed in accordance with WAC 296-23A-0600.

[Statutory Authority: RCW 51.04.020, 51.04.030 and 51.36.080. 97-06-066, § 296-23A-0310, filed 2/28/97, effective 4/1/97.]

PART 2.2 - PER DIEM PAYMENT METHODS AND POLICIES

WAC 296-23A-0350 When do per diem rates apply? The department may designate from time to time, those hospitals and hospital services paid on a per diem basis. For example, the department may develop per diem rates for the following diagnosis-related-group (DRG) categories:

- Psychiatric;
- Rehabilitation;
- Substance abuse;
- Medical;
- Surgical; and
- Other categories as determined by the department.

[Statutory Authority: RCW 51.04.020, 51.04.030 and 51.36.080. 97-06-066, § 296-23A-0350, filed 2/28/97, effective 4/1/97.]

(2007 Ed.)

WAC 296-23A-0360 What is the method for calculating per diem rates? Per diem rates are calculated by dividing the total costs for all relevant cases in the historical data base by the total number of days. The total number of days is equal to the sum of the number of days for each relevant case. The number of days per case is equal to last date of service minus the first date of service. The department will allocate costs at the detailed revenue code level using Medicare cost report data and Medicare definitions for allowable costs. The department will allow costs for graduate medical education and charity care. Allowable costs for charity care shall not exceed a maximum of two percent of the facility's total allowable costs.

Payment rates are equal to the applicable per diem rate multiplied by the number of days allowed by the department. The department does not pay for the day of discharge. Payment shall not exceed allowed billed charges.

[Statutory Authority: RCW 51.04.020, 51.04.030 and 51.36.080. 97-06-066, § 296-23A-0360, filed 2/28/97, effective 4/1/97.]

PART 2.3 - DIAGNOSIS-RELATED-GROUP PAYMENT METHODS AND POLICIES

WAC 296-23A-0400 What is a "diagnosis-related-group" payment system? A diagnosis-related-group (DRG) system categorizes patients into clinically coherent and homogenous groups with respect to resource use. The department will use an all-patient grouper to perform the diagnostic categorization. To the extent feasible, where DRG relative weights meet acceptable reliability and validity standards, the department will use DRG per case rates for payment of hospital inpatient services.

[Statutory Authority: RCW 51.04.020, 51.04.030 and 51.36.080. 97-06-066, § 296-23A-0400, filed 2/28/97, effective 4/1/97.]

WAC 296-23A-0410 How does the department calculate diagnosis-related-group (DRG) relative weights? In calculating DRG relative weights, the department will:

(1) Allocate costs for hospital services at a detailed revenue code level using Medicare cost report data and Medicare definitions for allowable costs. The department will allow costs for graduate medical education and charity care. Allowable costs for charity care shall not exceed a maximum of two percent of the facility's total allowable costs.

(2) Classify department hospital admissions data and hospital discharge data in the Washington state department of health's comprehensive hospital abstract reporting system (CHARS), using an all-patient grouper.

(3) Establish relative weights from department of labor and industries' hospital admission data. If the department's data is not sufficient to calculate stable relative weights, the department may use hospital discharge data in the Washington state department of health's comprehensive hospital abstract reporting system (CHARS) or another appropriate data source.

(4) Exclude the following types of cases from DRG relative weight calculations: Transfers, statistical outliers, length of stay equal to zero, psychiatric, substance abuse and rehabilitation DRGs, out-of-state hospitals, other hospitals and services designated as exempt from DRG payment rates.

(2007 Ed.)

See WAC 296-23A-0470 and 296-23A-0480 for exclusions and exceptions to DRG payments for hospital services.

(5) Test each DRG statistically for adequacy of sample size to ensure that relative weights meet acceptable reliability and validity standards.

(6) Replace unstable department relative weights with stable CHARS derived relative weights.

(7) Standardize department and CHARS relative weights to a statewide case-mix index of 1.0.

[Statutory Authority: RCW 51.04.020, 51.04.030 and 51.36.080. 97-06-066, § 296-23A-0410, filed 2/28/97, effective 4/1/97.]

WAC 296-23A-0420 How does the department determine the base price for hospital services paid using per case rates? The department determines the base price for hospital services paid using per case rates according to the following table:

<i>Type of Hospital</i>	<i>Base Price</i>
<u>Major Teaching Hospital:</u> Harborview Medical Center or University of Washington	Hospital-specific case-mix adjusted average cost per case
Other DRG Hospital	Weighted median case-mix adjusted average cost per case for DRG hospitals, except major teaching hospitals

[Statutory Authority: RCW 51.04.020, 51.04.030 and 51.36.080. 97-06-066, § 296-23A-0420, filed 2/28/97, effective 4/1/97.]

WAC 296-23A-0430 How does the department calculate a hospital specific case-mix adjusted average cost per case? The department determines the case-mix adjusted average cost per case for each hospital by:

(1) Allocating costs for hospital services at a detailed revenue code level using Medicare cost report data and Medicare definitions for allowable costs. The department will allow costs for graduate medical education and charity care. Allowable costs for charity care shall not exceed a maximum of two percent of the facility's total allowable costs;

(2) Totaling the costs of all DRG cases;

(3) Dividing the total by the number of cases; and

(4) Then dividing that number by the hospital's case-mix index.

(5) Per case costs are indexed to the payment period for inflation and other factors.

[Statutory Authority: RCW 51.04.020, 51.04.030 and 51.36.080. 97-06-066, § 296-23A-0430, filed 2/28/97, effective 4/1/97.]

WAC 296-23A-0440 How does the department calculate the base price for DRG hospitals, except major teaching hospitals? The department calculates the base price for DRG hospitals, except major teaching hospitals by:

(1) Calculating each hospital's case-mix adjusted average cost per case;

(2) Weighting each hospital's case-mix adjusted average cost per case by the number of cases at that hospital;

(3) Determining the median (fiftieth percentile) of the list of case-mix adjusted average costs per case.

[Title 296 WAC—p. 633]

[Statutory Authority: RCW 51.04.020, 51.04.030 and 51.36.080. 97-06-066, § 296-23A-0440, filed 2/28/97, effective 4/1/97.]

WAC 296-23A-0450 What cases does the department exclude from base price calculations? The department excludes the following types of cases from base price calculations:

- Transfers;
- Statistical outliers;
- Length of stay equal to zero;
- Psychiatric, substance abuse and rehabilitation DRGs;
- Out-of-state hospitals; and
- Other hospitals and services designated as exempt from DRG payment rates.

See WAC 296-23A-0470 and 296-23A-0480 for exclusions and exceptions to DRG payments for hospital services.

[Statutory Authority: RCW 51.04.020, 51.04.030 and 51.36.080. 97-06-066, § 296-23A-0450, filed 2/28/97, effective 4/1/97.]

WAC 296-23A-0460 How does the department calculate the diagnosis-related-group (DRG) per case payment rate for a particular hospital? The DRG per case rate for a particular hospital is calculated by multiplying the assigned DRG relative weight for that admission by the applicable base price.

[Statutory Authority: RCW 51.04.020, 51.04.030 and 51.36.080. 97-06-066, § 296-23A-0460, filed 2/28/97, effective 4/1/97.]

WAC 296-23A-0470 Which exclusions and exceptions apply to diagnosis-related-group (DRG) payments for hospital services? The following exclusions and exceptions apply to DRG payments for hospital services:

- Psychiatric, rehabilitation, and chemical dependency (substance abuse) services will be excluded from payment by DRG rates. These services will be paid using per diem payment rates.
- Ambulance and air transportation services are excluded from DRG payments.
- Bills assigned to a DRG that is defined as ungroupable will be denied.
- Bills where the principal diagnosis is invalid as a discharge diagnosis will be denied.
- Bills where the injured worker has been admitted and discharged in less than twenty-four hours will be reviewed by the department and may be paid as hospital outpatient services.
- The department may choose to exclude other DRGs from DRG payment rates due to concerns about access, case volume or other considerations. These services will be paid using the applicable percent of allowed charges (POAC) factor and per diem rates.

[Statutory Authority: RCW 51.04.020, 51.04.030 and 51.36.080. 97-06-066, § 296-23A-0470, filed 2/28/97, effective 4/1/97.]

WAC 296-23A-0480 Which hospitals does the department exclude from diagnosis-related-group (DRG) payments? The following hospitals are excluded from DRG payments:

- Military, Veterans Administration, state psychiatric facilities, health maintenance organizations (HMO), and children's hospitals will be paid their allowed charges.
- Department-approved chronic pain management programs will be paid according to department agreement or contract.
- Hospitals located outside of Washington will be paid a percent of allowed charges (POAC).
- Other hospitals, as determined by the department, may be excluded from DRG reimbursement rates due to concerns about access, case volume or other considerations. These facilities will be paid using the applicable POAC factor and per diem rates.

[Statutory Authority: RCW 51.04.030 and 51.12.330. 06-12-073, § 296-23A-0480, filed 6/6/06, effective 7/7/06. Statutory Authority: RCW 51.04.020, 51.04.030 and 51.36.080. 97-06-066, § 296-23A-0480, filed 2/28/97, effective 4/1/97.]

WAC 296-23A-0490 Which hospital services does the department include in diagnosis-related-group (DRG) rates? Unless otherwise specified, the department will include in the DRG rate all hospital services provided to an injured worker admitted to a hospital. Hospital services must be medically necessary for the treatment of the accepted occupational disease or injury.

[Statutory Authority: RCW 51.04.020, 51.04.030 and 51.36.080. 97-06-066, § 296-23A-0490, filed 2/28/97, effective 4/1/97.]

WAC 296-23A-0500 When does a case qualify for high outlier status? Outlier payments apply only to diagnosis-related-group (DRG) reimbursed cases with unusually high or low costs. Outlier status does not apply to cases paid using a percent of allowed charges (POAC) factor or per diem rates.

A case is considered a high cost outlier if the costs for the case exceed the outlier threshold for the assigned diagnosis-related-group. The costs for a case are determined by multiplying the allowed charges for the case by the hospital specific POAC factor. The threshold used to define a high outlier case is the greater of a dollar threshold of twelve thousand dollars or two standard deviations above the statewide average cost for each DRG paid by the department.

The dollar threshold may be adjusted annually for inflation or other factors as determined by the department. The standard deviations for DRGs will be computed from all relevant cases in the historical data base, excluding statistical outliers.

[Statutory Authority: RCW 51.04.020, 51.04.030. 00-24-066, § 296-23A-0500, filed 12/1/00, effective 1/1/01. Statutory Authority: RCW 51.04.020, 51.04.030 and 51.36.080. 97-06-066, § 296-23A-0500, filed 2/28/97, effective 4/1/97.]

WAC 296-23A-0520 How does the department pay for high outlier cases? Cases defined as high cost outliers will be reimbursed at the diagnosis-related-group (DRG) payment rate plus one hundred percent of costs in excess of the threshold. Costs are determined by multiplying the allowed charges by the hospital specific percent of allowed charges (POAC) factor.

[Statutory Authority: RCW 51.04.020, 51.04.030 and 51.36.080. 97-06-066, § 296-23A-0520, filed 2/28/97, effective 4/1/97.]

WAC 296-23A-0530 How does a case qualify for low outlier status? To qualify as a low outlier, the allowed charges multiplied by that hospital's percent of allowed charges (POAC) factor must be less than ten percent of the statewide diagnosis-related-group (DRG) rate or five hundred dollars whichever is greater. The standard deviations for DRGs will be computed from all relevant cases in the historical data base, excluding statistical outliers.

[Statutory Authority: RCW 51.04.020, 51.04.030 and 51.36.080. 97-06-066, § 296-23A-0530, filed 2/28/97, effective 4/1/97.]

WAC 296-23A-0540 How does the department pay for low outlier cases? Low outlier cases are paid by multiplying each hospital's specific percent of allowed charges (POAC) factor by the allowed charges for the case.

[Statutory Authority: RCW 51.04.020, 51.04.030 and 51.36.080. 97-06-066, § 296-23A-0540, filed 2/28/97, effective 4/1/97.]

WAC 296-23A-0550 Under what circumstances will the department pay for interim bills? The department will deny interim bills which are assigned to diagnosis-related-groups (DRGs) paid per case rates by the department.

If an interim bill is coded as a diagnosis-related-group (DRG) not paid per case rates by the department, then the bill will be paid using the applicable percent of allowed charges (POAC) factor and per diem rates. If a subsequent bill coded as a DRG paid per case rates by the department, for the same injured worker, has a first date of service within seven days of the last date of service of the previous bill, then the bills will be subject to review and adjustment by the department.

[Statutory Authority: RCW 51.04.020, 51.04.030 and 51.36.080. 97-06-066, § 296-23A-0550, filed 2/28/97, effective 4/1/97.]

WAC 296-23A-0560 How does the department define and pay for hospital readmissions? The department will review hospital readmissions occurring within seven days of discharge and will determine whether the second admission resulted from premature discharge. Payment for services associated with readmission will depend upon the review. For example:

- If the second admission is determined unnecessary, reimbursement may be denied.
- If the admission was avoidable, the two admissions may be combined and a single diagnosis-related-group (DRG) payment made.
- If two different DRG assignments are involved, reimbursement for the appropriate DRG will be based upon review of the case.
- Readmissions involving different hospitals will be reviewed by the department and may be paid using the payment method for transfers.

[Statutory Authority: RCW 51.04.020, 51.04.030 and 51.36.080. 97-06-066, § 296-23A-0560, filed 2/28/97, effective 4/1/97.]

WAC 296-23A-0570 How does the department define a transfer case? A transfer case is defined as an injured worker's admission to another acute care hospital within seven days of that worker's previous discharge. All bills for transfer cases will be subject to review by the department and payment will be determined based on that analysis.

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The transferring hospital may qualify for high and low outlier status.

[Statutory Authority: RCW 51.04.020, 51.04.030 and 51.36.080. 97-06-066, § 296-23A-0570, filed 2/28/97, effective 4/1/97.]

WAC 296-23A-0575 How does the department pay a transferring hospital for a transfer case? When the stay at the transferring hospital is a diagnosis-related-group (DRG) paid by the department, and does not qualify as a low outlier, the transferring hospital is paid a graduated per diem rate for each day of care allowed by the department. If the case qualifies as a low cost outlier, the hospital will be paid the graduated per diem amount or low cost outlier payment amount, whichever is lower. The per diem rate is determined by dividing that hospital's rate for the appropriate DRG by that DRG's average length of stay as determined by the department. Payment for the first day of service will be two times the per diem rate. For subsequent allowed days, the basic per diem rate will be paid up to the full DRG payment amount. Unless the case qualifies as a high outlier, payment to the transferring hospital will not exceed the appropriate DRG rate that would have been paid had the injured worker not been transferred to another hospital.

[Statutory Authority: RCW 51.04.020, 51.04.030 and 51.36.080. 97-06-066, § 296-23A-0575, filed 2/28/97, effective 4/1/97.]

WAC 296-23A-0580 How does the department pay the receiving hospital for a transfer case? The hospital receiving a transfer will be paid according to the department's review of the case. If the receiving hospital's stay is a diagnosis-related-group (DRG) paid by the department, then the hospital will receive the appropriate per case and outlier payments. If the case is not a DRG paid by the department, then the hospital is paid using applicable percent of allowed charges (POAC) factor or per diem rates.

[Statutory Authority: RCW 51.04.020, 51.04.030 and 51.36.080. 97-06-066, § 296-23A-0580, filed 2/28/97, effective 4/1/97.]

PART 3 - REQUESTING A HOSPITAL RATE ADJUSTMENT

WAC 296-23A-0600 How can a hospital request a rate adjustment? Hospitals may submit a request for adjustment to their rate if:

- The rate methodology or principles of reimbursement established in department publications were incorrectly applied, or
- Incorrect data or erroneous calculations were used in the establishment of the hospital's rate.

In all circumstances, requests for adjustments to rates must show how the rate adjustment was calculated and contain sufficient detail to permit an audit. Requests must specify the nature and the amount of the adjustment sought. The burden of proof is on the requesting hospital.

[Statutory Authority: RCW 51.04.020, 51.04.030 and 51.36.080. 97-06-066, § 296-23A-0600, filed 2/28/97, effective 4/1/97.]

WAC 296-23A-0610 Where must hospitals submit requests for rate adjustments? Hospitals must submit requests for rate adjustments in writing to:

[Title 296 WAC—p. 635]

Department of Labor and Industries
Health Services Analysis
Request for Hospital Rate Adjustment
P.O. Box 44322
Olympia, Washington 98504-4322.

Requests must be received within sixty days after the facility receives notice of its payment rates.

[Statutory Authority: RCW 51.04.020, 51.04.030 and 51.36.080. 97-06-066, § 296-23A-0610, filed 2/28/97, effective 4/1/97.]

WAC 296-23A-0620 What action will the department take upon receipt of a request for a rate adjustment? Upon receipt of the request, the department shall determine the need for a conference with the hospital and will contact the facility to arrange a conference if needed. The conference, if needed, must be held within sixty days of the department's receipt of the request.

Within thirty calendar days of the receipt of the request for review or the date of the conference, the department shall notify the facility of the action to be taken by the department.

If the department's review of the material submitted by the hospital results in a favorable determination for the hospital, the department will modify the hospital's payment rate(s). The revised rate(s) will apply to all bills with a date of admission on or after a date chosen by the department. The chosen date will be within one hundred twenty days of the department's and hospital's agreement to modify the rate(s).

If the department's review of the material submitted by the hospital results in an unfavorable determination for the hospital, the hospital may file an appeal with the board of industrial insurance appeals.

[Statutory Authority: RCW 51.04.020, 51.04.030 and 51.36.080. 97-06-066, § 296-23A-0620, filed 2/28/97, effective 4/1/97.]

PART 4 - AMBULATORY PAYMENT CLASSIFICATION PAYMENT METHODS AND POLICIES

WAC 296-23A-0700 What is the "ambulatory payment classification" (APC) payment system? The APC outpatient prospective payment system (OPPS) is a reimbursement method that categorizes outpatient visits into groups according to the clinical characteristics, the typical resource use, and the costs associated with the diagnoses and the procedures performed. The groups are called Ambulatory Payment Classifications (APCs). The department uses a modified version of the Centers for Medicare and Medicaid Services' (CMS) Prospective Payment System for Hospital Outpatient Department Services to pay some hospitals for covered outpatient services provided to injured workers. The department will utilize CMS' current outpatient code editor to categorize outpatient visits.

The payment system methodology uses CMS' outpatient prospective payment system's relative weight factor for each APC group and a blend of statewide and hospital-specific rates for each APC.

For a complete description of CMS' Prospective Payment System for Hospital Outpatient Department Services see 42 CFR, Chapter IV, Part 419, et al.

[Statutory Authority: RCW 51.04.020, 51.04.030, 51.36.080, 51.36.085. 01-24-045, § 296-23A-0700, filed 11/29/01, effective 1/1/02.]

WAC 296-23A-0710 Definitions. "Alternate outpatient payment." A payment for proper and necessary services calculated using a method other than the APC method, such as the outpatient hospital rate or fee schedule.

"Ambulatory payment classification (APC) bill." An outpatient bill for hospital services that are grouped and paid using APCs.

"Ambulatory payment classification (APC) weight." The relative value assigned to each APC by CMS. For information on calculating the APC weights, please see 42 CFR, Chapter IV, Part 419, et al. Medicare Program; Prospective Payment System for Hospital Outpatient Services.

"Ambulatory payment classification (APC)." A grouping for outpatient visits which are similar both clinically and in the resources used.

"Ambulatory surgery centers (ASCs)." Ambulatory surgery centers as defined by the department. ASCs are excluded from the APC payment system.

"Blended rate." The dollar amount used to determine APC payments.

"Bundling." Including the costs of supplies and certain other items with the costs of APCs. Bundled services will not be paid separately.

"Cancer hospitals." Freestanding hospitals specializing in the treatment of individuals who have a neoplasm diagnosis.

"Children's hospitals." Freestanding hospitals specializing in the treatment of individuals less than fourteen years of age.

"CMS." Centers for Medicare and Medicaid Services, formerly the Health Care Financing Administration (HCFA).

"Correct coding initiative." A process to encourage hospitals to code the most appropriate diagnosis and procedure for the services rendered.

"Critical access hospitals." Critical access hospitals as defined by the department of health.

"Current procedural terminology (CPT)." A systematic listing of descriptive terms and identifying codes for reporting medical services, procedures, interventions performed by physicians; the American Medical Association (AMA) publishes it annually.

"Discount factor." The percentage applied to additional significant procedures when a claim has multiple significant procedures or when the same procedure is performed multiple times.

"Exempt services." Services and hospitals that have been identified by CMS and/or L&I as exempt from the APC-based payment system.

"Health care common procedure coding system (HCCPS)." Medicare's procedure coding system, which consists of Level 1 CPT Codes, Level 2 National Codes, and Level 3 Local Codes.

"Incidental services." Proper and necessary services that are integral to the delivery of the significant procedure or medical visit and are not separately reimbursable.

"Inpatient only procedures." Certain procedures designated by CMS as being of sufficient resource intensity that an inpatient setting is always required.

"Modifier." A two-digit alphabetic and/or numeric identifier that is added to the procedure code to indicate the type of service performed. Modifiers add clarification to procedures and can affect payment. Modifiers are listed in the current CPT and HCPCS manuals.

"Non-APC services." Services specifically excluded by CMS or by L&I from APC payment.

"Out-of-state hospitals." Any hospital not physically located within the state of Washington.

"Outpatient code editor." A prepayment analysis program designed to exclude certain diagnostic and procedure codes from being classified within the APC payment system.

"Outpatient prospective payment system (OPPS)." A payment system that groups hospital outpatient visits into APCs and multiplies the relative weight factor by the OPPS conversion rate to determine the appropriate payment.

"Outpatient services." Proper and necessary health care services and treatment ordinarily furnished by a hospital in which the injured worker is not admitted as an inpatient.

"Outpatient." A patient who receives proper and necessary health care services or supplies in a hospital-type setting but is not admitted as an inpatient.

"Partial hospitalization." Mental health services provided in an inpatient setting without the traditional inpatient overnight stay.

"Pediatric services." Proper and necessary health care services and treatment ordinarily furnished by a hospital in which the injured worker is under the age of fourteen.

"Psychiatric hospitals." Freestanding hospitals specializing in the treatment of individuals with a mental health disease.

"Rehabilitation hospitals." Freestanding hospitals specializing in the treatment of individuals in need of rehabilitative services.

"Related encounters or related services." Multiple encounters which are:

- Provided within the same window of service; and
- By the same provider (hospital).

"Single visit." A single visit includes all related services that are combined for reimbursement when they occur with the same hospital during the window of service.

"Special programs." Programs specifically designated by the department.

"Transitional pass-through." Certain drugs, devices and biologicals, as identified by CMS that are entitled to a specified payment until CMS assigns and reimburses them under their own APC.

"Window of service." A single date of service. All services associated with the visit for that date constitute a single visit, even when those services are provided on different days.

[Statutory Authority: RCW 51.04.030 and 51.12.330. 06-12-073, § 296-23A-0710, filed 6/6/06, effective 7/7/06. Statutory Authority: RCW 51.04.020. 03-21-069, § 296-23A-0710, filed 10/14/03, effective 12/1/03. Statutory Authority: RCW 51.04.020, 51.04.030, 51.36.080, 51.36.085. 01-24-045, § 296-23A-0710, filed 11/29/01, effective 1/1/02.]

WAC 296-23A-0720 How does the department calculate the hospital-specific per APC rate used for paying outpatient services under the outpatient prospective payment system (OPPS)? (1) OPPS payment rates are calcu-

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lated with a formula that blends a hospital-specific rate and a statewide rate. Each hospital's historic labor and industries' reimbursement level in combination with the department's statewide payments will determine payment rates.

(2) For the statewide rate, the department:

(a) Determines the total number of APC procedures that the department paid the covered hospitals. The relative weights for all of these APCs are summed.

(b) Determines the total dollar amount the department paid for those APCs.

(c) Determines the total dollar amount the department paid as outlier payments.

(d) Subtracts the total outlier payments in (c) of this subsection from the total dollar amount in (b) of this subsection and then divides the adjusted dollar amount by the APC relative weight total from (a) of this subsection.

$$(\text{Sum of APC payments} - \text{Sum of outlier payments}) / \text{Sum of APC relative weights} = \text{Statewide rate}$$

(3) For the hospital-specific rate, the department:

(a) Segregates all the APCs for each hospital and totals the relative weights for each hospital.

(b) Determines the total dollar amount the department historically paid each hospital for those APCs.

(c) Determines the total dollar amount the department historically paid each hospital as an outlier payment for those APCs.

(d) Subtracts the total hospital-specific outlier payments in (c) of this subsection from the total hospital-specific APC payments in (b) of this subsection and then divides the hospital's adjusted dollar amount by the hospital-specific APC relative weight total from (a) of this subsection.

$$(\text{Sum of hospital-specific APC payment} - \text{Sum of hospital-specific outlier payments}) / \text{Sum of the hospital-specific APC relative weights} = \text{Hospital-specific rate}$$

(4) The final per APC rate paid to a hospital is a blended combination of the hospital-specific and statewide rates.

[Statutory Authority: RCW 51.04.020, 51.04.030, 51.36.080, 51.36.085. 01-24-045, § 296-23A-0720, filed 11/29/01, effective 1/1/02.]

WAC 296-23A-0730 How does the department determine the APC relative weights? The relative weight for each APC is the current relative weight listed by CMS for the corresponding APC.

[Statutory Authority: RCW 51.04.020, 51.04.030, 51.36.080, 51.36.085. 01-24-045, § 296-23A-0730, filed 11/29/01, effective 1/1/02.]

WAC 296-23A-0740 How does the department calculate payments for covered outpatient services through the outpatient prospective payment system (OPPS)? (1) Billed services that are reimbursed by the OPPS are grouped into one or more APCs using the outpatient code editor software.

(2) Additional payment may be made for services classified by CMS as transitional pass-through.

(3) Incidental services are grouped within an APC and are not paid separately.

(4) The OPPS APC payment method uses an APC relative weight for each classification group (APC) and the current hospital-specific blended rate to determine the APC payment for an individual service.

(5) For each additional APC listed on a single claim for services, the payment is calculated with the same formula and then discounted. L&I follows all discounting policies used by CMS for the Medicare Prospective Payment System for Hospital Outpatient Department Services.

(6) APC payment for each APC = (APC relative weight x hospital-specific blended rate)* discount factor (if applicable) x units (if applicable).

(7) The total payment on an APC claim is determined mathematically as follows:

(a) Sum of APC payments for each APC +

(b) Additional payment for each transitional pass-through (if applicable) +

(c) Additional outlier payment (if applicable).

(8) L&I follows all billing policies used by CMS for the Medicare Prospective Payment System for Hospital Outpatient Department Services with respect to:

(a) Billing of units of service;

(b) Outlier claims;

(c) Use of modifiers;

(d) Distinguishing between single and multiple visits during a span of time and reporting a single visit on one claim, but multiple visits with unrelated medical conditions on multiple claims; and

(e) For paying terminated procedures based on services actually provided and documented in the medical record, and properly indicated by the hospital through the CPT codes and modifiers submitted on the claim.

[Statutory Authority: RCW 51.04.020, 51.04.030, 51.36.080, 51.36.085. 01-24-045, § 296-23A-0740, filed 11/29/01, effective 1/1/02.]

WAC 296-23A-0750 What exclusions and exceptions apply to ambulatory-payment-classification (APC) payments for hospital services? (1) Critical access hospitals as identified by the Washington state department of health (DOH).

(2) All out-of-state hospitals.

(3) Military/veterans hospitals.

(4) Psychiatric hospitals.

(5) Rehabilitation hospitals.

(6) Cancer hospitals.

(7) Children's hospitals.

(8) Ambulatory surgery centers.

(9) Any outpatient service or special program identified by the department or by CMS as being a non-APC service.

(10) Any inpatient-only procedures as identified by CMS.

(11) Any APCs identified by the department as a non-APC service.

[Statutory Authority: RCW 51.04.030 and 51.12.330. 06-12-073, § 296-23A-0750, filed 6/6/06, effective 7/7/06. Statutory Authority: RCW 51.04.020, 51.04.030, 51.36.080, 51.36.085. 01-24-045, § 296-23A-0750, filed 11/29/01, effective 1/1/02.]

WAC 296-23A-0770 How will excluded outpatient services and hospitals be paid? Services excluded from APC-payment, if deemed appropriate for reimbursement, will be reimbursed using an alternate outpatient payment method, such as a specific fee schedule and/or using the hospital-specific or the statewide average percent of allowed charges (POAC).

[Title 296 WAC—p. 638]

[Statutory Authority: RCW 51.04.020, 51.04.030, 51.36.080, 51.36.085. 01-24-045, § 296-23A-0770, filed 11/29/01, effective 1/1/02.]

WAC 296-23A-0780 What information needs to be submitted for the hospital to be paid for outpatient services? Each claim for services must include the required elements as described within the current L&I hospital billing and administrative guidelines.

Note: Includes Provider General Billing Manual; Billing Instructions for Hospital Services; Provider Bulletins; and Provider Updates.

[Statutory Authority: RCW 51.04.020, 51.04.030, 51.36.080, 51.36.085. 01-24-045, § 296-23A-0780, filed 11/29/01, effective 1/1/02.]

Chapter 296-23B WAC

AMBULATORY SURGERY CENTER PAYMENT

WAC

296-23B-0100	Who may bill for ambulatory surgery center services?
296-23B-0110	How does an ambulatory surgery center bill for services?
296-23B-0120	What procedures are covered in an ambulatory surgery center?
296-23B-0130	What payment can an ambulatory surgery center expect for providing services?
296-23B-0140	When will the rates and policies for ambulatory surgery centers be updated?

WAC 296-23B-0100 Who may bill for ambulatory surgery center services? Only facilities that meet the criteria below may bill for ambulatory surgery center (ASC) services.

An ambulatory surgery center is an outpatient facility where surgical services are provided and that meets the following three requirements:

(1) Must be licensed by the state(s) in which it operates, unless that state does not require licensure.

(2) Must have at least one of the following credentials:

(a) Medicare certification as an ambulatory surgery center; or

(b) Accreditation as an ambulatory surgery center by a nationally recognized agency acknowledged by the Centers for Medicare and Medicaid Services (CMS).

(3) Must have an active ambulatory surgery center provider account with the department of labor and industries.

Note: A provider account application may be obtained from Department of Labor and Industries, Provider Accounts, P.O. Box 44261, Olympia, WA 98504-4261, 360-902-5140. A copy can also be obtained online at www.lni.wa.gov.

[Statutory Authority: RCW 51.36.080, 51.04.030, 51.36.010, 51.04.020. 01-21-140, § 296-23B-0100, filed 10/24/01, effective 1/1/02.]

WAC 296-23B-0110 How does an ambulatory surgery center bill for services? Ambulatory surgery centers must submit bills for services on a national standard form specified by the department of labor and industries. Bills also may be submitted electronically using department file format specifications. Providers must follow the instructions in the *General Provider Billing Manual* and *Billing Instructions*. Special billing policies for ambulatory surgery centers are in the *Medical Aid Rules and Fee Schedules* under *Ambulatory Surgery Center Payment Policies*.

Note: Copies of billing manuals, billing instructions and the *Medical Aid Rules and Fee Schedules* may be obtained from Department of Labor and Industries, Warehouse, P.O. Box 44843, Olympia, WA 98504-4843 or 360-902-5754. The

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Medical Aid Rules and Fee Schedules may also be viewed online at www.lni.wa.gov.

[Statutory Authority: RCW 51.36.080, 51.04.030, 51.36.010, 51.04.020. 01-21-140, § 296-23B-0110, filed 10/24/01, effective 1/1/02.]

WAC 296-23B-0120 What procedures are covered in an ambulatory surgery center? The department will use the Centers for Medicare and Medicaid Services (CMS) list of procedures covered in an ambulatory surgery center plus additional procedures as determined by the department. All procedures covered in an ambulatory surgery center are listed in the *Medical Aid Rules and Fee Schedules, Ambulatory Surgery Center Payment Policies* section. Certain procedures are still subject to the utilization review program. Procedures that are not listed are not covered in an ambulatory surgery center.

Under certain conditions, the director, the director's designee, or self-insurer, in their sole discretion, may determine that a procedure not on the list may be authorized in an ambulatory surgery center. For example, if the procedure could be harmful to a particular patient unless performed in an ambulatory surgery center. Requests for coverage under these special circumstances require prior authorization. The process for requesting coverage is outlined in the *Medical Aid Rules and Fee Schedules, Ambulatory Surgery Center Payment Policies* section.

The department will allow some procedures to be covered in an outpatient setting that CMS covers only in an inpatient setting. The department will cover these procedures in an ambulatory surgery center if the following criteria are met:

- (1) The surgeon deems that it is safe and appropriate to perform such a procedure in an outpatient setting; and
- (2) The procedure meets the department's utilization review requirements.

Notes: For information on the utilization review program please see the following:
 WAC 296-20-024 for utilization management authority.
 WAC 296-20-01002 for definition of utilization review.
 WAC 296-20-02700 through 296-20-03002 for medical coverage policies.
 Provider bulletins describing the utilization review program.
 These may be viewed online at www.lni.wa.gov.

[Statutory Authority: RCW 51.36.080, 51.04.030, 51.36.010, 51.04.020. 01-21-140, § 296-23B-0120, filed 10/24/01, effective 1/1/02.]

WAC 296-23B-0130 What payment can an ambulatory surgery center expect for providing services? The department pays the lesser of the billed charge (the ASC's usual and customary fee) or the fee schedule's maximum allowed rate. The fee schedule for ambulatory surgery centers is in the *Medical Aid Rules and Fee Schedules*.

[Statutory Authority: RCW 51.36.080, 51.04.030, 51.36.010, 51.04.020. 01-21-140, § 296-23B-0130, filed 10/24/01, effective 1/1/02.]

WAC 296-23B-0140 When will the rates and policies for ambulatory surgery centers be updated? The fee schedule, codes, and policies for ambulatory surgery centers will be reviewed periodically. The department will publish provider bulletins to clarify, update, and inform ambulatory surgery centers about changes in policies or fees. They also will be published each July in the *Medical Aid Rules and Fee Schedules*.

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[Statutory Authority: RCW 51.36.080, 51.04.030, 51.36.010, 51.04.020. 01-21-140, § 296-23B-0140, filed 10/24/01, effective 1/1/02.]

Chapter 296-24 WAC

GENERAL SAFETY AND HEALTH STANDARDS

WAC

PART A-1 PURPOSE AND SCOPE

- 296-24-003 Subsections, subdivisions, items, subitems, and segments.
 296-24-005 Purpose and scope.
 296-24-012 Definitions applicable to all sections of this chapter.

PART A-2 PERSONAL PROTECTIVE EQUIPMENT RESERVE

- Note: Personal protective equipment requirements have been moved to WAC 296-800-160.
 Note: Electrical protective equipment requirements have been moved to WAC 296-24-980.

- ##### PART A-3 LATE NIGHT RETAIL WORKER CRIME PROTECTION
- Note: Late night retail worker crime protection has been moved to chapter 296-832 WAC.

- ##### PART A-4 SAFETY PROCEDURES
- Note: Safety procedures have been moved to chapter 296-803 WAC.

- ##### PART B-2 SAFETY COLOR CODE FOR MARKING PHYSICAL HAZARDS, ETC., WINDOW WASHING
- Note: Safety color code for marking physical hazards, etc., window washing have been moved to WAC 296-800-11045.

- ##### PART C MACHINERY AND MACHINE GUARDING
- Note: Machinery and machine guarding has been moved to chapter 296-806 WAC.

- ##### PART D MATERIALS HANDLING AND STORAGE, INCLUDING CRANES, DERRICKS, ETC., AND RIGGING

Handling and Storage—Cranes, Derricks, Etc.

- 296-24-215 Materials handling and storage—Handling materials—General.
 296-24-21501 Use of mechanical equipment.
 296-24-21509 Clearance limits.
 296-24-21511 Rolling railroad cars.
 296-24-21513 Guarding.
 296-24-217 Servicing multipiece and single-piece rim wheels.
 296-24-235 Overhead and gantry cranes.
 296-24-23501 Definitions.
 296-24-23503 General requirements.
 296-24-23505 Cabs.
 296-24-23507 Footwalks and ladders.
 296-24-23509 Stops, bumpers, rail sweeps, and guards.
 296-24-23511 Brakes.
 296-24-23513 Electric equipment.
 296-24-23515 Hoisting equipment.
 296-24-23517 Warning device.
 296-24-23519 Inspection.
 296-24-23521 Testing.
 296-24-23523 Maintenance.
 296-24-23525 Rope inspection.
 296-24-23527 Handling the load.
 296-24-23529 Operators.
 296-24-23531 Other requirements—General.
 296-24-23533 Crane and derrick suspended personnel (work) platforms.
 296-24-237 Construction, operation and maintenance—Chain and electric hoists.
 296-24-238 Air hoists.
 296-24-240 Crawler locomotive and truck cranes.
 296-24-24001 Definitions.
 296-24-24003 General requirements.
 296-24-24005 Load ratings.
 296-24-24007 Inspection classification.
 296-24-24009 Testing.

296-24-24011	Maintenance procedure.
296-24-24013	Rope inspection.
296-24-24015	Handling the load.
296-24-24017	Other requirements.
296-24-24019	Operating near overhead electric power lines.
296-24-245	Derricks.
296-24-24501	Definitions.
296-24-24503	General requirements.
296-24-24505	Load ratings.
296-24-24507	Inspection.
296-24-24509	Testing.
296-24-24511	Maintenance.
296-24-24513	Rope inspection.
296-24-24515	Operations of derricks.
296-24-24517	Handling the load.
296-24-24519	Other requirements.
296-24-293	"A" frames.
296-24-294	Rigging.
296-24-29401	Wire rope.
296-24-29403	Hemp rope.
296-24-29405	Hemp and wire rope slings.
296-24-29407	Guys.
296-24-29409	Thimbles.
296-24-29411	Blocks and falls.
296-24-29413	Chains and cables.
296-24-29415	Slings.
296-24-29417	Definitions.
296-24-29419	Safe operating practices.
296-24-29421	Inspections.
296-24-29423	Alloy steel chain slings.
296-24-29425	Wire rope slings.
296-24-29427	Metal mesh slings.
296-24-29429	Natural and synthetic fiber rope slings.
296-24-29431	Synthetic web slings.

PART E

HAZARDOUS MATERIALS, FLAMMABLE AND COMBUSTIBLE LIQUIDS, SPRAY FINISHING

Hazardous Materials

296-24-295	Compressed gases (general requirements).
296-24-29501	Inspection of compressed gas cylinders.
296-24-29503	Compressed gases.
296-24-29505	Safety relief devices for compressed gas containers.
296-24-310	Acetylene.
296-24-31001	Cylinders.
296-24-31003	Piped systems.
296-24-31005	Generators and filling cylinders.
296-24-315	Hydrogen.
296-24-31501	General.
296-24-31503	Gaseous hydrogen systems.
296-24-31505	Liquefied hydrogen systems.
296-24-320	Oxygen.
296-24-32001	Scope.
296-24-32003	Bulk oxygen systems.
296-24-325	Nitrous oxide.
296-24-330	Flammable and combustible liquids.
296-24-33001	Definitions.
296-24-33003	Scope.
296-24-33005	Tank storage.
296-24-33007	Piping, valves, and fittings.
296-24-33009	Container and portable tank storage.
296-24-33011	Industrial plants.
296-24-33013	Bulk plants.
296-24-33015	Service stations.
296-24-33017	Processing plants.
296-24-33019	Refineries, chemical plants, and distilleries.
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296-24-37001	Definitions.
296-24-37003	Spray booths.
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296-24-37009	Flammable and combustible liquids—Storage and handling.
296-24-37011	Protection.
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296-24-37023	Powder coating.
296-24-37025	Organic peroxides and dual component coatings.
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296-24-450	Chlorine cylinders used in chlorinator systems.
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PART F-1

STORAGE AND HANDLING OF LIQUEFIED PETROLEUM GASES

296-24-475	Storage and handling of liquefied petroleum gases.
296-24-47501	Definitions.
296-24-47503	Scope.
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296-24-47507	Cylinder systems.
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296-24-47511	Liquefied petroleum gas as a motor fuel.
296-24-47513	Storage of containers awaiting use or resale.
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PART F-2

STORAGE AND HANDLING OF ANHYDROUS AMMONIA

Note: Storage and handling of anhydrous ammonia has been moved to chapter 296-826 WAC.

PART G-1

MEANS OF EGRESS

296-24-55001	Definitions.
296-24-56525	Automatic sprinkler systems.
296-24-56527	Fire alarm signaling systems.
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PART G-2

FIRE PROTECTION

296-24-585	Fire protection.
296-24-58501	Definitions applicable to fire protection.
296-24-58503	Scope, application and definitions applicable.

PART G-3

FIRE SUPPRESSION EQUIPMENT

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296-24-59201	Scope and application.
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296-24-59215	Appendix A—Portable fire extinguishers.
296-24-602	Standpipe and hose systems.
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296-24-60701	Scope and application.
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296-24-622	Fixed extinguishing systems, dry chemical.
296-24-62201	Scope and application.
296-24-62203	Specific requirements.
296-24-62299	Appendix A—Fixed extinguishing systems, dry chemical.
296-24-623	Fixed extinguishing systems, gaseous agent.
296-24-62301	Scope and application.
296-24-62303	Specific requirements.
296-24-62399	Appendix A—Fixed extinguishing systems, gaseous agent.
296-24-627	Fixed extinguishing systems, water spray and foam.
296-24-62701	Scope and application.
296-24-62703	Specific requirements.
296-24-62799	Appendix A—Fixed extinguishing systems, water spray and foam.
296-24-629	Fire detection systems.
296-24-62901	Scope and application.
296-24-62903	Installation and restoration.
296-24-62905	Maintenance and testing.
296-24-62907	Protection of fire detectors.
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296-24-62999	Appendix A—Fire detection systems.
296-24-63299	Appendix B—National consensus standards.
296-24-63399	Appendix C—Fire protection references for further information.

- 296-24-63499 Appendix D—Availability of publications incorporated by references in WAC 296-24-58505—Fire brigades.
- 296-24-63599 Appendix E—Test methods for protective clothing.

PART H-2

SAFE PRACTICES AND VENTILATION OF ABRASIVE BLASTING OPERATIONS

Note: Safe practices and ventilation of abrasive blasting operations have been moved to chapter 296-818 WAC.

PART I

WELDING, CUTTING AND BRAZING

- 296-24-680 Welding, cutting, and brazing.
- 296-24-68001 Definitions.
- 296-24-682 Installation and operation of oxygen fuel gas systems for welding and cutting.
- 296-24-68201 General requirements.
- 296-24-68203 Cylinders and containers.
- 296-24-68205 Manifolding of cylinders.
- 296-24-68207 Service piping systems.
- 296-24-68209 Protective equipment, hose, and regulators.
- 296-24-68211 Acetylene generators.
- 296-24-68213 Calcium carbide storage.
- 296-24-68215 Public exhibitions and demonstrations.
- 296-24-685 Application, installation, and operation of arc welding and cutting equipment.
- 296-24-68501 General.
- 296-24-68503 Application of arc welding equipment.
- 296-24-68505 Installation of arc welding equipment.
- 296-24-68507 Operation and maintenance.
- 296-24-690 Installation and operation of resistance welding equipment.
- 296-24-69001 General.
- 296-24-69003 Spot and seam welding machines (nonportable).
- 296-24-69005 Portable welding machines.
- 296-24-69007 Flash welding equipment.
- 296-24-69009 Hazards and precautions.
- 296-24-69011 Maintenance.
- 296-24-695 Fire prevention and protection.
- 296-24-69501 Basic precautions.
- 296-24-69503 Special precautions.
- 296-24-69505 Welding or cutting containers.
- 296-24-69507 Confined spaces.
- 296-24-700 Protection of employees.
- 296-24-70001 General.
- 296-24-70003 Eye protection.
- 296-24-70005 Protective clothing.
- 296-24-70007 Work in confined spaces.
- 296-24-715 Health protection and ventilation.
- 296-24-71501 General.
- 296-24-71503 Ventilation for general welding and cutting.
- 296-24-71505 Local exhaust hoods and booths.
- 296-24-71507 Ventilation in confined spaces.
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- 296-24-71511 Zinc.
- 296-24-71513 Lead.
- 296-24-71515 Beryllium.
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- 296-24-71519 Mercury.
- 296-24-71521 Cleaning compounds.
- 296-24-71523 Cutting of stainless steels.
- 296-24-71525 First-aid equipment.
- 296-24-720 Industrial applications.
- 296-24-72001 Transmission pipeline.
- 296-24-72003 Mechanical piping systems.
- 296-24-722 Welding, cutting, and heating in way of preservative coatings.
- 296-24-735 Walking-working surfaces.
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- 296-24-73505 Aisles and passageways.
- 296-24-73507 Covers and guardrails.
- 296-24-73511 Steam pipes.
- 296-24-750 Guarding floor and wall openings and holes.
- 296-24-75001 Terms.
- 296-24-75003 Protection for floor openings.
- 296-24-75005 Protection for wall openings and holes.
- 296-24-75007 Protection of open-sided runways.
- 296-24-75011 Railing, toeboards, and cover specifications.
- 296-24-765 Fixed industrial stairs.
- 296-24-76501 Terms.
- 296-24-76503 Application of requirements.
- 296-24-76507 Stair strength.
- 296-24-76509 Stair width.
- 296-24-76511 Angle of stairway rise.
- 296-24-76513 Stair treads.
- 296-24-76515 Length of stairways.
- 296-24-76519 Vertical clearance.
- 296-24-76521 Open risers.
- 296-24-76523 General.
- 296-24-76555 Alternating tread-type stairs.
- 296-24-855 Other working surfaces.
- 296-24-85501 Dockboards (bridge plates).
- 296-24-85503 Forging machine area.
- 296-24-85505 Veneer machinery.
- PART J-2
SCAFFOLDS
- 296-24-862 Nonmandatory appendices.
- PART J-3
POWERED PLATFORMS
- Note: Powered platforms have been moved to chapters 296-869 and 296-870 WAC.
- 296-24-88050 Appendix C—Personal fall arrest system (Part I—Mandatory; Parts II and III—Nonmandatory).
- PART K
COMPRESSED GAS AND COMPRESSED GAS EQUIPMENT
- 296-24-920 Inspection of compressed gas cylinders.
- 296-24-92001 Definitions.
- 296-24-92003 General requirements.
- 296-24-92005 Inspection of low-pressure cylinders exempt from the hydrostatic test including acetylene cylinders.
- 296-24-92007 Low-pressure cylinders subject to hydrostatic testing.
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- 296-24-92011 Internal inspection.
- 296-24-930 Safety relief devices for compressed gas cylinders.
- 296-24-93001 Definitions.
- 296-24-93003 General requirements.
- 296-24-935 Safety relief devices for cargo and portable tanks storing compressed gases.
- 296-24-93501 Definitions.
- 296-24-93503 General requirements.
- 296-24-940 Air receivers.
- 296-24-94001 General requirements.
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- PART L
ELECTRICAL
- 296-24-956 Electrical.
- 296-24-95601 Definitions applicable to WAC 296-24-956 through 296-24-985.
- 296-24-95603 Electric utilization systems.
- 296-24-95605 General requirements.
- 296-24-95607 Wiring design and protection.
- 296-24-95609 Wiring methods, components, and equipment for general use.
- 296-24-95611 Specific purpose equipment and installations.
- 296-24-95613 Hazardous (classified) locations.
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- 296-24-95699 Appendices.
- 296-24-960 Working on or near exposed energized parts.
- 296-24-965 Safety-related work practices.
- 296-24-970 Training.
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- 296-24-980 Safeguards for personnel protection.
- 296-24-985 Use of equipment.
- DISPOSITION OF SECTIONS FORMERLY
CODIFIED IN THIS CHAPTER
- 296-24-001 Foreword. [Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-24-001, filed 7/20/94, effective 9/20/94; Order 73-5, § 296-24-001, filed 5/9/73 and Order 73-4, § 296-24-001, filed 5/7/73.] Repealed by 01-11-038, filed 5/9/01, effective 9/1/01. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.

296-24-006	Equipment approval by nonstate agency or organization. [Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-24-006, filed 7/20/94, effective 9/20/94; Order 73-5, § 296-24-006, filed 5/9/73 and Order 73-4, § 296-24-006, filed 5/7/73.] Repealed by 01-11-038, filed 5/9/01, effective 9/1/01. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.	296-24-055	Safety bulletin board. [Order 73-5, § 296-24-055, filed 5/9/73 and Order 73-4, § 296-24-055, filed 5/7/73.] Repealed by 01-11-038, filed 5/9/01, effective 9/1/01. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.
296-24-007	Incorporation of standards of national organization. [Statutory Authority: Chapter 49.17 RCW. 94-20-057 (Order 94-16), § 296-24-007, filed 9/30/94, effective 11/20/94; Order 73-5, § 296-24-007, filed 5/9/73 and Order 73-4, § 296-24-007, filed 5/7/73.] Repealed by 01-11-038, filed 5/9/01, effective 9/1/01. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.	296-24-060	First-aid training and certification. [Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-24-060, filed 7/20/94, effective 9/20/94. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-13-053 (Order 81-9), § 296-24-060, filed 6/17/81. Statutory Authority: RCW 49.17.040, 49.17.050, 49.17.240, chapters 42.30 and 43.22 RCW. 80-17-014 (Order 80-20), § 296-24-060, filed 11/13/80; 78-12-017 (Order 78-22), § 296-24-060, filed 11/13/78; Order 74-27, § 296-24-060, filed 5/7/74; Order 73-5, § 296-24-060, filed 5/9/73 and Order 73-4, § 296-24-060, filed 5/7/73.] Repealed by 98-06-061, filed 3/2/98, effective 6/1/98. Statutory Authority: Chapter 49.17 RCW.
296-24-008	Incorporation of standards of federal agency. [Order 73-5, § 296-24-008, filed 5/9/73 and Order 73-4, § 296-24-008, filed 5/7/73.] Repealed by 01-11-038, filed 5/9/01, effective 9/1/01. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.	296-24-061	First-aid requirements. [Statutory Authority: Chapter 49.17 RCW. 98-06-061, § 296-24-061, filed 3/2/98, effective 6/1/98.] Repealed by 01-11-038, filed 5/9/01, effective 9/1/01. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.
296-24-010	Variance and procedure. [Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-24-010, filed 7/20/94, effective 9/20/94; 91-24-017 (Order 91-07), § 296-24-010, filed 11/22/91, effective 12/24/91; Order 74-27, § 296-24-010, filed 5/7/74; Order 73-5, § 296-24-010, filed 5/9/73 and Order 73-4, § 296-24-010, filed 5/7/73.] Repealed by 01-11-038, filed 5/9/01, effective 9/1/01. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.	296-24-06105	What workplaces does this rule apply to? [Statutory Authority: RCW 49.17.040. 99-02-023, § 296-24-06105, filed 12/30/98, effective 3/30/99. Statutory Authority: Chapter 49.17 RCW. 98-06-061, § 296-24-06105, filed 3/2/98, effective 6/1/98.] Repealed by 01-11-038, filed 5/9/01, effective 9/1/01. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.
296-24-015	Education and first-aid standards. [Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-24-015, filed 7/20/94, effective 9/20/94. Statutory Authority: RCW 49.17.040, 49.17.050, 49.17.240, chapters 43.22 and 42.30 RCW. 80-17-015 (Order 80-21), § 296-24-015, filed 11/13/80; Order 73-5, § 296-24-015, filed 5/9/73 and Order 73-4, § 296-24-015, filed 5/7/73.] Repealed by 01-11-038, filed 5/9/01, effective 9/1/01. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.	296-24-06110	What is the purpose of this rule? [Statutory Authority: Chapter 49.17 RCW. 98-06-061, § 296-24-06110, filed 3/2/98, effective 6/1/98.] Repealed by 01-11-038, filed 5/9/01, effective 9/1/01. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.
296-24-020	Management's responsibility. [Statutory Authority: Chapter 49.17 RCW. 94-20-057 (Order 94-16), § 296-24-020, filed 9/30/94, effective 11/20/94; 91-24-017 (Order 91-07), § 296-24-020, filed 11/22/91, effective 12/24/91; 91-03-044 (Order 90-18), § 296-24-020, filed 1/10/91, effective 2/12/91; 90-03-029 (Order 89-20), § 296-24-020, filed 1/11/90, effective 2/26/90. Statutory Authority: RCW 49.17.040, 49.17.050, 49.17.240 and chapters 42.30 and 43.22 RCW. 78-12-017 (Order 78-22), § 296-24-020, filed 11/13/78; Order 74-27, § 296-24-020, filed 5/7/74; Order 73-5, § 296-24-020, filed 5/9/73 and Order 73-4, § 296-24-020, filed 5/7/73.] Repealed by 01-11-038, filed 5/9/01, effective 9/1/01. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.	296-24-06115	What definitions apply to this section? [Statutory Authority: Chapter 49.17 RCW. 98-06-061, § 296-24-06115, filed 3/2/98, effective 6/1/98.] Repealed by 01-11-038, filed 5/9/01, effective 9/1/01. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.
296-24-025	Employee's responsibility. [Order 74-27, § 296-24-025, filed 5/7/74; Order 73-5, § 296-24-025, filed 5/9/73 and Order 73-4, § 296-24-025, filed 5/7/73.] Repealed by 01-11-038, filed 5/9/01, effective 9/1/01. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.	296-24-06120	How must an employer ensure that first-aid assistance is available in the workplace? [Statutory Authority: Chapter 49.17 RCW. 98-06-061, § 296-24-06120, filed 3/2/98, effective 6/1/98.] Repealed by 01-11-038, filed 5/9/01, effective 9/1/01. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.
296-24-040	Accident prevention programs. [Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-093, § 296-24-040, filed 8/17/99, effective 12/1/99. Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-24-040, filed 7/20/94, effective 9/20/94. Statutory Authority: RCW 49.17.040, 49.17.050, 49.17.240 and chapters 42.30 and 43.22 RCW. 78-12-017 (Order 78-22), § 296-24-040, filed 11/13/78; Order 74-27, § 296-24-040, filed 5/7/74; Order 73-5, § 296-24-040, filed 5/9/73 and Order 73-4, § 296-24-040, filed 5/7/73.] Repealed by 01-11-038, filed 5/9/01, effective 9/1/01. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.	296-24-06125	How many employees must be trained in first aid? [Statutory Authority: Chapter 49.17 RCW. 98-06-061, § 296-24-06125, filed 3/2/98, effective 6/1/98.] Repealed by 01-11-038, filed 5/9/01, effective 9/1/01. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.
296-24-045	Safety and health committee plan. [Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-24-045, filed 7/20/94, effective 9/20/94. Statutory Authority: RCW 49.17.040, 49.17.050, 49.17.240, chapters 42.30 and 43.22 RCW. 80-17-014 (Order 80-20), § 296-24-045, filed 11/13/80; 78-12-017 (Order 78-22), § 296-24-045, filed 11/13/78.] Repealed by 01-11-038, filed 5/9/01, effective 9/1/01. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.	296-24-06130	What must first-aid training cover? [Statutory Authority: Chapter 49.17 RCW. 98-06-061, § 296-24-06130, filed 3/2/98, effective 6/1/98.] Repealed by 01-11-038, filed 5/9/01, effective 9/1/01. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.
		296-24-06135	How often must employees complete first-aid training? [Statutory Authority: Chapter 49.17 RCW. 98-06-061, § 296-24-06135, filed 3/2/98, effective 6/1/98.] Repealed by 01-11-038, filed 5/9/01, effective 9/1/01. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.
		296-24-06140	How must an employer document first-aid training? [Statutory Authority: Chapter 49.17 RCW. 98-06-061, § 296-24-06140, filed 3/2/98, effective 6/1/98.] Repealed by 01-11-038, filed 5/9/01, effective 9/1/01. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.
		296-24-06145	What is the requirement for first-aid supplies? [Statutory Authority: Chapter 49.17 RCW. 98-06-061, § 296-24-06145, filed 3/2/98, effective 6/1/98.] Repealed by 01-11-038, filed 5/9/01, effective 9/1/01. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.
		296-24-06150	What is the requirement to provide a first-aid station? [Statutory Authority: Chapter 49.17 RCW. 98-06-061, § 296-24-06150, filed 3/2/98, effective 6/1/98.] Repealed by 01-11-038, filed 5/9/01, effective 9/1/01. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.
		296-24-06155	APPENDIX 1 Evaluation worksheet for the first-aid response plan. [Statutory Authority: Chapter 49.17 RCW. 98-06-061, § 296-24-06155, filed 3/2/98, effective 6/1/98.]

	<p>tive 6/1/98.] Repealed by 01-11-038, filed 5/9/01, effective 9/1/01. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.</p>		
296-24-06160	<p>APPENDIX 2—First-aid kit guidance. [Statutory Authority: Chapter 49.17 RCW. 98-06-061, § 296-24-06160, filed 3/2/98, effective 6/1/98.] Repealed by 01-11-038, filed 5/9/01, effective 9/1/01. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.</p>	296-24-08105	<p>Selection of respirators. [Order 73-5, § 296-24-08105, filed 5/9/73 and Order 73-4, § 296-24-08105, filed 5/7/73.] Repealed by 81-16-016 (Order 81-19), filed 7/27/81. Statutory Authority: RCW 49.17.040, 49.17-050 and 49.17.240.</p>
296-24-065	<p>First-aid kit. [Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-24-065, filed 7/20/94, effective 9/20/94; 91-03-044 (Order 90-18), § 296-24-065, filed 1/10/91, effective 2/12/91; Order 74-27, § 296-24-065, filed 5/7/74; Order 73-5, § 296-24-065, filed 5/9/73 and Order 73-4, § 296-24-065, filed 5/7/73.] Repealed by 98-06-061, filed 3/2/98, effective 6/1/98. Statutory Authority: Chapter 49.17 RCW.</p>	296-24-08107	<p>Air quality. [Statutory Authority: RCW 49.17.040, 49.17.050, and 49.17.240. 80-11-010 (Order 80-14), § 296-24-08107, filed 8/8/80; Order 73-5, § 296-24-08107, filed 5/9/73 and Order 73-4, § 296-24-08107, filed 5/7/73.] Repealed by 81-16-016 (Order 81-19), filed 7/27/81. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240.</p>
296-24-067	<p>First-aid station. [Order 73-5, § 296-24-067, filed 5/9/73 and Order 73-4, § 296-24-067, filed 5/7/73.] Repealed by 98-06-061, filed 3/2/98, effective 6/1/98. Statutory Authority: Chapter 49.17 RCW.</p>	296-24-08109	<p>Use of respirators. [Statutory Authority: RCW 49.17-040, 49.17.050, and 49.17.240. 80-11-010 (Order 80-14), § 296-24-08109, filed 8/8/80; Order 73-5, § 296-24-08109, filed 5/9/73 and Order 73-4, § 296-24-08109, filed 5/7/73.] Repealed by 81-16-016 (Order 81-19), filed 7/27/81. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240.</p>
296-24-070	<p>First-aid room. [Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-13-053 (Order 81-9), § 296-24-070, filed 6/17/81; Order 73-5, § 296-24-070, filed 5/9/73 and Order 73-4, § 296-24-070, filed 5/7/73.] Repealed by 98-06-061, filed 3/2/98, effective 6/1/98. Statutory Authority: Chapter 49.17 RCW.</p>	296-24-08111	<p>Maintenance and care of respirators. [Order 73-5, § 296-24-08111, filed 5/9/73 and Order 73-4, § 296-24-08111, filed 5/7/73.] Repealed by 81-16-016 (Order 81-19), filed 7/27/81. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240.</p>
296-24-073	<p>Safe place standards. [Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-24-073, filed 7/20/94, effective 9/20/94. Statutory Authority: RCW 49.17.040 and 49.17.050. 85-01-022 (Order 84-24), § 296-24-073, filed 12/11/84; Order 74-27, § 296-24-073, filed 5/7/74; Order 73-5, § 296-24-073, filed 5/9/73 and Order 73-4, § 296-24-073, filed 5/7/73.] Repealed by 01-11-038, filed 5/9/01, effective 9/1/01. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.</p>	296-24-08113	<p>Identification of gas mask canisters. [Order 73-5, § 296-24-08113, filed 5/9/73 and Order 73-4, § 296-24-08113, filed 5/7/73.] Repealed by 81-16-016 (Order 81-19), filed 7/27/81. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240.</p>
296-24-075	<p>Personal protective equipment. [Order 73-5, § 296-24-075, filed 5/9/73 and Order 73-4, § 296-24-075, filed 5/7/73.] Repealed by 01-11-038, filed 5/9/01, effective 9/1/01. Statutory Authority: RCW 49.17.010, [49.17].-040, and [49.17].050.</p>	296-24-084	<p>Occupational head protection. [Statutory Authority: RCW 49.17.040, [49.17].050 and [49.17].060. 97-11-055, § 296-24-084, filed 5/20/97, effective 8/1/97. Statutory Authority: Chapter 49.17 RCW. 96-09-030, § 296-24-084, filed 4/10/96, effective 6/1/96; 94-20-057 (Order 94-16), § 296-24-084, filed 9/30/94, effective 11/20/94; 91-03-044 (Order 90-18), § 296-24-084, filed 1/10/91, effective 2/12/91; Order 74-27, § 296-24-084, filed 5/7/74; Order 73-5, § 296-24-084, filed 5/9/73 and Order 73-4, § 296-24-084, filed 5/7/73.] Repealed by 01-11-038, filed 5/9/01, effective 9/1/01. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].-050.</p>
296-24-07501	<p>General requirements. [Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-24-07501, filed 5/4/99, effective 9/1/99. Statutory Authority: Chapter 49.17 RCW. 94-20-057 (Order 94-16), § 296-24-07501, filed 9/30/94, effective 11/20/94; Order 73-5, § 296-24-07501, filed 5/9/73 and Order 73-4, § 296-24-07501, filed 5/7/73.] Repealed by 01-11-038, filed 5/9/01, effective 9/1/01. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.</p>	296-24-086	<p>Personal flotation devices. [Order 76-6, § 296-24-086, filed 3/1/76.] Repealed by 01-11-038, filed 5/9/01, effective 9/1/01. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.</p>
296-24-078	<p>Eye and face protection. [Order 73-5, § 296-24-078, filed 5/9/73 and Order 73-4, § 296-24-078, filed 5/7/73.] Repealed by 01-11-038, filed 5/9/01, effective 9/1/01. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.</p>	296-24-088	<p>Occupational foot protection. [Statutory Authority: RCW 49.17.040, [49.17].050 and [49.17].060. 97-11-055, § 296-24-088, filed 5/20/97, effective 8/1/97. Statutory Authority: Chapter 49.17 RCW. 94-20-057 (Order 94-16), § 296-24-088, filed 9/30/94, effective 11/20/94; 94-15-096 (Order 94-07), § 296-24-088, filed 7/20/94, effective 9/20/94; Order 73-5, § 296-24-088, filed 5/9/73 and Order 73-4, § 296-24-088, filed 5/7/73.] Repealed by 01-11-038, filed 5/9/01, effective 9/1/01. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.</p>
296-24-07801	<p>General. [Statutory Authority: RCW 49.17.040, [49.17].050 and [49.17].060. 97-11-055, § 296-24-07801, filed 5/20/97, effective 8/1/97. Statutory Authority: Chapter 49.17 RCW. 94-20-057 (Order 94-16), § 296-24-07801, filed 9/30/94, effective 11/20/94; Order 73-5, § 296-24-07801, filed 5/9/73 and Order 73-4, § 296-24-07801, filed 5/7/73.] Repealed by 01-11-038, filed 5/9/01, effective 9/1/01. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.</p>	296-24-090	<p>Hand protection. [Statutory Authority: Chapter 49.17 RCW. 94-20-057 (Order 94-16), § 296-24-090, filed 9/30/94, effective 11/20/94.] Repealed by 01-11-038, filed 5/9/01, effective 9/1/01. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.</p>
296-24-081	<p>Respiratory protection. [Order 73-5, § 296-24-081, filed 5/9/73 and order 73-4, § 296-24-081, filed 5/7/73.] Repealed by 81-16-016 (order 81-19), filed 7/27/81. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. Later promulgation, see chapter 296-62 WAC.</p>	296-24-092	<p>Electrical protective equipment. [Statutory Authority: Chapter 49.17 RCW. 96-09-030, § 296-24-092, filed 4/10/96, effective 6/1/96; 94-20-057 (Order 94-16), § 296-24-092, filed 9/30/94, effective 11/20/94; Order 73-5, § 296-24-092, filed 5/9/73 and Order 73-4, § 296-24-092, filed 5/7/73.] Repealed by 01-11-038, filed 5/9/01, effective 9/1/01. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.</p>
296-24-08101	<p>Permissible practice. [Order 73-5, § 296-24-08101, filed 5/9/73 and Order 73-4, § 296-24-08101, filed 5/7/73.] Repealed by 81-16-016 (Order 81-19), filed 7/27/81. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240.</p>	296-24-094	<p>Lighting and illumination. [Order 74-27, § 296-24-094, filed 5/7/74.] Repealed by 01-11-038, filed 5/9/01, effective 9/1/01. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.</p>
296-24-08103	<p>Requirements for a minimal acceptable program. [Statutory Authority: RCW 49.17.040, 49.17.050, and 49.17.240. 80-11-010 (Order 80-14), § 296-24-08103, filed 8/8/80; Order 73-5, § 296-24-08103, filed 5/9/73 and Order 73-4, § 296-24-08103, filed 5/7/73.] Repealed by 81-16-016 (Order 81-19), filed 7/27/81. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240.</p>	296-24-096	<p>Appendix A to Part A-2—References for further information (nonmandatory). [Statutory Authority: Chapter 49.17 RCW. 94-20-057 (Order 94-16), § 296-24-096, filed 9/30/94, effective 11/20/94.] Repealed by 01-11-038, filed 5/9/01, effective 9/1/01. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.</p>
		296-24-098	<p>Appendix B to Part A-2—Nonmandatory compliance guidelines for hazard assessment and personal protective equipment selection. [Statutory Authority: Chapter 49.17 RCW. 94-20-057 (Order 94-16), § 296-24-098,</p>

	filed 9/30/94, effective 11/20/94.] Repealed by 01-11-038, filed 5/9/01, effective 9/1/01. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.		
296-24-102	Scope and application. [Statutory Authority: Chapter 49.17 RCW. 90-03-029 (Order 89-20), § 296-24-102, filed 1/11/90, effective 2/26/90.] Repealed by 02-16-087, filed 8/7/02, effective 10/1/02. Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050, and [49.17].060. Later promulgation, see chapter 296-832 WAC.		
296-24-10203	General requirements. [Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 01-11-038, § 296-24-10203, filed 5/9/01, effective 9/1/01. Statutory Authority: Chapter 49.17 RCW. 90-03-029 (Order 89-20), § 296-24-10203, filed 1/11/90, effective 2/26/90.] Repealed by 02-16-087, filed 8/7/02, effective 10/1/02. Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050, and [49.17].060. Later promulgation, see chapter 296-832 WAC.		
296-24-110	The control of hazardous energy (lockout/tagout). [Statutory Authority: Chapter 49.17 RCW. 90-20-091 (Order 90-14), § 296-24-110, filed 10/1/90, effective 11/15/90.] Repealed by 04-15-105, filed 7/20/04, effective 11/1/04. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060.		
296-24-11001	Scope, application, and purpose. [Statutory Authority: Chapter 49.17 RCW. 94-06-068 (Order 93-17), § 296-24-11001, filed 3/2/94, effective 3/1/95. Statutory Authority: Chapter 49.17 RCW and RCW 49.17.040, [49.17].050 and [49.17].060. 92-22-067 (Order 92-06), § 296-24-11001, filed 10/30/92, effective 12/8/92. Statutory Authority: Chapter 49.17 RCW. 91-11-070 (Order 91-01), § 296-24-11001, filed 5/20/91, effective 6/20/91; 90-20-091 (Order 90-14), § 296-24-11001, filed 10/1/90, effective 11/15/90.] Repealed by 04-15-105, filed 7/20/04, effective 11/1/04. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060.		
296-24-11003	Definitions applicable to this part. [Statutory Authority: Chapter 49.17 RCW. 93-19-142 (Order 93-04), § 296-24-11003, filed 9/22/93, effective 11/1/93. Statutory Authority: Chapter 49.17 RCW and RCW 49.17.040, [49.17].050 and [49.17].060. 92-22-067 (Order 92-06), § 296-24-11003, filed 10/30/92, effective 12/08/92. Statutory Authority: Chapter 49.17 RCW. 91-11-070 (Order 91-01), § 296-24-11003, filed 5/20/91, effective 6/20/91; 90-20-091 (Order 90-14), § 296-24-11003, filed 10/1/90, effective 11/15/90.] Repealed by 04-15-105, filed 7/20/04, effective 11/1/04. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060.		
296-24-11005	General. [Statutory Authority: Chapter 49.17 RCW and RCW 49.17.040, [49.17].050 and [49.17].060. 92-22-067 (Order 92-06), § 296-24-11005, filed 10/30/92, effective 12/8/92. Statutory Authority: Chapter 49.17 RCW. 91-11-070 (Order 91-01), § 296-24-11005, filed 5/20/91, effective 6/20/91; 90-20-091 (Order 90-14), § 296-24-11005, filed 10/1/90, effective 11/15/90.] Repealed by 04-15-105, filed 7/20/04, effective 11/1/04. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060.		
296-24-11007	Application of control. [Statutory Authority: Chapter 49.17 RCW and RCW 49.17.040, [49.17].050 and [49.17].060. 92-22-067 (Order 92-06), § 296-24-11007, filed 10/30/92, effective 12/8/92. Statutory Authority: Chapter 49.17 RCW. 91-11-070 (Order 91-01), § 296-24-11007, filed 5/20/91, effective 6/20/91; 90-20-091 (Order 90-14), § 296-24-11007, filed 10/1/90, effective 11/15/90.] Repealed by 04-15-105, filed 7/20/04, effective 11/1/04. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060.		
296-24-11009	Release from lockout or tagout. [Statutory Authority: Chapter 49.17 RCW and RCW 49.17.040, [49.17].050 and [49.17].060. 92-22-067 (Order 92-06), § 296-24-11009, filed 10/30/92, effective 12/8/92. Statutory Authority: Chapter 49.17 RCW. 91-11-070 (Order 91-01), § 296-24-11009, filed 5/20/91, effective 6/20/91; 90-20-091 (Order 90-14), § 296-24-11009, filed 10/1/90, effective 11/15/90.] Repealed by 04-15-105, filed 7/20/04, effective 11/1/04. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060.		
296-24-11011	Additional requirements. [Statutory Authority: Chapter 49.17 RCW and RCW 49.17.040, [49.17].050 and [49.17].060. 92-22-067 (Order 92-06), § 296-24-11011, filed 10/30/92, effective 12/8/92. Statutory Authority:		
	Chapter 49.17 RCW. 91-11-070 (Order 91-01), § 296-24-11011, filed 5/20/91, effective 6/20/91; 90-20-091 (Order 90-14), § 296-24-11011, filed 10/1/90, effective 11/15/90.] Repealed by 04-15-105, filed 7/20/04, effective 11/1/04. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060.		
	Reserved. [Statutory Authority: Chapter 49.17 RCW and RCW 49.17.040, [49.17].050 and [49.17].060. 92-22-067 (Order 92-06), § 296-24-11013, filed 10/30/92, effective 12/8/92. Statutory Authority: Chapter 49.17 RCW. 91-11-070 (Order 91-01), § 296-24-11013, filed 5/20/91, effective 6/20/91; 90-20-091 (Order 90-14), § 296-24-11013, filed 10/1/90, effective 11/15/90.] Repealed by 04-15-105, filed 7/20/04, effective 11/1/04. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060.	296-24-11013	
	Reserved. [Statutory Authority: Chapter 49.17 RCW and RCW 49.17.040, [49.17].050 and [49.17].060. 92-22-067 (Order 92-06), § 296-24-11015, filed 10/30/92, effective 12/8/92. Statutory Authority: Chapter 49.17 RCW. 91-11-070 (Order 91-01), § 296-24-11015, filed 5/20/91, effective 6/20/91; 90-20-091 (Order 90-14), § 296-24-11015, filed 10/1/90, effective 11/15/90.] Repealed by 04-15-105, filed 7/20/04, effective 11/1/04. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060.	296-24-11015	
	Reserved. [Statutory Authority: Chapter 49.17 RCW and RCW 49.17.040, [49.17].050 and [49.17].060. 92-22-067 (Order 92-06), § 296-24-11017, filed 10/30/92, effective 12/8/92. Statutory Authority: Chapter 49.17 RCW. 91-11-070 (Order 91-01), § 296-24-11017, filed 5/20/91, effective 6/20/91; 90-20-091 (Order 90-14), § 296-24-11017, filed 10/1/90, effective 11/15/90.] Repealed by 04-15-105, filed 7/20/04, effective 11/1/04. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060.	296-24-11017	
	Appendices. [Statutory Authority: Chapter 49.17 RCW and RCW 49.17.040, [49.17].050 and [49.17].060. 92-22-067 (Order 92-06), § 296-24-119, filed 10/30/92, effective 12/8/92. Statutory Authority: Chapter 49.17 RCW. 91-11-070 (Order 91-01), § 296-24-119, filed 5/20/91, effective 6/20/91; 90-20-091 (Order 90-14), § 296-24-119, filed 10/1/90, effective 11/15/90.] Repealed by 04-15-105, filed 7/20/04, effective 11/1/04. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060.	296-24-119	
	Sanitation. [Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060. 03-18-090, § 296-24-120, filed 9/2/03, effective 11/1/03; Order 73-5, § 296-24-120, filed 5/9/73 and Order 73-4, § 296-24-120, filed 5/7/73.] Repealed by 04-07-161, filed 3/23/04, effective 6/1/04. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060.	296-24-120	
	Scope. [Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 01-11-038, § 296-24-12001, filed 5/9/01, effective 9/1/01. Statutory Authority: RCW 49.17.010, [49.17].050 and [49.17].060. 95-22-015, § 296-24-12001, filed 10/20/95, effective 1/16/96. Statutory Authority: Chapter 49.17 RCW. 94-06-068 (Order 93-17), § 296-24-12001, filed 3/2/94, effective 3/1/95; Order 74-27, § 296-24-12001, filed 5/7/74; Order 73-5, § 296-24-12001, filed 5/9/73 and Order 73-4, § 296-24-12001, filed 5/7/73.] Repealed by 03-18-090, filed 9/2/03, effective 11/1/03. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060. Later promulgation, see chapter 296-800 WAC.	296-24-12001	
	Definitions. [Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-094, § 296-24-12002, filed 8/17/99, effective 12/1/99. Statutory Authority: Chapter 49.17 RCW. 91-11-070 (Order 91-01), § 296-24-12002, filed 5/20/91, effective 6/20/91; Order 74-27, § 296-24-12002, filed 5/7/74.] Repealed by 03-18-090, filed 9/2/03, effective 11/1/03. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060. Later promulgation, see chapter 296-800 WAC.	296-24-12002	
	General requirements. [Order 74-27, § 296-24-12003, filed 5/7/74; Order 73-5, § 296-24-12003, filed 5/9/73 and Order 73-4, § 296-24-12003, filed 5/7/73.] Repealed by 01-11-038, filed 5/9/01, effective 9/1/01. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.	296-24-12003	
	Water supply. [Statutory Authority: RCW 49.17.040 and 49.17.050. 82-13-045 (Order 82-22), § 296-24-	296-24-12005	

	12005, filed 6/11/82; Order 74-27, § 296-24-12005, filed 5/7/74; Order 73-5, § 296-24-12005, filed 5/9/73 and Order 73-4, § 296-24-12005, filed 5/7/73.] Repealed by 01-11-038, filed 5/9/01, effective 9/1/01. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.		11/19/02, effective 1/1/03. Statutory Authority: RCW 49.17.010, 49.[17].040, 49.[17].050, and 49.[17].060. Later promulgation, see chapter 296-833 WAC.
296-24-12007	Toilet facilities. [Statutory Authority: Chapter 49.17 RCW. 87-24-051 (Order 87-24), § 296-24-12007, filed 11/30/87. Statutory Authority: RCW 49.17.040 and 49.17.050. 82-02-003 (Order 81-32), § 296-24-12007, filed 12/24/81. Statutory Authority: RCW 49.17.040, 49.17.050, 49.17.240, chapters 43.22 and 42.30 RCW. 80-17-015 (Order 80-21), § 296-24-12007, filed 11/13/80; Order 74-27, § 296-24-12007, filed 5/7/74; Order 73-5, § 296-24-12007, filed 5/9/73 and Order 73-4, § 296-24-12007, filed 5/7/73.] Repealed by 01-11-038, filed 5/9/01, effective 9/1/01. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.	296-24-12504	What electricity must be provided for temporary labor camps? [Statutory Authority: RCW 49.17.040. 98-24-096, § 296-24-12504, filed 12/1/98, effective 3/1/99.] Repealed by 02-23-073, filed 11/19/02, effective 1/1/03. Statutory Authority: RCW 49.17.010, 49.[17].040, 49.[17].050, and 49.[17].060. Later promulgation, see chapter 296-833 WAC.
296-24-12009	Washing facilities. [Statutory Authority: Chapter 49.17 RCW. 90-03-029 (Order 89-20), § 296-24-12009, filed 1/11/90, effective 2/26/90. Statutory Authority: RCW 49.17.040 and 49.17.050. 82-08-026 (Order 82-10), § 296-24-12009, filed 3/30/82. Statutory Authority: RCW 49.17.040, 49.17.050, 49.17.240, chapters 43.22 and 42.30 RCW. 80-17-015 (Order 80-21), § 296-24-12009, filed 11/13/80; Order 74-27, § 296-24-12009, filed 5/7/74; Order 73-5, § 296-24-12009, filed 5/9/73 and Order 73-4, § 296-24-12009, filed 5/7/73.] Repealed by 01-11-038, filed 5/9/01, effective 9/1/01. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.	296-24-12505	What requirements apply to the water supply? [Statutory Authority: RCW 49.17.040. 98-24-096, § 296-24-12505, filed 12/1/98, effective 3/1/99; Order 73-5, § 296-24-12505, filed 5/9/73 and Order 73-4, § 296-24-12505, filed 5/7/73.] Repealed by 02-23-073, filed 11/19/02, effective 1/1/03. Statutory Authority: RCW 49.17.010, 49.[17].040, 49.[17].050, and 49.[17].060. Later promulgation, see chapter 296-833 WAC.
296-24-12010	Showers. [Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 01-11-038, § 296-24-12010, filed 5/9/01, effective 9/1/01.] Repealed by 03-18-090, filed 9/2/03, effective 11/1/03. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060. Later promulgation, see chapter 296-800 WAC.	296-24-12507	Must an employer provide toilet facilities for the camp? [Statutory Authority: RCW 49.17.040. 98-24-096, § 296-24-12507, filed 12/1/98, effective 3/1/99; Order 73-5, § 296-24-12507, filed 5/9/73 and Order 73-4, § 296-24-12507, filed 5/7/73.] Repealed by 02-23-073, filed 11/19/02, effective 1/1/03. Statutory Authority: RCW 49.17.010, 49.[17].040, 49.[17].050, and 49.[17].060. Later promulgation, see chapter 296-833 WAC.
296-24-12011	Change rooms. [Order 74-27, § 296-24-12011, filed 5/7/74; Order 73-5, § 296-24-12011, filed 5/9/73 and Order 73-4, § 296-24-12011, filed 5/7/73.] Repealed by 03-18-090, filed 9/2/03, effective 11/1/03. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060. Later promulgation, see chapter 296-800 WAC.	296-24-12509	Must sewer lines connect to public sewers? [Statutory Authority: RCW 49.17.040. 98-24-096, § 296-24-12509, filed 12/1/98, effective 3/1/99; Order 73-5, § 296-24-12509, filed 5/9/73 and Order 73-4, § 296-24-12509, filed 5/7/73.] Repealed by 02-23-073, filed 11/19/02, effective 1/1/03. Statutory Authority: RCW 49.17.010, 49.[17].040, 49.[17].050, and 49.[17].060. Later promulgation, see chapter 296-833 WAC.
296-24-12013	Lunchrooms. [Order 73-5, § 296-24-12013, filed 5/9/73 and Order 73-4, § 296-24-12013, filed 5/7/73.] Repealed by Order 74-27, filed 5/7/74.	296-24-12511	What facilities must an employer provide for laundry, handwashing, and bathing? [Statutory Authority: RCW 49.17.040. 98-24-096, § 296-24-12511, filed 12/1/98, effective 3/1/99. Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-24-12511, filed 7/20/94, effective 9/20/94; Order 73-5, § 296-24-12511, filed 5/9/73 and Order 73-4, § 296-24-12511, filed 5/7/73.] Repealed by 02-23-073, filed 11/19/02, effective 1/1/03. Statutory Authority: RCW 49.17.010, 49.[17].040, 49.[17].050, and 49.[17].060. Later promulgation, see chapter 296-833 WAC.
296-24-12015	Food handling. [Order 73-5, § 296-24-12015, filed 5/9/73 and Order 73-4, § 296-24-12015, filed 5/7/73.] Repealed by Order 74-27, filed 5/7/74.	296-24-12513	What lighting must an employer provide for camp buildings? [Statutory Authority: RCW 49.17.040. 98-24-096, § 296-24-12513, filed 12/1/98, effective 3/1/99; Order 73-5, § 296-24-12513, filed 5/9/73 and Order 73-4, § 296-24-12513, filed 5/7/73.] Repealed by 02-23-073, filed 11/19/02, effective 1/1/03. Statutory Authority: RCW 49.17.010, 49.[17].040, 49.[17].050, and 49.[17].060. Later promulgation, see chapter 296-833 WAC.
296-24-12017	Consumption of food and beverages on the premises. [Order 76-6, § 296-24-12017, filed 3/1/76; Order 74-27, § 296-24-12017, filed 5/7/74.] Repealed by 03-18-090, filed 9/2/03, effective 11/1/03. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060. Later promulgation, see chapter 296-800 WAC.	296-24-12515	What requirements apply to refuse disposal? [Statutory Authority: RCW 49.17.040. 98-24-096, § 296-24-12515, filed 12/1/98, effective 3/1/99; Order 73-5, § 296-24-12515, filed 5/9/73 and Order 73-4, § 296-24-12515, filed 5/7/73.] Repealed by 02-23-073, filed 11/19/02, effective 1/1/03. Statutory Authority: RCW 49.17.010, 49.[17].040, 49.[17].050, and 49.[17].060. Later promulgation, see chapter 296-833 WAC.
296-24-12019	Waste disposal. [Order 74-27, § 296-24-12019, filed 5/7/74.] Repealed by 01-11-038, filed 5/9/01, effective 9/1/01. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.	296-24-12517	What cooking and food-handling facilities must be provided in temporary labor camps? [Statutory Authority: RCW 49.17.040. 98-24-096, § 296-24-12517, filed 12/1/98, effective 3/1/99; Order 73-5, § 296-24-12517, filed 5/9/73 and Order 73-4, § 296-24-12517, filed 5/7/73.] Repealed by 02-23-073, filed 11/19/02, effective 1/1/03. Statutory Authority: RCW 49.17.010, 49.[17].040, 49.[17].050, and 49.[17].060. Later promulgation, see chapter 296-833 WAC.
296-24-12021	Vermin control. [Order 74-27, § 296-24-12021, filed 5/7/74.] Repealed by 01-11-038, filed 5/9/01, effective 9/1/01. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.	296-24-12519	Must an employer provide insect and rodent control? [Statutory Authority: RCW 49.17.040. 98-24-096, § 296-24-12519, filed 12/1/98, effective 3/1/99; Order 73-5, § 296-24-12519, filed 5/9/73 and Order 73-4, § 296-24-12519, filed 5/7/73.] Repealed by 02-23-073, filed 11/19/02, effective 1/1/03. Statutory Authority: RCW 49.17.010, 49.[17].040, 49.[17].050, and 49.[17].060. Later promulgation, see chapter 296-833 WAC.
296-24-125	Temporary labor camps. [Order 73-5, § 296-24-125, filed 5/9/73 and Order 73-4, § 296-24-125, filed 5/7/73.] Repealed by 02-23-073, filed 11/19/02, effective 1/1/03. Statutory Authority: RCW 49.17.010, 49.[17].040, 49.[17].050, and 49.[17].060. Later promulgation, see chapter 296-833 WAC.	296-24-12521	What first-aid facilities must be available in the camp? [Statutory Authority: RCW 49.17.040. 98-24-096, § 296-24-12521, filed 12/1/98, effective 3/1/99; Order 73-5, § 296-24-12521, filed 5/9/73 and Order 73-4, § 296-24-12521, filed 5/7/73.] Repealed by 02-23-073, filed
296-24-12501	What requirements apply to camp sites? [Statutory Authority: RCW 49.17.040. 98-24-096, § 296-24-12501, filed 12/1/98, effective 3/1/99; Order 73-5, § 296-24-12501, filed 5/9/73 and Order 73-4, § 296-24-12501, filed 5/7/73.] Repealed by 02-23-073, filed 11/19/02, effective 1/1/03. Statutory Authority: RCW 49.17.010, 49.[17].040, 49.[17].050, and 49.[17].060. Later promulgation, see chapter 296-833 WAC.		
296-24-12503	How must camp shelters be constructed? [Statutory Authority: RCW 49.17.040. 98-24-096, § 296-24-12503, filed 12/1/98, effective 3/1/99; Order 73-5, § 296-24-12503, filed 5/9/73 and Order 73-4, § 296-24-12503, filed 5/7/73.] Repealed by 02-23-073, filed		

	11/19/02, effective 1/1/03. Statutory Authority: RCW 49.17.010, 49.[17.]040, 49.[17.]050, and 49.[17.]060. Later promulgation, see chapter 296-833 WAC.		Repealed by 04-18-080, filed 8/31/04, effective 11/1/04. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.
296-24-12523	When must an employer report communicable diseases in a camp? [Statutory Authority: RCW 49.17.040, 98-24-096, § 296-24-12523, filed 12/1/98, effective 3/1/99; Order 73-5, § 296-24-12523, filed 5/9/73 and Order 73-4, § 296-24-12523, filed 5/7/73.] Repealed by 02-23-073, filed 11/19/02, effective 1/1/03. Statutory Authority: RCW 49.17.010, 49.[17.]040, 49.[17.]050, and 49.[17.]060. Later promulgation, see chapter 296-833 WAC.	296-24-14005	Classification of signs according to use. [Order 73-5, § 296-24-14005, filed 5/9/73 and Order 73-4, § 296-24-14005, filed 5/7/73.] Repealed by 04-18-080, filed 8/31/04, effective 11/1/04. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.
296-24-130	Nonwater carriage disposal systems. [Order 73-5, § 296-24-130, filed 5/9/73 and Order 73-4, § 296-24-130, filed 5/7/73.] Repealed by 82-08-026 (Order 82-10), filed 3/30/82. Statutory Authority: RCW 49.17.040 And 49.17.050.	296-24-14007	Sign design and colors. [Statutory Authority: RCW 49.17.010, [49.17.]040, and [49.17.]050. 01-11-038, § 296-24-14007, filed 5/9/01, effective 9/1/01. Statutory Authority: RCW 49.17.040 and 49.17.050. 82-13-045 (Order 82-22), § 296-24-14007, filed 6/11/82; Order 73-5, § 296-24-14007, filed 5/9/73 and Order 73-4, § 296-24-14007, filed 5/7/73.] Repealed by 04-18-080, filed 8/31/04, effective 11/1/04. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.
296-24-13001	Acceptable industrial disposal systems. [Order 73-5, § 296-24-13001, filed 5/9/73 and Order 73-4, § 296-24-13001, filed 5/7/73.] Repealed by 82-08-026 (Order 82-10), filed 3/30/82. Statutory Authority: RCW 49.17.040 and 49.17.050.	296-24-14009	Sign wordings. [Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-24-14009, filed 7/20/94, effective 9/20/94; Order 73-5, § 296-24-14009, filed 5/9/73 and Order 73-4, § 296-24-14009, filed 5/7/73.] Repealed by 04-18-080, filed 8/31/04, effective 11/1/04. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.
296-24-13003	Privy specifications. [Order 73-5, § 296-24-13003, filed 5/9/73 and Order 73-4, § 296-24-13003, filed 5/7/73.] Repealed by 82-08-026 (Order 82-10), filed 3/30/82. Statutory Authority: RCW 49.17.040 and 49.17.050.	296-24-14011	Accident prevention tags. [Statutory Authority: RCW 49.17.010, [49.17.]050 and [49.17.]060. 95-22-015, § 296-24-14011, filed 10/20/95, effective 1/16/96. Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-24-14011, filed 7/20/94, effective 9/20/94; 94-06-068 (Order 93-17), § 296-24-14011, filed 3/2/94, effective 3/1/95. Statutory Authority: RCW 49.17.050(2) and 49.14.040 [49.17.040]. 87-07-022 (Order 87-01), § 296-24-14011, filed 3/12/87; Order 76-6, § 296-24-14011, filed 3/1/76; Order 73-5, § 296-24-14011, filed 5/9/73 and Order 73-4, § 296-24-14011, filed 5/7/73.] Repealed by 04-18-080, filed 8/31/04, effective 11/1/04. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.
296-24-13005	Chemical toilet specifications. [Order 73-5, § 296-24-13005, filed 5/9/73 and Order 73-4, § 296-24-13005, filed 5/7/73.] Repealed by 82-08-026 (Order 82-10), filed 3/30/82. Statutory Authority: RCW 49.17.040 and 49.17.050.		
296-24-13007	Seepage pit construction. [Order 73-5, § 296-24-13007, filed 5/9/73 and Order 73-4, § 296-24-13007, filed 5/7/73.] Repealed by 82-08-026 (Order 82-10), filed 3/30/82. Statutory Authority: RCW 49.17.040 and 49.17.050.	296-24-145	Window washing. [Order 73-5, § 296-24-145, filed 5/9/73 and Order 73-4, § 296-24-145, filed 5/7/73.] Repealed by 02-22-027, filed 10/28/02, effective 1/1/03. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060. Later promulgation, see chapter 296-878 WAC.
296-24-13009	Combustion toilet. [Order 73-5, § 296-24-13009, filed 5/9/73 and Order 73-4, § 296-24-13009, filed 5/7/73.] Repealed by 82-08-026 (Order 82-10), filed 3/30/82. Statutory Authority: RCW 49.17.040 and 49.17.050.	296-24-14501	Definitions. [Order 73-5, § 296-24-14501, filed 5/9/73 and Order 73-4, § 296-24-14501, filed 5/7/73.] Repealed by 02-22-027, filed 10/28/02, effective 1/1/03. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060. Later promulgation, see chapter 296-878 WAC.
296-24-13011	Recirculating toilet specifications. [Order 73-5, § 296-24-13011, filed 5/9/73 and Order 73-4, § 296-24-13011, filed 5/7/73.] Repealed by 82-08-026 (Order 82-10), filed 3/30/82. Statutory Authority: RCW 49.17.040 and 49.17.050.	296-24-14503	Application. [Order 73-5, § 296-24-14503, filed 5/9/73 and Order 73-4, § 296-24-14503, filed 5/7/73.] Repealed by 02-22-027, filed 10/28/02, effective 1/1/03. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060. Later promulgation, see chapter 296-878 WAC.
296-24-13013	Portable toilet construction. [Order 73-5, § 296-24-13013, filed 5/9/73 and Order 73-4, § 296-24-13013, filed 5/7/73.] Repealed by 82-08-026 (Order 82-10), filed 3/30/82. Statutory Authority: RCW 49.17.040 and 49.17.050.	296-24-14505	Protection of persons engaged at window cleaning. [Order 73-5, § 296-24-14505, filed 5/9/73 and Order 73-4, § 296-24-14505, filed 5/7/73.] Repealed by 02-22-027, filed 10/28/02, effective 1/1/03. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060. Later promulgation, see chapter 296-878 WAC.
296-24-135	Safety color code for marking physical hazards. [Order 73-5, § 296-24-135, filed 5/9/73 and Order 73-4, § 296-24-135, filed 5/7/73.] Repealed by 04-18-080, filed 8/31/04, effective 11/1/04. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	296-24-14507	General. [Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-24-14507, filed 7/20/94, effective 9/20/94; Order 73-5, § 296-24-14507, filed 5/9/73 and Order 73-4, § 296-24-14507, filed 5/7/73.] Repealed by 02-22-027, filed 10/28/02, effective 1/1/03. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060. Later promulgation, see chapter 296-878 WAC.
296-24-13501	Color identification. [Statutory Authority: RCW 49.17.010, [49.17.]050 and [49.17.]060. 95-22-015, § 296-24-13501, filed 10/20/95, effective 1/16/96. Statutory Authority: RCW 49.17.040 and 49.17.050. 82-13-045 (Order 82-22), § 296-24-13501, filed 6/11/82; Order 73-5, § 296-24-13501, filed 5/9/73 and Order 73-4, § 296-24-13501, filed 5/7/73.] Repealed by 04-18-080, filed 8/31/04, effective 11/1/04. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.		
296-24-13503	Color specifications. [Order 73-5, § 296-24-13503, filed 5/9/73 and Order 73-4, § 296-24-13503, filed 5/7/73.] Repealed by 83-15-017 (Order 83-19), filed 7/13/83, effective 9/12/83. Statutory Authority: RCW 49.17.040 and 49.17.050.	296-24-14509	Belt terminals, anchors and bolts. [Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-24-14509, filed 7/20/94, effective 9/20/94; Order 73-5, § 296-24-14509, filed 5/9/73 and Order 73-4, § 296-24-14509, filed 5/7/73.] Repealed by 02-22-027, filed 10/28/02, effective 1/1/03. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060. Later promulgation, see chapter 296-878 WAC.
296-24-140	Specifications for accident prevention signs and tags. [Order 73-5, § 296-24-140, filed 5/9/73 and Order 73-4, § 296-24-140, filed 5/7/73.] Repealed by 04-18-080, filed 8/31/04, effective 11/1/04. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	296-24-14511	Belts. [Order 73-5, § 296-24-14511, filed 5/9/73 and Order 73-4, § 296-24-14511, filed 5/7/73.] Repealed by 02-22-027, filed 10/28/02, effective 1/1/03. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060.
296-24-14001	Scope. [Statutory Authority: RCW 49.17.010, [49.17.]040, [49.17.]050. 02-12-098, § 296-24-14001, filed 6/5/02, effective 8/1/02; Order 76-6, § 296-24-14001, filed 3/1/76; Order 73-5, § 296-24-14001, filed 5/9/73 and Order 73-4, § 296-24-14001, filed 5/7/73.] Repealed by 04-18-080, filed 8/31/04, effective 11/1/04. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.		
296-24-14003	Definitions. [Order 73-5, § 296-24-14003, filed 5/9/73 and Order 73-4, § 296-24-14003, filed 5/7/73.]		

	49.17.060. Later promulgation, see chapter 296-878 WAC.		Statutory Authority: RCW 49.17.040 and 49.17.050. 83-15-017 (Order 83-19), § 296-24-165, filed 7/13/83, effective 9/12/83; Order 76-6, § 296-24-165, filed 3/1/76; Order 73-5, § 296-24-165, filed 5/9/73 and Order 73-4, § 296-24-165, filed 5/7/73.] Repealed by 04-14-028, filed 6/29/04, effective 1/1/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060.
296-24-14513	Anchor installations. [Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-24-14513, filed 7/20/94, effective 9/20/94; Order 73-5, § 296-24-14513, filed 5/9/73 and Order 73-4, § 296-24-14513, filed 5/7/73.] Repealed by 02-22-027, filed 10/28/02, effective 1/1/03. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060. Later promulgation, see chapter 296-878 WAC.	296-24-16501	Definitions. [Order 73-5, § 296-24-16501, filed 5/9/73 and Order 73-4, § 296-24-16501, filed 5/7/73.] Repealed by 04-14-028, filed 6/29/04, effective 1/1/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060.
296-24-14515	Reversible and pivot windows. [Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-24-14515, filed 7/20/94, effective 9/20/94; Order 73-5, § 296-24-14515, filed 5/9/73 and Order 73-4, § 296-24-14515, filed 5/7/73.] Repealed by 02-22-027, filed 10/28/02, effective 1/1/03. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060. Later promulgation, see chapter 296-878 WAC.	296-24-16503	Machine construction general. [Statutory Authority: Chapter 49.17 RCW. 89-11-035 (Order 89-03), § 296-24-16503, filed 5/15/89, effective 6/30/89. Statutory Authority: RCW 49.17.040 and 49.17.050. 83-15-017 (Order 83-19), § 296-24-16503, filed 7/13/83, effective 9/12/83; 82-13-045 (Order 82-22), § 296-24-16503, filed 6/11/82; Order 73-5, § 296-24-16503, filed 5/9/73 and Order 73-4, § 296-24-16503, filed 5/7/73.] Repealed by 04-14-028, filed 6/29/04, effective 1/1/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060.
296-24-14517	Ladders. [Order 73-5, § 296-24-14517, filed 5/9/73 and Order 73-4, § 296-24-14517, filed 5/7/73.] Repealed by 02-22-027, filed 10/28/02, effective 1/1/03. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060. Later promulgation, see chapter 296-878 WAC.	296-24-16505	Machine controls and equipment. [Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-24-16505, filed 7/20/94, effective 9/20/94; Order 73-5, § 296-24-16505, filed 5/9/73 and Order 73-4, § 296-24-16505, filed 5/7/73.] Repealed by 04-14-028, filed 6/29/04, effective 1/1/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060.
296-24-14519	Boatswain's chairs. [Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 00-08-078, § 296-24-14519, filed 4/4/00, effective 7/1/00. Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-24-14519, filed 7/20/94, effective 9/20/94; Order 73-5, § 296-24-14519, filed 5/9/73 and Order 73-4, § 296-24-14519, filed 5/7/73.] Repealed by 02-22-027, filed 10/28/02, effective 1/1/03. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060. Later promulgation, see chapter 296-878 WAC.	296-24-16507	Hand-fed rip saws. [Statutory Authority: Chapter 49.17 RCW. 90-03-029 (Order 89-20), § 296-24-16507, filed 1/11/90, effective 2/26/90; Order 73-5, § 296-24-16507, filed 5/9/73 and Order 73-4, § 296-24-16507, filed 5/7/73.] Repealed by 04-14-028, filed 6/29/04, effective 1/1/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060.
296-24-150	Machinery and machine guarding—General requirements for all machines—Scope and application. [Statutory Authority: Chapter 49.17 RCW. 91-03-044 (Order 90-18), § 296-24-150, filed 1/10/91, effective 2/12/91; 89-11-035 (Order 89-03), § 296-24-150, filed 5/15/89, effective 6/30/89; Order 74-27, § 296-24-150, filed 5/7/74; Order 73-5, § 296-24-150, filed 5/9/73 and Order 73-4, § 296-24-150, filed 5/7/73.] Repealed by 04-14-028, filed 6/29/04, effective 1/1/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060.	296-24-16509	Hand-fed crosscut table saws. [Order 73-5, § 296-24-16509, filed 5/9/73 and Order 73-4, § 296-24-16509, filed 5/7/73.] Repealed by 04-14-028, filed 6/29/04, effective 1/1/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060.
296-24-15001	Machine guarding. [Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-24-15001, filed 7/20/94, effective 9/20/94; 91-03-044 (Order 90-18), § 296-24-15001, filed 1/10/91, effective 2/12/91; 90-03-029 (Order 89-20), § 296-24-15001, filed 1/11/90, effective 2/26/90; 89-11-035 (Order 89-03), § 296-24-15001, filed 5/15/89, effective 6/30/89; Order 74-27, § 296-24-15001, filed 5/7/74; Order 73-5, § 296-24-15001, filed 5/9/73 and Order 73-4, § 296-24-15001, filed 5/7/73.] Repealed by 04-14-028, filed 6/29/04, effective 1/1/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060.	296-24-16511	Circular resaws. [Order 73-5, § 296-24-16511, filed 5/9/73 and Order 73-4, § 296-24-16511, filed 5/7/73.] Repealed by 04-14-028, filed 6/29/04, effective 1/1/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060.
296-24-15003	Anchoring fixed machinery. [Statutory Authority: Chapter 49.17 RCW. 91-03-044 (Order 90-18), § 296-24-15003, filed 1/10/91, effective 2/12/91; Order 73-5, § 296-24-15003, filed 5/9/73 and Order 73-4, § 296-24-15003, filed 5/7/73.] Repealed by 04-14-028, filed 6/29/04, effective 1/1/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060.	296-24-16513	Self-feed circular saws. [Statutory Authority: RCW 49.17.040 and 49.17.050. 83-15-017 (Order 83-19), § 296-24-16513, filed 7/13/83, effective 9/12/83; Order 73-5, § 296-24-16513, filed 5/9/73 and Order 73-4, § 296-24-16513, filed 5/7/73.] Repealed by 04-14-028, filed 6/29/04, effective 1/1/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060.
296-24-15005	Means to prevent slipping. [Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-24-15005, filed 7/20/94, effective 9/20/94; Order 73-5, § 296-24-15005, filed 5/9/73 and Order 73-4, § 296-24-15005, filed 5/7/73.] Repealed by 04-14-028, filed 6/29/04, effective 1/1/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060.	296-24-16515	Swing cutoff saws. [Statutory Authority: Chapter 49.17 RCW. 90-03-029 (Order 89-20), § 296-24-16515, filed 1/11/90, effective 2/26/90; Order 73-5, § 296-24-16515, filed 5/9/73 and Order 73-4, § 296-24-16515, filed 5/7/73.] Repealed by 04-14-028, filed 6/29/04, effective 1/1/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060.
296-24-15007	Machines shall be stopped when making repairs. [Order 74-27, § 296-24-15007, filed 5/7/74.] Repealed by 04-14-028, filed 6/29/04, effective 1/1/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060.	296-24-16517	Radial saws. [Statutory Authority: Chapter 49.17 RCW. 90-03-029 (Order 89-20), § 296-24-16517, filed 1/11/90, effective 2/26/90; 89-11-035 (Order 89-03), § 296-24-16517, filed 5/15/89, effective 6/30/89; Order 73-5, § 296-24-16517, filed 5/9/73 and Order 73-4, § 296-24-16517, filed 5/7/73.] Repealed by 04-14-028, filed 6/29/04, effective 1/1/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060.
296-24-15009	Counterweights. [Order 74-27, § 296-24-15009, filed 5/7/74.] Repealed by 04-14-028, filed 6/29/04, effective 1/1/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060.	296-24-16519	Bandsaws and band resaws. [Order 73-5, § 296-24-16519, filed 5/9/73 and Order 73-4, § 296-24-16519, filed 5/7/73.] Repealed by 04-14-028, filed 6/29/04, effective 1/1/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060.
296-24-165	Fixed and portable power tool requirements. [Statutory Authority: Chapter 49.17 RCW. 91-24-017 (Order 91-07), § 296-24-165, filed 11/22/91, effective 12/24/91.	296-24-16521	Jointers. [Statutory Authority: RCW 49.17.040 and 49.17.050. 83-15-017 (Order 83-19), § 296-24-16521, filed 7/13/83, effective 9/12/83; Order 73-5, § 296-24-16521, filed 5/9/73 and Order 73-4, § 296-24-16521, filed 5/7/73.] Repealed by 04-14-028, filed 6/29/04, effective 1/1/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060.
		296-24-16523	Tenoning machines. [Order 76-6, § 296-24-16523, filed 3/1/76; Order 73-5, § 296-24-16523, filed 5/9/73 and

	Order 73-4, § 296-24-16523, filed 5/7/73.] Repealed by 04-14-028, filed 6/29/04, effective 1/1/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060.		
296-24-16525	Boring and mortising machines. [Order 73-5, § 296-24-16525, filed 5/9/73 and Order 73-4, § 296-24-16525, filed 5/7/73.] Repealed by 04-14-028, filed 6/29/04, effective 1/1/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060.	296-24-17011	Repealed by 82-13-045 (Order 82-22), filed 6/11/82. Statutory Authority: RCW 49.17.040 and 49.17.050.
296-24-16527	Shapers and similar equipment. [Statutory Authority: RCW 49.17.040 and 49.17.050. 83-15-017 (Order 83-19), § 296-24-16527, filed 7/13/83, effective 9/12/83; Order 73-5, § 296-24-16527, filed 5/9/73 and Order 73-4, § 296-24-16527, filed 5/7/73.] Repealed by 04-14-028, filed 6/29/04, effective 1/1/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060.	296-24-17013	Stave and heading planers (single and double heads). [Order 73-5, § 296-24-17013, filed 5/9/73 and Order 73-4, § 296-24-17013, filed 5/7/73.] Repealed by 82-13-045 (Order 82-22), filed 6/11/82. Statutory Authority: RCW 49.17.040 and 49.17.050.
296-24-16529	Planing, molding, sticking, and matching machines. [Order 73-5, § 296-24-16529, filed 5/9/73 and Order 73-4, § 296-24-16529, filed 5/7/73.] Repealed by 04-14-028, filed 6/29/04, effective 1/1/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060.	296-24-17015	Stave jointing machines (wheel). [Order 73-5, § 296-24-17015, filed 5/9/73 and Order 73-4, § 296-24-17015, filed 5/7/73.] Repealed by 82-13-045 (Order 82-22), filed 6/11/82. Statutory Authority: RCW 49.17.040 and 49.17.050.
296-24-16531	Profile and swing-head lathes and heel turning machine. [Statutory Authority: Chapter 49.17 RCW. 91-03-044 (Order 90-18), § 296-24-16531, filed 1/10/91, effective 2/12/91. Statutory Authority: RCW 49.17.040 and 49.17.050. 83-15-017 (Order 83-19), § 296-24-16531, filed 7/13/83, effective 9/12/83; Order 73-5, § 296-24-16531, filed 5/9/73 and Order 73-4, § 296-24-16531, filed 5/7/73.] Repealed by 04-14-028, filed 6/29/04, effective 1/1/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060.	296-24-17017	Heading jointer and doweler machine (wheel). [Order 73-5, § 296-24-17017, filed 5/9/73 and Order 73-4, § 296-24-17017, filed 5/7/73.] Repealed by 82-13-045 (Order 82-22), filed 6/11/82. Statutory Authority: RCW 49.17.040 and 49.17.050.
296-24-16533	Sanding machines. [Order 73-5, § 296-24-16533, filed 5/9/73 and Order 73-4, § 296-24-16533, filed 5/7/73.] Repealed by 04-14-028, filed 6/29/04, effective 1/1/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060.	296-24-17019	Heading rounder. [Order 73-5, § 296-24-17019, filed 5/9/73 and Order 73-4, § 296-24-17019, filed 5/7/73.] Repealed by 82-13-045 (Order 82-22), filed 6/11/82. Statutory Authority: RCW 49.17.040 and 49.17.050.
296-24-16535	Veneer cutters and wringers. [Order 73-5, § 296-24-16535, filed 5/9/73 and Order 73-4, § 296-24-16535, filed 5/7/73.] Repealed by 04-14-028, filed 6/29/04, effective 1/1/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060.	296-24-17021	Power windlass machine. [Order 73-5, § 296-24-17021, filed 5/9/73 and Order 73-4, § 296-24-17021, filed 5/7/73.] Repealed by 82-13-045 (Order 82-22), filed 6/11/82. Statutory Authority: RCW 49.17.040 and 49.17.050.
296-24-16537	Miscellaneous machines. [Statutory Authority: RCW 49.17.040 and 49.17.050. 83-15-017 (Order 83-19), § 296-24-16537, filed 7/13/83, effective 9/12/83; Order 73-5, § 296-24-16537, filed 5/9/73 and Order 73-4, § 296-24-16537, filed 5/7/73.] Repealed by 04-14-028, filed 6/29/04, effective 1/1/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060.	296-24-17023	Crozing machine (stationary heads). [Order 73-5, § 296-24-17023, filed 5/9/73 and Order 73-4, § 296-24-17023, filed 5/7/73.] Repealed by 82-13-045 (Order 82-22), filed 6/11/82. Statutory Authority: RCW 49.17.040 and 49.17.050.
296-24-16539	Inspection and maintenance of machinery. [Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-24-16539, filed 7/20/94, effective 9/20/94. Statutory Authority: RCW 49.17.040 and 49.17.050. 83-15-017 (Order 83-19), § 296-24-16539, filed 7/13/83, effective 9/12/83; 82-13-045 (Order 82-22), § 296-24-16539, filed 6/11/82; Order 73-5, § 296-24-16539, filed 5/9/73 and Order 73-4, § 296-24-16539, filed 5/7/73.] Repealed by 04-14-028, filed 6/29/04, effective 1/1/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060.	296-24-17025	Heading-up machine. [Order 73-5, § 296-24-17025, filed 5/9/73 and Order 73-4, § 296-24-17025, filed 5/7/73.] Repealed by 82-13-045 (Order 82-22), filed 6/11/82. Statutory Authority: RCW 49.17.040 and 49.17.050.
296-24-170	Cooperage machinery. [Order 73-5, § 296-24-170, filed 5/9/73 and Order 73-4, § 296-24-170, filed 5/7/73.] Repealed by 82-13-045 (Order 82-22), filed 6/11/82. Statutory Authority: RCW 49.17.040 and 49.17.050.	296-24-17027	Head charring machine. [Order 73-5, § 296-24-17027, filed 5/9/73 and Order 73-4, § 296-24-17027, filed 5/7/73.] Repealed by 82-13-045 (Order 82-22), filed 6/11/82. Statutory Authority: RCW 49.17.040 and 49.17.050.
296-24-17001	Definitions. [Order 73-5, § 296-24-17001, filed 5/9/73 and Order 73-4, § 296-24-17001, filed 5/7/73.] Repealed by 82-13-045 (Order 82-22), filed 6/11/82. Statutory Authority: RCW 49.17.040 and 49.17.050.	296-24-17029	Bilge truss hoop ring removing machine. [Order 73-5, § 296-24-17029, filed 5/9/73 and Order 73-4, § 296-24-17029, filed 5/7/73.] Repealed by 82-13-045 (Order 82-22), filed 6/11/82. Statutory Authority: RCW 49.17.040 and 49.17.050.
296-24-17003	Heading bolt sawing machine. [Order 73-5, § 296-24-17003, filed 5/9/73 and Order 73-4, § 296-24-17003, filed 5/7/73.] Repealed by 82-13-045 (Order 82-22), filed 6/11/82. Statutory Authority: RCW 49.17.040 and 49.17.050.	296-24-17031	Hoop elevators and conveyors. [Order 73-5, § 296-24-17031, filed 5/9/73 and Order 73-4, § 296-24-17031, filed 5/7/73.] Repealed by 82-13-045 (Order 82-22), filed 6/11/82. Statutory Authority: RCW 49.17.040 and 49.17.050.
296-24-17005	Bolt, equalizer, stave, and heading saws (tilting table style). [Order 73-5, § 296-24-17005, filed 5/9/73 and Order 73-4, § 296-24-17005, filed 5/7/73.] Repealed by 82-13-045 (Order 82-22), filed 6/11/82. Statutory Authority: RCW 49.17.040 and 49.17.050.	296-24-17033	Barrel sanding machine. [Order 73-5, § 296-24-17033, filed 5/9/73 and Order 73-4, § 296-24-17033, filed 5/7/73.] Repealed by 82-13-045 (Order 82-22), filed 6/11/82. Statutory Authority: RCW 49.17.040 and 49.17.050.
296-24-17007	Barrel stave saws (cylindrical saws). [Order 73-5, § 296-24-17007, filed 5/9/73 and Order 73-4, § 296-24-17007, filed 5/7/73.] Repealed by 82-13-045 (Order 82-22), filed 6/11/82. Statutory Authority: RCW 49.17.040 and 49.17.050.	296-24-17035	Hoop drivers and trussers. [Order 73-5, § 296-24-17035, filed 5/9/73 and Order 73-4, § 296-24-17035, filed 5/7/73.] Repealed by 82-13-045 (Order 82-22), filed 6/11/82. Statutory Authority: RCW 49.17.040 and 49.17.050.
296-24-17009	Hand-fed rip saws. [Order 73-5, § 296-24-17009, filed 5/9/73 and Order 73-4, § 296-24-17009, filed 5/7/73.]	296-24-17037	Head sanding machine. [Order 73-5, § 296-24-17037, filed 5/9/73 and Order 73-4, § 296-24-17037, filed 5/7/73.] Repealed by 82-13-045 (Order 82-22), filed 6/11/82. Statutory Authority: RCW 49.17.040 and 49.17.050.
		296-24-17039	Hand jointer. [Order 73-5, § 296-24-17039, filed 5/9/73 and Order 73-4, § 296-24-17039, filed 5/7/73.] Repealed by 82-13-045 (Order 82-22), filed 6/11/82. Statutory Authority: RCW 49.17.040 and 49.17.050.
		296-24-17041	Hoop punching and coiling machine. [Order 73-5, § 296-24-17041, filed 5/9/73 and Order 73-4, § 296-24-17041, filed 5/7/73.] Repealed by 82-13-045 (Order 82-22), filed 6/11/82. Statutory Authority: RCW 49.17.040 and 49.17.050.
		296-24-17043	Hoop riveting machine. [Order 73-5, § 296-24-17043, filed 5/9/73 and Order 73-4, § 296-24-17043, filed 5/7/73.] Repealed by 82-13-045 (Order 82-22), filed

	6/11/82. Statutory Authority: RCW 49.17.040 and 49.17.050.		effective 1/1/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060.
296-24-17045	Hoop flaring and expanding machine. [Order 73-5, § 296-24-17045, filed 5/9/73 and Order 73-4, § 296-24-17045, filed 5/7/73.] Repealed by 82-13-045 (Order 82-22), filed 6/11/82. Statutory Authority: RCW 49.17.040 and 49.17.050.	296-24-19013	Stopping limits. [Order 73-5, § 296-24-19013, filed 5/9/73 and Order 73-4, § 296-24-19013, filed 5/7/73.] Repealed by 04-14-028, filed 6/29/04, effective 1/1/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060.
296-24-17047	Inspection and maintenance of cooperage machinery. [Order 73-5, § 296-24-17047, filed 5/9/73 and order 73-4, § 296-24-17047, filed 5/7/73.] Repealed by 82-13-045 (order 82-22), filed 6/11/82. Statutory Authority: RCW 49.17.040 and 49.17.050.	296-24-19015	Alarm. [Order 73-5, § 296-24-19015, filed 5/9/73 and Order 73-4, § 296-24-19015, filed 5/7/73.] Repealed by 04-14-028, filed 6/29/04, effective 1/1/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060.
296-24-180	Abrasive wheel machinery. [Order 73-5, § 296-24-180, filed 5/9/73 and Order 73-4, § 296-24-180, filed 5/7/73.] Repealed by 04-14-028, filed 6/29/04, effective 1/1/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060.	296-24-195	Mechanical power presses. [Statutory Authority: Chapter 49.17 RCW. 89-11-035 (Order 89-03), § 296-24-195, filed 5/15/89, effective 6/30/89; Order 76-6, § 296-24-195, filed 3/1/76; Order 73-5, § 296-24-195, filed 5/9/73 and Order 73-4, § 296-24-195, filed 5/7/73.] Repealed by 04-14-028, filed 6/29/04, effective 1/1/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060.
296-24-18001	Definitions. [Order 73-5, § 296-24-18001, filed 5/9/73 and Order 73-4, § 296-24-18001, filed 5/7/73.] Repealed by 04-14-028, filed 6/29/04, effective 1/1/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060.	296-24-19501	Definitions. [Statutory Authority: RCW 49.17.040, [49.17].050 and [49.17].060. 95-17-036, § 296-24-19501, filed 8/9/95, effective 9/25/95. Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-24-19501, filed 7/20/94, effective 9/20/94; 88-23-054 (Order 88-25), § 296-24-19501, filed 11/14/88; Order 76-6, § 296-24-19501, filed 3/1/76; Order 73-5, § 296-24-19501, filed 5/9/73 and Order 73-4, § 296-24-19501, filed 5/7/73.] Repealed by 04-14-028, filed 6/29/04, effective 1/1/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060.
296-24-18003	General requirements. [Order 73-5, § 296-24-18003, filed 5/9/73; Order 73-4, § 296-24-18003, filed 5/7/73.] Repealed by 04-14-028, filed 6/29/04, effective 1/1/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060.	296-24-19503	General requirements. [Order 76-6, § 296-24-19503, filed 3/1/76; Order 73-5, § 296-24-19503, filed 5/9/73 and Order 73-4, § 296-24-19503, filed 5/7/73.] Repealed by 04-14-028, filed 6/29/04, effective 1/1/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060.
296-24-18005	Guarding of abrasive wheel machinery. [Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 98-02-028, § 296-24-18005, filed 12/31/97, effective 1/31/98; Order 76-6, § 296-24-18005, filed 3/1/76; Order 73-5, § 296-24-18005, filed 5/9/73 and Order 73-4, § 296-24-18005, filed 5/7/73.] Repealed by 04-14-028, filed 6/29/04, effective 1/1/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060.	296-24-19505	Mechanical power press guarding and construction, general. [Statutory Authority: Chapter 49.17 RCW. 91-03-044 (Order 90-18), § 296-24-19505, filed 1/10/91, effective 2/12/91; Order 76-6, § 296-24-19505, filed 3/1/76; Order 74-27, § 296-24-19505, filed 5/7/74; Order 73-5, § 296-24-19505, filed 5/9/73 and Order 73-4, § 296-24-19505, filed 5/7/73.] Repealed by 04-14-028, filed 6/29/04, effective 1/1/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060.
296-24-18007	Flanges. [Order 73-5, § 296-24-18007, filed 5/9/73 and Order 73-4, § 296-24-18007, filed 5/7/73.] Repealed by 04-14-028, filed 6/29/04, effective 1/1/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060.	296-24-19507	Safeguarding the point of operation. [Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-24-19507, filed 7/20/94, effective 9/20/94; 88-23-054 (Order 88-25), § 296-24-19507, filed 11/14/88. Statutory Authority: RCW 49.17.040, 49.17.050, 49.17.240, chapters 43.22 and 42.30 RCW. 80-17-015 (Order 80-21), § 296-24-19507, filed 11/13/80; Order 76-6, § 296-24-19507, filed 3/1/76; Order 73-5, § 296-24-19507, filed 5/9/73 and Order 73-4, § 296-24-19507, filed 5/7/73.] Repealed by 04-14-028, filed 6/29/04, effective 1/1/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060.
296-24-18009	Mounting. [Order 73-5, § 296-24-18009, filed 5/9/73 and Order 73-4, § 296-24-18009, filed 5/7/73.] Repealed by 04-14-028, filed 6/29/04, effective 1/1/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060.	296-24-19509	Design, construction, setting and feeding of dies. [Statutory Authority: Chapter 49.17 RCW. 91-03-044 (Order 90-18), § 296-24-19509, filed 1/10/91, effective 2/12/91. Statutory Authority: RCW 49.17.040 and 49.17.050. 82-02-003 (Order 81-32), § 296-24-19509, filed 12/24/81; Order 76-6, § 296-24-19509, filed 3/1/76; Order 73-5, § 296-24-19509, filed 5/9/73 and Order 73-4, § 296-24-19509, filed 5/7/73.] Repealed by 04-14-028, filed 6/29/04, effective 1/1/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060.
296-24-190	Mills and calenders in the rubber and plastics industries. [Order 73-5, § 296-24-190, filed 5/9/73 and Order 73-4, § 296-24-190, filed 5/7/73.] Repealed by 04-14-028, filed 6/29/04, effective 1/1/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060.		
296-24-19001	Definitions. [Order 73-5, § 296-24-19001, filed 5/9/73 and Order 73-4, § 296-24-19001, filed 5/7/73.] Repealed by 04-14-028, filed 6/29/04, effective 1/1/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060.		
296-24-19003	General requirements. [Statutory Authority: Chapter 49.17 RCW. 91-24-017 (Order 91-07), § 296-24-19003, filed 11/22/91, effective 12/24/91. Statutory Authority: RCW 49.17.040 and 49.17.050. 85-10-004 (Order 85-09), § 296-24-19003, filed 4/19/85; Order 76-6, § 296-24-19003, filed 3/1/76; Order 73-5, § 296-24-19003, filed 5/9/73 and Order 73-4, § 296-24-19003, filed 5/7/73.] Repealed by 04-14-028, filed 6/29/04, effective 1/1/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060.		
296-24-19005	Mill safety controls. [Order 73-5, § 296-24-19005, filed 5/9/73 and Order 73-4, § 296-24-19005, filed 5/7/73.] Repealed by 04-14-028, filed 6/29/04, effective 1/1/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060.	296-24-19511	Inspection, maintenance and modification of presses. [Order 76-6, § 296-24-19511, filed 3/1/76; Order 73-5, § 296-24-19511, filed 5/9/73 and Order 73-4, § 296-24-19511, filed 5/7/73.] Repealed by 04-14-028, filed 6/29/04, effective 1/1/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060.
296-24-19007	Calendar safety controls. [Order 73-5, § 296-24-19007, filed 5/9/73 and Order 73-4, § 296-24-19007, filed 5/7/73.] Repealed by 04-14-028, filed 6/29/04, effective 1/1/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060.	296-24-19513	Operation of power presses. [Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-24-19513, filed 7/20/94, effective 9/20/94; Order 76-6, § 296-24-19513, filed 3/1/76; Order 73-5, § 296-24-19513, filed 5/9/73 and Order 73-4, § 296-24-19513, filed 5/7/73.] Repealed by 04-14-028, filed 6/29/04, effective 1/1/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060.
296-24-19009	Protection by location. [Order 73-5, § 296-24-19009, filed 5/9/73 and Order 73-4, § 296-24-19009, filed 5/7/73.] Repealed by 04-14-028, filed 6/29/04, effective 1/1/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060.		
296-24-19011	Trip and emergency switches. [Order 73-5, § 296-24-19011, filed 5/9/73 and Order 73-4, § 296-24-19011, filed 5/7/73.] Repealed by 04-14-028, filed 6/29/04,		

296-24-19514	Reports of injuries to employees operating mechanical power presses. [Statutory Authority: RCW 49.17.040, [49.17].050 and [49.17].060. 95-17-036, § 296-24-19514, filed 8/9/95, effective 9/25/95.] Repealed by 04-14-028, filed 6/29/04, effective 1/1/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060.		1/1/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060.
296-24-19515	Reports of point of operation injuries—Mechanical power presses. [Order 76-6, § 296-24-19515, filed 3/1/76.] Repealed by 88-14-108 (Order 88-11), filed 7/6/88. Statutory Authority: Chapter 49.17 RCW.	296-24-20021	Other forge facility equipment. [Order 73-5, § 296-24-20021, filed 5/9/73 and Order 73-4, § 296-24-20021, filed 5/7/73.] Repealed by 04-14-028, filed 6/29/04, effective 1/1/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060.
296-24-19517	Presence sensing device initiation (PSDI). [Statutory Authority: RCW 49.17.040, [49.17].050 and [49.17].-060. 95-17-036, § 296-24-19517, filed 8/9/95, effective 9/25/95. Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-24-19517, filed 7/20/94, effective 9/20/94; 92-17-022 (Order 92-06), § 296-24-19517, filed 8/10/92, effective 9/10/92; 88-23-054 (Order 88-25), § 296-24-19517, filed 11/14/88.] Repealed by 04-14-028, filed 6/29/04, effective 1/1/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060.	296-24-205	Safeguarding power transmission parts. [Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 98-10-073, 98-24-120 and 99-12-091, § 296-24-205, filed 5/4/98, 12/2/98 and 6/1/99, effective 1/1/00; Order 73-5, § 296-24-205, filed 5/9/73 and Order 73-4, § 296-24-205, filed 5/7/73.] Repealed by 04-14-028, filed 6/29/04, effective 1/1/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060.
296-24-197	Compactors. [Order 74-27, § 296-24-197, filed 5/7/74.] Repealed by 04-14-028, filed 6/29/04, effective 1/1/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060.	296-24-20501	What is an employer's duty to protect employees from hazards of power transmission parts? [Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-19-112, § 296-24-20501, filed 9/21/99, effective 1/1/00; 98-10-073, 98-24-120 and 99-12-091, § 296-24-20501, filed 5/4/98, 12/2/98 and 6/1/99, effective 1/1/00. Statutory Authority: Chapter 49.17 RCW. 89-11-035 (Order 89-03), § 296-24-20501, filed 5/15/89, effective 6/30/89; Order 73-5, § 296-24-20501, filed 5/9/73 and Order 73-4, § 296-24-20501, filed 5/7/73.] Repealed by 04-14-028, filed 6/29/04, effective 1/1/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060.
296-24-200	Forging machines. [Statutory Authority: Chapter 49.17 RCW. 91-03-044 (Order 90-18), § 296-24-200, filed 1/10/91, effective 2/12/91; Order 73-5, § 296-24-200, filed 5/9/73 and Order 73-4, § 296-24-200, filed 5/7/73.] Repealed by 04-14-028, filed 6/29/04, effective 1/1/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060.	296-24-20503	What requirements must guards meet? [Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-19-112, § 296-24-20503, filed 9/21/99, effective 1/1/00; 98-10-073, 98-24-120 and 99-12-091, § 296-24-20503, filed 5/4/98, 12/2/98 and 6/1/99, effective 1/1/00. Statutory Authority: Chapter 49.17 RCW. 90-03-029 (Order 89-20), § 296-24-20503, filed 1/11/90, effective 2/26/90; 89-11-035 (Order 89-03), § 296-24-20503, filed 5/15/89, effective 6/30/89; Order 73-5, § 296-24-20503, filed 5/9/73 and Order 73-4, § 296-24-20503, filed 5/7/73.] Repealed by 04-14-028, filed 6/29/04, effective 1/1/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060.
296-24-20001	Definitions. [Order 73-5, § 296-24-20001, filed 5/9/73 and Order 73-4, § 296-24-20001, filed 5/7/73.] Repealed by 04-14-028, filed 6/29/04, effective 1/1/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060.	296-24-20505	What requirements must devices meet? [Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].-050. 99-19-112, § 296-24-20505, filed 9/21/99, effective 1/1/00; 98-10-073, 98-24-120 and 99-12-091, § 296-24-20505, filed 5/4/98, 12/2/98 and 6/1/99, effective 1/1/00; Order 73-5, § 296-24-20505, filed 5/9/73 and Order 73-4, § 296-24-20505, filed 5/7/73.] Repealed by 04-14-028, filed 6/29/04, effective 1/1/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060.
296-24-20003	General requirements. [Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-24-20003, filed 7/20/94, effective 9/20/94; Order 76-6, § 296-24-20003, filed 3/1/76; Order 73-5, § 296-24-20003, filed 5/9/73 and Order 73-4, § 296-24-20003, filed 5/7/73.] Repealed by 04-14-028, filed 6/29/04, effective 1/1/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060.	296-24-20507	What requirements must safeguarding by distance meet? [Statutory Authority: RCW 49.17.010, [49.17].-040 and [49.17].050. 99-19-112, § 296-24-20507, filed 9/21/99, effective 1/1/00; 98-10-073, 98-24-120 and 99-12-091, § 296-24-20507, filed 5/4/98, 12/2/98 and 6/1/99, effective 1/1/00; Order 73-5, § 296-24-20507, filed 5/9/73 and Order 73-4, § 296-24-20507, filed 5/7/73.] Repealed by 04-14-028, filed 6/29/04, effective 1/1/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060.
296-24-20005	Hammers, general. [Order 73-5, § 296-24-20005, filed 5/9/73 and Order 73-4, § 296-24-20005, filed 5/7/73.] Repealed by 04-14-028, filed 6/29/04, effective 1/1/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060.	296-24-20509	What requirements must safeguarding by location meet? [Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-19-112, § 296-24-20509, filed 9/21/99, effective 1/1/00; 98-10-073, 98-24-120 and 99-12-091, § 296-24-20509, filed 5/4/98, 12/2/98 and 6/1/99, effective 1/1/00; Order 73-5, § 296-24-20509, filed 5/9/73 and Order 73-4, § 296-24-20509, filed 5/7/73.] Repealed by 04-14-028, filed 6/29/04, effective 1/1/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060.
296-24-20007	Presses. [Order 73-5, § 296-24-20007, filed 5/9/73 and Order 73-4, § 296-24-20007, filed 5/7/73.] Repealed by 04-14-028, filed 6/29/04, effective 1/1/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060.	296-24-20511	What other responsibilities beyond safeguarding does an employer have to protect employees from power transmission parts? [Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-19-112, § 296-24-20511, filed 9/21/99, effective 1/1/00; 98-10-073, 98-24-120 and 99-12-091, § 296-24-20511, filed 5/4/98, 12/2/98 and 6/1/99, effective 1/1/00. Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-24-20511, filed 7/20/94, effective 9/20/94; Order 73-5, § 296-24-20511, filed 5/9/73 and Order 73-4, § 296-24-20511, filed 5/7/73.] Repealed by 04-14-
296-24-20009	Power-driven hammers. [Order 73-5, § 296-24-20009, filed 5/9/73 and Order 73-4, § 296-24-20009, filed 5/7/73.] Repealed by 04-14-028, filed 6/29/04, effective 1/1/05. Statutory Authority: RCW 49.17.010, 49.17.-040, 49.17.050, and 49.17.060.		
296-24-20011	Gravity hammers. [Order 73-5, § 296-24-20011, filed 5/9/73 and Order 73-4, § 296-24-20011, filed 5/7/73.] Repealed by 04-14-028, filed 6/29/04, effective 1/1/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060.		
296-24-20013	Forging presses. [Order 73-5, § 296-24-20013, filed 5/9/73 and Order 73-4, § 296-24-20013, filed 5/7/73.] Repealed by 04-14-028, filed 6/29/04, effective 1/1/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060.		
296-24-20015	Trimming presses. [Order 73-5, § 296-24-20015, filed 5/9/73 and Order 73-4, § 296-24-20015, filed 5/7/73.] Repealed by 04-14-028, filed 6/29/04, effective 1/1/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060.		
296-24-20017	Upsetters. [Order 73-5, § 296-24-20017, filed 5/9/73 and Order 73-4, § 296-24-20017, filed 5/7/73.] Repealed by 04-14-028, filed 6/29/04, effective 1/1/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060.		
296-24-20019	Other forging equipment. [Order 73-5, § 296-24-20019, filed 5/9/73 and Order 73-4, § 296-24-20019, filed 5/7/73.] Repealed by 04-14-028, filed 6/29/04, effective		

	028, filed 6/29/04, effective 1/1/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060.	296-24-20529	Reserve. [Statutory Authority: RCW 49.17.010, [49.17.]040 and [49.17.]050. 98-10-073, 98-24-120 and 99-12-091, § 296-24-20529, filed 5/4/98, 12/2/98 and 6/1/99, effective 1/1/00; Order 73-5, § 296-24-20529, filed 5/9/73 and Order 73-4, § 296-24-20529, filed 5/7/73.] Repealed by 04-14-028, filed 6/29/04, effective 1/1/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060.
296-24-20513	When may a guardrail be used as a safeguard? [Statutory Authority: RCW 49.17.010, [49.17.]040 and [49.17.]050. 99-19-112, § 296-24-20513, filed 9/21/99, effective 1/1/00; 98-10-073, 98-24-120 and 99-12-091, § 296-24-20513, filed 5/4/98, 12/2/98 and 6/1/99, effective 1/1/00; Order 73-5, § 296-24-20513, filed 5/9/73 and Order 73-4, § 296-24-20513, filed 5/7/73.] Repealed by 04-14-028, filed 6/29/04, effective 1/1/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060.	296-24-20531	Reserve. [Statutory Authority: RCW 49.17.010, [49.17.]040 and [49.17.]050. 98-10-073, 98-24-120 and 99-12-091, § 296-24-20531, filed 5/4/98, 12/2/98 and 6/1/99, effective 1/1/00; Order 76-6, § 296-24-20531, filed 3/1/76; Order 73-5, § 296-24-20531, filed 5/9/73 and Order 73-4, § 296-24-20531, filed 5/7/73.] Repealed by 04-14-028, filed 6/29/04, effective 1/1/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060.
296-24-20515	What are the additional requirements for flywheels? [Statutory Authority: RCW 49.17.010, [49.17.]040 and [49.17.]050. 99-19-112, § 296-24-20515, filed 9/21/99, effective 1/1/00; 98-10-073, 98-24-120 and 99-12-091, § 296-24-20515, filed 5/4/98, 12/2/98 and 6/1/99, effective 1/1/00; Order 73-5, § 296-24-20515, filed 5/9/73 and Order 73-4, § 296-24-20515, filed 5/7/73.] Repealed by 04-14-028, filed 6/29/04, effective 1/1/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060.	296-24-20533	Reserve. [Statutory Authority: RCW 49.17.010, [49.17.]040 and [49.17.]050. 98-10-073, 98-24-120 and 99-12-091, § 296-24-20533, filed 5/4/98, 12/2/98 and 6/1/99, effective 1/1/00. Statutory Authority: RCW 49.17.040, 49.17.050, 49.17.240, chapters 43.22 and 42.30 RCW. 80-17-015 (Order 80-21), § 296-24-20533, filed 11/13/80; Order 73-5, § 296-24-20533, filed 5/9/73 and Order 73-4, § 296-24-20533, filed 5/7/73.] Repealed by 04-14-028, filed 6/29/04, effective 1/1/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060.
296-24-20517	What are the additional requirements for shafting? [Statutory Authority: RCW 49.17.010, [49.17.]040 and [49.17.]050. 99-19-112, § 296-24-20517, filed 9/21/99, effective 1/1/00; 98-10-073, 98-24-120 and 99-12-091, § 296-24-20517, filed 5/4/98, 12/2/98 and 6/1/99, effective 1/1/00; Order 73-5, § 296-24-20517, filed 5/9/73 and Order 73-4, § 296-24-20517, filed 5/7/73.] Repealed by 04-14-028, filed 6/29/04, effective 1/1/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060.	296-24-20699	Appendices A through D are added to Part C of chapter 296-24 WAC, to describe the federal procedures for third-party validation and certification of presence sensing devices on mechanical power presses. [Statutory Authority: Chapter 49.17 RCW. 88-23-054 (Order 88-25), § 296-24-20699, filed 11/14/88.] Repealed by 04-14-028, filed 6/29/04, effective 1/1/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060.
296-24-20519	What are the additional requirements for pulleys? [Statutory Authority: RCW 49.17.010, [49.17.]040 and [49.17.]050. 98-10-073, 98-24-120 and 99-12-091, § 296-24-20519, filed 5/4/98, 12/2/98 and 6/1/99, effective 1/1/00; Order 73-5, § 296-24-20519, filed 5/9/73 and Order 73-4, § 296-24-20519, filed 5/7/73.] Repealed by 04-14-028, filed 6/29/04, effective 1/1/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060.	296-24-20700	Appendix A to WAC 296-24-195. [Statutory Authority: Chapter 49.17 RCW. 92-17-022 (Order 92-06), § 296-24-20700, filed 8/10/92, effective 9/10/92; 91-24-017 (Order 91-07), § 296-24-20700, filed 11/22/91, effective 12/24/91; 90-09-026 (Order 90-01), § 296-24-20700, filed 4/10/90, effective 5/25/90; 88-23-054 (Order 88-25), § 296-24-20700, filed 11/14/88.] Repealed by 04-14-028, filed 6/29/04, effective 1/1/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060.
296-24-20521	What are the additional requirements for belt and rope drives? [Statutory Authority: RCW 49.17.010, [49.17.]040 and [49.17.]050. 99-19-112, § 296-24-20521, filed 9/21/99, effective 1/1/00; 98-10-073, 98-24-120 and 99-12-091, § 296-24-20521, filed 5/4/98, 12/2/98 and 6/1/99, effective 1/1/00; Order 73-5, § 296-24-20521, filed 5/9/73 and Order 73-4, § 296-24-20521, filed 5/7/73.] Repealed by 04-14-028, filed 6/29/04, effective 1/1/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060.	296-24-20710	Appendix B to WAC 296-24-195. [Statutory Authority: Chapter 49.17 RCW. 88-23-054 (Order 88-25), § 296-24-20710, filed 11/14/88.] Repealed by 04-14-028, filed 6/29/04, effective 1/1/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060.
296-24-20523	What are the additional requirements for gears? [Statutory Authority: RCW 49.17.010, [49.17.]040 and [49.17.]050. 98-10-073, 98-24-120 and 99-12-091, § 296-24-20523, filed 5/4/98, 12/2/98 and 6/1/99, effective 1/1/00; Order 73-5, § 296-24-20523, filed 5/9/73 and Order 73-4, § 296-24-20523, filed 5/7/73.] Repealed by 04-14-028, filed 6/29/04, effective 1/1/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060.	296-24-20720	Appendix C to WAC 296-24-195. [Statutory Authority: Chapter 49.17 RCW. 88-23-054 (Order 88-25), § 296-24-20720, filed 11/14/88.] Repealed by 04-14-028, filed 6/29/04, effective 1/1/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060.
296-24-20525	What are the additional requirements for belt shifters? [Statutory Authority: RCW 49.17.010, [49.17.]040 and [49.17.]050. 99-19-112, § 296-24-20525, filed 9/21/99, effective 1/1/00; 98-10-073, 98-24-120 and 99-12-091, § 296-24-20525, filed 5/4/98, 12/2/98 and 6/1/99, effective 1/1/00. Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-24-20525, filed 7/20/94, effective 9/20/94; Order 76-6, § 296-24-20525, filed 3/1/76; Order 73-5, § 296-24-20525, filed 5/9/73 and Order 73-4, § 296-24-20525, filed 5/7/73.] Repealed by 04-14-028, filed 6/29/04, effective 1/1/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060.	296-24-20730	Appendix D to WAC 296-24-195. [Statutory Authority: Chapter 49.17 RCW. 92-17-022 (Order 92-06), § 296-24-20730, filed 8/10/92, effective 9/10/92; 88-23-054 (Order 88-25), § 296-24-20730, filed 11/14/88.] Repealed by 04-14-028, filed 6/29/04, effective 1/1/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060.
296-24-20527	What are the additional requirements for sewing machines? [Statutory Authority: RCW 49.17.010, [49.17.]040 and [49.17.]050. 99-19-112, § 296-24-20527, filed 9/21/99, effective 1/1/00; 98-10-073, 98-24-120 and 99-12-091, § 296-24-20527, filed 5/4/98, 12/2/98 and 6/1/99, effective 1/1/00; Order 73-5, § 296-24-20527, filed 5/9/73 and Order 73-4, § 296-24-20527, filed 5/7/73.] Repealed by 04-14-028, filed 6/29/04, effective 1/1/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060.	296-24-21503	Secure storage. [Order 73-5, § 296-24-21503, filed 5/9/73 and Order 73-4, § 296-24-21503, filed 5/7/73.] Repealed by 01-11-038, filed 5/9/01, effective 9/1/01. Statutory Authority: RCW 49.17.010, [49.17.]040, and [49.17.]050.
		296-24-21505	Housekeeping. [Order 73-5, § 296-24-21505, filed 5/9/73 and Order 73-4, § 296-24-21505, filed 5/7/73.] Repealed by 01-11-038, filed 5/9/01, effective 9/1/01. Statutory Authority: RCW 49.17.010, [49.17.]040, and [49.17.]050.
		296-24-21507	Drainage. [Order 73-5, § 296-24-21507, filed 5/9/73 and Order 73-4, § 296-24-21507, filed 5/7/73.] Repealed by 01-11-038, filed 5/9/01, effective 9/1/01. Statutory Authority: RCW 49.17.010, [49.17.]040, and [49.17.]050.
		296-24-21515	Conveyors. [Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-24-21515, filed 7/20/94, effective 9/20/94; Order 74-27, § 296-24-21515, filed 5/7/74; Order 73-5, § 296-24-21515, filed 5/9/73 and Order 73-4, § 296-24-21515, filed 5/7/73.]

	Repealed by 06-05-027, filed 2/7/06, effective 4/1/06. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	296-24-220	Indoor general storage. [Order 73-5, § 296-24-220, filed 5/9/73 and Order 73-4, § 296-24-220, filed 5/7/73.] Repealed by Order 74-27, filed 5/7/74.
296-24-21701	Scope. [Statutory Authority: Chapter 49.17 RCW. 88-14-108 (Order 88-11), § 296-24-21701, filed 7/6/88. Statutory Authority: RCW 49.17.040 and 49.17.050. 84-17-099 (Order 84-18), § 296-24-21701, filed 8/21/84. Statutory Authority: RCW 49.17.040, 49.17.050, 49.17.240, chapters 42.30 and 43.22 RCW. 80-17-014 (Order 80-20), § 296-24-21701, filed 11/13/80.] Repealed by 04-20-079, filed 10/5/04, effective 2/1/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. Later promulgation, see chapter 296-864 WAC.	296-24-22001	Definitions. [Order 73-5, § 296-24-22001, filed 5/9/73 and Order 73-4, § 296-24-22001, filed 5/7/73.] Repealed by Order 74-27, filed 5/7/74.
		296-24-22003	General requirements. [Order 73-5, § 296-24-22003, filed 5/9/73 and Order 73-4, § 296-24-22003, filed 5/7/73.] Repealed by Order 74-27, filed 5/7/74.
		296-24-22005	Piling procedures and precautions. [Order 73-5, § 296-24-22005, filed 5/9/73 and Order 73-4, § 296-24-22005, filed 5/7/73.] Repealed by Order 74-27, filed 5/7/74.
		296-24-22007	Fire protection requirements. [Order 73-5, § 296-24-22007, filed 5/9/73 and Order 73-4, § 296-24-22007, filed 5/7/73.] Repealed by Order 74-27, filed 5/7/74.
296-24-21703	Definitions. [Statutory Authority: Chapter 49.17 RCW. 89-11-035 (Order 89-03), § 296-24-21703, filed 5/15/89, effective 6/30/89. Statutory Authority: RCW 49.17.040 and 49.17.050. 84-17-099 (Order 84-18), § 296-24-21703, filed 8/21/84. Statutory Authority: RCW 49.17.040, 49.17.050, 49.17.240, chapters 42.30 and 43.22 RCW. 80-17-014 (Order 80-20), § 296-24-21703, filed 11/13/80.] Repealed by 04-20-079, filed 10/5/04, effective 2/1/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. Later promulgation, see chapter 296-864 WAC.	296-24-22009	Mechanical handling equipment. [Order 73-5, § 296-24-22009, filed 5/9/73 and Order 73-4, § 296-24-22009, filed 5/7/73.] Repealed by Order 74-27, filed 5/7/74.
		296-24-22011	Building service equipment. [Order 73-5, § 296-24-22011, filed 5/9/73 and Order 73-4, § 296-24-22011, filed 5/7/73.] Repealed by Order 74-27, filed 5/7/74.
		296-24-230	Powered industrial trucks. [Order 73-5, § 296-24-230, filed 5/9/73 and Order 73-4, § 296-24-230, filed 5/7/73.] Repealed by 04-19-051, filed 9/14/04, effective 2/1/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.
296-24-21705	Employee training. [Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-24-21705, filed 7/20/94, effective 9/20/94. Statutory Authority: RCW 49.17.040 and 49.17.050. 86-03-064 (Order 86-02), § 296-24-21705, filed 1/17/86; 84-17-099 (Order 84-18), § 296-24-21705, filed 8/21/84. Statutory Authority: RCW 49.17.040, 49.17.050, 49.17.240, chapters 42.30 and 43.22 RCW. 80-17-014 (Order 80-20), § 296-24-21705, filed 11/13/80.] Repealed by 04-20-079, filed 10/5/04, effective 2/1/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. Later promulgation, see chapter 296-864 WAC.	296-24-23001	Definition. [Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 00-01-176, § 296-24-23001, filed 12/21/99, effective 3/1/00. Statutory Authority: Chapter 49.17 RCW. 88-23-054 (Order 88-25), § 296-24-23001, filed 11/14/88; Order 74-27, § 296-24-23001, filed 5/7/74; Order 73-5, § 296-24-23001, filed 5/9/73 and Order 73-4, § 296-24-23001, filed 5/7/73.] Repealed by 04-19-051, filed 9/14/04, effective 2/1/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.
		296-24-23003	General requirements. [Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050. 02-12-098, § 296-24-23003, filed 6/5/02, effective 8/1/02; 00-01-176, § 296-24-23003, filed 12/21/99, effective 3/1/00; Order 76-6, § 296-24-23003, filed 3/1/76; Order 74-27, § 296-24-23003, filed 5/7/74; Order 73-5 § 296-24-23003, filed 5/9/73 and Order 73-4, § 296-24-23003, filed 5/7/73.] Repealed by 04-19-051, filed 9/14/04, effective 2/1/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.
296-24-21707	Tire servicing equipment. [Statutory Authority: Chapter 49.17 RCW. 89-11-035 (Order 89-03), § 296-24-21707, filed 5/15/89, effective 6/30/89; 88-11-021 (Order 88-04), § 296-24-21707, filed 5/11/88. Statutory Authority: RCW 49.17.040 and 49.17.050. 86-03-064 (Order 86-02), § 296-24-21707, filed 1/17/86; 84-17-099 (Order 84-18), § 296-24-21707, filed 8/21/84. Statutory Authority: RCW 49.17.040, 49.17.050, 49.17.240, chapters 42.30 and 43.22 RCW. 80-17-014 (Order 80-20), § 296-24-21707, filed 11/13/80.] Repealed by 04-20-079, filed 10/5/04, effective 2/1/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. Later promulgation, see chapter 296-864 WAC.	296-24-23005	Designations. [Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 00-01-176, § 296-24-23005, filed 12/21/99, effective 3/1/00; Order 73-5, § 296-24-23005, filed 5/9/73 and Order 73-4, § 296-24-23005, filed 5/7/73.] Repealed by 04-19-051, filed 9/14/04, effective 2/1/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.
		296-24-23007	Designated locations. [Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 00-01-176, § 296-24-23007, filed 12/21/99, effective 3/1/00. Statutory Authority: Chapter 49.17 RCW. 91-24-017 (Order 91-07), § 296-24-23007, filed 11/22/91, effective 12/24/91; Order 73-5, § 296-24-23007, filed 5/9/73 and Order 73-4, § 296-24-23007, filed 5/7/73.] Repealed by 04-19-051, filed 9/14/04, effective 2/1/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.
296-24-21709	Wheel component acceptability. [Statutory Authority: RCW 49.17.040 and 49.17.050. 84-17-099 (Order 84-18), § 296-24-21709, filed 8/21/84. Statutory Authority: RCW 49.17.040, 49.17.050, 49.17.240, chapters 42.30 and 43.22 RCW. 80-17-014 (Order 80-20), § 296-24-21709, filed 11/13/80.] Repealed by 04-20-079, filed 10/5/04, effective 2/1/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. Later promulgation, see chapter 296-864 WAC.		
		296-24-23009	Converted industrial trucks. [Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 00-01-176, § 296-24-23009, filed 12/21/99, effective 3/1/00; Order 73-5, § 296-24-23009, filed 5/9/73 and Order 73-4, § 296-24-23009, filed 5/7/73.] Repealed by 04-19-051, filed 9/14/04, effective 2/1/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.
296-24-21711	Safe operating procedure—Multipiece rim wheels. [Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-24-21711, filed 7/20/94, effective 9/20/94. Statutory Authority: RCW 49.17.040 and 49.17.050. 86-03-064 (Order 86-02), § 296-24-21711, filed 1/17/86; 84-17-099 (Order 84-18), § 296-24-21711, filed 8/21/84. Statutory Authority: RCW 49.17.040, 49.17.050, 49.17.240, chapters 42.30 and 43.22 RCW. 80-17-014 (Order 80-20), § 296-24-21711, filed 11/13/80.] Repealed by 04-20-079, filed 10/5/04, effective 2/1/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. Later promulgation, see chapter 296-864 WAC.	296-24-23011	Safety guards. [Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 00-01-176, § 296-24-23011, filed 12/21/99, effective 3/1/00; Order 73-5, § 296-24-23011, filed 5/9/73 and Order 73-4, § 296-24-23011, filed 5/7/73.] Repealed by 04-19-051, filed 9/14/04, effective 2/1/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.
296-24-21713	Safe operating procedure—Single-piece rim wheels. [Statutory Authority: Chapter 49.17 RCW. 89-11-035 (Order 89-03), § 296-24-21713, filed 5/15/89, effective 6/30/89. Statutory Authority: RCW 49.17.040 and 49.17.050. 84-17-099 (Order 84-18), § 296-24-21713, filed 8/21/84.] Repealed by 04-20-079, filed 10/5/04, effective 2/1/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. Later promulgation, see chapter 296-864 WAC.	296-24-23013	Fuel handling and storage. [Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 00-01-176, § 296-24-23013, filed 12/21/99, effective 3/1/00; Order 73-5, § 296-24-23013, filed 5/9/73 and Order 73-4, § 296-24-23013, filed 5/7/73.] Repealed by 04-19-051, filed 9/14/04, effective 2/1/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.

296-24-23015	Changing and charging storage batteries. [Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].-050. 00-01-176, § 296-24-23015, filed 12/21/99, effective 3/1/00; Order 73-5, § 296-24-23015, filed 5/9/73 and Order 73-4, § 296-24-23015, filed 5/7/73.] Repealed by 04-19-051, filed 9/14/04, effective 2/1/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	296-24-23037	4, § 296-24-23035, filed 5/7/73.] Repealed by 04-19-051, filed 9/14/04, effective 2/1/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.
296-24-23017	Lighting for operating areas. [Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 00-01-176, § 296-24-23017, filed 12/21/99, effective 3/1/00; Order 73-5, § 296-24-23017, filed 5/9/73 and Order 73-4, § 296-24-23017, filed 5/7/73.] Repealed by 04-19-051, filed 9/14/04, effective 2/1/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	296-24-233	Appendix 1 stability of powered industrial trucks non-mandatory appendix. [Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 00-01-176, § 296-24-23037, filed 12/21/99, effective 3/1/00.] Repealed by 04-19-051, filed 9/14/04, effective 2/1/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.
296-24-23019	Control of noxious gases and fumes. [Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 00-01-176, § 296-24-23019, filed 12/21/99, effective 3/1/00; Order 73-5, § 296-24-23019, filed 5/9/73 and Order 73-4, § 296-24-23019, filed 5/7/73.] Repealed by 04-19-051, filed 9/14/04, effective 2/1/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.		Motor vehicle trucks and trailers. [Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. 04-20-079, § 296-24-233, filed 10/5/04, effective 2/1/05. Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-24-233, filed 7/20/94, effective 9/20/94; Order 76-29, § 296-24-233, filed 9/30/76; Order 76-6, § 296-24-233, filed 3/1/76; Order 75-11, § 296-24-233, filed 4/4/75; Order 74-27, § 296-24-233, filed 5/7/74; Order 73-5, § 296-24-233, filed 5/9/73 and Order 73-4, § 296-24-233, filed 5/7/73.] Repealed by 05-17-059, filed 8/10/05, effective 10/1/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. Later promulgation, see chapter 296-865 WAC.
296-24-23021	Dockboards (bridge plates). [Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 00-01-176, § 296-24-23021, filed 12/21/99, effective 3/1/00; Order 73-5, § 296-24-23021, filed 5/9/73 and Order 73-4, § 296-24-23021, filed 5/7/73.] Repealed by 04-19-051, filed 9/14/04, effective 2/1/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	296-24-260	Helicopters. [Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 01-17-033, § 296-24-260, filed 8/8/01, effective 9/1/01. Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-24-260, filed 7/20/94, effective 9/20/94; 89-11-035 (Order 89-03), § 296-24-260, filed 5/15/89, effective 6/30/89; Order 76-28, § 296-24-260, filed 9/28/76.] Repealed by 04-09-099, filed 4/20/04, effective 9/1/04. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060. Later promulgation, see chapter 296-829 WAC.
296-24-23023	Trucks and railroad cars. [Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 00-01-176, § 296-24-23023, filed 12/21/99, effective 3/1/00. Statutory Authority: Chapter 49.17 RCW. 91-03-044 (Order 90-18), § 296-24-23023, filed 1/10/91, effective 2/12/91; Order 73-5, § 296-24-23023, filed 5/9/73 and Order 73-4, § 296-24-23023, filed 5/7/73.] Repealed by 04-19-051, filed 9/14/04, effective 2/1/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	296-24-405	Dip tanks containing flammable or combustible liquids. [Order 73-5, § 296-24-405, filed 5/9/73 and Order 73-4, § 296-24-405, filed 5/7/73.] Repealed by 02-15-102, filed 7/17/02, effective 10/1/02. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.
296-24-23025	Operator training. [Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 00-01-176, § 296-24-23025, filed 12/21/99, effective 3/1/00; Order 73-5, § 296-24-23025, filed 5/9/73 and Order 73-4, § 296-24-23025, filed 5/7/73.] Repealed by 04-19-051, filed 9/14/04, effective 2/1/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	296-24-40501	Definitions. [Statutory Authority: Chapter 49.17 RCW. 88-23-054 (Order 88-25), § 296-24-40501, filed 11/14/88; Order 73-5, § 296-24-40501, filed 5/9/73 and Order 73-4, § 296-24-40501, filed 5/7/73.] Repealed by 02-15-102, filed 7/17/02, effective 10/1/02. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.
296-24-23027	Powered industrial truck operations. [Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 00-08-078, § 296-24-23027, filed 4/4/00, effective 7/1/00; 00-01-176, § 296-24-23027, filed 12/21/99, effective 3/1/00. Statutory Authority: Chapter 49.17 RCW. 91-03-044 (Order 90-18), § 296-24-23027, filed 1/10/91, effective 2/12/91; Order 74-27, § 296-24-23027, filed 5/7/74; Order 73-5, § 296-24-23027, filed 5/9/73 and Order 73-4, § 296-24-23027, filed 5/7/73.] Repealed by 04-19-051, filed 9/14/04, effective 2/1/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	296-24-40503	Ventilation. [Order 73-5, § 296-24-40503, filed 5/9/73 and Order 73-4, § 296-24-40503, filed 5/7/73.] Repealed by 02-15-102, filed 7/17/02, effective 10/1/02. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.
296-24-23029	Traveling. [Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 00-01-176, § 296-24-23029, filed 12/21/99, effective 3/1/00; Order 73-5, § 296-24-23029, filed 5/9/73 and Order 73-4, § 296-24-23029, filed 5/7/73.] Repealed by 04-19-051, filed 9/14/04, effective 2/1/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	296-24-40505	Construction of dip tanks. [Order 73-5, § 296-24-40505, filed 5/9/73 and Order 73-4, § 296-24-40505, filed 5/7/73.] Repealed by 02-15-102, filed 7/17/02, effective 10/1/02. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.
296-24-23031	Loading. [Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 00-01-176, § 296-24-23031, filed 12/21/99, effective 3/1/00; Order 73-5, § 296-24-23031, filed 5/9/73 and Order 73-4, § 296-24-23031, filed 5/7/73.] Repealed by 04-19-051, filed 9/14/04, effective 2/1/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	296-24-40507	Liquids used in dip tanks, storage and handling. [Order 73-5, § 296-24-40507, filed 5/9/73 and Order 73-4, § 296-24-40507, filed 5/7/73.] Repealed by 02-15-102, filed 7/17/02, effective 10/1/02. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.
296-24-23033	Operation of the truck. [Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 00-01-176, § 296-24-23033, filed 12/21/99, effective 3/1/00; Order 73-5, § 296-24-23033, filed 5/9/73 and Order 73-4, § 296-24-23033, filed 5/7/73.] Repealed by 04-19-051, filed 9/14/04, effective 2/1/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	296-24-40509	Electrical and other sources of ignition. [Statutory Authority: Chapter 49.17 RCW. 91-24-017 (Order 91-07), § 296-24-40509, filed 11/22/91, effective 12/24/91. Statutory Authority: RCW 49.17.040 and 49.17.050. 85-10-004 (Order 85-09), § 296-24-40509, filed 4/19/85; Order 76-6, § 296-24-40509, filed 3/1/76; Order 73-5, § 296-24-40509, filed 5/9/73 and Order 73-4, § 296-24-40509, filed 5/7/73.] Repealed by 02-15-102, filed 7/17/02, effective 10/1/02. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.
296-24-23035	Maintenance of industrial trucks. [Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 00-01-176, § 296-24-23035, filed 12/21/99, effective 3/1/00; Order 73-5, § 296-24-23035, filed 5/9/73 and Order 73-4, § 296-24-23035, filed 5/7/73.] Repealed by 02-15-102, filed 7/17/02, effective 10/1/02. Statutory Authority: RCW 49.17.-010, [49.17].040, and [49.17].050.	296-24-40511	Operations and maintenance. [Order 73-5, § 296-24-40511, filed 5/9/73 and Order 73-4, § 296-24-40511, filed 5/7/73.] Repealed by 02-15-102, filed 7/17/02, effective 10/1/02. Statutory Authority: RCW 49.17.-010, [49.17].040, and [49.17].050.
		296-24-40513	Extinguishment. [Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 01-11-038, § 296-24-40513, filed 5/9/01, effective 9/1/01. Statutory Authority: RCW 49.17.040 and 49.17.050. 82-02-003 (Order 81-32), § 296-24-40513, filed 12/24/81; Order 73-5, § 296-24-40513, filed 5/9/73 and Order 73-4, § 296-24-40513, filed 5/7/73.] Repealed by 02-15-102, filed

	7/17/02, effective 10/1/02. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.		
296-24-40515	Special dip tank applications. [Order 76-6, § 296-24-40515, filed 3/1/76; Order 74-27, § 296-24-40515, filed 5/7/74; Order 73-5, § 296-24-40515, filed 5/9/73 and Order 73-4, § 296-24-40515, filed 5/7/73.] Repealed by 02-15-102, filed 7/17/02, effective 10/1/02. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.		
296-24-47515	LP-gas system installations on commercial vehicles. [Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-24-47515, filed 7/20/94, effective 9/20/94; Order 76-6, § 296-24-47515, filed 3/1/76; Order 73-5, § 296-24-47515, filed 5/9/73 and Order 73-4, § 296-24-47515, filed 5/7/73.] Repealed by 99-17-094, filed 8/17/99, effective 12/1/99. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050.		
296-24-510	Storage and handling of anhydrous ammonia. [Order 73-5, § 296-24-510, filed 5/9/73 and Order 73-4, § 296-24-510, filed 5/7/73.] Repealed by 06-10-067, filed 5/2/06, effective 9/1/06. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. Later promulgation, see chapter 296-826 WAC.	296-24-51015	Systems utilizing portable DOT containers. [Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050. 02-12-098, § 296-24-51015, filed 6/5/02, effective 8/1/02; Order 73-5, § 296-24-51015, filed 5/9/73 and Order 73-4, § 296-24-51015, filed 5/7/73.] Repealed by 06-10-067, filed 5/2/06, effective 9/1/06. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. Later promulgation, see chapter 296-826 WAC.
296-24-51001	Scope. [Order 73-5, § 296-24-51001, filed 5/9/73 and Order 73-4, § 296-24-51001, filed 5/7/73.] Repealed by 06-10-067, filed 5/2/06, effective 9/1/06. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. Later promulgation, see chapter 296-826 WAC.	296-24-51017	Systems mounted on trucks, semi-trailers, and trailers for transportation of ammonia. [Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-094, § 296-24-51017, filed 8/17/99, effective 12/1/99. Statutory Authority: RCW 49.17.040, 49.17.050, 49.17.240, chapters 43.22 and 42.30 RCW. 80-17-015 (Order 80-21), § 296-24-51017, filed 11/13/80; Order 76-6, § 296-24-51017, filed 3/1/76; Order 73-5, § 296-24-51017, filed 5/9/73 and Order 73-4, § 296-24-51017, filed 5/7/73.] Repealed by 06-10-067, filed 5/2/06, effective 9/1/06. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. Later promulgation, see chapter 296-826 WAC.
296-24-51003	General. [Order 73-5, § 296-24-51003, filed 5/9/73 and Order 73-4, § 296-24-51003, filed 5/7/73.] Repealed by 06-10-067, filed 5/2/06, effective 9/1/06. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. Later promulgation, see chapter 296-826 WAC.	296-24-51019	Systems mounted on farm wagons (implements of husbandry) for the transportation of ammonia. [Order 73-5, § 296-24-51019, filed 5/9/73 and Order 73-4, § 296-24-51019, filed 5/7/73.] Repealed by 06-10-067, filed 5/2/06, effective 9/1/06. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. Later promulgation, see chapter 296-826 WAC.
296-24-51005	Definitions. [Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-24-51005, filed 5/4/99, effective 9/1/99. Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-24-51005, filed 7/20/94, effective 9/20/94; Order 74-27, § 296-24-51005, filed 5/7/74; Order 73-5, § 296-24-51005, filed 5/9/73 and Order 73-4, § 296-24-51005, filed 5/7/73.] Repealed by 06-10-067, filed 5/2/06, effective 9/1/06. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. Later promulgation, see chapter 296-826 WAC.	296-24-51021	Systems mounted on farm equipment (implements of husbandry) for the application of ammonia. [Statutory Authority: RCW 49.17.040, 49.17.050, 49.17.240, chapters 43.22 and 42.30 RCW. 80-17-015 (Order 80-21), § 296-24-51021, filed 11/13/80; Order 73-5, § 296-24-51021, filed 5/9/73 and Order 73-4, § 296-24-51021, filed 5/7/73.] Repealed by 06-10-067, filed 5/2/06, effective 9/1/06. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. Later promulgation, see chapter 296-826 WAC.
296-24-51007	Use of water in emergencies. [Order 73-5, § 296-24-51007, filed 5/9/73 and Order 73-4, § 296-24-51007, filed 5/7/73.] Repealed by 06-10-067, filed 5/2/06, effective 9/1/06. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. Later promulgation, see chapter 296-826 WAC.	296-24-51099	Appendix C—Availability of reference material. [Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-24-51099, filed 7/20/94, effective 9/20/94; Order 76-6, § 296-24-51099, filed 3/1/76.] Repealed by 06-10-067, filed 5/2/06, effective 9/1/06. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. Later promulgation, see chapter 296-826 WAC.
296-24-51009	Basic rules. [Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050. 02-12-098, § 296-24-51009, filed 6/5/02, effective 8/1/02; 99-10-071, § 296-24-51009, filed 5/4/99, effective 9/1/99. Statutory Authority: Chapter 49.17 RCW. 91-24-017 (Order 91-07), § 296-24-51009, filed 11/22/91, effective 12/24/91; 88-23-054 (Order 88-25), § 296-24-51009, filed 11/14/88. Statutory Authority: RCW 49.17.040, 49.17.050, 49.17.240, chapters 43.22 and 42.30 RCW. 80-17-015 (Order 80-21), § 296-24-51009, filed 11/13/80; Order 76-6, § 296-24-51009, filed 3/1/76; Order 74-27, § 296-24-51009, filed 5/7/74; Order 73-5, § 296-24-51009, filed 5/9/73 and Order 73-4, § 296-24-51009, filed 5/7/73.] Repealed by 06-10-067, filed 5/2/06, effective 9/1/06. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. Later promulgation, see chapter 296-826 WAC.	296-24-550	Means of egress. [Statutory Authority: Chapter 49.17 RCW. 90-03-029 (Order 89-20), § 296-24-550, filed 1/11/90, effective 2/26/90; Order 73-5, § 296-24-550, filed 5/9/73 and Order 73-4, § 296-24-550, filed 5/7/73.] Repealed by 01-11-038, filed 5/9/01, effective 9/1/01. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.
		296-24-55003	General requirements. [Order 73-5, § 296-24-55003, filed 5/9/73 and Order 73-4, § 296-24-55003, filed 5/7/73.] Repealed by 01-11-038, filed 5/9/01, effective 9/1/01. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.
296-24-51011	Systems utilizing stationary, pier-mounted or skid-mounted aboveground or underground, nonrefrigerated storage. [Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050. 02-12-098, § 296-24-51011, filed 6/5/02, effective 8/1/02; Order 76-6, § 296-24-51011, filed 3/1/76; Order 73-5, § 296-24-51011, filed 5/9/73 and Order 73-4, § 296-24-51011, filed 5/7/73.] Repealed by 06-10-067, filed 5/2/06, effective 9/1/06. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. Later promulgation, see chapter 296-826 WAC.	296-24-55005	Fundamental requirements. [Order 74-27, § 296-24-55005, filed 5/7/74; Order 73-5, § 296-24-55005, filed 5/9/73 and Order 73-4, § 296-24-55005, filed 5/7/73.] Repealed by 01-11-038, filed 5/9/01, effective 9/1/01. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.
		296-24-55007	Protection of employees exposed by construction and repair operations. [Order 73-5, § 296-24-55007, filed 5/9/73 and Order 73-4, § 296-24-55007, filed 5/7/73.] Repealed by 01-11-038, filed 5/9/01, effective 9/1/01. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.
296-24-51013	Refrigerated storage. [Statutory Authority: Chapter 49.17 RCW. 88-23-054 (Order 88-25), § 296-24-51013, filed 11/14/88. Statutory Authority: RCW 49.17.040, 49.17.050, 49.17.240, chapters 43.22 and 42.30 RCW.	296-24-55009	Maintenance. [Order 73-5, § 296-24-55009, filed 5/9/73 and Order 73-4, § 296-24-55009, filed 5/7/73.] Repealed by 01-11-038, filed 5/9/01, effective 9/1/01. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.

296-24-565	Means of egress, general. [Order 73-5, § 296-24-565, filed 5/9/73 and Order 73-4, § 296-24-565, filed 5/7/73.] Repealed by 01-11-038, filed 5/9/01, effective 9/1/01. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.	effective 3/1/06. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. Later promulgation, see chapter 296-811 WAC.
296-24-56501	Permissible exit components. [Order 73-5, § 296-24-56501, filed 5/9/73 and Order 73-4, § 296-24-56501, filed 5/7/73.] Repealed by 01-11-038, filed 5/9/01, effective 9/1/01. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.	296-24-58507 Organization. [Statutory Authority: RCW 49.17.040 and 49.17.050. 82-02-003 (Order 81-32), § 296-24-58507, filed 12/24/81.] Repealed by 06-01-073, filed 12/20/05, effective 3/1/06. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. Later promulgation, see chapter 296-811 WAC.
296-24-56503	Protective enclosure of exits. [Order 73-5, § 296-24-56503, filed 5/9/73 and Order 73-4, § 296-24-56503, filed 5/7/73.] Repealed by 01-11-038, filed 5/9/01, effective 9/1/01. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.	296-24-58509 Training and education. [Statutory Authority: RCW 49.17.040 and 49.17.050. 82-02-003 (Order 81-32), § 296-24-58509, filed 12/24/81.] Repealed by 06-01-073, filed 12/20/05, effective 3/1/06. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. Later promulgation, see chapter 296-811 WAC.
296-24-56505	Width and capacity of means of egress. [Order 73-5, § 296-24-56505, filed 5/9/73 and Order 73-4, § 296-24-56505, filed 5/7/73.] Repealed by 01-11-038, filed 5/9/01, effective 9/1/01. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.	296-24-58511 Fire fighting equipment. [Statutory Authority: RCW 49.17.040 and 49.17.050. 82-02-003 (Order 81-32), § 296-24-58511, filed 12/24/81.] Repealed by 06-01-073, filed 12/20/05, effective 3/1/06. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. Later promulgation, see chapter 296-811 WAC.
296-24-56507	Egress capacity and occupant load. [Order 73-5, § 296-24-56507, filed 5/9/73 and Order 73-4, § 296-24-56507, filed 5/7/73.] Repealed by 01-11-038, filed 5/9/01, effective 9/1/01. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.	296-24-58513 Protective clothing. [Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. 05-03-093, § 296-24-58513, filed 1/18/05, effective 3/1/05. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 01-11-038, § 296-24-58513, filed 5/9/01, effective 9/1/01; 99-10-071, § 296-24-58513, filed 5/4/99, effective 9/1/99. Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-24-58513, filed 7/20/94, effective 9/20/94; 92-23-017 (Order 92-13), § 296-24-58513, filed 11/10/92, effective 12/18/92; 90-03-029 (Order 89-20), § 296-24-58513, filed 1/11/90, effective 2/26/90; 88-14-108 (Order 88-11), § 296-24-58513, filed 7/6/88; 87-24-051 (Order 87-24), § 296-24-58513, filed 11/30/87. Statutory Authority: RCW 49.17.040 and 49.17.050. 82-02-003 (Order 81-32), § 296-24-58513, filed 12/24/81.] Repealed by 06-01-073, filed 12/20/05, effective 3/1/06. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. Later promulgation, see chapter 296-811 WAC.
296-24-56509	Arrangement of exits. [Order 73-5, § 296-24-56509, filed 5/9/73 and Order 73-4, § 296-24-56509, filed 5/7/73.] Repealed by 01-11-038, filed 5/9/01, effective 9/1/01. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.	296-24-58515 Respiratory protection devices. [Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. 05-03-093, § 296-24-58515, filed 1/18/05, effective 3/1/05. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-24-58515, filed 5/4/99, effective 9/1/99. Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-24-58515, filed 7/20/94, effective 9/20/94. Statutory Authority: RCW 49.17.040 and 49.17.050. 82-02-003 (Order 81-32), § 296-24-58515, filed 12/24/81.] Repealed by 06-01-073, filed 12/20/05, effective 3/1/06. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. Later promulgation, see chapter 296-811 WAC.
296-24-56511	Access to exits. [Order 73-5, § 296-24-56511, filed 5/9/73 and Order 73-4, § 296-24-56511, filed 5/7/73.] Repealed by 01-11-038, filed 5/9/01, effective 9/1/01. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.	296-24-58516 Procedures for interior structural fire fighting. [Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-24-58516, filed 5/4/99, effective 9/1/99.] Repealed by 06-01-073, filed 12/20/05, effective 3/1/06. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. Later promulgation, see chapter 296-811 WAC.
296-24-56513	Exterior ways of exit access. [Statutory Authority: Chapter 49.17 RCW. 88-23-054 (Order 88-25), § 296-24-56513, filed 11/14/88; Order 73-5, § 296-24-56513, filed 5/9/73 and Order 73-4, § 296-24-56513, filed 5/7/73.] Repealed by 01-11-038, filed 5/9/01, effective 9/1/01. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.	296-24-58517 Appendix A—Fire brigades. [Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. 05-03-093, § 296-24-58517, filed 1/18/05, effective 3/1/05. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 01-11-038, § 296-24-58517, filed 5/9/01, effective 9/1/01; 99-10-071, § 296-24-58517, filed 5/4/99, effective 9/1/99. Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-24-58517, filed 7/20/94, effective 9/20/94. Statutory Authority: RCW 49.17.040 and 49.17.050. 82-02-003 (Order 81-32), § 296-24-58517, filed 12/24/81.] Repealed by 06-01-073, filed 12/20/05, effective 3/1/06. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. Later promulgation, see chapter 296-811 WAC.
296-24-56515	Discharge from exits. [Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-24-56515, filed 7/20/94, effective 9/20/94; Order 73-5, § 296-24-56515, filed 5/9/73 and Order 73-4, § 296-24-56515, filed 5/7/73.] Repealed by 01-11-038, filed 5/9/01, effective 9/1/01. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.	296-24-590 Portable fire suppression equipment—Portable fire extinguishers. [Order 73-5, § 296-24-590, filed 5/9/73 and Order 73-4, § 296-24-590, filed 5/7/73.] Repealed by 88-11-021 (Order 88-04), filed 5/11/88. Statutory Authority: Chapter 49.17 RCW.
296-24-56517	Headroom. [Order 73-5, § 296-24-56517, filed 5/9/73 and Order 73-4, § 296-24-56517, filed 5/7/73.] Repealed by 01-11-038, filed 5/9/01, effective 9/1/01. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.	296-24-59001 General requirements. [Order 73-5, § 296-24-59001, filed 5/9/73 and Order 73-4, § 296-24-59001, filed
296-24-56519	Changes in elevation. [Order 73-5, § 296-24-56519, filed 5/9/73 and Order 73-4, § 296-24-56519, filed 5/7/73.] Repealed by 01-11-038, filed 5/9/01, effective 9/1/01. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.	
296-24-56521	Maintenance and workmanship. [Order 73-5, § 296-24-56521, filed 5/9/73 and Order 73-4, § 296-24-56521, filed 5/7/73.] Repealed by 01-11-038, filed 5/9/01, effective 9/1/01. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.	
296-24-56523	Furnishings and decorations. [Order 73-5, § 296-24-56523, filed 5/9/73 and Order 73-4, § 296-24-56523, filed 5/7/73.] Repealed by 01-11-038, filed 5/9/01, effective 9/1/01. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.	
296-24-56529	Fire retardant paints. [Order 73-5, § 296-24-56529, filed 5/9/73 and Order 73-4, § 296-24-56529, filed 5/7/73.] Repealed by 01-11-038, filed 5/9/01, effective 9/1/01. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.	
296-24-56531	Exit marking. [Order 73-5, § 296-24-56531, filed 5/9/73 and Order 73-4, § 296-24-56531, filed 5/7/73.] Repealed by 01-11-038, filed 5/9/01, effective 9/1/01. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.	
296-24-58505	Fire brigades. [Statutory Authority: RCW 49.17.040, 99-05-080, § 296-24-58505, filed 2/17/99, effective 6/1/99. Statutory Authority: RCW 49.17.040 and 49.17.050. 82-02-003 (Order 81-32), § 296-24-58505, filed 12/24/81.] Repealed by 06-01-073, filed 12/20/05,	

	5/7/73.] Repealed by 87-24-051 (Order 87-24), filed 11/30/87. Statutory Authority: Chapter 49.17 RCW.	296-24-60503	Fire department connections. [Order 73-5, § 296-24-60503, filed 5/9/73 and Order 73-4, § 296-24-60503, filed 5/7/73.] Repealed by 87-24-051 (Order 87-24), filed 11/30/87. Statutory Authority: Chapter 49.17 RCW.
296-24-59003	Selection of extinguishers. [Order 74-27, § 296-24-59003, filed 5/7/74; Order 73-5, § 296-24-59003, filed 5/9/73 and Order 73-4, § 296-24-59003, filed 5/7/73.] Repealed by 87-24-051 (Order 87-24), filed 11/30/87. Statutory Authority: Chapter 49.17 RCW.	296-24-60505	Sprinkler alarms. [Order 73-5, § 296-24-60505, filed 5/9/73 and Order 73-4, § 296-24-60505, filed 5/7/73.] Repealed by 87-24-051 (Order 87-24), filed 11/30/87. Statutory Authority: Chapter 49.17 RCW.
296-24-59005	Distribution of portable fire extinguishers. [Order 73-5, § 296-24-59005, filed 5/9/73 and Order 73-4, § 296-24-59005, filed 5/7/73.] Repealed by 87-24-051 (Order 87-24), filed 11/30/87. Statutory Authority: Chapter 49.17 RCW.	296-24-60507	Maintenance of sprinkler system. [Order 76-6, § 296-24-60507, filed 3/1/76; Order 73-5, § 296-24-60507, filed 5/9/73 and Order 73-4, § 296-24-60507, filed 5/7/73.] Repealed by 87-24-051 (Order 87-24), filed 11/30/87. Statutory Authority: Chapter 49.17 RCW.
296-24-59007	Inspection, maintenance, and hydrostatic tests. [Order 74-27, § 296-24-59007, filed 5/7/74; Order 73-5, § 296-24-59007, filed 5/9/73 and Order 73-4, § 296-24-59007, filed 5/7/73.] Repealed by 87-24-051 (Order 87-24), filed 11/30/87. Statutory Authority: Chapter 49.17 RCW.	296-24-60509	Sprinkler head clearance. [Order 73-5, § 296-24-60509, filed 5/9/73 and Order 73-4, § 296-24-60509, filed 5/7/73.] Repealed by 87-24-051 (Order 87-24), filed 11/30/87. Statutory Authority: Chapter 49.17 RCW.
296-24-59203	Exemptions. [Statutory Authority: RCW 49.17.040 and 49.17.050. 82-02-003 (Order 81-32), § 296-24-59203, filed 12/24/81.] Repealed by 01-17-033, filed 8/8/01, effective 9/1/01. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.	296-24-615	Fixed dry chemical extinguishing systems. [Order 73-5, § 296-24-615, filed 5/9/73 and Order 73-4, § 296-24-615, filed 5/7/73.] Repealed by 87-24-051 (Order 87-24), filed 11/30/87. Statutory Authority: Chapter 49.17 RCW.
296-24-59205	General requirements. [Statutory Authority: RCW 49.17.040 and 49.17.050. 82-02-003 (Order 81-32), § 296-24-59205, filed 12/24/81.] Repealed by 01-11-038, filed 5/9/01, effective 9/1/01. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.	296-24-61501	General requirements. [Order 73-5, § 296-24-61501, filed 5/9/73 and Order 73-4, § 296-24-61501, filed 5/7/73.] Repealed by 87-24-051 (Order 87-24), filed 11/30/87. Statutory Authority: Chapter 49.17 RCW.
296-24-59207	Selection and distribution. [Statutory Authority: RCW 49.17.040 and 49.17.050. 82-02-003 (Order 81-32), § 296-24-59207, filed 12/24/81.] Repealed by 01-11-038, filed 5/9/01, effective 9/1/01. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.	296-24-61503	Alarms and indicators. [Order 74-27, § 296-24-61503, filed 5/7/74; Order 73-5, § 296-24-61503, filed 5/9/73 and Order 73-4, § 296-24-61503, filed 5/7/73.] Repealed by 87-24-051 (Order 87-24), filed 11/30/87. Statutory Authority: Chapter 49.17 RCW.
296-24-59209	Inspection, maintenance and testing. [Statutory Authority: RCW 49.17.040 and 49.17.050. 82-02-003 (Order 81-32), § 296-24-59209, filed 12/24/81.] Repealed by 01-11-038, filed 5/9/01, effective 9/1/01. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.	296-24-61505	Inspection and maintenance. [Order 76-6, § 296-24-61505, filed 3/1/76; Order 73-5, § 296-24-61505, filed 5/9/73 and Order 73-4, § 296-24-61505, filed 5/7/73.] Repealed by 87-24-051 (Order 87-24), filed 11/30/87. Statutory Authority: Chapter 49.17 RCW.
296-24-59211	Hydrostatic testing. [Statutory Authority: Chapter 49.17 RCW. 92-23-017 (Order 92-13), § 296-24-59211, filed 11/10/92, effective 12/18/92; 87-24-051 (Order 87-24), § 296-24-59211, filed 11/30/87. Statutory Authority: RCW 49.17.040 and 49.17.050. 82-02-003 (Order 81-32), § 296-24-59211, filed 12/24/81.] Repealed by 01-11-038, filed 5/9/01, effective 9/1/01. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.	296-24-620	Carbon dioxide extinguishing systems. [Order 73-5, § 296-24-620, filed 5/9/73 and Order 73-4, § 296-24-620, filed 5/7/73.] Repealed by 87-24-051 (Order 87-24), filed 11/30/87. Statutory Authority: Chapter 49.17 RCW.
296-24-59213	Training and education. [Statutory Authority: RCW 49.17.040 and 49.17.050. 82-02-003 (Order 81-32), § 296-24-59213, filed 12/24/81.] Repealed by 01-11-038, filed 5/9/01, effective 9/1/01. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.	296-24-62001	General requirements. [Order 73-5, § 296-24-62001, filed 5/9/73 and Order 73-4, § 296-24-62001, filed 5/7/73.] Repealed by 87-24-051 (Order 87-24), filed 11/30/87. Statutory Authority: Chapter 49.17 RCW.
296-24-600	Standpipe and hose systems. [Order 73-5, § 296-24-600, filed 5/9/73 and Order 73-4, § 296-24-600, filed 5/7/73.] Repealed by 87-24-051 (Order 87-24), filed 11/30/87. Statutory Authority: Chapter 49.17 RCW.	296-24-62003	Inspection and maintenance. [Order 74-27, § 296-24-62003, filed 5/7/74; Order 73-5, § 296-24-62003, filed 5/9/73 and Order 73-4, § 296-24-62003, filed 5/7/73.] Repealed by 87-24-051 (Order 87-24), filed 11/30/87. Statutory Authority: Chapter 49.17 RCW.
296-24-60001	General requirements. [Order 73-5, § 296-24-60001, filed 5/9/73 and Order 73-4, § 296-24-60001, filed 5/7/73.] Repealed by 87-24-051 (Order 87-24), filed 11/30/87. Statutory Authority: Chapter 49.17 RCW.	296-24-625	Local fire alarm signaling systems. [Order 74-27, § 296-24-625, filed 5/7/74.] Repealed by 87-24-051 (Order 87-24), filed 11/30/87. Statutory Authority: Chapter 49.17 RCW.
296-24-60003	Hose outlets. [Order 74-27, § 296-24-60003, filed 5/7/74; Order 73-5, § 296-24-60003, filed 5/9/73 and Order 73-4, § 296-24-60003, filed 5/7/73.] Repealed by 87-24-051 (Order 87-24), filed 11/30/87. Statutory Authority: Chapter 49.17 RCW.	296-24-631	Employee alarm systems. [Statutory Authority: RCW 49.17.040 and 49.17.050. 82-02-003 (Order 81-32), § 296-24-631, filed 12/24/81.] Repealed by 01-17-033, filed 8/8/01, effective 9/1/01. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.
296-24-60005	Water supplies. [Order 73-5, § 296-24-60005, filed 5/9/73 and Order 73-4, § 296-24-60005, filed 5/7/73.] Repealed by 87-24-051 (Order 87-24), filed 11/30/87. Statutory Authority: Chapter 49.17 RCW.	296-24-63101	Scope and application. [Statutory Authority: RCW 49.17.040 and 49.17.050. 82-02-003 (Order 81-32), § 296-24-63101, filed 12/24/81.] Repealed by 01-17-033, filed 8/8/01, effective 9/1/01. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.
296-24-60007	Tests and maintenance. [Order 73-5, § 296-24-60007, filed 5/9/73 and Order 73-4, § 296-24-60007, filed 5/7/73.] Repealed by 87-24-051 (Order 87-24), filed 11/30/87. Statutory Authority: Chapter 49.17 RCW.	296-24-63103	General requirements. [Statutory Authority: RCW 49.17.040 and 49.17.050. 82-02-003 (Order 81-32), § 296-24-63103, filed 12/24/81.] Repealed by 01-17-033, filed 8/8/01, effective 9/1/01. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.
296-24-605	Fixed fire suppression equipment—Automatic sprinkler systems. [Order 73-5, § 296-24-605, filed 5/9/73 and Order 73-4, § 296-24-605, filed 5/7/73.] Repealed by 88-11-021 (Order 88-04), filed 5/11/88. Statutory Authority: Chapter 49.17 RCW.	296-24-63105	Installation and restoration. [Statutory Authority: RCW 49.17.040 and 49.17.050. 82-02-003 (Order 81-32), § 296-24-63105, filed 12/24/81.] Repealed by 01-17-033, filed 8/8/01, effective 9/1/01. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.
296-24-60501	General requirements. [Order 73-5, § 296-24-60501, filed 5/9/73 and Order 73-4, § 296-24-60501, filed 5/7/73.] Repealed by 87-24-051 (Order 87-24), filed 11/30/87. Statutory Authority: Chapter 49.17 RCW.	296-24-63107	Maintenance and testing. [Statutory Authority: RCW 49.17.040 and 49.17.050. 82-02-003 (Order 81-32), § 296-24-63107, filed 12/24/81.] Repealed by 01-17-033, filed 8/8/01, effective 9/1/01. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.
		296-24-63109	Manual operation. [Statutory Authority: RCW 49.17.040 and 49.17.050. 82-02-003 (Order 81-32), § 296-24-63109, filed 12/24/81.] Repealed by 01-17-033,

296-24-63199	filed 8/8/01, effective 9/1/01. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. Appendix A—Employee alarm systems. [Statutory Authority: RCW 49.17.040 and 49.17.050. 82-02-003 (Order 81-32), § 296-24-63199, filed 12/24/81.] Repealed by 01-17-033, filed 8/8/01, effective 9/1/01. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.	296-24-66001	Abrasive wheel terms. [Order 73-5, § 296-24-66001, filed 5/9/73 and Order 73-4, § 296-24-66001, filed 5/7/73.] Repealed by 03-09-009, filed 4/4/03, effective 8/1/03. Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050, and [49.17].060. Later promulgation, see chapter 296-807 WAC.
296-24-650	Hand and portable powered tools and equipment—General. [Order 73-5, § 296-24-650, filed 5/9/73 and Order 73-4, § 296-24-650, filed 5/7/73.] Repealed by 03-09-009, filed 4/4/03, effective 8/1/03. Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050, and [49.17].060. Later promulgation, see chapter 296-807 WAC.	296-24-66003	General requirements. [Order 74-27, § 296-24-66003, filed 5/7/74; Order 73-5, § 296-24-66003, filed 5/9/73 and Order 73-4, § 296-24-66003, filed 5/7/73.] Repealed by 03-09-009, filed 4/4/03, effective 8/1/03. Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050, and [49.17].060. Later promulgation, see chapter 296-807 WAC.
296-24-65001	General requirements. [Order 73-5, § 296-24-65001, filed 5/9/73 and Order 73-4, § 296-24-65001, filed 5/7/73.] Repealed by 01-11-038, filed 5/9/01, effective 9/1/01. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.	296-24-66005	Cup wheels. [Order 73-5, § 296-24-66005, filed 5/9/73 and Order 73-4, § 296-24-66005, filed 5/7/73.] Repealed by 03-09-009, filed 4/4/03, effective 8/1/03. Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050, and [49.17].060. Later promulgation, see chapter 296-807 WAC.
296-24-65003	Compressed air used for cleaning. [Order 73-5, § 296-24-65003, filed 5/9/73 and Order 73-4, § 296-24-65003, filed 5/7/73.] Repealed by 03-09-009, filed 4/4/03, effective 8/1/03. Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050, and [49.17].060. Later promulgation, see chapter 296-807 WAC.	296-24-66007	Vertical portable grinders. [Order 73-5, § 296-24-66007, filed 5/9/73 and Order 73-4, § 296-24-66007, filed 5/7/73.] Repealed by 03-09-009, filed 4/4/03, effective 8/1/03. Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050, and [49.17].060. Later promulgation, see chapter 296-807 WAC.
296-24-65005	Compressed air tools. [Order 73-5, § 296-24-65005, filed 5/9/73 and Order 73-4, § 296-24-65005, filed 5/7/73.] Repealed by 03-09-009, filed 4/4/03, effective 8/1/03. Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050, and [49.17].060. Later promulgation, see chapter 296-807 WAC.	296-24-66009	Other portable grinders. [Order 73-5, § 296-24-66009, filed 5/9/73 and Order 73-4, § 296-24-66009, filed 5/7/73.] Repealed by 03-09-009, filed 4/4/03, effective 8/1/03. Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050, and [49.17].060. Later promulgation, see chapter 296-807 WAC.
296-24-65007	Air hammer. [Order 73-5, § 296-24-65007, filed 5/9/73 and Order 73-4, § 296-24-65007, filed 5/7/73.] Repealed by 03-09-009, filed 4/4/03, effective 8/1/03. Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050, and [49.17].060. Later promulgation, see chapter 296-807 WAC.	296-24-66011	Mounting and inspection of abrasive wheels. [Order 74-27, § 296-24-66011, filed 5/7/74; Order 73-5, § 296-24-66011, filed 5/9/73 and Order 73-4, § 296-24-66011, filed 5/7/73.] Repealed by 03-09-009, filed 4/4/03, effective 8/1/03. Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050, and [49.17].060. Later promulgation, see chapter 296-807 WAC.
296-24-655	Guarding of portable powered tools. [Order 73-5, § 296-24-655, filed 5/9/73 and Order 73-4, § 296-24-655, filed 5/7/73.] Repealed by 03-09-009, filed 4/4/03, effective 8/1/03. Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050, and [49.17].060. Later promulgation, see chapter 296-807 WAC.	296-24-662	Safety requirements for explosive-actuated fastening tools. [Order 73-5, § 296-24-662, filed 5/9/73 and Order 73-4, § 296-24-662, filed 5/7/73.] Repealed by 79-08-115 (Order 79-9), filed 7/31/79. Statutory Authority: RCW 49.17.040, 49.17.150, and 49.17.240.
296-24-65501	Portable powered tools. [Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 01-11-038, § 296-24-65501, filed 5/9/01, effective 9/1/01. Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-24-65501, filed 7/20/94, effective 9/20/94; 91-24-017 (Order 91-07), § 296-24-65501, filed 11/22/91, effective 12/24/91. Statutory Authority: RCW 49.17.040, 49.17.050, 49.17.240, chapters 43.22 and 42.30 RCW. 80-17-015 (Order 80-21), § 296-24-65501, filed 11/13/80; Order 74-27, § 296-24-65501, filed 5/7/74; Order 73-5, § 296-24-65501, filed 5/9/73 and Order 73-4, § 296-24-65501, filed 5/7/73.] Repealed by 03-09-009, filed 4/4/03, effective 8/1/03. Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050, and [49.17].060. Later promulgation, see chapter 296-807 WAC.	296-24-66201	Scope. [Order 73-5, § 296-24-66201, filed 5/9/73 and Order 73-4, § 296-24-66201, filed 5/7/73.] Repealed by 79-08-115 (Order 79-9), filed 7/31/79. Statutory Authority: RCW 49.17.040, 49.17.150, and 49.17.240.
296-24-657	Pneumatic powered tools and hose. [Order 73-5, § 296-24-657, filed 5/9/73 and Order 73-4, § 296-24-657, filed 5/7/73.] Repealed by 03-09-009, filed 4/4/03, effective 8/1/03. Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050, and [49.17].060. Later promulgation, see chapter 296-807 WAC.	296-24-66203	Purpose. [Order 73-5, § 296-24-66203, filed 5/9/73 and Order 73-4, § 296-24-66203, filed 5/7/73.] Repealed by 79-08-115 (Order 79-9), filed 7/31/79. Statutory Authority: RCW 49.17.040, 49.17.150, and 49.17.240.
296-24-65701	Portable tools. [Order 73-5, § 296-24-65701, filed 5/9/73 and Order 73-4, § 296-24-65701, filed 5/7/73.] Repealed by 03-09-009, filed 4/4/03, effective 8/1/03. Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050, and [49.17].060. Later promulgation, see chapter 296-807 WAC.	296-24-66205	Definitions. [Order 73-5, § 296-24-66205, filed 5/9/73 and Order 73-4, § 296-24-66205, filed 5/7/73.] Repealed by 79-08-115 (Order 79-9), filed 7/31/79. Statutory Authority: RCW 49.17.040, 49.17.150, and 49.17.240.
296-24-65703	Airhose. [Order 73-5, § 296-24-65703, filed 5/9/73 and Order 73-4, § 296-24-65703, filed 5/7/73.] Repealed by 03-09-009, filed 4/4/03, effective 8/1/03. Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050, and [49.17].060. Later promulgation, see chapter 296-807 WAC.	296-24-66207	Design requirements—High velocity tools. [Order 73-5, § 296-24-66207, filed 5/9/73 and Order 73-4, § 296-24-66207, filed 5/7/73.] Repealed by 79-08-115 (Order 79-9), filed 7/31/79. Statutory Authority: RCW 49.17.040, 49.17.150, and 49.17.240.
296-24-660	Portable abrasive wheels. [Order 73-5, § 296-24-660, filed 5/9/73 and Order 73-4, § 296-24-660, filed 5/7/73.] Repealed by 03-09-009, filed 4/4/03, effective 8/1/03. Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050, and [49.17].060. Later promulgation, see chapter 296-807 WAC.	296-24-66209	Low velocity piston tools. [Order 73-5, § 296-24-66209, filed 5/9/73 and Order 73-4, § 296-24-66209, filed 5/7/73.] Repealed by 79-08-115 (Order 79-9), filed 7/31/79. Statutory Authority: RCW 49.17.040, 49.17.150, and 49.17.240.
		296-24-66211	Hammer-operated piston tools—Low velocity type. [Order 73-5, § 296-24-66211, filed 5/9/73 and Order 73-4, § 296-24-66211, filed 5/7/73.] Repealed by 79-08-115 (Order 79-9), filed 7/31/79. Statutory Authority: RCW 49.17.040, 49.17.150, and 49.17.240.
		296-24-66213	Requirements for loads and fasteners. [Order 73-5, § 296-24-66213, filed 5/9/73 and Order 73-4, § 296-24-66213, filed 5/7/73.] Repealed by 79-08-115 (Order 79-9), filed 7/31/79. Statutory Authority: RCW 49.17.040, 49.17.150, and 49.17.240.
		296-24-66215	Approvals. [Order 73-5, § 296-24-66215, filed 5/9/73 and Order 73-4, § 296-24-66215, filed 5/7/73.] Repealed by 79-08-115 (Order 79-9), filed 7/31/79. Statutory Authority: RCW 49.17.040, 49.17.150, and 49.17.240.
		296-24-66217	Operation. [Order 73-5, § 296-24-66217, filed 5/9/73 and Order 73-4, § 296-24-66217, filed 5/7/73.] Repealed by 79-08-115 (Order 79-9), filed 7/31/79.

	Statutory Authority: RCW 49.17.040, 49.17.150, and 49.17.240.		[49.17].060. Later promulgation, see chapter 296-807 WAC.
296-24-66219	Servicing. [Order 73-5, § 296-24-66219, filed 5/9/73 and Order 73-4, § 296-24-66219, filed 5/7/73.] Repealed by 79-08-115 (Order 79-9), filed 7/31/79. Statutory Authority: RCW 49.17.040, 49.17.150, and 49.17.240.	296-24-66317	Maintenance and storage. [Statutory Authority: RCW 49.17.040, 49.17.150, and 49.17.240. 79-08-115 (Order 79-9), § 296-24-66317, filed 7/31/79.] Repealed by 03-09-009, filed 4/4/03, effective 8/1/03. Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050, and [49.17].060. Later promulgation, see chapter 296-807 WAC.
296-24-66221	Qualification and certification of operators. [Order 73-5, § 296-24-66221, filed 5/9/73 and Order 73-4, § 296-24-66221, filed 5/7/73.] Repealed by 79-08-115 (Order 79-9), filed 7/31/79. Statutory Authority: RCW 49.17.040, 49.17.150, and 49.17.240.	296-24-66319	Authorized instructor. [Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-24-66319, filed 7/20/94, effective 9/20/94. Statutory Authority: RCW 49.17.040, 49.17.150, and 49.17.240. 79-08-115 (Order 79-9), § 296-24-66319, filed 7/31/79.] Repealed by 03-09-009, filed 4/4/03, effective 8/1/03. Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050, and [49.17].060. Later promulgation, see chapter 296-807 WAC.
296-24-66223	Storage of explosive-actuated tools, instruction books, cleaning kits, and tools. [Order 73-5, § 296-24-66223, filed 5/9/73 and Order 73-4, § 296-24-66223, filed 5/7/73.] Repealed by 79-08-115 (Order 79-9), filed 7/31/79. Statutory Authority: RCW 49.17.040, 49.17.150, and 49.17.240.		
296-24-66225	Use low velocity tools when possible. [Order 73-5, § 296-24-66225, filed 5/9/73 and Order 73-4, § 296-24-66225, filed 5/7/73.] Repealed by 79-08-115 (Order 79-9), filed 7/31/79. Statutory Authority: RCW 49.17.040, 49.17.150, and 49.17.240.	296-24-66321	Qualified operator. [Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-24-66321, filed 7/20/94, effective 9/20/94. Statutory Authority: RCW 49.17.040, 49.17.150, and 49.17.240. 79-08-115 (Order 79-9), § 296-24-66321, filed 7/31/79.] Repealed by 03-09-009, filed 4/4/03, effective 8/1/03. Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050, and [49.17].060. Later promulgation, see chapter 296-807 WAC.
296-24-663	Safety requirements for powder actuated fastening systems. [Statutory Authority: RCW 49.17.040, 49.17.150, and 49.17.240. 79-08-115 (Order 79-9), § 296-24-663, filed 7/31/79.] Repealed by 03-09-009, filed 4/4/03, effective 8/1/03. Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050, and [49.17].060. Later promulgation, see chapter 296-807 WAC.	296-24-665	Power lawnmowers. [Order 73-5, § 296-24-665, filed 5/9/73 and Order 73-4, § 296-24-665, filed 5/7/73.] Repealed by 03-09-009, filed 4/4/03, effective 8/1/03. Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050, and [49.17].060. Later promulgation, see chapter 296-807 WAC.
296-24-66301	Scope. [Statutory Authority: RCW 49.17.040, 49.17.150, and 49.17.240. 79-08-115 (Order 79-9), § 296-24-66301, filed 7/31/79.] Repealed by 03-09-009, filed 4/4/03, effective 8/1/03. Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050, and [49.17].060. Later promulgation, see chapter 296-807 WAC.	296-24-66501	Terms. [Order 73-5, § 296-24-66501, filed 5/9/73 and Order 73-4, § 296-24-66501, filed 5/7/73.] Repealed by 03-09-009, filed 4/4/03, effective 8/1/03. Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050, and [49.17].060. Later promulgation, see chapter 296-807 WAC.
296-24-66303	Purpose. [Statutory Authority: RCW 49.17.040, 49.17.150, and 49.17.240. 79-08-115 (Order 79-9), § 296-24-66303, filed 7/31/79.] Repealed by 03-09-009, filed 4/4/03, effective 8/1/03. Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050, and [49.17].060. Later promulgation, see chapter 296-807 WAC.	296-24-66503	General requirements. [Order 76-6, § 296-24-66503, filed 3/1/76; Order 73-5, § 296-24-66503, filed 5/9/73 and Order 73-4, § 296-24-66503, filed 5/7/73.] Repealed by 03-09-009, filed 4/4/03, effective 8/1/03. Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050, and [49.17].060. Later promulgation, see chapter 296-807 WAC.
296-24-66305	Definitions applicable to this section. [Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-24-66305, filed 7/20/94, effective 9/20/94. Statutory Authority: RCW 49.17.040, 49.17.150, and 49.17.240. 79-08-115 (Order 79-9), § 296-24-66305, filed 7/31/79.] Repealed by 03-09-009, filed 4/4/03, effective 8/1/03. Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050, and [49.17].060. Later promulgation, see chapter 296-807 WAC.	296-24-66505	Walk-behind and riding rotary mowers. [Order 74-27, § 296-24-66505, filed 5/7/74; Order 73-5, § 296-24-66505, filed 5/9/73 and Order 73-4, § 296-24-66505, filed 5/7/73.] Repealed by 03-09-009, filed 4/4/03, effective 8/1/03. Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050, and [49.17].060. Later promulgation, see chapter 296-807 WAC.
296-24-66307	Requirements. [Statutory Authority: RCW 49.17.040, 49.17.150, and 49.17.240. 79-08-115 (Order 79-9), § 296-24-66307, filed 7/31/79.] Repealed by 03-09-009, filed 4/4/03, effective 8/1/03. Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050, and [49.17].060. Later promulgation, see chapter 296-807 WAC.	296-24-66507	Walk-behind rotary mowers. [Order 74-27, § 296-24-66507, filed 5/7/74; Order 73-5, § 296-24-66507, filed 5/9/73 and Order 73-4, § 296-24-66507, filed 5/7/73.] Repealed by 03-09-009, filed 4/4/03, effective 8/1/03. Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050, and [49.17].060. Later promulgation, see chapter 296-807 WAC.
296-24-66309	Power loads. [Statutory Authority: RCW 49.17.040, 49.17.150, and 49.17.240. 79-08-115 (Order 79-9), § 296-24-66309, filed 7/31/79.] Repealed by 03-09-009, filed 4/4/03, effective 8/1/03. Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050, and [49.17].060. Later promulgation, see chapter 296-807 WAC.	296-24-66509	Riding rotary mowers. [Order 74-27, § 296-24-66509, filed 5/7/74; Order 73-5, § 296-24-66509, filed 5/9/73 and Order 73-4, § 296-24-66509, filed 5/7/73.] Repealed by 03-09-009, filed 4/4/03, effective 8/1/03. Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050, and [49.17].060. Later promulgation, see chapter 296-807 WAC.
296-24-66311	Fasteners. [Statutory Authority: RCW 49.17.040, 49.17.150, and 49.17.240. 79-08-115 (Order 79-9), § 296-24-66311, filed 7/31/79.] Repealed by 03-09-009, filed 4/4/03, effective 8/1/03. Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050, and [49.17].060. Later promulgation, see chapter 296-807 WAC.	296-24-670	Jacks. [Order 73-5, § 296-24-670, filed 5/9/73 and Order 73-4, § 296-24-670, filed 5/7/73.] Repealed by 03-09-009, filed 4/4/03, effective 8/1/03. Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050, and [49.17].060. Later promulgation, see chapter 296-807 WAC.
296-24-66313	Operation. [Statutory Authority: Chapter 49.17 RCW. 89-11-035 (Order 89-03), § 296-24-66313, filed 5/15/89, effective 6/30/89. Statutory Authority: RCW 49.17.040, 49.17.150, and 49.17.240. 79-08-115 (Order 79-9), § 296-24-66313, filed 7/31/79.] Repealed by 03-09-009, filed 4/4/03, effective 8/1/03. Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050, and [49.17].060. Later promulgation, see chapter 296-807 WAC.	296-24-67001	Jack terms. [Order 73-5, § 296-24-67001, filed 5/9/73 and Order 73-4, § 296-24-67001, filed 5/7/73.] Repealed by 03-09-009, filed 4/4/03, effective 8/1/03. Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050, and [49.17].060. Later promulgation, see chapter 296-807 WAC.
296-24-66315	Limitations of use. [Statutory Authority: RCW 49.17.040, 49.17.150, and 49.17.240. 79-08-115 (Order 79-9), § 296-24-66315, filed 7/31/79.] Repealed by 03-09-009, filed 4/4/03, effective 8/1/03. Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050, and	296-24-67003	Loading and marking. [Order 73-5, § 296-24-67003, filed 5/9/73 and Order 73-4, § 296-24-67003, filed 5/7/73.] Repealed by 03-09-009, filed 4/4/03, effective 8/1/03. Statutory Authority: RCW 49.17.010, [49.17].-

	040, [49.17].050, and [49.17].060. Later promulgation, see chapter 296-807 WAC.		
296-24-67005	Operation and maintenance. [Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-24-67005, filed 7/20/94, effective 9/20/94; Order 73-5, § 296-24-67005, filed 5/9/73 and Order 73-4, § 296-24-67005, filed 5/7/73.] Repealed by 03-09-009, filed 4/4/03, effective 8/1/03. Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050, and [49.17].060. Later promulgation, see chapter 296-807 WAC.	296-24-67517	Air supply and air compressors. [Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. 05-03-093, § 296-24-67517, filed 1/18/05, effective 3/1/05. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-24-67517, filed 5/4/99, effective 9/1/99. Statutory Authority: RCW 49.17.040, [49.17].050 and [49.17].060. 98-02-006, § 296-24-67517, filed 12/26/97, effective 3/1/98; Order 73-5, § 296-24-67517, filed 5/9/73 and Order 73-4, § 296-24-67517, filed 5/7/73.] Repealed by 06-12-074, filed 6/6/06, effective 9/1/06. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.
296-24-675	Safe practices of abrasive blasting operations. [Order 73-5, § 296-24-675, filed 5/9/73 and Order 73-4, § 296-24-675, filed 5/7/73.] Repealed by 06-12-074, filed 6/6/06, effective 9/1/06. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	296-24-67519	Operational procedures and general safety. [Statutory Authority: RCW 49.17.040, [49.17].050 and [49.17].060. 98-02-006, § 296-24-67519, filed 12/26/97, effective 3/1/98; Order 73-5, § 296-24-67519, filed 5/9/73 and Order 73-4, § 296-24-67519, filed 5/7/73.] Repealed by 06-12-074, filed 6/6/06, effective 9/1/06. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.
296-24-67501	Purpose. [Statutory Authority: RCW 49.17.040, [49.17].050 and [49.17].060. 98-02-006, § 296-24-67501, filed 12/26/97, effective 3/1/98; Order 73-5, § 296-24-67501, filed 5/9/73 and Order 73-4, § 296-24-67501, filed 5/7/73.] Repealed by 06-12-074, filed 6/6/06, effective 9/1/06. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	296-24-67520	Ventilation. [Statutory Authority: RCW 49.17.040, [49.17].050 and [49.17].060. 98-02-006, § 296-24-67520, filed 12/26/97, effective 3/1/98.] Repealed by 06-12-074, filed 6/6/06, effective 9/1/06. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.
296-24-67503	Application. [Order 73-5, § 296-24-67503, filed 5/9/73 and Order 73-4, § 296-24-67503, filed 5/7/73.] Repealed by 06-12-074, filed 6/6/06, effective 9/1/06. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	296-24-67521	Appendix 1. [Statutory Authority: RCW 49.17.040, [49.17].050 and [49.17].060. 98-02-006, § 296-24-67521, filed 12/26/97, effective 3/1/98.] Repealed by 06-12-074, filed 6/6/06, effective 9/1/06. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.
296-24-67505	Selection of abrasives and equipment. [Statutory Authority: RCW 49.17.040, [49.17].050 and [49.17].060. 98-02-006, § 296-24-67505, filed 12/26/97, effective 3/1/98; Order 73-5, § 296-24-67505, filed 5/9/73 and Order 73-4, § 296-24-67505, filed 5/7/73.] Repealed by 06-12-074, filed 6/6/06, effective 9/1/06. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	296-24-677	Ventilation. [Order 73-5, § 296-24-677, filed 5/9/73 and Order 73-4, § 296-24-677, filed 5/7/73.] Repealed by 98-02-006, filed 12/26/97, effective 3/1/98. Statutory Authority: RCW 49.17.040, [49.17].050 and [49.17].060.
296-24-67507	Definitions. [Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-24-67507, filed 5/4/99, effective 9/1/99. Statutory Authority: RCW 49.17.040, [49.17].050 and [49.17].060. 98-02-006, § 296-24-67507, filed 12/26/97, effective 3/1/98. Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-24-67507, filed 7/20/94, effective 9/20/94; Order 73-5, § 296-24-67507, filed 5/9/73 and Order 73-4, § 296-24-67507, filed 5/7/73.] Repealed by 06-12-074, filed 6/6/06, effective 9/1/06. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	296-24-67701	Scope. [Order 73-5, § 296-24-67701, filed 5/9/73 and Order 73-4, § 296-24-67701, filed 5/7/73.] Repealed by 98-02-006, filed 12/26/97, effective 3/1/98. Statutory Authority: RCW 49.17.040, [49.17].050 and [49.17].060.
296-24-67509	Dust hazards from abrasive blasting. [Statutory Authority: RCW 49.17.040, [49.17].050 and [49.17].060. 98-02-006, § 296-24-67509, filed 12/26/97, effective 3/1/98. Statutory Authority: Chapter 49.17 RCW. 91-24-017 (Order 91-07), § 296-24-67509, filed 11/22/91, effective 12/24/91; Order 73-5, § 296-24-67509, filed 5/9/73 and Order 73-4, § 296-24-67509, filed 5/7/73.] Repealed by 06-12-074, filed 6/6/06, effective 9/1/06. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	296-24-73503	Housekeeping. [Order 74-27, § 296-24-73503, filed 5/7/74; Order 73-5, § 296-24-73503, filed 5/9/73 and Order 73-4, § 296-24-73503, filed 5/7/73.] Repealed by 01-11-038, filed 5/9/01, effective 9/1/01. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.
296-24-67511	Blast cleaning enclosures. [Statutory Authority: RCW 49.17.040, [49.17].050 and [49.17].060. 98-02-006, § 296-24-67511, filed 12/26/97, effective 3/1/98; Order 73-5, § 296-24-67511, filed 5/9/73 and Order 73-4, § 296-24-67511, filed 5/7/73.] Repealed by 06-12-074, filed 6/6/06, effective 9/1/06. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	296-24-73509	Floor loading protection. [Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-24-73509, filed 7/20/94, effective 9/20/94; Order 73-5, § 296-24-73509, filed 5/9/73 and Order 73-4, § 296-24-73509, filed 5/7/73.] Repealed by 01-11-038, filed 5/9/01, effective 9/1/01. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.
296-24-67513	Construction and maintenance of the exhaust ventilation systems. [Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050. 02-12-098, § 296-24-67513, filed 6/5/02, effective 8/1/02. Statutory Authority: RCW 49.17.040, [49.17].050 and [49.17].060. 98-02-006, § 296-24-67513, filed 12/26/97, effective 3/1/98; Order 73-5, § 296-24-67513, filed 5/9/73 and Order 73-4, § 296-24-67513, filed 5/7/73.] Repealed by 06-12-074, filed 6/6/06, effective 9/1/06. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	296-24-73513	Buildings—Floors. [Order 74-27, § 296-24-73513, filed 5/7/74.] Repealed by 01-11-038, filed 5/9/01, effective 9/1/01. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.
296-24-67515	Personal protective equipment. [Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. 05-03-093, § 296-24-67515, filed 1/18/05, effective 3/1/05. Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050. 02-12-098, § 296-24-67515, filed 6/5/02, effective 8/1/02; 01-11-038, § 296-24-67515, filed 5/9/01, effective 9/1/01; 99-10-071, § 296-24-67515, filed 5/4/99, effective 9/1/99. Statutory Authority: RCW 49.17.040, [49.17].050 and [49.17].060. 98-02-006, § 296-24-67515, filed 12/26/97, effective 3/1/98. Statutory Authority: Chapter 49.17 RCW. 94-15-096	296-24-75009	Stairway railings and guards. [Statutory Authority: Chapter 49.17 RCW. 91-03-044 (Order 90-18), § 296-24-75009, filed 1/10/91, effective 2/12/91; 90-03-029 (Order 89-20), § 296-24-75009, filed 1/11/90, effective 2/26/90; Order 73-5, § 296-24-75009, filed 5/9/73 and Order 73-4, § 296-24-75009, filed 5/7/73.] Repealed by 01-17-033, filed 8/8/01, effective 9/1/01. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.
		296-24-76505	Where fixed stairs are required. [Order 73-5, § 296-24-76505, filed 5/9/73 and Order 73-4, § 296-24-76505, filed 5/7/73.] Repealed by 01-11-038, filed 5/9/01, effective 9/1/01. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.
		296-24-76517	Railings and handrails. [Order 73-5, § 296-24-76517, filed 5/9/73 and Order 73-4, § 296-24-76517, filed 5/7/73.] Repealed by 01-11-038, filed 5/9/01, effective 9/1/01. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.

296-24-780	Portable wood ladders. [Order 73-5, § 296-24-780, filed 5/9/73 and Order 73-4, § 296-24-780, filed 5/7/73.] Repealed by 05-20-068, filed 10/4/05, effective 1/1/06. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	296-24-81003	Design requirements. [Statutory Authority: Chapter 49.17 RCW. 90-03-029 (Order 89-20), § 296-24-81003, filed 1/11/90, effective 2/26/90; Order 73-5, § 296-24-81003, filed 5/9/73 and Order 73-4, § 296-24-81003, filed 5/7/73.] Repealed by 06-16-020, filed 7/24/06, effective 12/1/06. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.
296-24-78003	Application of requirements. [Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 01-17-033, § 296-24-78003, filed 8/8/01, effective 9/1/01; Order 73-5, § 296-24-78003, filed 5/9/73 and Order 73-4, § 296-24-78003, filed 5/7/73.] Repealed by 05-20-068, filed 10/4/05, effective 1/1/06. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	296-24-81005	Specific features. [Statutory Authority: Chapter 49.17 RCW. 90-03-029 (Order 89-20), § 296-24-81005, filed 1/11/90, effective 2/26/90; Order 73-5, § 296-24-81005, filed 5/9/73 and Order 73-4, § 296-24-81005, filed 5/7/73.] Repealed by 06-16-020, filed 7/24/06, effective 12/1/06. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.
296-24-78005	Materials. [Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 01-17-033, § 296-24-78005, filed 8/8/01, effective 9/1/01; Order 73-5, § 296-24-78005, filed 5/9/73 and Order 73-4, § 296-24-78005, filed 5/7/73.] Repealed by 05-20-068, filed 10/4/05, effective 1/1/06. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	296-24-81007	Clearance. [Order 73-5, § 296-24-81007, filed 5/9/73 and Order 73-4, § 296-24-81007, filed 5/7/73.] Repealed by 06-16-020, filed 7/24/06, effective 12/1/06. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.
296-24-78007	Construction requirements. [Statutory Authority: Chapter 49.17 RCW. 90-03-029 (Order 89-20), § 296-24-78007, filed 1/11/90, effective 2/26/90; Order 73-5, § 296-24-78007, filed 5/9/73 and Order 73-4, § 296-24-78007, filed 5/7/73.] Repealed by 05-20-068, filed 10/4/05, effective 1/1/06. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	296-24-81009	Special requirements. [Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-24-81009, filed 7/20/94, effective 9/20/94; Order 73-5, § 296-24-81009, filed 5/9/73 and Order 73-4, § 296-24-81009, filed 5/7/73.] Repealed by 06-16-020, filed 7/24/06, effective 12/1/06. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.
296-24-78009	Ladder tests. [Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 01-17-033, § 296-24-78009, filed 8/8/01, effective 9/1/01. Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-24-78009, filed 7/20/94, effective 9/20/94; 88-11-021 (Order 88-04), § 296-24-78009, filed 5/11/88. Statutory Authority: RCW 49.17.040, 49.17.150 and 49.17.240. 79-08-115 (Order 79-9), § 296-24-78009, filed 7/31/79; Order 76-6, § 296-24-78009, filed 3/1/76; Order 73-5, § 296-24-78009, filed 5/9/73 and Order 73-4, § 296-24-78009, filed 5/7/73.] Repealed by 05-20-068, filed 10/4/05, effective 1/1/06. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	296-24-81011	Pitch. [Statutory Authority: RCW 49.17.040, 49.17.050, 49.17.240, chapters 43.22 and 42.30 RCW. 80-17-015 (Order 80-21), § 296-24-81011, filed 11/13/80; Order 73-5, § 296-24-81011, filed 5/9/73 and Order 73-4, § 296-24-81011, filed 5/7/73.] Repealed by 06-16-020, filed 7/24/06, effective 12/1/06. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.
296-24-795	Portable metal ladders. [Order 73-5, § 296-24-795, filed 5/9/73 and Order 73-4, § 296-24-795, filed 5/7/73.] Repealed by 05-20-068, filed 10/4/05, effective 1/1/06. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	296-24-81013	Maintenance and use. [Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-24-81013, filed 7/20/94, effective 9/20/94; Order 76-6, § 296-24-81013, filed 3/1/76; Order 73-5, § 296-24-81013, filed 5/9/73 and Order 73-4, § 296-24-81013, filed 5/7/73.] Repealed by 06-16-020, filed 7/24/06, effective 12/1/06. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.
296-24-79501	Terms. [Order 73-5, § 296-24-79501, filed 5/9/73 and Order 73-4, § 296-24-79501, filed 5/7/73.] Repealed by 05-20-068, filed 10/4/05, effective 1/1/06. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	296-24-825	Safety requirements for scaffolding. [Order 73-5, § 296-24-825, filed 5/9/73 and Order 73-4, § 296-24-825, filed 5/7/73.] Repealed by 00-08-078, filed 4/4/00, effective 7/1/00. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.
296-24-79503	Requirements. [Order 73-5, § 296-24-79503, filed 5/9/73 and Order 73-4, § 296-24-79503, filed 5/7/73.] Repealed by 05-20-068, filed 10/4/05, effective 1/1/06. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	296-24-82501	Definitions. [Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-24-82501, filed 7/20/94, effective 9/20/94; Order 73-5, § 296-24-82501, filed 5/9/73 and Order 73-4, § 296-24-82501, filed 5/7/73.] Repealed by 00-08-078, filed 4/4/00, effective 7/1/00. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.
296-24-79505	Testing. [Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-24-79505, filed 7/20/94, effective 9/20/94; Order 73-5, § 296-24-79505, filed 5/9/73 and Order 73-4, § 296-24-79505, filed 5/7/73.] Repealed by 05-20-068, filed 10/4/05, effective 1/1/06. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	296-24-82503	General requirements for all scaffolds. [Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-24-82503, filed 7/20/94, effective 9/20/94; 90-03-029 (Order 89-20), § 296-24-82503, filed 1/11/90, effective 2/26/90; Order 74-27, § 296-24-82503, filed 5/7/74; Order 73-5, § 296-24-82503, filed 5/9/73 and Order 73-4, § 296-24-82503, filed 5/7/73.] Repealed by 00-08-078, filed 4/4/00, effective 7/1/00. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.
296-24-79507	Care and maintenance and use of ladders. [Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-24-79507, filed 7/20/94, effective 9/20/94; 91-24-017 (Order 91-07), § 296-24-79507, filed 11/22/91, effective 12/24/91; Order 76-6, § 296-24-79507, filed 3/1/76; Order 73-5, § 296-24-79507, filed 5/9/73 and Order 73-4, § 296-24-79507, filed 5/7/73.] Repealed by 01-11-038, filed 5/9/01, effective 9/1/01. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.	296-24-82505	General requirements for wood pole scaffolds. [Order 73-5, § 296-24-82505, filed 5/9/73 and Order 73-4, § 296-24-82505, filed 5/7/73.] Repealed by 00-08-078, filed 4/4/00, effective 7/1/00. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.
296-24-810	Fixed ladders. [Order 73-5, § 296-24-810, filed 5/9/73 and Order 73-4, § 296-24-810, filed 5/7/73.] Repealed by 06-16-020, filed 7/24/06, effective 12/1/06. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	296-24-82507	Tube and coupler scaffolds. [Statutory Authority: RCW 49.17.040, 49.17.150, and 49.17.240. 79-08-115 (Order 79-9), § 296-24-82507, filed 7/31/79; Order 73-5, § 296-24-82507, filed 5/9/73 and Order 73-4, § 296-24-82507, filed 5/7/73.] Repealed by 00-08-078, filed 4/4/00, effective 7/1/00. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.
296-24-81001	Definitions. [Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-24-81001, filed 7/20/94, effective 9/20/94; Order 73-5, § 296-24-81001, filed 5/9/73 and Order 73-4, § 296-24-81001, filed 5/7/73.] Repealed by 06-16-020, filed 7/24/06, effective 12/1/06. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	296-24-82509	Tubular welded frame scaffolds. [Statutory Authority: RCW 49.17.040, 49.17.150, and 49.17.240. 79-08-115 (Order 79-9), § 296-24-82509, filed 7/31/79; Order 73-5, § 296-24-82509, filed 5/9/73 and Order 73-4, § 296-24-82509, filed 5/7/73.] Repealed by 00-08-078, filed 4/4/00, effective 7/1/00. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.
		296-24-82511	Outrigger scaffolds. [Order 73-5, § 296-24-82511, filed 5/9/73 and Order 73-4, § 296-24-82511, filed 5/7/73.]

	Repealed by 00-08-078, filed 4/4/00, effective 7/1/00. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.	296-24-82531	Plasterers', decorators', and large area scaffolds. [Statutory Authority: RCW 49.17.040, 49.17.150, and 49.17.-240. 79-08-115 (Order 79-9), § 296-24-82531, filed 7/31/79; Order 73-5, § 296-24-82531, filed 5/9/73 and Order 73-4, § 296-24-82531, filed 5/7/73.] Repealed by 00-08-078, filed 4/4/00, effective 7/1/00. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].-050.
296-24-82513	Masons' adjustable multiple-point suspension scaffolds. [Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-24-82513, filed 7/20/94, effective 9/20/94; 88-23-054 (Order 88-25), § 296-24-82513, filed 11/14/88; Order 73-5, § 296-24-82513, filed 5/9/73 and Order 73-4, § 296-24-82513, filed 5/7/73.] Repealed by 00-08-078, filed 4/4/00, effective 7/1/00. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.	296-24-82533	Interior hung scaffolds. [Statutory Authority: RCW 49.17.040, 49.17.150, and 49.17.240. 79-08-115 (Order 79-9), § 296-24-82533, filed 7/31/79; Order 73-5, § 296-24-82533, filed 5/9/73 and Order 73-4, § 296-24-82533, filed 5/7/73.] Repealed by 00-08-078, filed 4/4/00, effective 7/1/00. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.
296-24-82515	Two-point suspension scaffolds (swinging scaffolds). [Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-24-82515, filed 7/20/94, effective 9/20/94; 88-23-054 (Order 88-25), § 296-24-82515, filed 11/14/88. Statutory Authority: RCW 49.17.040, 49.17.050, and 49.17.240. 80-11-010 (Order 80-14), § 296-24-82515, filed 8/8/80. Statutory Authority: RCW 49.17.040, 49.17.150, and 49.17.240. 79-08-115 (Order 79-9), § 296-24-82515, filed 7/31/79; Order 73-5, § 296-24-82515, filed 5/9/73 and Order 73-4, § 296-24-82515, filed 5/7/73.] Repealed by 00-08-078, filed 4/4/00, effective 7/1/00. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.	296-24-82535	Ladder-jack scaffolds. [Order 73-5, § 296-24-82535, filed 5/9/73 and Order 73-4, § 296-24-82535, filed 5/7/73.] Repealed by 00-08-078, filed 4/4/00, effective 7/1/00. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.
296-24-82517	Stone setters' adjustable multiple-point suspension scaffolds. [Statutory Authority: Chapter 49.17 RCW. 88-23-054 (Order 88-25), § 296-24-82517, filed 11/14/88. Statutory Authority: RCW 49.17.040, 49.17.150, and 49.17.240. 79-08-115 (Order 79-9), § 296-24-82517, filed 7/31/79; Order 73-5, § 296-24-82517, filed 5/9/73 and Order 73-4, § 296-24-82517, filed 5/7/73.] Repealed by 00-08-078, filed 4/4/00, effective 7/1/00. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.	296-24-82537	Window-jack scaffolds. [Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-24-82537, filed 7/20/94, effective 9/20/94; Order 73-5, § 296-24-82537, filed 5/9/73 and Order 73-4, § 296-24-82537, filed 5/7/73.] Repealed by 00-08-078, filed 4/4/00, effective 7/1/00. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.
296-24-82519	Single-point adjustable suspension scaffolds. [Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-24-82519, filed 7/20/94, effective 9/20/94; 88-23-054 (Order 88-25), § 296-24-82519, filed 11/14/88; Order 73-5, § 296-24-82519, filed 5/9/73 and Order 73-4, § 296-24-82519, filed 5/7/73.] Repealed by 00-08-078, filed 4/4/00, effective 7/1/00. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].-050.	296-24-82539	Roofing brackets. [Order 73-5, § 296-24-82539, filed 5/9/73 and Order 73-4, § 296-24-82539, filed 5/7/73.] Repealed by 00-08-078, filed 4/4/00, effective 7/1/00. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.
296-24-82521	Boatswain's chairs. [Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-24-82521, filed 7/20/94, effective 9/20/94. Statutory Authority: RCW 49.17.040, 49.17.050, and 49.17.240. 80-11-010 (Order 80-14), § 296-24-82521, filed 8/8/80. Statutory Authority: RCW 49.17.040, 49.17.150, and 49.17.240. 79-08-115 (Order 79-9), § 296-24-82521, filed 7/31/79; Order 73-5, § 296-24-82521, filed 5/9/73 and Order 73-4, § 296-24-82521, filed 5/7/73.] Repealed by 00-08-078, filed 4/4/00, effective 7/1/00. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.	296-24-82541	Crawling boards or chicken ladders. [Order 73-5, § 296-24-82541, filed 5/9/73 and Order 73-4, § 296-24-82541, filed 5/7/73.] Repealed by 00-08-078, filed 4/4/00, effective 7/1/00. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.
296-24-82523	Carpenters' bracket scaffolds. [Statutory Authority: RCW 49.17.040, 49.17.150, and 49.17.240. 79-08-115 (Order 79-9), § 296-24-82523, filed 7/31/79; Order 76-6, § 296-24-82523, filed 3/1/76; Order 73-5, § 296-24-82523, filed 5/9/73 and Order 73-4, § 296-24-82523, filed 5/7/73.] Repealed by 00-08-078, filed 4/4/00, effective 7/1/00. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.	296-24-82543	Float or ship scaffolds. [Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-24-82543, filed 7/20/94, effective 9/20/94; Order 73-5, § 296-24-82543, filed 5/9/73 and Order 73-4, § 296-24-82543, filed 5/7/73.] Repealed by 00-08-078, filed 4/4/00, effective 7/1/00. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.
296-24-82525	Bricklayers' square scaffolds. [Order 73-5, § 296-24-82525, filed 5/9/73 and Order 73-4, § 296-24-82525, filed 5/7/73.] Repealed by 00-08-078, filed 4/4/00, effective 7/1/00. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.	296-24-82545	Scope. [Order 73-5, § 296-24-82545, filed 5/9/73 and Order 73-4, § 296-24-82545, filed 5/7/73.] Repealed by 00-08-078, filed 4/4/00, effective 7/1/00. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].-050.
296-24-82527	Horse scaffolds. [Statutory Authority: RCW 49.17.040, 49.17.150, and 49.17.240. 79-08-115 (Order 79-9), § 296-24-82527, filed 7/31/79; Order 73-5, § 296-24-82527, filed 5/9/73 and Order 73-4, § 296-24-82527, filed 5/7/73.] Repealed by 00-08-078, filed 4/4/00, effective 7/1/00. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.	296-24-840	Manually propelled mobile ladder stands and scaffolds (towers). [Order 73-5, § 296-24-840, filed 5/9/73 and Order 73-4, § 296-24-840, filed 5/7/73.] Repealed by 00-08-078, filed 4/4/00, effective 7/1/00. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].-050.
296-24-82529	Needle beam scaffold. [Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-24-82529, filed 7/20/94, effective 9/20/94. Statutory Authority: RCW 49.17.040, 49.17.150, and 49.17.240. 79-08-115 (Order 79-9), § 296-24-82529, filed 7/31/79; Order 73-5, § 296-24-82529, filed 5/9/73 and Order 73-4, § 296-24-82529, filed 5/7/73.] Repealed by 00-08-078, filed 4/4/00, effective 7/1/00. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.	296-24-84001	Definitions. [Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-24-84001, filed 7/20/94, effective 9/20/94; Order 73-5, § 296-24-84001, filed 5/9/73 and Order 73-4, § 296-24-84001, filed 5/7/73.] Repealed by 00-08-078, filed 4/4/00, effective 7/1/00. Statutory Authority: RCW 49.17.010, [49.17].-040, and [49.17].050.
		296-24-84003	General requirements. [Statutory Authority: RCW 49.17.040, 49.17.150, and 49.17.240. 79-08-115 (Order 79-9), § 296-24-84003, filed 7/31/79; Order 73-5, § 296-24-84003, filed 5/9/73 and Order 73-4, § 296-24-84003, filed 5/7/73.] Repealed by 00-08-078, filed 4/4/00, effective 7/1/00. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.
		296-24-84005	Mobile tubular welded frame scaffolds. [Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-24-84005, filed 7/20/94, effective 9/20/94; Order 73-5, § 296-24-84005, filed 5/9/73 and Order 73-4, § 296-24-84005, filed 5/7/73.] Repealed by 00-08-078, filed 4/4/00, effective 7/1/00. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.
		296-24-84007	Mobile tubular welded sectional folding scaffolds. [Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-24-84007, filed 7/20/94, effective 9/20/94; Order 73-5, § 296-24-84007, filed 5/9/73 and Order 73-4, § 296-24-84007, filed 5/7/73.] Repealed by 00-08-078, filed 4/4/00, effective 7/1/00. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].-050.

296-24-84009	Mobile tube and coupler scaffolds. [Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-24-84009, filed 7/20/94, effective 9/20/94; Order 73-5, § 296-24-84009, filed 5/9/73 and Order 73-4, § 296-24-84009, filed 5/7/73.] Repealed by 00-08-078, filed 4/4/00, effective 7/1/00. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.	296-24-86130	Mobile ladder stands. [Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 00-08-078, § 296-24-86130, filed 4/4/00, effective 7/1/00.] Repealed by 05-01-054, filed 12/7/04, effective 3/1/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.
296-24-84011	Mobile work platforms. [Order 73-5, § 296-24-84011, filed 5/9/73 and Order 73-4, § 296-24-84011, filed 5/7/73.] Repealed by 00-08-078, filed 4/4/00, effective 7/1/00. Statutory Authority: RCW 49.17.010, [49.17].-040, and [49.17].050.	296-24-870	Power platforms for exterior building maintenance. [Statutory Authority: Chapter 49.17 RCW. 90-09-026 (Order 90-01), § 296-24-870, filed 4/10/90, effective 5/25/90; Order 73-5, § 296-24-870, filed 5/9/73 and Order 73-4, § 296-24-870, filed 5/7/73.] Repealed by 00-08-078, filed 4/4/00, effective 7/1/00. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].-050.
296-24-84013	Mobile ladder stands. [Order 73-5, § 296-24-84013, filed 5/9/73 and Order 73-4, § 296-24-84013, filed 5/7/73.] Repealed by 00-08-078, filed 4/4/00, effective 7/1/00. Statutory Authority: RCW 49.17.010, [49.17].-040, and [49.17].050.	296-24-87001	Definitions. [Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-24-87001, filed 7/20/94, effective 9/20/94; 90-09-026 (Order 90-01), § 296-24-87001, filed 4/10/90, effective 5/25/90; Order 73-5, § 296-24-87001, filed 5/9/73 and Order 73-4, § 296-24-87001, filed 5/7/73.] Repealed by 00-08-078, filed 4/4/00, effective 7/1/00. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.
296-24-860	Scaffolds. [Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 00-08-078, § 296-24-860, filed 4/4/00, effective 7/1/00.] Repealed by 05-01-054, filed 12/7/04, effective 3/1/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	296-24-87003	General requirements. [Order 76-6, § 296-24-87003, filed 3/1/76; Order 73-5, § 296-24-87003, filed 5/9/73 and Order 73-4, § 296-24-87003, filed 5/7/73.] Repealed by 90-09-026 (Order 90-01), filed 4/10/90, effective 5/25/90. Statutory Authority: Chapter 49.17 RCW.
296-24-86005	Definitions applicable to this part. [Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 00-08-078, § 296-24-86005, filed 4/4/00, effective 7/1/00.] Repealed by 05-01-054, filed 12/7/04, effective 3/1/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	296-24-87005	Type F powered platforms. [Order 76-6, § 296-24-87005, filed 3/1/76; Order 73-5, § 296-24-87005, filed 5/9/73 and Order 73-4, § 296-24-87005, filed 5/7/73.] Repealed by 90-09-026 (Order 90-01), filed 4/10/90, effective 5/25/90. Statutory Authority: Chapter 49.17 RCW.
296-24-86010	General requirements. [Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 00-08-078, § 296-24-86010, filed 4/4/00, effective 7/1/00.] Repealed by 05-01-054, filed 12/7/04, effective 3/1/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	296-24-87007	Type T powered platforms. [Order 73-5, § 296-24-87007, filed 5/9/73 and Order 73-4, § 296-24-87007, filed 5/7/73.] Repealed by 90-09-026 (Order 90-01), filed 4/10/90, effective 5/25/90. Statutory Authority: Chapter 49.17 RCW.
296-24-86015	Additional requirements applicable to specific types of scaffolds. [Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 00-08-078, § 296-24-86015, filed 4/4/00, effective 7/1/00.] Repealed by 05-01-054, filed 12/7/04, effective 3/1/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	296-24-87009	Inspections and tests. [Statutory Authority: Chapter 49.17 RCW. 90-09-026 (Order 90-01), § 296-24-87009, filed 4/10/90, effective 5/25/90; Order 73-5, § 296-24-87009, filed 5/9/73 and Order 73-4, § 296-24-87009, filed 5/7/73.] Repealed by 00-08-078, filed 4/4/00, effective 7/1/00. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.
296-24-86020	Training. [Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 00-08-078, § 296-24-86020, filed 4/4/00, effective 7/1/00.] Repealed by 05-01-054, filed 12/7/04, effective 3/1/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	296-24-87011	Powered platform installations—Affected parts of buildings. [Statutory Authority: Chapter 49.17 RCW. 91-24-017 (Order 91-07), § 296-24-87011, filed 11/22/91, effective 12/24/91; 90-09-026 (Order 90-01), § 296-24-87011, filed 4/10/90, effective 5/25/90.] Repealed by 00-08-078, filed 4/4/00, effective 7/1/00. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.
296-24-861	Manually propelled mobile ladder stands and scaffolds (towers). [Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 00-08-078, § 296-24-861, filed 4/4/00, effective 7/1/00.] Repealed by 05-01-054, filed 12/7/04, effective 3/1/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	296-24-87013	Powered platform installations—Equipment. [Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-24-87013, filed 7/20/94, effective 9/20/94; 90-09-026 (Order 90-01), § 296-24-87013, filed 4/10/90, effective 5/25/90.] Repealed by 00-08-078, filed 4/4/00, effective 7/1/00. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.
296-24-86105	General requirements. [Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 00-08-078, § 296-24-86105, filed 4/4/00, effective 7/1/00.] Repealed by 05-01-054, filed 12/7/04, effective 3/1/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	296-24-87015	Maintenance. [Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-24-87015, filed 7/20/94, effective 9/20/94; 90-09-026 (Order 90-01), § 296-24-87015, filed 4/10/90, effective 5/25/90.] Repealed by 00-08-078, filed 4/4/00, effective 7/1/00. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.
296-24-86110	Mobile tubular welded frame scaffolds. [Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].-050. 00-08-078, § 296-24-86110, filed 4/4/00, effective 7/1/00.] Repealed by 05-01-054, filed 12/7/04, effective 3/1/05. Statutory Authority: RCW 49.17.010, 49.17.-040, 49.17.050, 49.17.060.	296-24-87017	Operations. [Statutory Authority: Chapter 49.17 RCW. 90-09-026 (Order 90-01), § 296-24-87017, filed 4/10/90, effective 5/25/90.] Repealed by 00-08-078, filed 4/4/00, effective 7/1/00. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.
296-24-86115	Mobile tubular welded sectional folding scaffolds. [Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 00-08-078, § 296-24-86115, filed 4/4/00, effective 7/1/00.] Repealed by 05-01-054, filed 12/7/04, effective 3/1/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	296-24-87019	Personal fall protection. [Statutory Authority: Chapter 49.17 RCW. 90-09-026 (Order 90-01), § 296-24-87019, filed 4/10/90, effective 5/25/90.] Repealed by 00-08-078, filed 4/4/00, effective 7/1/00. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.
296-24-86120	Mobile tube and coupler scaffolds. [Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 00-08-078, § 296-24-86120, filed 4/4/00, effective 7/1/00.] Repealed by 05-01-054, filed 12/7/04, effective 3/1/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	296-24-87031	Appendix A—Guidelines (advisory). [Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-24-87031, filed 7/20/94, effective 9/20/94; 90-09-026 (Order 90-01), § 296-24-87031, filed 4/10/90, effective 5/25/90.] Repealed by 00-08-078, filed 4/4/00,
296-24-86125	Mobile work platforms. [Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 00-08-078, § 296-24-86125, filed 4/4/00, effective 7/1/00.] Repealed by 05-01-054, filed 12/7/04, effective 3/1/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.		

	effective 7/1/00. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.		Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.
296-24-87033	Appendix B—Exhibits (advisory). [Statutory Authority: Chapter 49.17 RCW. 90-09-026 (Order 90-01), § 296-24-87033, filed 4/10/90, effective 5/25/90.] Repealed by 00-08-078, filed 4/4/00, effective 7/1/00. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].-050.	296-24-88030	Operations. [Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 00-08-078, § 296-24-88030, filed 4/4/00, effective 7/1/00.] Repealed by 06-19-073, filed 9/19/06, effective 1/1/07. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.
296-24-87035	Appendix C—Personal fall arrest system (Part I—Mandatory; Parts II and III—Nonmandatory). [Statutory Authority: Chapter 49.17 RCW. 91-03-044 (Order 90-18), § 296-24-87035, filed 1/10/91, effective 2/12/91; 90-09-026 (Order 90-01), § 296-24-87035, filed 4/10/90, effective 5/25/90.] Repealed by 00-08-078, filed 4/4/00, effective 7/1/00. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.	296-24-88035	Personal fall protection. [Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 00-08-078, § 296-24-88035, filed 4/4/00, effective 7/1/00.] Repealed by 06-19-073, filed 9/19/06, effective 1/1/07. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.
296-24-87037	Appendix D—Existing installations (mandatory). [Statutory Authority: Chapter 49.17 RCW. 90-09-026 (Order 90-01), § 296-24-87037, filed 4/10/90, effective 5/25/90.] Repealed by 00-08-078, filed 4/4/00, effective 7/1/00. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.	296-24-88040	Appendix A—Guidelines (advisory). [Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 00-08-078, § 296-24-88040, filed 4/4/00, effective 7/1/00.] Repealed by 06-19-073, filed 9/19/06, effective 1/1/07. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.
296-24-875	Elevating work platforms. [Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 00-08-078, § 296-24-875, filed 4/4/00, effective 7/1/00.] Repealed by 06-19-073, filed 9/19/06, effective 1/1/07. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	296-24-88045	Appendix B—Exhibits (advisory). [Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 00-08-078, § 296-24-88045, filed 4/4/00, effective 7/1/00.] Repealed by 06-19-073, filed 9/19/06, effective 1/1/07. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.
296-24-87505	Self-propelled elevating work platforms. [Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].-050. 00-08-078, § 296-24-87505, filed 4/4/00, effective 7/1/00.] Repealed by 06-19-073, filed 9/19/06, effective 1/1/07. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	296-24-88055	Appendix D—Existing installations (mandatory). [Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 00-08-078, § 296-24-88055, filed 4/4/00, effective 7/1/00.] Repealed by 06-19-073, filed 9/19/06, effective 1/1/07. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.
296-24-87510	Boom supported elevating work platforms. [Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].-050. 00-08-078, § 296-24-87510, filed 4/4/00, effective 7/1/00.] Repealed by 06-19-073, filed 9/19/06, effective 1/1/07. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	296-24-885	Vehicle-mounted elevating and rotating work platforms. [Order 76-6, § 296-24-885, filed 3/1/76; Order 73-5, § 296-24-885, filed 5/9/73 and Order 73-4, § 296-24-885, filed 5/7/73.] Repealed by 00-08-078, filed 4/4/00, effective 7/1/00. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.
296-24-87515	Aerial lifts. [Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 00-08-078, § 296-24-87515, filed 4/4/00, effective 7/1/00.] Repealed by 06-19-073, filed 9/19/06, effective 1/1/07. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	296-24-88501	Definitions. [Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-24-88501, filed 7/20/94, effective 9/20/94; Order 76-6, § 296-24-88501, filed 3/1/76; Order 73-5, § 296-24-88501, filed 5/9/73 and Order 73-4, § 296-24-88501, filed 5/7/73.] Repealed by 00-08-078, filed 4/4/00, effective 7/1/00. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.
296-24-880	Power platforms for exterior building maintenance. [Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 00-08-078, § 296-24-880, filed 4/4/00, effective 7/1/00.] Repealed by 06-19-073, filed 9/19/06, effective 1/1/07. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	296-24-88503	General requirements. [Statutory Authority: Chapter 49.17 RCW. 91-24-017 (Order 91-07), § 296-24-88503, filed 11/22/91, effective 12/24/91; Order 76-6, § 296-24-88503, filed 3/1/76; Order 73-5, § 296-24-88503, filed 5/9/73 and Order 73-4, § 296-24-88503, filed 5/7/73.] Repealed by 00-08-078, filed 4/4/00, effective 7/1/00. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.
296-24-88005	Definitions. [Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 00-08-078, § 296-24-88005, filed 4/4/00, effective 7/1/00.] Repealed by 06-19-073, filed 9/19/06, effective 1/1/07. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	296-24-88505	Specific requirements. [Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-24-88505, filed 7/20/94, effective 9/20/94; Order 76-6, § 296-24-88505, filed 3/1/76.] Repealed by 00-08-078, filed 4/4/00, effective 7/1/00. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.
296-24-88010	Inspections and tests. [Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 00-08-078, § 296-24-88010, filed 4/4/00, effective 7/1/00.] Repealed by 06-19-073, filed 9/19/06, effective 1/1/07. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	296-24-900	Manlifts. [Order 73-5, § 296-24-900, filed 5/9/73 and Order 73-4, § 296-24-900, filed 5/7/73.] Repealed by 06-19-073, filed 9/19/06, effective 1/1/07. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.
296-24-88015	Powered platform installations—Affected parts of buildings. [Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 00-08-078, § 296-24-88015, filed 4/4/00, effective 7/1/00.] Repealed by 06-19-073, filed 9/19/06, effective 1/1/07. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	296-24-90001	Definitions. [Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 00-08-078, § 296-24-90001, filed 4/4/00, effective 7/1/00. Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-24-90001, filed 7/20/94, effective 9/20/94; Order 73-5, § 296-24-90001, filed 5/9/73 and Order 73-4, § 296-24-90001, filed 5/7/73.] Repealed by 06-19-073, filed 9/19/06, effective 1/1/07. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.
296-24-88020	Powered platform installations—Equipment. [Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060. 04-14-028, § 296-24-88020, filed 6/29/04, effective 1/1/05. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 00-08-078, § 296-24-88020, filed 4/4/00, effective 7/1/00.] Repealed by 06-19-073, filed 9/19/06, effective 1/1/07. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	296-24-90003	General requirements. [Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060. 04-14-028, § 296-24-90003, filed 6/29/04, effective 1/1/05. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 00-08-078, § 296-24-90003, filed 4/4/00, effective 7/1/00. Statutory Authority: Chapter 49.17 RCW. 91-24-017 (Order 91-07), § 296-24-90003, filed 11/22/91, effective 12/24/91; Order 76-6, § 296-24-90003, filed 3/1/76; Order 73-5, § 296-24-90003, filed 5/9/73 and Order 73-4, § 296-24-90003, filed 5/7/73.]
296-24-88025	Maintenance. [Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 00-08-078, § 296-24-88025, filed 4/4/00, effective 7/1/00.] Repealed by 06-19-073, filed 9/19/06, effective 1/1/07. Statutory		

	Repealed by 06-19-073, filed 9/19/06, effective 1/1/07. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.
296-24-90005	Mechanical requirements. [Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 00-08-078, § 296-24-90005, filed 4/4/00, effective 7/1/00. Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-24-90005, filed 7/20/94, effective 9/20/94; 91-24-017 (Order 91-07), § 296-24-90005, filed 11/22/91, effective 12/24/91; Order 74-27, § 296-24-90005, filed 5/7/74; Order 73-5, § 296-24-90005, filed 5/9/73 and Order 73-4, § 296-24-90005, filed 5/7/73.] Repealed by 06-19-073, filed 9/19/06, effective 1/1/07. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.
296-24-90007	Operating rules. [Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 00-08-078, § 296-24-90007, filed 4/4/00, effective 7/1/00; Order 73-5, § 296-24-90007, filed 5/9/73 and Order 73-4, § 296-24-90007, filed 5/7/73.] Repealed by 06-19-073, filed 9/19/06, effective 1/1/07. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.
296-24-90009	Periodic inspection. [Statutory Authority: RCW 49.17.-010, [49.17].040, and [49.17].050. 00-08-078, § 296-24-90009, filed 4/4/00, effective 7/1/00. Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-24-90009, filed 7/20/94, effective 9/20/94; Order 73-5, § 296-24-90009, filed 5/9/73 and Order 73-4, § 296-24-90009, filed 5/7/73.] Repealed by 06-19-073, filed 9/19/06, effective 1/1/07. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.
296-24-950	Electrical—Application. [Order 74-27, § 296-24-950, filed 5/7/74.] Repealed by 83-24-013 (Order 83-34), filed 11/30/83. Statutory Authority: RCW 49.17.040 and 49.17.050.
296-24-955	National electrical code. [Statutory Authority: RCW 49.17.040, 49.17.050, 49.17.240, chapters 42.30 and 43.22 RCW. 80-17-015 (Order 80-21), § 296-24-955, filed 11/13/80; 78-12-017 (Order 78-22), § 296-24-955, filed 11/13/78; Order 77-12, § 296-24-955, filed 7/11/77; Order 74-27, § 296-24-955, filed 5/7/74.] Repealed by 82-08-026 (Order 82-10), filed 3/30/82. Statutory Authority: RCW 49.17.040 and 49.17.050.

PART A-1 PURPOSE AND SCOPE

WAC 296-24-003 Subsections, subdivisions, items, subitems, and segments. (1) That portion of section numeration appearing after the chapter designation appears in either a three digit or a five digit format (e.g. 296-24-330 and 296-24-33002). The final two digits of the section number are implied decimal extensions of the first three digits and represent a further division of the three digit enumeration.

(2) Sections of this chapter may be divided into subsections (1), (2), (3), etc., which may in turn be divided into subdivisions (a), (b), (c), etc., which may be further divided into items (i), (ii), (iii), etc., which may be further divided into subitems (A), (B), (C), etc., which may be further divided into segments (I), (II), (III), etc., all according to the following hierarchy, e.g.

Sections	296-24-330 and 296-24-33002
Subsections	(1) (2)
Subdivisions	(a) (b)
Items	(i) (ii)

Subitems	(A) (B)
Segments	(I) (II)

[Statutory Authority: Chapter 49.17 RCW. 88-23-054 (Order 88-25), § 296-24-003, filed 11/14/88; Order 76-6, § 296-24-003, filed 3/1/76; Order 73-5, § 296-24-003, filed 5/9/73 and Order 73-4, § 296-24-003, filed 5/7/73.]

WAC 296-24-005 Purpose and scope. The rules in this chapter are designed to protect the safety and health of employees by creating a healthy work environment by establishing requirements to control safety hazards in the workplace. Chapter 296-800 WAC, the safety and health core rules, contain safety and health rules that apply to most workplaces. Other special industry rules complement the rules found in this chapter and in the safety and health core rules.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 01-11-038, § 296-24-005, filed 5/9/01, effective 9/1/01; Order 73-5, § 296-24-005, filed 5/9/73 and Order 73-4, § 296-24-005, filed 5/7/73.]

WAC 296-24-012 Definitions applicable to all sections of this chapter.

Note: Meaning of words. Unless the context indicates otherwise, words used in this chapter shall have the meaning given in this section.

(1) "Approved" means approved by the director of the department of labor and industries or his/her authorized representative: Provided, however, That should a provision of this chapter state that approval by an agency or organization other than the department of labor and industries is required, such as Underwriters' Laboratories or the Mine Safety and Health Administration (MSHA) and the National Institute for Occupational Safety and Health (NIOSH), the provisions of WAC 296-800-360 shall apply.

(2) "Authorized person" means a person approved or assigned by the employer to perform a specific type of duty or duties or to be at a specific location or locations at the job site.

(3) "Competent person" means one who is capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has authorization to take prompt corrective action to eliminate them.

(4) "Department" means the department of labor and industries.

(5) "Director" means the director of the department of labor and industries, or his/her designated representative.

(6) "Employer" means any person, firm, corporation, partnership, business trust, legal representative, or other business entity which engages in any business, industry, profession, or activity in this state and employs one or more employees or who contracts with one or more persons, the essence of which is the personal labor of such person or persons and includes the state, counties, cities, and all municipal corporations, public corporations, political subdivisions of the state, and charitable organizations: Provided, That any person, partnership, or business entity not having employees, and who is covered by the industrial insurance act shall be considered both an employer and an employee.

(7) "First aid" means, for purposes of this section, the extent of treatment that could be expected to be given by a person trained in basic first aid, using supplies from a first-aid kit. Tests, such as X rays, shall not be confused with treatment.

(8) "Hazard" means that condition, potential or inherent, which can cause injury, death, or occupational disease.

(9) "Hospitalization" means to be sent to; to go to; or be admitted to a hospital or an equivalent medical facility and receive medical treatment beyond that which would be considered as first-aid treatment, regardless of the length of stay in the hospital or medical facility.

(10) "Qualified" means one who, by possession of a recognized degree, certificate, or professional standing, or who by extensive knowledge, training, and experience, has successfully demonstrated the ability to solve or resolve problems relating to the subject matter, the work, or the project.

(11) "Safety factor" means the ratio of the ultimate breaking strength of a member or piece of material or equipment to the actual working stress or safe load when in use.

(12) "Safety and health standard" means a standard which requires the adoption or use of one or more practices, means, methods, operations, or processes reasonably necessary or appropriate to provide safe or healthful employment and places of employment.

(13) "Shall" means mandatory.

(14) "Should" means recommended.

(15) "Standard safeguard" means a device designed and constructed with the object of removing the hazard of accident incidental to the machine, appliance, tool, building, or equipment to which it is attached.

Standard safeguards shall be constructed of either metal or wood or other suitable material or a combination of these. The final determination of the sufficiency of any safeguard rests with the director of the department of labor and industries.

(16) "Suitable" means that which fits, or has the qualities or qualifications to meet a given purpose, occasion, condition, function, or circumstance.

(17) "Working day" means a calendar day, except Saturdays, Sundays, and legal holidays as set forth in RCW 1.16.050, as now or hereafter amended, and for the purposes of the computation of time within which an act is to be done under the provisions of this chapter, shall be computed by excluding the first working day and including the last working day.

(18) "Worker," "personnel," "person," "employee," and other terms of like meaning, unless the context of the provision containing such term indicates otherwise, mean an employee of an employer who is employed in the business of his/her employer whether by way of manual labor or otherwise and every person in this state who is engaged in the employment of or who is working under an independent contract the essence of which is his/her personal labor for an employer whether by manual labor or otherwise.

(19) "Work place" means any plant, yard, premises, room, or other place where an employee or employees are employed for the performance of labor or service over which the employer has the right of access or control, and includes, but is not limited to, all work places covered by industrial insurance under Title 51 RCW, as now or hereafter amended.

(20) Abbreviations used in this chapter:

(a) "ANSI" means American National Standards Institute.

(b) "API" means American Petroleum Institute.

(c) "ASA" means American Standards Association.

(d) "ASAE" means American Society of Agricultural Engineers.

(e) "ASHRE" means American Society of Heating and Refrigeration Engineers.

(f) "ASME" means American Society for Mechanical Engineers.

(g) "ASTM" means American Society for Testing and Materials.

(h) "AWS" means American Welding Society.

(i) "BTU" means British thermal unit.

(j) "BTUH" means British thermal unit per hour.

(k) "CFM" means cubic feet per minute.

(l) "CFR" means Code of Federal Regulations.

(m) "CGA" means Compressed Gas Association.

(n) "CIE" means Commission Internationale de l' Eclairage.

(o) "DOT" means department of transportation.

(p) "FRP" means fiberglass reinforced plastic.

(q) "GPM" means gallons per minute.

(r) "ICC" means Interstate Commerce Commission.

(s) "ID" means inside diameter.

(t) "LPG" means liquefied petroleum gas.

(u) "MCA" means Manufacturing Chemist Association. (New name: Chemical Manufacturers Association.)

(v) "NBFU" means National Board of Fire Underwriters.

(w) "NEMA" means National Electrical Manufacturing Association.

(x) "NFPA" means National Fire Protection Association.

(y) "NTP" means normal temperature and pressure.

(z) "OD" means outside diameter.

(aa) "PSI" means pounds per square inch.

(bb) "PSIA" means pounds per square inch atmospheric.

(cc) "PSIG" means pounds per square inch gauge.

(dd) "RMA" means Rubber Manufacturers Association.

(ee) "SAE" means Society of Automotive Engineers.

(ff) "TFI" means The Fertilizer Institute.

(gg) "TSC" means Trailer Standard Code.

(hh) "UL" means Underwriters' Laboratories, Inc.

(ii) "USASI" means United States of America Standards Institute.

(jj) "USC" means United States Code.

(kk) "USCG" means United States Coast Guard.

(ll) "WAC" means Washington Administrative Code.

(mm) "WISHA" means Washington Industrial Safety and Health Act of 1973.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060. 04-07-161, § 296-24-012, filed 3/23/04, effective 6/1/04. Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050. 02-12-098, § 296-24-012, filed 6/5/02, effective 8/1/02. Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-24-012, filed 7/20/94, effective 9/20/94; 89-11-035 (Order 89-03), § 296-24-012, filed 5/15/89, effective 6/30/89; Order 73-5, § 296-24-012, filed 5/9/73 and Order 73-4, § 296-24-012, filed 5/7/73.]

**PART A-2
PERSONAL PROTECTIVE EQUIPMENT
RESERVE**

- Note: Personal protective equipment requirements have been moved to WAC 296-800-160.
Note: Electrical protective equipment requirements have been moved to WAC 296-24-980.

**PART A-3
LATE NIGHT RETAIL WORKER CRIME
PROTECTION**

- Note: Late night retail worker crime protection has been moved to chapter 296-832 WAC.

**PART A-4
SAFETY PROCEDURES**

- Note: Safety procedures has been moved to chapter 296-803 WAC.

**PART B-2
SAFETY COLOR CODE FOR MARKING PHYSICAL
HAZARDS, ETC., WINDOW WASHING**

- Note: Safety color code for marking physical hazards, etc., window washing has been moved to WAC 296-800-11045.

**PART C
MACHINERY AND MACHINE GUARDING**

- Note: Machinery and machine guarding has been moved to chapter 296-806 WAC.

**PART D
MATERIALS HANDLING AND STORAGE,
INCLUDING CRANES, DERRICKS, ETC.,
AND RIGGING**

Handling and Storage—Cranes, Derricks, etc.

**WAC 296-24-215 Materials handling and storage—
Handling materials—General.**

[Order 73-5, § 296-24-215, filed 5/9/73 and Order 73-4, § 296-24-215, filed 5/7/73.]

WAC 296-24-21501 Use of mechanical equipment. Where mechanical handling equipment is used, sufficient safe clearances shall be allowed for aisles, at loading docks, through doorways and wherever turns or passage must be made. Aisles and passageways shall be kept clear and in good repair, with no obstruction across or in aisles that could create a hazard. Permanent aisles and passageways shall be appropriately marked.

[Order 73-5, § 296-24-21501, filed 5/9/73 and Order 73-4, § 296-24-21501, filed 5/7/73.]

WAC 296-24-21509 Clearance limits. Clearance signs to warn of clearance limits shall be provided.

[Order 73-5, § 296-24-21509, filed 5/9/73 and Order 73-4, § 296-24-21509, filed 5/7/73.]

WAC 296-24-21511 Rolling railroad cars. (1) Derail and/or bumper blocks shall be provided on spur railroad tracks where a rolling car could contact other cars being

worked, enter a building, work or traffic area. This does not apply to cars being moved by a locomotive, switch engine, donkey engine, or a car puller, but only to cars which are "cut loose." The standard does not apply to "cut loose" cars in railroad yards where trains are made up using gravity feed arrangements.

(2) A clearly audible warning system shall be employed when cars are being moved by car pullers or locomotives, and when the person responsible for the moving does not have assurance that the area is clear, and it is safe to move the car or cars.

[Statutory Authority: Chapter 49.17 RCW. 89-11-035 (Order 89-03), § 296-24-21511, filed 5/15/89, effective 6/30/89; Order 74-27, § 296-24-21511, filed 5/7/74; Order 73-5, § 296-24-21511, filed 5/9/73 and Order 73-4, § 296-24-21511, filed 5/7/73.]

WAC 296-24-21513 Guarding. Covers and/or guard-rails shall be provided to protect personnel from the hazards of open pits, tanks, vats, ditches, etc.

[Order 73-5, § 296-24-21513, filed 5/9/73 and Order 73-4, § 296-24-21513, filed 5/7/73.]

WAC 296-24-217 Servicing multipiece and single-piece rim wheels.

[Statutory Authority: RCW 49.17.040 and 49.17.050. 84-17-099 (Order 84-18), § 296-24-217, filed 8/21/84. Statutory Authority: RCW 49.17.040, 49.17.050, 49.17.240, chapters 42.30 and 43.22 RCW. 80-17-014 (Order 80-20), § 296-24-217, filed 11/13/80.]

WAC 296-24-235 Overhead and gantry cranes.

[Order 73-5, § 296-24-235, filed 5/9/73 and Order 73-4, § 296-24-235, filed 5/7/73.]

WAC 296-24-23501 Definitions. (1) A "crane" is a machine for lifting and lowering a load and moving it horizontally, with the hoisting mechanism and integral part of the machine. Cranes whether fixed or mobile are driven manually or by power.

(2) An "automatic crane" is a crane which when activated operates through a preset cycle or cycles.

(3) A "cab-operated crane" is a crane controlled by an operator in a cab located on the bridge or trolley.

(4) "Cantilever gantry crane" means a gantry or semigantry crane in which the bridge girders or trusses extend transversely beyond the crane runway on one or both sides.

(5) "Floor-operated crane" means a crane which is pendant or nonconductive rope controlled by an operator on the floor or an independent platform.

(6) "Gantry crane" means a crane similar to an overhead crane except that the bridge for carrying the trolley or trolleys is rigidly supported on two or more legs running on fixed rails or other runway.

(7) "Hot metal handling crane" means an overhead crane used for transporting or pouring molten material.

(8) "Overhead crane" means a crane with a movable bridge carrying a movable or fixed hoisting mechanism and traveling on an overhead fixed runway structure.

(9) "Power-operated crane" means a crane whose mechanism is driven by electric, air, hydraulic, or internal combustion means.

(10) A "pulpit-operated crane" is a crane operated from a fixed operator station not attached to the crane.

(11) A "remote-operated crane" is a crane controlled by an operator not in a pulpit or in the cab attached to the crane, by any method other than pendant or rope control.

(12) A "semigantry crane" is a gantry crane with one end of the bridge rigidly supported on one or more legs that run on a fixed rail or runway, the other end of the bridge being supported by a truck running on an elevated rail or runway.

(13) "Storage bridge crane" means a gantry type crane of long span usually used for bulk storage of material; the bridge girders or trusses are rigidly or nonrigidly supported on one or more legs. It may have one or more fixed or hinged cantilever ends.

(14) "Wall crane" means a crane having a jib with or without trolley and supported from a side wall or line of columns of a building. It is a traveling type and operates on a runway attached to the side wall or columns.

(15) "Appointed" means assigned specific responsibilities by the employer or the employer's representative.

(16) "ANSI" means the American National Standards Institute.

(17) An "auxiliary hoist" is a supplemental hoisting unit of lighter capacity and usually higher speed than provided for the main hoist.

(18) A "brake" is a device used for retarding or stopping motion by friction or power means.

(19) A "drag brake" is a brake which provides retarding force without external control.

(20) A "holding brake" is a brake that automatically prevents motion when power is off.

(21) "Bridge" means that part of a crane consisting of girders, trucks, end ties, footwalks, and drive mechanism which carries the trolley or trollies.

(22) "Bridge travel" means the crane movement in a direction parallel to the crane runway.

(23) A "bumper" (buffer) is an energy absorbing device for reducing impact when a moving crane or trolley reaches the end of its permitted travel; or when two moving cranes or trollies come in contact.

(24) The "cab" is the operator's compartment on a crane.

(25) "Clearance" means the distance from any part of the crane to a point of the nearest obstruction.

(26) "Collectors" (current) are contacting devices for collecting current from runway or bridge conductors.

(27) "Conductors, bridge" are the electrical conductors located along the bridge structure of a crane to provide power to the trolley.

(28) "Conductors, runway" (main) are the electrical conductors located along a crane runway to provide power to the crane.

(29) The "control braking means" is a method of controlling crane motor speed when in an overhauling condition.

(30) "Countertorque" means a method of control by which the power to the motor is reversed to develop torque in the opposite direction.

(31) "Dynamic" means a method of controlling crane motor speeds when in the overhauling condition to provide a retarding force.

(32) "Regenerative" means a form of dynamic braking in which the electrical energy generated is fed back into the power system.

(33) "Mechanical" means a method of control by friction.

(34) "Controller, spring return" means a controller which when released will return automatically to a neutral position.

(35) "Designated" means selected or assigned by the employer or the employer's representative as being qualified to perform specific duties.

(36) A "drift point" means a point on a travel motion controller which releases the brake while the motor is not energized. This allows for coasting before the brake is set.

(37) The "drum" is the cylindrical member around which the ropes are wound for raising or lowering the load.

(38) An "equalizer" is a device which compensates for unequal length or stretch of a rope.

(39) "Exposed" means capable of being contacted inadvertently. Applied to hazardous objects not adequately guarded or isolated.

(40) "Fail-safe" means a provision designed to automatically stop or safely control any motion in which a malfunction occurs.

(41) "Footwalk" means the walkway with handrail, attached to the bridge or trolley for access purposes.

(42) A "hoist" is an apparatus which may be a part of a crane, exerting a force for lifting or lowering.

(43) "Hoist chain" means the load bearing chain in a hoist.

Note: Chain properties do not conform to those shown in ANSI B30.9-1971, Safety Code for Slings.

(44) "Hoist motion" means that motion of a crane which raises and lowers a load.

(45) "Load" means the total superimposed weight on the load block or hook.

(46) The "load block" is the assembly of hook or shackle, swivel, bearing, sheaves, pins, and frame suspended by the hoisting rope.

(47) "Magnet" means an electromagnetic device carried on a crane hook to pick up loads magnetically.

(48) "Main hoist" means the hoist mechanism provided for lifting the maximum rated load.

(49) A "man trolley" is a trolley having an operator's cab attached thereto.

(50) "Rated load" means the maximum load for which a crane or individual hoist is designed and built by the manufacturer and shown on the equipment nameplate(s).

(51) "Rope" refers to wire rope, unless otherwise specified.

(52) "Running sheave" means a sheave which rotates as the load block is raised or lowered.

(53) "Runway" means an assembly of rails, beams, girders, brackets, and framework on which the crane or trolley travels.

(54) "Side pull" means that portion of the hoist pull acting horizontally when the hoist lines are not operated vertically.

(55) "Span" means the horizontal distance center to center of runway rails.

(56) "Standby crane" means a crane which is not in regular service but which is used occasionally or intermittently as required.

(57) A "stop" is a device to limit travel of a trolley or crane bridge. This device normally is attached to a fixed structure and normally does not have energy absorbing ability.

(58) A "switch" is a device for making, breaking, or for changing the connections in an electric circuit.

(59) An "emergency stop switch" is a manually or automatically operated electric switch to cut off electric power independently of the regular operating controls.

(60) A "limit switch" is a switch which is operated by some part or motion of a power-driven machine or equipment to alter the electric circuit associated with the machine or equipment.

(61) A "main switch" is a switch controlling the entire power supply to the crane.

(62) A "master switch" is a switch which dominates the operation of contractors, relays, or other remotely operated devices.

(63) The "trolley" is the unit which travels on the bridge rails and carries the hoisting mechanism.

(64) "Trolley travel" means the trolley movement at right angles to the crane runway.

(65) "Truck" means the unit consisting of a frame, wheels, bearings, and axles which supports the bridge girders or trolleys.

[Order 73-5, § 296-24-23501, filed 5/9/73 and Order 73-4, § 296-24-23501, filed 5/7/73.]

WAC 296-24-23503 General requirements. (1) Application. This section applies to overhead and gantry cranes, including semigantry, cantilever gantry, wall cranes, storage bridge cranes, and others having the same fundamental characteristics. These cranes are grouped because they all have trolleys and similar travel characteristics.

(2) New and existing equipment. All new overhead and gantry cranes constructed and installed on or after the effective date of these standards, shall meet the design specifications of the American National Standards Institute, Safety Code for Overhead and Gantry Cranes, ANSI B30.2.0-1967. Overhead and gantry cranes constructed before the effective date of these standards, should be modified to conform to those design specifications, unless it can be shown that the crane cannot feasibly or economically be altered and that the crane substantially complies with the requirements of this section. (See WAC 296-350-700 variance from WISHA rules.)

(3) Modifications. Cranes may be modified and rerated provided such modifications and the supporting structure are checked thoroughly for the new rated load by a qualified engineer or the equipment manufacturer. The crane shall be tested in accordance with WAC 296-24-23521(2). New rated load shall be displayed in accordance with (5) of this section.

(4) Wind indicators and rail clamps.

(a) Outdoor storage bridges shall be provided with automatic rail clamps. A wind-indicating device shall be provided which will give a visible or audible alarm to the bridge operator at a predetermined wind velocity. If the clamps act on the

rail heads, any beads or weld flash on the rail heads shall be ground off.

(b) Calculations for wind pressure on outside overhead traveling cranes shall be based on not less than 30 pounds per square foot of exposed surface.

(5) Rated load marking. The rated load of the crane shall be plainly marked on each side of the crane, and if the crane has more than one hoisting unit, each hoist shall have its rated load marked on it or its load block and this marking shall be clearly legible from the ground or floor.

(6) Clearance from obstruction.

(a) Minimum clearance of 3 inches overhead and 2 inches laterally shall be provided and maintained between crane and obstructions in conformity with Specification No. 61 Crane Manufacturers Association of America, Inc., 8720 Red Oak Blvd., Suite 201, Charlotte, NC 28217.

(b) Where passageways or walkways are provided obstructions shall not be placed so that safety of personnel will be jeopardized by movements of the crane.

(7) Clearance between parallel cranes. If the runways of two cranes are parallel, and there are no intervening walls or structure, there shall be adequate clearance provided and maintained between the two bridges.

(8) Designated personnel. Only designated personnel shall be permitted to operate a crane covered by this section.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 01-11-038, § 296-24-23503, filed 5/9/01, effective 9/1/01. Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-24-23503, filed 7/20/94, effective 9/20/94; Order 74-27, § 296-24-23503, filed 5/7/74; Order 73-5, § 296-24-23503, filed 5/9/73 and Order 73-4, § 296-24-23503, filed 5/7/73.]

WAC 296-24-23505 Cabs. (1) Cab location.

(a) The general arrangement of the cab and the location of control and protective equipment shall be such that all operating handles are within convenient reach of the operator when facing the area to be served by the load hook, or while facing the direction of travel of the cab. The arrangement shall allow the operator a full view of the load hook in all positions.

(b) The cab shall be located to afford a minimum of 3 inches clearance from all fixed structures within its area of possible movement.

(c) The clearance of the cab above the working floor or passageway should be not less than seven feet.

(2) Access to crane. Access to the cab and/or bridge walkway shall be by a conveniently placed fixed ladder, stairs, or platform, requiring no step over any gap exceeding 12 inches. Fixed ladders shall be in conformance with the American National Standards Institute, Safety Code for Fixed Ladders, ANSI A14.3-1956.

(3) Fire extinguisher. A carbon dioxide, dry-chemical, or equivalent hand fire extinguisher should be kept in the cab. Carbon tetrachloride extinguishers shall not be used.

Note: For additional requirements relating to portable fire extinguishers see WAC 296-800-300.

(4) Lighting. Light in the cab shall be sufficient to enable the operator to see clearly enough to perform the work.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 01-17-033, § 296-24-23505, filed 8/8/01, effective 9/1/01. Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-24-23505, filed

7/20/94, effective 9/20/94; Order 73-5, § 296-24-23505, filed 5/9/73 and Order 73-4, § 296-24-23505, filed 5/7/73.]

WAC 296-24-23507 Footwalks and ladders. (1) Location of footwalks.

(a) If sufficient headroom is available on cab-operated cranes, a footwalk shall be provided on the drive side along the entire length of the bridge of all cranes having the trolley running on the top of the girders. To give sufficient access to the opposite side of the trolley, there should be provided either a footwalk mounted on the trolley, a suitable footwalk or platform in the building, or a footwalk on the opposite side of the crane at least twice the length of the trolley.

(b) Footwalks should be located to give a headroom not less than 78 inches. In no case shall less than 48 inches be provided. If 48 inches of headroom cannot be provided, footwalks should be omitted from the crane and a stationary platform or landing stage built for workers making repairs.

(2) Construction of footwalks.

(a) Footwalks shall be of rigid construction and designed to sustain a distributed load of at least 50 pounds per square foot.

(b) Footwalks shall have a walking surface of antislip type.

Note: Wood will meet this requirement.

(c) Footwalks should be continuous and permanently secured.

(d) Footwalks should have a clear passageway at least 18 inches wide except opposite the bridge motor, where they should be not less than 15 inches. The inner edge shall extend at least to the line of the outside edge of the lower cover plate or flange of the girder.

(3) Toeboards and handrails for footwalks. Toeboards and handrails shall be in compliance with WAC 296-24-750 through 296-24-75011 and WAC 296-800-260.

(4) Ladders and stairways.

(a) Gantry cranes shall be provided with ladders or stairways extending from the ground to the footwalk or cab platform.

(b) Stairways shall be equipped with rigid and substantial metal handrails. Walking surfaces shall be of an antislip type.

(c) Ladders shall be permanently and securely fastened in place and shall be constructed in compliance with chapter 296-876 WAC, Ladders, portable and fixed.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060, 06-16-020, § 296-24-23507, filed 7/24/06, effective 12/1/06. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 01-11-038, § 296-24-23507, filed 5/9/01, effective 9/1/01. Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-24-23507, filed 7/20/94, effective 9/20/94; Order 73-5, § 296-24-23507, filed 5/9/73 and Order 73-4, § 296-24-23507, filed 5/7/73.]

WAC 296-24-23509 Stops, bumpers, rail sweeps, and guards. (1) Trolley stops.

(a) Stops shall be provided at the limits of travel of the trolley.

(b) Stops shall be fastened to resist forces applied when contacted.

(c) A stop engaging the tread of the wheel shall be of a height at least equal to the radius of the wheel.

(2007 Ed.)

(2) Bridge bumpers.

(a) A crane shall be provided with bumpers or other automatic means providing equivalent effect, unless the crane travels at a slow rate of speed and has a faster deceleration rate due to the use of sleeve bearings, or is not operated near the ends of bridge and trolley travel, or is restricted to a limited distance by the nature of the crane operation and there is no hazard of striking any object in this limited distance or is used in similar operating conditions. The bumpers shall be capable of stopping the crane (not including the lifted load) at an average rate of deceleration not to exceed 3 ft./s when traveling in either direction at 20 percent of the rated load speed.

(i) The bumpers shall have sufficient energy absorbing capacity to stop the crane when traveling at a speed of at least 40 percent of rated load speed.

(ii) The bumpers shall be so mounted that there is no direct shear on bolts.

(iii) Bumpers shall be so designed and installed as to minimize parts falling from the crane in case of breakage.

(3) Trolley bumpers.

(a) A trolley shall be provided with bumpers or other automatic means of equivalent effect, unless the trolley travels at a slow rate of speed, or is not operated near the ends of bridge and trolley travel, or is restricted to a limited distance of the runway and there is no hazard of striking any object in this limited distance, or is used in similar operating conditions. The bumpers shall be capable of stopping the trolley (not including the lifted load) at an average rate of deceleration not to exceed 4.7 ft./s when traveling in either direction at one-third of the rated load speed.

(i) When more than one trolley is operated on the same bridge, each shall be equipped with bumpers or equivalent on their adjacent ends.

(b) Bumpers or equivalent shall be designed and installed to minimize parts falling from the trolley in case of age.

(4) Rail sweeps. Bridge trucks shall be equipped with sweeps which extend below the top of the rail and project in front of the truck wheels.

(5) Guards for hoisting ropes.

(a) If hoisting ropes run near enough to other parts to make fouling or chafing possible, guards shall be installed to prevent this condition.

(b) A guard shall be provided to prevent contact between bridge conductors and hoisting ropes if they could come into contact.

(6) Guards for moving parts.

(a) Exposed moving parts such as gears, set screws, projecting keys, chains, chain sprockets, and reciprocating components which might constitute a hazard under normal operating conditions shall be guarded.

(b) Guards shall be securely fastened.

(c) Each guard shall be capable of supporting without permanent distortion the weight of a 200-pound person unless the guard is located where it is impossible for a person to step on it.

[Statutory Authority: RCW 49.17.040, 49.17.050, 49.17.240, chapters 43.22 and 42.30 RCW. 80-17-015 (Order 80-21), § 296-24-23509, filed 11/13/80; Order 74-27, § 296-24-23509, filed 5/7/74; Order 73-5, § 296-24-23509, filed 5/9/73 and Order 73-4, § 296-24-23509, filed 5/7/73.]

WAC 296-24-23511 Brakes. (1) Brakes for hoists.

(a) Each independent hoisting unit of a crane shall be equipped with at least one self-setting brake, hereafter referred to as a holding brake, applied directly to the motor shaft or some part of the gear train.

(b) Each independent hoisting unit of a crane, except worm-gear hoists, the angle of whose worm is such as to prevent the load from accelerating in the lowering direction shall, in addition to a holding brake, be equipped with control braking means to prevent overspeeding.

(2) Holding brakes.

(a) Holding brakes for hoist motors shall have not less than the following percentage of the full load hoisting torque at the point where the brake is applied.

(i) 125 percent when used with a control braking means other than mechanical.

(ii) 100 percent when used in conjunction with a mechanical control braking means.

(iii) 100 percent each if two holding brakes are provided.

(b) Holding brakes on hoists shall have ample thermal capacity for the frequency of operation required by the service.

(c) Holding brakes on hoists shall be applied automatically when power is removed.

(d) Where necessary holding brakes shall be provided with adjustment means to compensate for wear.

(e) The wearing surface of all holding-brake drums or discs shall be smooth.

(f) Each independent hoisting unit of a crane handling hot metal and having power control braking means shall be equipped with at least two holding brakes.

(3) Control braking means.

(a) A power control braking means such as regenerative, dynamic or countertorque braking, or a mechanically controlled braking means shall be capable of maintaining safe lowering speeds of rated loads.

(b) The control braking means shall have ample thermal capacity for the frequency of operation required by service.

(4) Brakes for trolleys and bridges.

(a) Foot operated brakes shall not require an applied force of more than 70 pounds to develop manufacturer's rated brake torque.

(b) Brakes may be applied by mechanical, electrical, pneumatic, hydraulic, or gravity means.

(c) Where necessary brakes shall be provided with adjustment means to compensate for wear.

(d) The wearing surface of all brake drums or discs shall be smooth.

(e) All foot-brake pedals shall be constructed so that the operator's foot will not easily slip off the pedal.

(f) Foot-operated brakes shall be equipped with automatic means for positive release when pressure is released from the pedal.

(g) Brakes for stopping the motion of the trolley or bridge shall be of sufficient size to stop the trolley or bridge within a distance in feet equal to 10 percent of full load speed in feet per minute when traveling at full speed with full load.

(h) If holding brakes are provided on the bridge or trolley(s), they shall not prohibit the use of a drift point in the control circuit.

(i) Brakes on trolleys and bridges shall have ample thermal capacity for the frequency of operation required by the service to prevent impairment of functions from overheating.

(5) Application of trolley brakes.

(a) On cab-operated cranes with cab on trolley, a trolley brake shall be required as specified under (4) of this section.

(b) A drag brake may be applied to hold the trolley in a desired position on the bridge and to eliminate creep with the power off.

(6) Application of bridge brakes.

(a) On cab-operated cranes with cab on bridge, a bridge brake is required as specified under (4) of this section.

(b) On cab-operated cranes with cab on trolley, a bridge brake of the holding type shall be required.

(c) On all floor, remote and pulpit-operated crane bridge drives, a brake or noncoasting mechanical drive shall be provided.

[Order 73-5, § 296-24-23511, filed 5/9/73 and Order 73-4, § 296-24-23511, filed 5/7/73.]

WAC 296-24-23513 Electric equipment. (1) General.

(a) Wiring and equipment shall comply with chapter 296-24 WAC Part L, and WAC 296-800-280.

(b) The control circuit voltage shall not exceed 600 volts for a.c. or d.c. current.

(c) The voltage at pendant pushbuttons shall not exceed 150 volts for a.c. and 300 volts for d.c.

(d) Where multiple conductor cable is used with a suspended pushbutton station, the station shall be supported in a manner that will protect the electrical conductors against strain.

(e) Pendant control boxes shall be constructed to prevent electrical shock and shall be clearly marked for identification of functions.

(2) Equipment.

(a) Electrical equipment shall be so located or enclosed that live parts will not be exposed to accidental contact under normal operating conditions.

(b) Electric equipment shall be protected from dirt, grease, oil, and moisture.

(c) Guards for live parts shall be substantial and so located that they cannot be accidentally deformed so as to make contact with the live parts.

(3) Controllers.

(a) Cranes not equipped with spring-return controllers or momentary contact pushbuttons shall be provided with a device which will disconnect all motors from the line on failure of power and will not permit any motor to be restarted until the controller handle is brought to the "off" position, or a reset switch or button is operated.

(b) Lever operated controllers shall be provided with a notch or latch which in the "off" position prevents the handle from being inadvertently moved to the "on" position. An "off" detent or spring return arrangement is acceptable.

(c) The controller operating handle shall be located within convenient reach of the operator.

(d) As far as practicable, the movement of each controller handle shall be in the same general directions as the resultant movements of the load.

(e) The control for the bridge and trolley travel shall be so located that the operator can readily face the direction of travel.

(f) For floor-operated cranes, the controller or controllers if rope operated, shall automatically return to the "off" position when released by the operator.

(g) Pushbuttons in pendant stations shall return to the off position when pressure is released by the crane operator.

(h) Automatic cranes shall be so designed that all motions shall fail-safe if any malfunction of operation occurs.

(i) Remote-operated cranes shall function so that if the control signal for any crane motion becomes ineffective the crane motion shall stop.

(4) Resistors.

(a) Enclosures for resistors shall have openings to provide adequate ventilation, and shall be installed to prevent the accumulation of combustible matter near hot parts.

(b) Resistor units shall be supported so as to be free as possible from vibration.

(c) Provision shall be made to prevent broken parts or molten metal falling upon the operator or from the crane.

(5) Switches.

(a) The power supply to the runway conductors shall be controlled by a switch or circuit breaker located on a fixed structure, accessible from the floor, and arranged to be locked in the open position.

(b) On cab-operated cranes a switch or circuit breaker of the enclosed type, with provision for locking in the open position shall be provided in the leads from the runway conductors. A means of opening this switch or circuit breaker shall be located within easy reach of the operator.

(c) On floor-operated cranes, a switch or circuit breaker of the enclosed type, with provision for locking in the open position, shall be provided in the leads from the runway conductors. This disconnect shall be mounted on the bridge or footwalk near the runway collectors. One of the following types of floor operated disconnects shall be provided:

(i) Nonconductive rope attached to the main disconnect switch.

(ii) An undervoltage trip for the main circuit breaker operated by an emergency stop button in the pendant pushbutton station.

(iii) A main line contactor operated by a switch or pushbutton in the pendant pushbutton station.

(d) The hoisting motion of all electric traveling cranes shall be provided with an overtravel limit switch in the hoisting direction.

(e) All cranes using a lifting magnet shall have a magnet circuit switch of the enclosed type with provision for locking in the open position. Means for discharging the inductive load of the magnet shall be provided.

(6) Runway conductors. Conductors of the open type mounted on the crane runway beams or overhead shall be so located or so guarded that persons entering or leaving the cab or crane footwalk normally could not come into contact with them.

(7) Extension lamps. If a service receptacle is provided in the cab or on the bridge of cab-operated cranes, it shall be a grounded three-prong type permanent receptacle, not exceeding 300 volts.

(8) Floor operated cranes.

(a) An unobstructed aisle not less than three feet wide shall be maintained for travel of the operator except in such cases where the control handles are hung from the trolleys of traveling cranes.

(b) The handles of control ropes shall be distinctly different in contour so that, without looking, the operator will know which is the hoisting and which is the lowering handle. The direction of all movements of the crane shall be clearly indicated in some manner so that the operator can easily become familiar with them.

(c) When repairing runways, repairpersons shall place rail stops and warning signs or signals so as to protect both ends of the section to be repaired.

(d) Repairpersons shall take care to prevent loose parts from falling or being thrown upon the floor beneath.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 01-11-038, § 296-24-23513, filed 5/9/01, effective 9/1/01. Statutory Authority: Chapter 49.17 RCW. 91-24-017 (Order 91-07), § 296-24-23513, filed 11/22/91, effective 12/24/91; Order 73-5, § 296-24-23513, filed 5/9/73 and Order 73-4, § 296-24-23513, filed 5/7/73.]

WAC 296-24-23515 Hoisting equipment. (1) Sheaves.

(a) Sheave grooves shall be smooth and free from surface defects which could cause rope damage.

(b) Sheaves carrying ropes which can be momentarily unloaded shall be provided with close-fitting guards or other suitable devices to guide the rope back into the groove when the load is applied again.

(c) The sheaves in the bottom block shall be equipped with close-fitting guards that will prevent ropes from becoming fouled when the block is laying on the ground with ropes loose.

(d) Pockets and flanges of sheaves used with hoist chains shall be of such dimensions that the chain does not catch or bind during operation.

(e) All running sheaves shall be equipped with means for lubrication. Permanently lubricated, sealed and/or shielded bearings meet this requirement.

(2) Ropes.

(a) In using hoisting ropes, the crane manufacturer's recommendation shall be followed. The rated load divided by the number of parts of rope shall not exceed 20 percent of the nominal breaking strength of the rope.

(b) Socketing shall be done in the manner specified by the manufacturer of the assembly.

(c) Rope shall be secured to the drum as follows:

(i) No less than two wraps of rope shall remain on the drum when the hook is in its extreme low position.

(ii) Rope end shall be anchored by a clamp securely attached to the drum, or by a socket arrangement approved by the crane or rope manufacturer.

(d) Rope clips attached with U-bolts shall have the U-bolts on the dead or short end of the rope. Spacing and number of all types of clips shall be in accordance with (2)(e) of this section. Clips shall be drop-forged steel in all sizes manufactured commercially. When a newly installed rope has been in operation for an hour, all nuts on the clip bolts shall be retightened.

(e)

Diameter of Rope	Number of Clips Required	Space Between Clips
1 1/2 inch	8	10 inches
1 3/8 inch	7	9 inches
1 1/4 inch	6	8 inches
1 1/8 inch	5	7 inches
1 inch	5	6 inches
7/8 inch	5	5 1/4 inches
3/4 inch	5	4 1/2 inches
3/8 to 5/8 inch	4	3 inches

(f) Swaged or compressed fittings shall be applied as recommended by the rope or crane manufacturer.

(g) Wherever exposed to temperatures, at which fiber cores would be damaged, rope having an independent wire-rope or wire-strand core, or other temperature-damage resistant core shall be used.

(h) Replacement rope shall be the same size, grade, and construction as the original rope furnished by the crane manufacturer, unless otherwise recommended by a wire rope manufacturer due to actual working condition requirements.

(3) Equalizers. If a load is supported by more than one part of rope, the tension in the parts shall be equalized.

(4) Hooks. Hooks shall meet the manufacturer's recommendations and shall not be overloaded. Safety latch-type hooks shall be used or the hook shall be moused.

[Statutory Authority: RCW 49.17.040, 49.17.050, 49.17.240, chapters 43.22 and 42.30 RCW, 80-17-015 (Order 80-21), § 296-24-23515, filed 11/13/80. Statutory Authority: RCW 49.17.040, 49.17.150, and 49.17.240, 79-08-115 (Order 79-9), § 296-24-23515, filed 7/31/79; Order 73-5, § 296-24-23515, filed 5/9/73 and Order 73-4, § 296-24-23515, filed 5/7/73.]

WAC 296-24-23517 Warning device. Except for floor operated cranes a gong or other effective warning signal shall be provided for each crane equipped with a powered traveling mechanism.

[Order 73-5, § 296-24-23517, filed 5/9/73 and Order 73-4, § 296-24-23517, filed 5/7/73.]

WAC 296-24-23519 Inspection. (1) Inspection classification.

(a) Initial inspection. Prior to initial use all new and altered cranes shall be inspected to insure compliance with the provisions of these standards.

(b) Inspection procedure for cranes in regular service is divided into two general classifications based upon the intervals at which inspection should be performed. The intervals in turn are dependent upon the nature of the critical components of the crane and the degree of their exposure to wear, deterioration, or malfunction. The two general classifications are herein designated as "frequent" and "periodic" with respective intervals between inspections as defined below:

(i) Frequent inspection - daily to monthly intervals.

(ii) Periodic inspection - 1 to 12 month intervals.

(2) Frequent inspection. The following items shall be inspected for defects at intervals as defined in (1)(b) of this section or as specifically indicated, including observation during operation for any defects which might appear between regular inspections. All deficiencies such as listed shall be

carefully examined and determination made as to whether they constitute a safety hazard:

(a) All functional operating mechanisms for maladjustment interfering with proper operation. Daily.

(b) Deterioration or leakage in lines, tanks, valves, drain pumps, and other parts of air or hydraulic systems. Daily.

(c) Hooks with deformation or cracks. Visual inspection daily; monthly inspection with signed reports. For hooks with cracks or having more than 15 percent in excess of normal throat opening or more than 10° twist from the plane of the unbent hook refer to WAC 296-24-23523 (3)(c)(i).

(d) Hoist or load attachment chains, including end connections, for excessive wear, twist, distorted links interfering with proper function, or stretch beyond manufacturer's recommendations. Visual inspection daily; monthly inspection with signed report.

(e) Rope slings, including end connections, for excessive wear, broken wires, stretch, kinking, or twisting. Visual inspection daily; monthly inspection with signed report.

(f) All functional operating mechanisms for excessive wear of components.

(g) Rope reeving for noncompliance with manufacturer's recommendations.

(3) Periodic inspection. Complete inspections of the crane shall be performed at intervals as generally defined in (1)(b)(ii) of this section, depending upon its activity, severity of service, and environment, or as specifically indicated below. These inspections shall include the requirements of (2) of this section and in addition, the following items. Any deficiencies such as listed shall be carefully examined and determination made as to whether they constitute a safety hazard:

(a) Deformed, cracked, or corroded members.

(b) Loose bolts or rivets.

(c) Cracked or worn sheaves and drums.

(d) Worn, cracked or distorted parts such as pins, bearings, shafts, gears, rollers, locking and clamping devices.

(e) Excessive wear on brake system parts, linings, pawls, and ratchets.

(f) Load, wind, and other indicators over their full range, for any significant inaccuracies.

(g) Gasoline, diesel, electric, or other powerplants for improper performance or noncompliance with applicable safety requirements.

(h) Excessive wear of chain drive sprockets and excessive chain stretch.

(i) Crane hooks. Magnetic particle or other suitable crack detecting inspection should be performed at least once each year.

(j) Electrical apparatus, for signs of pitting or any deterioration of controller contactors, limit switches and pushbutton stations.

(4) Cranes not in regular use.

(a) A crane which has been idle for a period of 1 month or more, but less than 6 months, shall be given an inspection conforming with requirements of (2) of this section and WAC 296-24-23525(2), before placing in service.

(b) A crane which has been idle for a period of over 6 months shall be given a complete inspection conforming with requirements of (2) and (3) of this section and WAC 296-24-23525(2) before placing in service.

(c) Standby cranes shall be inspected at least semi-annually in accordance with requirements of (2) of this section and WAC 296-24-23525(2). Standby cranes exposed to adverse environment should be inspected more frequently.

[Order 73-5, § 296-24-23519, filed 5/9/73 and Order 73-4, § 296-24-23519, filed 5/7/73.]

WAC 296-24-23521 Testing. (1) Operational tests.

(a) Prior to initial use all new and altered cranes shall be tested to insure compliance with this section including the following functions:

- (i) Hoisting and lowering.
- (ii) Trolley travel.
- (iii) Bridge travel.
- (iv) Limit switches, locking and safety devices.

(b) The trip setting of hoist limit switches shall be determined by tests with an empty hook traveling in increasing speeds up to the maximum speed. The actuating mechanism of the limit switch shall be located so that it will trip the switch, under all conditions, in sufficient time to prevent contact of the hook or hook block with any part of the trolley.

(2) Rated load test. Prior to initial use all new, extensively repaired, and altered cranes should be tested by or under the direction of an appointed or authorized person, confirming the load rating of the crane. The load rating should not be more than 80 percent of the maximum load sustained during the test. Test loads shall not be more than 125 percent of the rated load unless otherwise recommended by the manufacturer. The tests reports shall be placed on file where readily available to appointed personnel.

[Order 73-5, § 296-24-23521, filed 5/9/73 and Order 73-4, § 296-24-23521, filed 5/7/73.]

WAC 296-24-23523 Maintenance. (1) Preventive maintenance. A preventive maintenance program based on the crane manufacturer's recommendations shall be established.

(2) Maintenance procedure.

(a) Before adjustments and repairs are started on a crane the following precautions shall be taken:

- (i) The crane to be repaired shall be run to a location where it will cause the least interference with other cranes and operations in the area.
- (ii) All controllers shall be at the off position.
- (iii) The main or emergency switch shall be open and locked in the open position.
- (iv) Warning or "out of order" signs shall be placed on the crane, also on the floor beneath or on the hook where visible from the floor.

(v) Where other cranes are in operation on the same runway, rail stops or other suitable means shall be provided to prevent interference with the idle crane.

(vi) Where temporary protective rail stops are not available, or practical, a signperson should be placed at a visual vantage point for observing the approach of an active crane and warning its operator when reaching the limit of safe distance from the idle crane.

(b) After adjustments and repairs have been made the crane shall not be operated until all guards have been reinstalled, safety devices reactivated and maintenance equipment removed.

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(3) Adjustments and repairs.

(a) Any unsafe conditions disclosed by the inspection requirements of WAC 296-24-23519 shall be corrected before operation of the crane is resumed. Adjustments and repairs shall be done only by designated personnel.

(b) Adjustments shall be maintained to assure correct functioning of components. The following are examples:

- (i) All functional operating mechanisms.
- (ii) Limit switches.
- (iii) Control systems.
- (iv) Brakes.
- (v) Power plants.

(c) Repairs or replacements shall be provided promptly as needed for safe operation. The following are examples:

(i) Accessory components, such as hooks, shall be carefully examined periodically and at the time of annual examination and inspection. Cracked or deformed hooks shall be discarded immediately and not reused on any equipment subject to the provisions of this code.

(ii) Load attachment chains and rope slings showing defects described in WAC 296-24-23519 (2)(d) and (e) respectively.

(iii) All critical parts which are cracked, broken, bent, or excessively worn.

(iv) Pendant control stations shall be kept clean and function labels kept legible.

[Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-24-23523, filed 7/20/94, effective 9/20/94; Order 73-5, § 296-24-23523, filed 5/9/73 and Order 73-4, § 296-24-23523, filed 5/7/73.]

WAC 296-24-23525 Rope inspection. (1) Running ropes. A thorough inspection of all ropes shall be made at least once a month and a full written, dated, and signed report of rope condition kept on file where readily available to appointed personnel. Any deterioration, resulting in appreciable loss of original strength, such as described below, shall be carefully noted and determination made as to whether further use of the rope would constitute a safety hazard:

(a) Reduction of rope diameter below nominal diameter due to loss of core support, internal or external corrosion, or wear of outside wires.

(b) A number of broken outside wires and the degree of distribution or concentration of such broken wires.

(c) Worn outside wires.

(d) Corroded or broken wires at end connections.

(e) Corroded, cracked, bent, worn, or improperly applied end connections.

(f) Severe kinking, crushing, cutting, or unstranding.

(2) Other ropes. All rope which has been idle for a period of a month or more due to shutdown or storage of a crane on which it is installed shall be given a thorough inspection before it is placed in service. This inspection shall be for all types of deterioration and shall be performed by an appointed person whose approval shall be required for further use of the rope. A written and dated report of the rope condition shall be available for inspection.

[Statutory Authority: RCW 49.17.040, 49.17.050, 49.17.240, chapters 43.22 and 42.30 RCW. 80-17-015 (Order 80-21), § 296-24-23525, filed 11/13/80; Order 73-5, § 296-24-23525, filed 5/9/73 and Order 73-4, § 296-24-23525, filed 5/7/73.]

WAC 296-24-23527 Handling the load. (1) Size of load. The crane shall not be loaded beyond its rated load except for test purposes as provided in WAC 296-24-23521.

(2) Attaching the load.

(a) The hoist chain or hoist rope shall be free from kinks or twists and shall not be wrapped around the load.

(b) The load shall be attached to the load block hook by means of slings or other approved devices.

(c) Care shall be taken to make certain that the sling clears all obstacles.

(3) Moving the load.

(a) The load shall be well secured and properly balanced in the sling or lifting device before it is lifted more than a few inches.

(b) Before starting to hoist the following conditions shall be noted:

(i) Hoist rope shall not be kinked.

(ii) Multiple part lines shall not be twisted around each other.

(iii) The hook shall be brought over the load in such a manner as to prevent swinging.

(c) During hoisting care shall be taken that:

(i) There is no sudden acceleration or deceleration of the moving load.

(ii) The load does not contact any obstructions.

(d) Cranes shall not be used for side pulls except when specifically authorized by a responsible person who has determined that the stability of the crane is not thereby endangered and that various parts of the crane will not be overstressed.

(e) While any employee is on the load or hook, there shall be no hoisting, lowering, or traveling.

(f) The employer shall require that the operator avoid carrying loads over people.

(g) The operator shall test the brakes each time a load approaching the rated load is handled. The brakes shall be tested by raising the load a few inches and applying the brakes.

(h) The load shall not be lowered below the point where less than two full wraps of rope remain on the hoisting drum.

(i) When two or more cranes are used to lift a load one qualified responsible person shall be in charge of the operation. The qualified person shall analyze the operation and instruct all personnel involved in the proper positioning, rigging of the load, and the movements to be made.

(j) The employer shall assure that the operator does not leave the control position while the load is suspended.

(k) When starting the bridge and when the load or hook approaches near or over personnel, the warning signal shall be sounded.

(4) Hoist limit switch.

(a) At the beginning of each operator's shift, the upper limit switch of each hoist shall be tried out under no load. Extreme care shall be exercised; the block shall be "inched" into the limit or run in at slow speed. If the switch does not operate properly, the appointed person shall be immediately notified.

(b) The hoist limit switch which controls the upper limit of travel of the load block shall never be used as an operating control.

[Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-24-23527, filed 7/20/94, effective 9/20/94; Order 73-5, § 296-24-23527, filed 5/9/73 and Order 73-4, § 296-24-23527, filed 5/7/73.]

WAC 296-24-23529 Operators. (1) Cranes shall be operated only by regular crane operators, authorized substitutes who have had adequate experience and training under the supervision of a competent operator, or by crane repairmen or inspectors.

(2) Crane operators must be able to communicate with others at the worksite sufficiently to understand the signs, notices, operation instructions, and the signal code in use to ensure safe operation of the crane.

(3) No minor under eighteen years of age shall be employed in occupations involving the operation of any power-driven hoisting apparatus or assisting in such operations by work such as hooking on, loading slings, rigging gear, etc.

(4) No person shall be permitted to operate a crane whose hearing or eye-sight is impaired, or who may be suffering from heart disease or similar ailments. The following physical qualifications shall be minimum requirements for overhead and gantry crane operators and trainees:

(a) They shall have vision of at least 20/30 in one eye, and 20/50 in the other, with or without corrective lenses.

(b) They shall be able to distinguish colors, regardless of position of colors, if color differential is required for operation.

(c) Their hearing, with or without hearing aid, must be adequate for a specific operation.

(d) They shall have sufficient strength, endurance, agility, coordination, and speed of reaction to meet the demands of equipment operation.

(e) They shall have normal depth perception, field of vision, reaction time, manual dexterity, coordination and no tendencies to dizziness or similar undesirable characteristics.

(f) Evidence of physical defects, or emotional instability which could render the operator or trainee a hazard to their self or others, or could interfere with their safe performance may be sufficient cause for disqualification. In such cases, specialized clinical or medical judgments or tests shall be required (which include annual medical certification for recovered heart attack patients).

(g) Evidence that an operator or trainee is subject to seizures or loss of physical control shall be sufficient reason for disqualification. Specialized medical tests shall be required to substantiate these conditions.

(5) Persons who have recovered from a heart attack shall be exempted from the provisions of subsection (4) of this section, as it pertains to their heart condition, provided:

(a) A medical release is obtained from their attending medical doctor.

(b) The release shall state that the operation of a crane will not present a hazard to their self or others.

(c) An examination by a medical doctor, and renewal of the work release certification is required annually.

(6) The operator shall be fully familiar with all crane rules and with the crane mechanism and its proper care. Needed adjustments or repairs shall be reported at once to the proper authority.

(7) The operator shall not eat, smoke or read while actually engaged in the operation of the crane, or operate the crane when physically unfit.

(8) The operator or someone especially designated shall properly lubricate all working parts of the crane.

(9) Cranes shall be kept clean.

(10) Whenever the operator finds the main or emergency switch open, it shall not be closed, even when starting on regular duty, until it is determined that no one is on or about the crane. The crane shall not be oiled or repaired unless the main switch is open.

(11) If the power goes off, the operator shall immediately throw all controllers to "off" position until the power is again available.

(12) Before closing the main switch the operator shall make sure that all controllers are in "off" position until the power is again available.

(13) The operator shall recognize signals only from the employee who is supervising the lift. Operating signals shall follow an established standard. Whistle signals may be used where one crane only is in operation.

(14) Bumping into runway stops or other cranes shall be avoided. When the operator is ordered to engage with or push other cranes, it shall be done with special care for the safety of persons on or below cranes.

(15) When lowering a load, the operator shall proceed carefully and make sure the load is under safe control.

(16) When leaving the cage the operator shall throw all controllers to "off" position and open the main switch.

(17) If the crane is located out-of-doors the operator shall lock the crane in a secure position to prevent it from being blown along or off the track by a severe wind.

(18) Operators shall not permit anyone to ride on the load or hooks, unless using a lifeline or safety device approved by the department.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-094, § 296-24-23529, filed 8/17/99, effective 12/1/99. Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-24-23529, filed 7/20/94, effective 9/20/94. 89-11-035 (Order 89-03), § 296-24-23529, filed 5/15/89, effective 6/30/89; Order 73-5, § 296-24-23529, filed 5/9/73 and Order 73-4, § 296-24-23529, filed 5/7/73.]

WAC 296-24-23531 Other requirements—General.

(1) Ladders.

(a) The employer shall insure that hands are free from encumbrances while personnel are using ladders.

(b) Articles which are too large to be carried in pockets or belts shall be lifted and lowered by hand line.

(2) Cabs.

(a) Necessary clothing and personal belongings shall be stored in such a manner as not to interfere with access or operation.

(b) Tools, oil cans, waste, extra fuses, and other necessary articles shall be stored in the tool box, and shall not be permitted to lie loose in or about the cab.

(3) Fire extinguishers. The employer shall insure that operators are familiar with the operation and care of fire extinguishers provided.

[Order 73-5, § 296-24-23531, filed 5/9/73 and Order 73-4, § 296-24-23531, filed 5/7/73.]

(2007 Ed.)

WAC 296-24-23533 Crane and derrick suspended personnel (work) platforms. (1) Scope and application. This standard applies to the design, construction, testing, use and maintenance of personnel platforms, and the hoisting of personnel platforms on the load lines of cranes or derricks.

(2) Definitions. For the purposes of this section, the following definitions apply:

(a) "Failure" means load refusal, breakage, or separation of components.

(b) "Hoist" (or hoisting) means all crane or derrick functions such as lowering, lifting, swinging, booming in and out or up and down, or suspending a personnel platform.

(c) "Load refusal" means the point where the ultimate strength is exceeded.

(d) "Maximum intended load" means the total load of all employees tools, materials, and other loads reasonably anticipated to be applied to a personnel platform or personnel platform component at any one time.

(e) "Runway" means a firm, level surface designed, prepared, and designated as a path of travel for the weight and configuration of the crane being used to lift and travel with the crane suspended platform. An existing surface may be used as long as it meets these criteria.

(3) General requirements. The use of a crane or derrick to hoist employees on a personnel platform is prohibited, except when the erection, use, and dismantling of conventional means of reaching the worksite, such as a personnel hoist, ladder, stairway, aerial lift, elevating work platform or scaffold, would be more hazardous, or is not possible because of structural design or worksite conditions.

(4) Operational criteria.

(a) Hoisting of the personnel platform shall be performed in a slow, controlled, cautious manner with no sudden movements of the crane or derrick, or the platform.

(b) Load lines shall be capable of supporting, without failure, at least seven times the maximum intended load, except that where rotation resistant rope is used, the lines shall be capable of supporting without failure, at least ten times the maximum intended load. The required design factor is achieved by taking the current safety factor of 3.5 and applying the fifty percent derating of the crane capacity.

(c) Load and boom hoist drum brakes, swing brakes, and locking devices such as pawls or dogs shall be engaged when the occupied personnel platform is in a stationary working position.

(d) Cranes and derricks with variable angle booms shall be equipped with a boom angle indicator, readily visible to the operator.

(e) Cranes with telescoping booms shall be equipped with a device to indicate clearly to the operator, at all times, the boom's extended length, or an accurate determination of the load radius to be used during the lift shall be made prior to hoisting personnel.

(f) A positive acting device shall be used which prevents contact between the load block or overhaul ball and the boom tip (anti-two-blocking device), or a system shall be used which deactivates the hoisting action before damage occurs in the event of a two-blocking situation (two block damage prevention feature).

(g) The load line hoist drum shall have a system or device on the power train, other than the load hoist brake,

which regulates the lowering rate of speed of the hoist mechanism (controlled load lowering). Free fall is prohibited.

(h) The crane shall be uniformly level within one percent of level grade and located on firm footing. Cranes equipped with outriggers shall have them all fully deployed following manufacturer's specifications, insofar as applicable, when hoisting employees.

(i) The total weight of the loaded personnel platform and related rigging shall not exceed fifty percent of the rated capacity for the radius and configuration of the crane or derrick.

(j) The use of machines having live booms (booms in which lowering is controlled by a brake without aid from other devices which slow the lowering speeds) is prohibited.

(k) Multiple-part line block: When a multiple-part line block is in use, a substantial strap shall be used between the crane hook and common ring, shackle, or other equivalent device, to eliminate employee exposure to the lines running through the block, and to the block itself.

(5) Rigging.

(a) Lifting bridles on box-type platforms shall consist of four legs of equal length, with one end securely shackled to each corner of the platform and the other end securely attached to a common ring, shackle, or other equivalent device to accommodate the crane hook, or a strap to the crane hook.

(b) Shackle bolts used for rigging of personnel platforms shall be secured against displacement.

(c) A substantial safety line shall pass through the eye of each leg of the bridle adjacent to the common ring, shackle, or equivalent device and be securely fastened with a minimum amount of slack to the lift line above the headache ball or to the crane hook itself.

(d) All eyes in wire rope sling shall be fabricated with thimbles.

(e) Wire rope, shackles, rings, master links, and other rigging hardware must be capable of supporting, without failure, at least five times the maximum intended load applied or transmitted to that component. Where rotation resistant wire rope is used for slings, they shall be capable of supporting without failure at least ten times the maximum intended load.

(f) Hooks on headache ball assemblies, lower load blocks, or other attachment assemblies shall be of a type that can be closed and locked, eliminating the hook throat opening. Alternatively, an alloy anchor type shackle with a bolt, nut, and retaining pin shall be used.

(g) Bridles and associated rigging for attaching the personnel platform to the hoist line shall be used only for the platform and the necessary employees, their tools and the materials necessary to do their work, and shall not be used for any other purpose when not hoisting personnel.

(6) Personnel platforms - design criteria.

(a) The personnel platform and suspension system shall be designed by a qualified engineer or a qualified person competent in structural design.

(b) The suspension system shall be designed to minimize tipping of the platform due to movement of employees occupying the platform.

(c) The personnel platform itself, except the guardrail system and body belt/harness anchorages, shall be capable of supporting, without failure, its own weight and at least five

times the maximum intended load based on a minimum allowance of five hundred pounds for the first person with light tools, and an additional two hundred fifty pounds for each additional person.

(d) Criteria for guardrail systems and body belt/harness anchorages are contained in Parts J-1 and J-2 of this chapter.

(e) The personnel platform shall be conspicuously posted with a plate or other permanent marking which indicates the weight of the platform and its rated load capacity or maximum intended load.

(7) Platform specifications.

(a) Each personnel platform shall be equipped with a guardrail system which meets the requirements of WAC 296-24-75007, and shall be enclosed at least from the toeboard to mid-rail with either solid construction or expanded metal having openings no greater than one-half inch (1.27cm).

(b) A grab rail shall be installed inside the entire perimeter of the personnel platform.

(c) Access gates, if installed, shall not swing outward during hoisting.

(d) Access gates, including sliding or folding gates, shall be equipped with a restraining device to prevent accidental opening.

(e) Headroom shall be provided which allows employees to stand upright in the platform.

(f) In addition to the use of hard hats, employees shall be protected by overhead protection on the personnel platform when employees are exposed to falling objects.

(g) All rough edges exposed to contact by employees shall be surfaced or smoothed in order to prevent injury to employees from punctures or lacerations.

(h) All welding of the personnel platform and its components shall be performed by a qualified welder familiar with the weld grades, types, and material specified in the platform design.

(i) Occupants of all personnel platforms shall wear a safety belt or harness and lanyard which meets the requirements of ANSI A10.14-1975.

(j) Box-type platform: The workers lanyard shall be secured to the work platform or guardrail of the work platform.

(k) Rescue platform:

(i) If the platform is used as a rescue vehicle, the injured worker shall be strapped into the stretcher or basket.

(ii) The basket shall then be secured by lanyard to an anchorage within the platform.

(l) Boatswains chair: The workers lanyard shall be secured to the lift line above the headache ball or to the crane hook itself.

(m) Barrel-type platform:

(i) The workers lanyard shall be secured to the lift line above the headache ball or to the crane hook itself.

(ii) A solid bar or rod shall be substantially attached in a rigid position to the bottom or side of the platform.

(iii) The side bar or rod shall extend a minimum of eight feet above the floor of the work platform.

(iv) The bottom of the barrel-type platform shall be of a convex shape to cause the platform to lay on its side when lowered to the ground or floor.

(v) Workers shall enter and exit from barrel-type platforms only when they are in an upright position, stable, and securely attached to the load line.

(vi) The employer shall use methods or devices which allow employees to safely enter or exit barrel-type platforms.

(8) Personnel platform loading.

(a) The personnel platform shall not be loaded in excess of its rated load capacity.

(b) The number of employees occupying the personnel platform shall not exceed the number required for the work being performed.

(c) Personnel platforms shall be used only for employees, their tools, and the materials necessary to do their work, and shall not be used to hoist only materials or tools when not hoisting personnel.

(d) Materials and tools for use during a personnel lift shall be secured to prevent displacement.

(e) Materials and tools for use during a personnel lift shall be evenly distributed within the confines of the platform while the platform is suspended.

(9) Trial lift, inspection, and prooftesting.

(a) A trial lift with the unoccupied personnel platform loaded at least to the anticipated liftweight shall be made from ground level, or any other location where employees will enter the platform, to each location at which the personnel platform is to be hoisted and positioned. This trial lift shall be performed immediately prior to placing personnel on the platform. The operator shall determine that all systems, controls, and safety devices are activated and functioning properly; that no interferences exist; and that all configurations necessary to reach those work locations will allow the operator to remain under the fifty percent limit of the hoist's rated capacity. Materials and tools to be used during the actual lift can be loaded in the platform, as provided in subsection (8)(d) and (e) of this section for the trial lift. A single trial lift may be performed at one time for all locations that are to be reached from a single set-up position.

(b) The trial lift shall be repeated prior to hoisting employees whenever the crane or derrick is moved and set up in a new location or returned to a previously used location. Additionally, the trial lift shall be repeated when the lift route is changed unless the operator determines that the route change is not significant (i.e., the route change would not affect the safety of hoisted employees).

(c) After the trial lift, and just prior to hoisting personnel, the platform shall be hoisted a few inches and inspected to ensure that it is secure and properly balanced. Employees shall not be hoisted unless the following conditions are determined to exist:

(i) Hoist ropes shall be free of kinks;

(ii) Multiple part lines shall not be twisted around each other;

(iii) The primary attachment shall be centered over the platform; and

(iv) The hoisting system shall be inspected if the load rope is slack to ensure all ropes are properly stated on drums and in sheaves.

(d) A visual inspection of the crane or derrick, rigging, personnel platform, and the crane or derrick base support or ground shall be conducted by a competent person immediately after the trial lift to determine whether the testing has

exposed any defect or produced any adverse effect upon any component or structure.

(e) Any defects found during inspections which create a safety hazard shall be corrected before hoisting personnel.

(f) At each job site, prior to hoisting employees on the personnel platform, and after any repair or modification, the platform and rigging shall be prooftested to one hundred twenty-five percent of the platform's rated capacity by holding it in a suspended position for five minutes with the test load evenly distributed on the platform (this may be done concurrently with the trial lift). After prooftesting, a competent person shall inspect the platform and rigging. Any deficiencies found shall be corrected and another prooftest shall be conducted. Personnel hoisting shall not be conducted until the prooftesting requirements are satisfied.

(g) The employer shall retain at the jobsite and produce when requested, documentation such as lift capacity information, verifying that the requirements of this standard have been met.

(10) Work practices.

(a) Employees shall keep all parts of the body inside the platform during raising, lowering, and positioning. This provision does not apply to an occupant of the platform performing the duties of a signal person.

(b) Before employees exit or enter a hoisted personnel platform that is not landed, the platform shall be secured to the structure where the work is to be performed, unless securing to the structure creates an unsafe situation.

(c) Tag lines shall be used unless their use creates an unsafe condition.

(d) The crane or derrick operator shall remain at the controls at all times when the crane engine is running and the platform is occupied.

(e) Hoisting of employees shall be promptly discontinued upon indication of any dangerous weather conditions or other impending danger.

(f) Employees being hoisted shall remain in continuous sight of and in direct communication with the operator or signal person. In those situations where direct visual contact with the operator is not possible, and the use of a signal person would create a greater hazard for that person, direct communication alone such as by radio may be used.

(g) Hand signals to the operator shall be in accordance with those prescribed by the applicable ANSI standard for the type of crane or lift in use unless voice communication equipment is utilized. Signals shall be discernable or audible at all times.

(h) Except over water, employees occupying the personnel platform shall use a body belt/harness system with lanyard appropriately attached to the lower load block or overhaul ball, or to a structural member within the personnel platform capable of supporting a fall impact for employees using the anchorage.

(i) No lifts shall be made on another of the crane's or derrick's load lines while personnel are suspended on a platform.

(11) Traveling.

(a) Hoisting of employees while the crane is traveling is prohibited except for portal, tower and locomotive cranes, or where the employer demonstrates that there is no less hazardous way to perform the work.

(b) Under any circumstances where a crane would travel while hoisting personnel, the employer shall implement the following procedures to safeguard employees:

(i) Crane travel shall be restricted to a fixed track or runway;

(ii) Travel shall be limited to the load radius of the boom used during the lift; and

(iii) The boom must be parallel to the direction of travel.

(c) A complete trial run shall be performed to test the route of travel before employees are allowed to occupy the platform. This trial run can be performed at the same time as the trial lift required by subsection (9)(a) of this section which tests the route of the lift.

(d) If travel is done with a rubber tired-carrier, the condition and air pressure of the tires shall be checked. The chart capacity for lifts on rubber shall be used for application of the fifty percent reduction of rated capacity. Notwithstanding subsection (4)(i) of this section, outriggers may be partially retracted as necessary for travel.

(12) Preload meeting.

(a) A meeting attended by the crane or derrick operator, signal person(s) (if necessary for the lift), employee(s) to be lifted, and the person responsible for the task to be performed shall be held to review the appropriate requirements of this section and the procedures to be followed.

(b) This meeting shall be held prior to the trial lift at each new location, and shall be repeated for any employees newly assigned to the operation.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 00-08-078, § 296-24-23533, filed 4/4/00, effective 7/1/00. Statutory Authority: Chapter 49.17 RCW. 96-09-030, § 296-24-23533, filed 4/10/96, effective 6/1/96; 91-03-044 (Order 90-18), § 296-24-23533, filed 1/10/91, effective 2/12/91.]

WAC 296-24-237 Construction, operation and maintenance—Chain and electric hoists. (1) Chain and electric hoists shall be of what is known as "all steel construction." No cast iron shall be used in parts subject to tension except drums, bearings or brake shoes.

(2) The chains shall be made of the best quality steel or iron with welded links.

(3) Chain and electric hoists shall have a factor of safety of at least five.

(4) Chain and electric hoists shall be equipped with an approved device which will automatically lock the load when hoisting is stopped.

(5) Electric hoists shall be provided with an approved limit stop to prevent the hoist block from traveling too far in case the operating handle is not released in time.

[Order 73-5, § 296-24-237, filed 5/9/73 and Order 73-4, § 296-24-237, filed 5/7/73.]

WAC 296-24-238 Air hoists. (1) To prevent piston rod lock nuts from becoming loose and allowing rod to drop when supporting a load, lock nut shall be secured to piston rod by a castellated nut and cotter-pin.

(2) A clevis or other means shall be used to prevent hoists cylinder becoming detached from hanger.

[Order 73-5, § 296-24-238, filed 5/9/73 and Order 73-4, § 296-24-238, filed 5/7/73.]

[Title 296 WAC—p. 678]

WAC 296-24-240 Crawler locomotive and truck cranes.

[Order 73-5, § 296-24-240, filed 5/9/73 and Order 73-4, § 296-24-240, filed 5/7/73.]

WAC 296-24-24001 Definitions. (1) A "crawler crane" consists of a rotating superstructure with power plant, operating machinery, and boom, mounted on a base, equipped with crawler treads for travel. Its function is to hoist and swing loads at various radii.

(2) A "locomotive crane" consists of a rotating superstructure with power plant, operating machinery and boom, mounted on a base or car equipped for travel on railroad track. It may be self-propelled or propelled by an outside source. Its function is to hoist and swing loads at various radii.

(3) A "truck crane" consists of a rotating superstructure with power plant, operating machinery and boom, mounted on an automotive truck equipped with a power plant for travel. Its function is to hoist and swing loads at various radii.

(4) A "wheel mounted crane" (wagon crane) consists of a rotating superstructure with power plant, operating machinery and boom, mounted on a base or platform equipped with axles and rubber-tired wheels for travel. The base is usually propelled by the engine in the superstructure, but it may be equipped with a separate engine controlled from the superstructure. Its function is to hoist and swing loads at various radii.

(5) An "accessory" is a secondary part or assembly of parts which contributes to the overall function and usefulness of a machine.

(6) "Appointed" means assigned specific responsibilities by the employer or the employer's representative.

(7) "ANSI" means the American National Standards Institute.

(8) An "angle indicator" (boom) is an accessory which measures the angle of the boom to the horizontal.

(9) The "axis of rotation" is the vertical axis around which the crane superstructure rotates.

(10) "Axle" means the shaft or spindle with which or about which a wheel rotates. On truck- and wheel-mounted cranes it refers to an automotive type of axle assembly including housings, gearing, differential, bearings, and mounting appurtenances.

(11) "Axle" (bogie) means two or more automotive-type axles mounted in tandem in a frame so as to divide the load between the axles and permit vertical oscillation of the wheels.

(12) The "base" (mounting) is the traveling base or carrier on which the rotating superstructure is mounted such as a car, truck, crawlers, or wheel platform.

(13) The "boom" (crane) is a member hinged to the front of the rotating superstructure with the outer end supported by ropes leading to a gantry or "A" frame and used for supporting the hoisting tackle.

(14) The "boom angle" is the angle between the longitudinal centerline of the boom and the horizontal. The boom longitudinal centerline is a straight line between the boom foot pin (heel pin) centerline and boom point sheave pin centerline.

(15) The "boom hoist" is a hoist drum and rope reeving system used to raise and lower the boom. The rope system may be all live reeving or a combination of live reeving and pendants.

(16) The "boom stop" is a device used to limit the angle of the boom at the highest position.

(17) A "brake" is a device used for retarding or stopping motion by friction or power means.

(18) A "cab" is housing which covers the rotating superstructure machinery and/or operator's station. On truck crane trucks a separate cab covers the driver's station.

(19) The "clutch" is a friction, electromagnetic, hydraulic, pneumatic, or positive mechanical device for engagement or disengagement of power.

(20) The "counterweight" is a weight used to supplement the weight of the machine in providing stability for lifting working loads.

(21) "Designated" means selected or assigned by the employer or the employer's representative as being qualified to perform specific duties.

(22) The "drum" is the cylindrical members around which ropes are wound for raising and lowering the load or boom.

(23) "Dynamic" (loading) means loads introduced into the machine or its components by forces in motion.

(24) The "gantry" (A-frame) is a structural frame, extending above the superstructure, to which the boom supports ropes are reeved.

(25) A "jib" is an extension attached to the boom point to provide added boom length for lifting specified loads. The jib may be in line with the boom or offset to various angles.

(26) "Load" (working) means the external load, in pounds, applied to the crane, including the weight of load-attaching equipment such as load blocks, shackles, and slings.

(27) "Load block" (upper) means the assembly of hook or shackle, swivel, sheaves, pins, and frame suspended from the boom point.

(28) "Load block" (lower) means the assembly of hook or shackle, swivel, sheaves, pins, and frame suspended by the hoisting ropes.

(29) A "load hoist" is a hoist drum and rope reeving system used for hoisting and lowering loads.

(30) "Load ratings" are crane ratings in pounds established by the manufacturer in accordance with WAC 296-24-24005.

(31) "Outriggers" are extendable or fixed metal arms, attached to the mounting base, which rest on supports at the outer ends.

(32) "Rail clamp" means a tong-like metal device, mounted on a locomotive crane car, which can be connected to the track.

(33) "Reeving" means a rope system in which the rope travels around drums and sheaves.

(34) "Rope" refers to a wire rope unless otherwise specified.

(35) "Side loading" means a load applied at an angle to the vertical plane of the boom.

(36) A "standby crane" is a crane which is not in regular service but which is used occasionally or intermittently as required.

(37) A "standing (guy) rope" is a supporting rope which maintains a constant distance between the points of attachment to the two components connected by the rope.

(38) "Structural competence" means the ability of the machine and its components to withstand the stresses imposed by applied loads.

(39) "Superstructure" means the rotating upper frame structure of the machine and the operating machinery mounted thereon.

(40) "Swing" means the rotation of the superstructure for movement of loads in a horizontal direction about the axis of rotation.

(41) "Swing mechanism" means the machinery involved in providing rotation of the superstructure.

(42) "Tackle" is an assembly of ropes and sheaves arranged for hoisting and pulling.

(43) "Transit" means the moving or transporting of a crane from one jobsite to another.

(44) "Travel" means the functions of the machine moving from one location to another, on a job site.

(45) The "travel mechanism" is the machinery involved in providing travel.

(46) "Wheelbase" means the distance between centers of front and rear axles. For a multiple axle assembly the axle center for wheelbase measurement is taken as the midpoint of the assembly.

(47) The "whipline" (auxiliary hoist) is a separate hoist rope system of lighter load capacity and higher speed than provided by the main hoist.

(48) A "winch head" is a power driven spool for handling of loads by means of friction between fiber or wire rope and spool.

[Order 73-5, § 296-24-24001, filed 5/9/73 and Order 73-4, § 296-24-24001, filed 5/7/73.]

WAC 296-24-24003 General requirements. (1) Application. This section applies to crawler cranes, locomotive cranes, wheel mounted cranes of both truck and self-propelled wheel type, and any variations thereof which retain the same fundamental characteristics. This section includes only cranes of the above types, which are basically powered by internal combustion engines or electric motors and which utilize drums and ropes. Cranes designed for railway and automobile wreck clearances are excepted. The requirements of these standards are applicable only to machines when used as lifting cranes.

(2) New and existing equipment. All new crawler, locomotive, and truck cranes constructed and utilized on or after the effective date of these standards, shall meet the design specifications of the American National Standard Safety Code for Crawler, Locomotive, and Truck Cranes, ANSI B 30.5-1968. Crawler, locomotive, and truck cranes constructed prior to the effective date of these standards should be modified to conform to those design specifications by December 31, 1973, unless it can be shown that the crane cannot feasibly or economically be altered and that the crane substantially complies with the requirements of this section. Replacement parts shall be of equal or better quality than the original equipment and suitable for the purpose. Repairs or modifications shall be such as to render the equipment equal to or better than the original construction or design.

(3) Designated personnel. Only designated personnel shall be permitted to operate a crane covered by this section.

[Order 74-27, § 296-24-24003, filed 5/7/74; Order 73-5, § 296-24-24003, filed 5/9/73 and Order 73-4, § 296-24-24003, filed 5/7/73.]

WAC 296-24-24005 Load ratings. (1) Load ratings—Where stability governs lifting performance.

(a) The margin of stability for determination of load ratings, with booms of stipulated lengths at stipulated working radii for the various types of crane mountings is established by taking a percentage of the loads which will produce a condition of tipping or balance with the boom in the least stable direction, relative to the mounting. The load ratings shall not exceed the following percentages for cranes, with the indicated types of mounting under conditions stipulated in (1)(b) and (c) of this section.

Type of crane mounting:	Maximum load ratings (percent of tipping loads)
Locomotive, without outriggers;	
Booms 60 feet or less	85
Booms over 60 feet	85 ¹
Locomotive, using outriggers fully extended	80
Crawler, without outriggers	75
Crawler, using outriggers fully extended	85
Truck and wheel mounted without outriggers or using outriggers fully extended	85

¹ Unless this results in less than 30,000 pound-feet net stabilizing moment about the rail, which shall be minimum with such booms.

(b) The following stipulation shall govern the application of the values in (1)(a) of this section for locomotive cranes:

(i) Tipping with or without the use of outriggers occurs when half of the wheels farthest from the load leave the rail.

(ii) The crane shall be standing on track which is level within 1 percent grade.

(iii) Radius of the load is the horizontal distance from a projection of the axis of rotation to the rail support surface, before loading, to the center of vertical hoist line or tackle with load applied.

(iv) Tipping loads from which ratings are determined shall be applied under static conditions only, i.e., without dynamic effect of hoisting, lowering, or swinging.

(v) The weight of all auxiliary handling devices such as hoist blocks, hooks, and slings shall be considered a part of the load rating.

(c) Stipulations governing the application of the values in (1)(a) of this section for crawler, truck, and wheel-mounted cranes shall be in accordance with Crane Load-Stability Test Code. Society of Automotive Engineers (SAE) J765.

Note: The effectiveness of these preceding stability factors will be influenced by such additional factors as freely suspended loads, track, wind, or ground conditions, condition and inflation of rubber tires, boom lengths, proper operating speeds for existing conditions, and, in general, careful and competent operation. All of these shall be taken into account by the user.

(2) Rated capacity chart. A chart indicating the manufacturer's rated capacity at all operating radii for all permissible

boom lengths and jib lengths with alternate ratings for optional equipment affecting such ratings shall be posted in all mobile type cranes and shall be readily visible to the operator in the normal operating position.

(3) Inspection classification. Initial inspection. Prior to initial use all new and altered cranes shall be inspected to insure compliance with provisions of these standards.

(4) All hooks shall be of the safety latch-type or the hook shall be moused.

[Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-24-24005, filed 7/20/94, effective 9/20/94. Statutory Authority: RCW 49.17.040, 49.17.150, and 49.17.240. 79-08-115 (Order 79-9), § 296-24-24005, filed 7/31/79; Order 73-5, § 296-24-24005, filed 5/9/73 and Order 73-4, § 296-24-24005, filed 5/7/73.]

WAC 296-24-24007 Inspection classification. (1) Regular inspection. Inspection procedure for cranes in regular service is divided into two general classifications based upon the intervals at which inspection should be performed. The intervals in turn are dependent upon the nature of the critical components of the crane and the degree of their exposure to wear, deterioration, or malfunction. The two general classifications are herein designated as "frequent" and "periodic" with respective intervals between inspections as defined below:

(a) Frequent inspection: Daily to monthly intervals.

(b) Periodic inspection: One- to 12-month intervals, or as specifically recommended by the manufacturer.

(2) Frequent inspection. Items such as the following shall be inspected for defects at intervals as defined in (2)(a) of this section or as specifically indicated including observation during operation for any defects which might appear between regular inspection. Any deficiencies such as listed shall be carefully examined and determination made as to whether they constitute a safety hazard:

(a) All control mechanisms for maladjustment interfering with proper operation: Daily.

(b) All control mechanisms for excessive wear of components and contamination by lubricants or other foreign matter.

(c) All safety devices for malfunction.

(d) Deterioration or leakage in air or hydraulic systems: Daily.

(e) Crane hooks with deformations or cracks. For hooks with cracks or having more than 15 percent in excess of normal throat opening or more than 10° twist from the plane of the unbent hook.

(f) Rope reeving for noncompliance with manufacturer's recommendations.

(g) Electrical apparatus for malfunctioning, signs of excessive deterioration, dirt, and moisture accumulation.

(3) Periodic inspection. Complete inspections of the crane shall be performed at intervals as generally defined in (2)(b) of this section depending upon its activity, severity of service, and environment, or as specifically indicated below. These inspections shall include the requirements of (3) of this section and in addition, items such as the following. Any deficiencies such as listed shall be carefully examined and determination made as to whether they constitute a safety hazard:

- (a) Deformed, cracked, or corroded members, in the crane structure and boom.
- (b) Loose bolts or rivets.
- (c) Cracked or worn sheaves and drums.
- (d) Worn, cracked, or distorted parts such as pins, bearings, shafts, gears, rollers and locking devices.
- (e) Excessive wear on brake and clutch system parts, linings, pawls, and ratchets.
- (f) Load, boom angle, and other indicators over their full range, for any significant inaccuracies.
- (g) Gasoline, diesel, electric, or other power plants for improper performance or noncompliance with safety requirements.
- (h) Excessive wear of chain-drive sprockets and excessive chain stretch.
- (i) Travel steering, braking, and locking devices, for malfunction.
- (j) Excessively worn or damaged tires.
- (4) Cranes not in regular use.

(a) A crane which has been idle for a period of one month or more, but less than 6 months, shall be given an inspection conforming with requirements of (3) of this section and WAC 296-24-24013 (2)(b) before placing in service.

(b) A crane which has been idle for a period of six months shall be given a complete inspection conforming with requirements of (3) and (4) of this section and WAC 296-24-24013 (2)(b) before placing in service.

(c) Standby cranes shall be inspected at least semi-annually in accordance with requirements of (3) of this section and WAC 296-24-24013 (2)(b). Such cranes which are exposed to adverse environment should be inspected more frequently.

(5) Inspection records. Written, dated, and signed inspection reports and records shall be made monthly on critical items in use such as brakes, crane hooks, and ropes. Records shall be kept readily available.

[Order 73-5, § 296-24-24007, filed 5/9/73 and Order 73-4, § 296-24-24007, filed 5/7/73.]

WAC 296-24-24009 Testing. (1) Operational tests.

(a) In addition to prototype tests and quality-control measures, the user of each new production crane shall require that it be tested and related data supplied by the manufacturer to the extent necessary to assure compliance with the operational requirements of this subsection including functions such as the following:

- (i) Load hoisting and lowering mechanisms
- (ii) Boom hoisting and lower mechanisms
- (iii) Swinging mechanism
- (iv) Travel mechanism
- (v) Safety devices

(b) Where the complete production crane is not supplied by one manufacturer such tests shall be conducted at final assembly.

(c) Certified production-crane test results shall be made available.

(2) Rated load test.

(a) Written reports shall be available showing test procedures and confirming the adequacy of repairs or alterations.

(b) Test loads shall not exceed 110 percent of the rated load at any selected working radius.

(c) Where rerating is necessary:

(i) Crawler, truck, and wheel-mounted cranes shall be tested in accordance with SAE Recommended Practice, Crane Load Stability Test Code J765 (April 1961).

(ii) Locomotive cranes shall be tested in accordance with WAC 296-24-24005 (1)(a) and (b).

(iii) Rerating test report shall be readily available.

(d) No cranes shall be rerated in excess of the original load ratings unless such rating changes are approved by the crane manufacturer or final assembler.

[Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-24-24009, filed 7/20/94, effective 9/20/94; Order 73-5, § 296-24-24009, filed 5/9/73 and Order 73-4, § 296-24-24009, filed 5/7/73.]

WAC 296-24-24011 Maintenance procedure. (1) Any unsafe conditions disclosed by the inspection requirements of this section shall be corrected before operation of the crane is resumed. Adjustments and repairs shall be done only by designated personnel.

(2) After adjustments and repairs have been made the crane shall not be operated until all guards have been reinstalled, safety devices reactivated, and maintenance equipment removed.

[Order 73-5, § 296-24-24011, filed 5/9/73 and Order 73-4, § 296-24-24011, filed 5/7/73.]

WAC 296-24-24013 Rope inspection. (1) Running ropes. A thorough inspection of all ropes in use shall be made at least once a month and a full written, dated, and signed report of rope condition kept on file where readily available. All inspections shall be performed by an appointed or authorized person. Any deterioration, resulting in appreciable loss of original strength, such as described below, shall be carefully noted and determination made as to whether further use of the rope would constitute a safety hazard:

(a) Reduction of rope diameter below nominal diameter due to loss of core support, internal, or external corrosion or wear of outside wires.

(b) A number of broken outside wires and the degree of distribution of concentration of such broken wires.

(c) Worn outside wires.

(d) Corroded or broken wires at end connections.

(e) Corroded, cracked, bent, worn, or improperly applied end connections.

(f) Severe kinking, crushing, cutting, or unstranding.

(2) Other ropes.

(a) Heavy wear and/or broken wires may occur in sections in contact with equalizer sheaves or other sheaves where rope travel is limited, or with saddles. Particular care shall be taken to inspect ropes at these locations.

(b) All rope which has been idle for a period of a month or more due to shut down or storage of a crane on which it is installed shall be given a thorough inspection before it is placed in service. This inspection shall be for all types of deterioration and shall be performed by an appointed or authorized person whose approval shall be required for further use of the rope. A written and dated report of the rope condition shall be available.

(c) Particular care shall be taken in the inspection of non-rotating rope.

[Order 73-5, § 296-24-24013, filed 5/9/73 and Order 73-4, § 296-24-24013, filed 5/7/73.]

WAC 296-24-24015 Handling the load. (1) Size of load.

(a) No crane shall be loaded beyond the rated load, except for test purposes as provided in WAC 296-24-24009.

(b) When loads which are limited by structural competence rather than by stability are to be handled, it shall be ascertained that the weight of the load has been determined within plus or minus 10 percent before it is lifted.

(2) Attaching the load.

(a) The hoist rope shall not be wrapped around the load.

(b) The load shall be attached to the hook by means of slings or other approved devices.

(3) Moving the load.

(a) The employer shall assure that:

(i) The crane is level and where necessary blocked properly.

(ii) The load is well secured and properly balanced in the sling or lifting device before it is lifted more than a few inches.

(b) Before starting to hoist, the following conditions shall be noted:

(i) Hoist rope shall not be kinked.

(ii) Multiple part lines shall not be twisted around each other.

(iii) The hook shall be brought over the load in such a manner as to prevent swinging.

(iv) If there is a slack rope condition, it should be determined that the rope is properly seated on the drum and in the sheaves.

(c) During hoisting care shall be taken that:

(i) There is no sudden acceleration or deceleration of the moving load.

(ii) The load does not contact any obstructions.

(d) Side loading of booms shall be limited to freely suspended loads. Cranes shall not be used for dragging loads sideways.

(e) No hoisting, lowering, swinging, or traveling shall be done while anyone is on the load or hook.

(f) The operator should avoid carrying loads over people.

(g) On truck mounted cranes, no loads shall be lifted over the front area except as approved by the crane manufacturer.

(h) The operator shall test the brakes each time a load approaching the rated load is handled by raising it a few inches and applying the brakes.

(i) Outriggers shall be used when the load to be handled at that particular radius exceeds the rated load without outriggers as given by the manufacturer for that crane. Where floats are used they shall be securely attached to the outriggers. Wood blocks used to support outriggers shall:

(i) Be strong enough to prevent crushing.

(ii) Be free from defects.

(iii) Be of sufficient width and length to prevent shifting or toppling under load.

(j) Neither the load nor the boom shall be lowered below the point where less than two full wraps of rope remain on their respective drums.

(k) Before lifting loads with locomotive cranes without using outriggers, means shall be applied to prevent the load from being carried by the truck springs.

(l) When two or more cranes are used to lift one load, one designated person shall be responsible for the operation. They shall be required to analyze the operation and instruct all personnel involved in the proper positioning, rigging of the load, and the movements to be made.

(m) In transit the following additional precautions shall be exercised.

(i) The boom shall be carried in line with the direction of motion.

(ii) The superstructure shall be secured against rotation, except when negotiating turns when there is an operator in the cab or the boom is supported on a dolly.

(iii) The empty hook shall be lashed or otherwise restrained so that it cannot swing freely.

(n) Before traveling a crane with load, a designated person shall be responsible for determining and controlling safety. Decisions such as position of load, boom location, ground support, travel route, and speed of movement shall be in accord with their determinations.

(o) A crane with or without load shall not be traveled with the boom so high that it may bounce back over the cab.

(p) When rotating the crane, sudden starts and stops shall be avoided. Rotational speed shall be such that the load does not swing out beyond the radii at which it can be controlled. A tag or restraint line shall be used when rotation of the load is hazardous.

(q) When a crane is to be operated at a fixed radius, the boom-hoist pawl or other positive locking device shall be engaged.

(r) Ropes shall not be handled on a winch head without the knowledge of the operator.

(s) While a winch head is being used, the operator shall be within convenient reach of the power unit control lever.

(4) Holding the load.

(a) The operator shall not be permitted to leave the control position while the load is suspended.

(b) No person should be permitted to stand or pass under a load on the hook.

(c) If the load must remain suspended for any considerable length of time, the operator shall hold the drum from rotating in the lowering direction by activating the positive controllable means of the operator's station.

[Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-24-24015, filed 7/20/94, effective 9/20/94; Order 73-5, § 296-24-24015, filed 5/9/73 and Order 73-4, § 296-24-24015, filed 5/7/73.]

WAC 296-24-24017 Other requirements. (1) Rail clamps. Rail clamps shall not be used as a means of restraining tipping of a locomotive crane.

(2) Ballast or counterweight. Cranes shall not be operated without the full amount of any ballast or counterweight in place as specified by the maker, but truck cranes that have dropped the ballast or counterweight may be operated temporarily with special care and only for light loads without full ballast or counterweight in place. The ballast or counterweight in place specified by the manufacturer shall not be exceeded.

(3) Cabs.

(a) Necessary clothing and personal belongings shall be stored in such a manner as to not interfere with access or operation.

(b) Tools, oil cans, waste, extra fuses, and other necessary articles shall be stored in the tool box, and shall not be permitted to lie loose in or about the cab.

(4) Refueling.

(a) Refueling with small portable containers shall be done with an approved safety type can equipped with an automatic closing cap and flame arrester. Refer to WAC 296-24-58501(19) for definition of approved.

(b) Machines shall not be refueled with the engine running.

(5) Fire extinguishers.

(a) A carbon dioxide, dry chemical, or equivalent fire extinguisher shall be kept in the cab or vicinity of the crane.

(b) Operating and maintenance personnel shall be made familiar with the use and care of the fire extinguishers provided.

(6) Swinging locomotive cranes. A locomotive crane shall not be swung into a position where railway cars on an adjacent track might strike it, until it has been ascertained that cars are not being moved on the adjacent track and proper flag protection has been established.

[Statutory Authority: Chapter 49.17 RCW. 88-23-054 (Order 88-25), § 296-24-24017, filed 11/14/88; Order 73-5, § 296-24-24017, filed 5/9/73 and Order 73-4, § 296-24-24017, filed 5/7/73.]

WAC 296-24-24019 Operating near overhead electric power lines. (1) For operations near overhead electric lines see chapter 296-24 WAC Part L.

(2) Boom guards. Cage-type boom guards, insulating links, or proximity warning devices may be used on cranes, but the use of such devices shall not operate to alter the requirements of (1) of this section.

(3) Notification. Before the commencement of operations near electrical lines, the owners of the lines or their authorized representative shall be notified and provided with all pertinent information. The cooperation of the owner shall be requested.

(4) Overhead wires. Any overhead wire shall be considered to be an energized line unless and until the person owning such line or the electrical utility authorities indicate that it is not an energized line.

[Statutory Authority: Chapter 49.17 RCW. 91-24-017 (Order 91-07), § 296-24-24019, filed 11/22/91, effective 12/24/91; Order 73-5, § 296-24-24019, filed 5/9/73 and Order 73-4, § 296-24-24019, filed 5/7/73.]

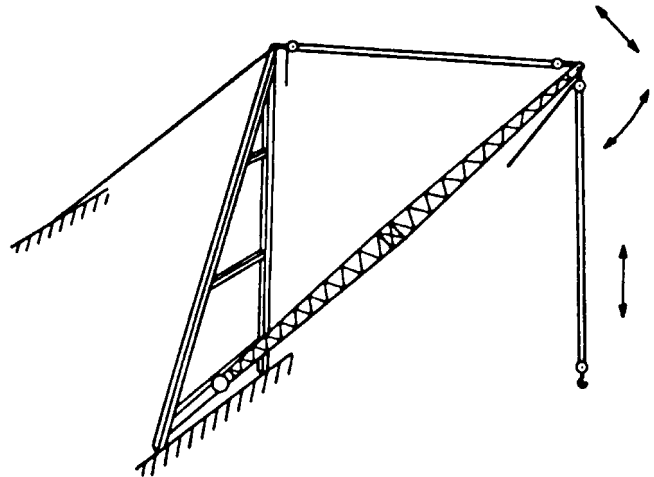
WAC 296-24-245 Derricks.

[Order 73-5, § 296-24-245, filed 5/9/73 and Order 73-4, § 296-24-245, filed 5/7/73.]

WAC 296-24-24501 Definitions. (1) A "derrick" is an apparatus consisting of a mast or equivalent member held at the head by guys or braces, with or without a boom, for use with a hoisting mechanism and operating ropes.

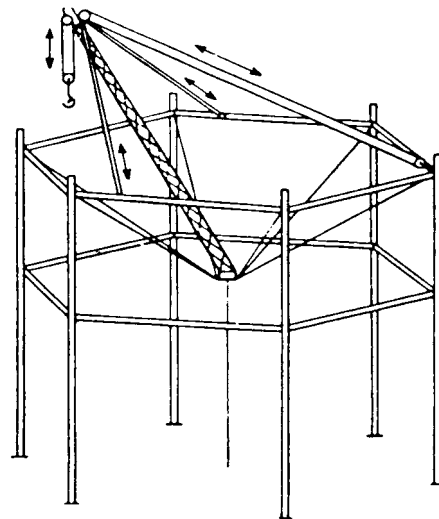
(2) "A-frame derrick" means a derrick in which the boom is hinged from a cross member between the bottom ends of two upright members spread apart at the lower ends and joined at the top; the boom point secured to the junction of the side members, and the side members are braced or guyed from this junction point.

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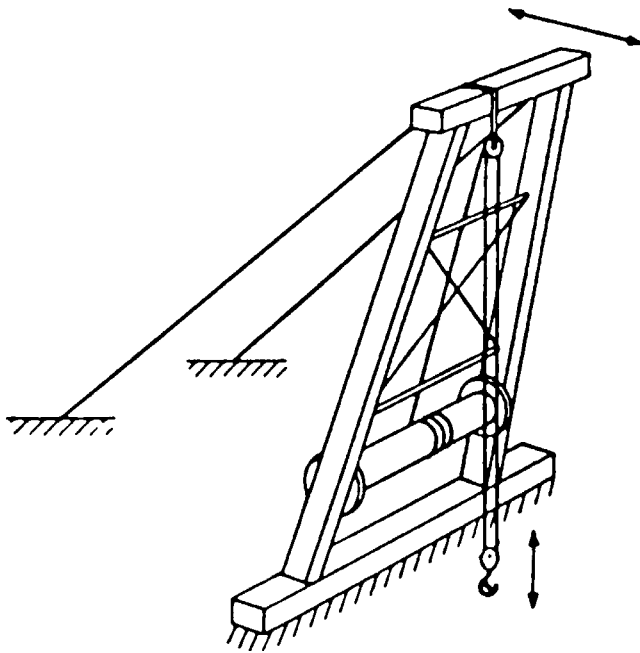
A-FRAME

(3) A "basket derrick" is a derrick without a boom, similar to a gin pole with its base supported by ropes attached to corner posts or other parts of the structure. The base is at a lower elevation than its supports. The location of the base of a basket derrick can be changed by varying the length of the rope supports. The top of the pole is secured with multiple reeved guys to position the top of the pole to the desired location by varying the length of the upper guy lines. The load is raised and lowered by ropes through a sheave or block secured to the top of the pole.



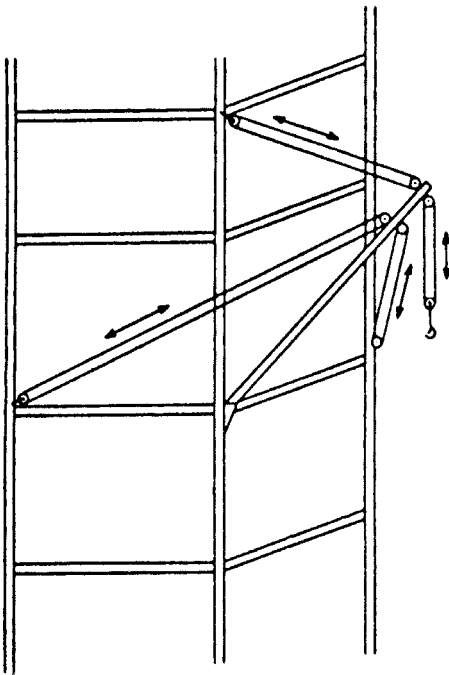
BASKET

(4) "Breast derrick" means a derrick without boom. The mast consists of two side members spread farther apart at the base than at the top and tied together at top and bottom by rigid members. The mast is prevented from tipping forward by guys connected to its top. The load is raised and lowered by ropes through a sheave or block secured to the top cross-piece.



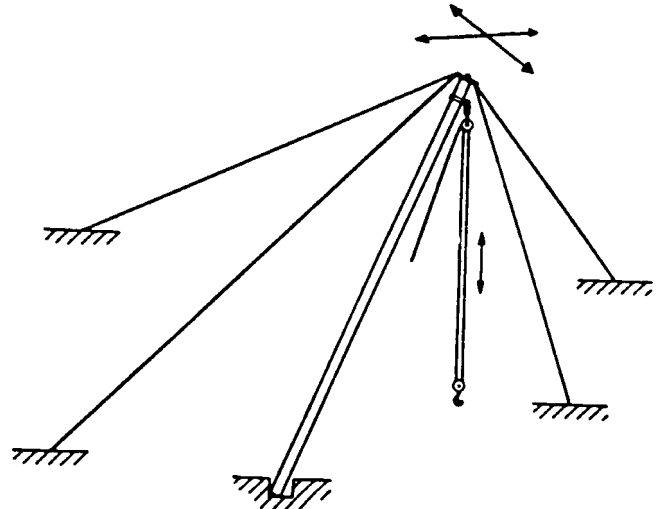
BREAST

(5) "Chicago boom derrick" means a boom which is attached to a structure, and outside upright member of the structure serving as the mast, and the boom being stepped in a fixed socket clamped to the upright. The derrick is complete with load, boom, and boom point swing line falls.



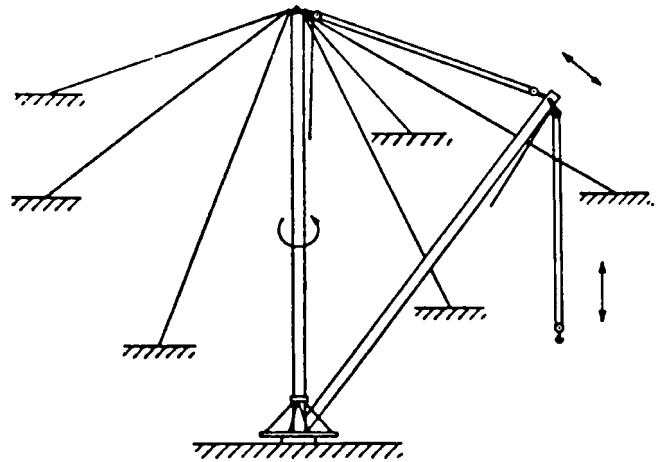
CHICAGO BOOM

(6) A "gin pole derrick" is a derrick without a boom. Its guys are so arranged from its top as to permit leaning the mast in any direction. The load is raised and lowered by ropes reeved through sheaves or blocks at the top of the mast.



GIN POLE

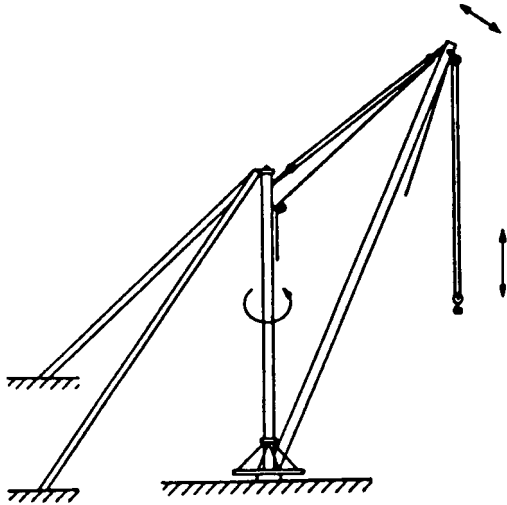
(7) "Guy derrick" means a fixed derrick consisting of a mast capable of being rotated, supported in a vertical position by guys, and a boom whose bottom end is hinged or pivoted to move in a vertical plane with a reeved rope between the head of the mast and the boom point for raising and lowering the boom, and a reeved rope from the boom point for raising and lowering the load.



GUY

(8) "Shearleg derrick" means a derrick without a boom and similar to a breast derrick. The mast, wide at the bottom and narrow at the top, is hinged at the bottom and has its top secured by a multiple reeved guy to permit handling loads at various radii by means of load tackle suspended from the mast top.

(9) A "stiffleg derrick" is a derrick similar to a guy derrick except that the mast is supported or held in place by two or more stiff members, called stifflegs, which are capable of resisting either tensile or compressive forces. Sills are generally provided to connect the lower ends of the stifflegs to the foot of the mast.



STIFF LEG

(10) "Appointed" means assigned specific responsibilities by the employer or the employer's representative.

(11) "ANSI" means the American National Standards Institute.

(12) A boom is a timber or metal section or strut, pivoted or hinged at the heel (lower end) at a location fixed in height on a frame or mast or vertical member, and with its point (upper end) supported by chains, ropes, or rods to the upper end of the frame mast, or vertical member. A rope for raising and lowering the load is reeved through sheaves or a block at the boom point. The length of the boom shall be taken as the straight line distance between the axis of the foot pin and the axis of the boom point sheave pin, or where used, the axis of the upper load block attachment pin.

(13) "Boom harness" means the block and sheave arrangement on the boom point to which the topping lift cable is reeved for lowering and raising the boom.

(14) The "boom point" is the outward end of the top section of the boom.

(15) "Derrick bullwheel" means a horizontal ring or wheel, fastened to the foot of a derrick, for the purpose of turning the derrick by means of ropes leading from this wheel to a powered drum.

(16) "Designated" means selected or assigned by the employer or employer's representative as being qualified to perform specific duties.

(17) "Eye" means a loop formed at the end of a rope by securing the dead end to the live end at the base of the loop.

(18) A "fiddle block" is a block consisting of two sheaves in the same plane held in place by the same cheek plates.

(19) The "foot bearing" or "foot block" (sill block) is the lower support on which the mast rotates.

(20) A "gudgeon pin" is a pin connecting the mast cap to the mast allowing rotation of the mast.

(21) A "guy" is a rope used to steady or secure the mast or other member in the desired position.

(22) "Load, working" means the external load, in pounds, applied to the derrick, including the weight of load

attaching equipment such as load blocks, shackles, and slings.

(23) "Load block, lower" means the assembly of sheaves, pins, and frame suspended by the hoisting rope.

(24) "Load block, upper" means the assembly of sheaves, pins, and frame suspended from the boom.

(25) "Mast" means the upright member of the derrick.

(26) "Mast cap (spider)" means the fitting at the top of the mast to which the guys are connected.

(27) "Reeving" means a rope system in which the rope travels around drums and sheaves.

(28) "Rope" refers to wire rope unless otherwise specified.

(29) "Safety hook" means a hook with a latch to prevent slings or load from accidentally slipping off the hook.

(30) "Side loading" is a load applied at an angle to the vertical plane of the boom.

(31) The "sill" is a member connecting the foot block and stiffleg or a member connecting the lower ends of a double member mast.

(32) A "standby derrick" is a derrick not in regular service which is used occasionally or intermittently as required.

(33) "Stiff leg" means a rigid member supporting the mast at the head.

(34) "Swing" means rotation of the mast and/or boom for movements of loads in a horizontal direction about the axis of rotation.

[Order 73-5, § 296-24-24501, filed 5/9/73 and Order 73-4, § 296-24-24501, filed 5/7/73.]

WAC 296-24-24503 General requirements. (1) Application. This section applies to guy, stiffleg, basket, breast, gin pole, Chicago boom and A-frame derricks of the stationary type, capable of handling loads at variable reaches and powered by hoists through systems of rope reeving, used to perform lifting hook work, single or multiple line bucket work, grab, grapple, and magnet work. Derricks may be permanently installed for temporary use as in construction work. The requirements of this section also apply to any modification of these types which retain their fundamental features, except for floating derricks.

(2) New and existing equipment. All new derricks constructed and installed on or after the effective date of these standards shall meet the design specifications of the "American National Standards Institute, Safety Code for Derricks, ANSI B30.6-1969." Derricks constructed prior to the effective date of these standards should be modified to conform to these design specifications by December 31, 1973 unless it can be shown that the derrick cannot feasibly or economically be altered and that the derrick substantially complies with the requirements of this section.

(a) Operating controls shall be marked or an explanation of the controls shall be posted in full view of the operator.

(b) Cranes or derricks having a movable working boom shall have a radius or boom angle indicator installed. This shall be located where the operator can readily read it from the normal operating position.

(c) Top of boom painted. The top six feet of the boom or jib shall be painted bright yellow.

(3) Designated personnel. Only designated personnel shall be permitted to operate a derrick covered by this section.

[Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-24-24503, filed 7/20/94, effective 9/20/94; Order 76-6, § 296-24-24503, filed 3/1/76; Order 73-5, § 296-24-24503, filed 5/9/73 and Order 73-4, § 296-24-24503, filed 5/7/73.]

WAC 296-24-24505 Load ratings. (1) Rated load marking. For permanently installed derricks with fixed lengths of boom, guy, and mast, a substantial, durable, and clearly legible rating chart shall be provided with each derrick and securely affixed where it is visible to personnel responsible for the safe operation of the equipment. The chart shall include the following data:

(a) Manufacturer's approved load ratings at corresponding ranges of boom angle or operating radii.

(b) Specific lengths of components on which the load ratings are based.

(c) Required parts for hoist reeving. Size and construction of rope may be shown either on the rating chart or in the operating manual.

(2) Nonpermanent installations. For nonpermanent installations, the employer shall provide sufficient information from which capacity charts can be prepared for the particular installation. The capacity charts shall be located at the derricks or the jobsite office.

[Order 73-5, § 296-24-24505, filed 5/9/73 and Order 73-4, § 296-24-24505, filed 5/7/73.]

WAC 296-24-24507 Inspection. (1) Inspection classification.

(a) Prior to initial use all new and altered derricks shall be inspected to insure compliance with the provisions of these standards.

(b) Inspection procedure for derricks in regular service is divided into two general classifications based upon the intervals at which inspection should be performed. The intervals in turn are dependent upon the nature of the critical components of the derrick and the degree of their exposure to wear, deterioration, or malfunction. The two general classifications are herein designated as frequent and periodic with respective intervals between inspections as defined below:

(i) Frequent inspection - daily to monthly intervals.

(ii) Periodic inspection - 1- to 12-month intervals, or as specified by the manufacturer.

(2) Frequent inspection. Items such as the following shall be inspected for defects at intervals as defined in (1)(b)(i) of this section or as specifically indicated, including observation during operation for any defects which might appear between regular inspections. Deficiencies shall be carefully examined for any safety hazard.

(a) All control mechanisms: Inspect daily for adjustment, wear, and lubrication.

(b) All chords and lacing: Inspect daily, visually.

(c) Tension in guys: Daily.

(d) Plumb of the mast.

(e) Deterioration or leakage in air or hydraulic systems: Daily.

(f) Derrick hooks for deformations or cracks; for hooks with cracks or having more than 15 percent in excess of nor-

mal throat opening or more than 10° twist from the plane of the unbent hook, refer to WAC 296-24-24511 (3)(c).

(g) Rope reeving; visual inspection for noncompliance with derrick manufacturer's recommendations.

(h) Hoist brakes, clutches, and operating levers: Check daily for proper functioning before beginning operations.

(i) Electrical apparatus for malfunctioning, signs of excessive deterioration, dirt, and moisture accumulation.

(3) Periodic inspection.

(a) Complete inspections of the derrick shall be performed at intervals as generally defined in (1)(b)(ii) of this section depending upon its activity, severity of service, and environment, or as specifically indicated below. These inspections shall include the requirements of (2) of this section and in addition, items such as the following. Deficiencies shall be carefully examined and a determination made as to whether they constitute a safety hazard:

(i) Structural members for deformations, cracks, and corrosion.

(ii) Bolts or rivets for tightness.

(iii) Parts such as pins, bearings, shafts, gears, sheaves, drums, rollers, locking and clamping devices, for wear, cracks, and distortion.

(iv) Gudgeon pin for cracks, wear, and distortion each time the derrick is to be erected.

(v) Power plants for proper performance and compliance with applicable safety requirements.

(vi) Hooks: Magnetic particle or other suitable crack detecting inspection should be performed at least once each year.

(b) Foundation or supports shall be inspected for continued ability to sustain the imposed loads.

(4) Derricks not in regular use.

(a) A derrick which has been idle for a period of 1 month or more, but less than 6 months, shall be given an inspection conforming with requirements of (2) of this section and WAC 296-24-24513(2) before placing in service.

(b) A derrick which has been idle for a period of over 6 months shall be given a complete inspection conforming with requirements of (2) and (3) of this section and WAC 296-24-24513(3) before placing in service.

(c) Standby derricks shall be inspected at least semiannually in accordance with requirements of (2) of this section and WAC 296-24-24513(3). Those exposed to adverse environment should be inspected more frequently.

[Order 73-5, § 296-24-24507, filed 5/9/73 and Order 73-4, § 296-24-24507, filed 5/7/73.]

WAC 296-24-24509 Testing. (1) Operational tests. Prior to initial use all new and altered derricks shall be tested to ensure compliance with this section including the following functions:

(a) Load hoisting and lowering.

(b) Boom up and down.

(c) Swing.

(d) Operation of clutches and brakes of hoist.

(2) Anchorages. All anchorages shall be approved by the appointed person. Rock and hairpin anchorages may require special testing.

[Order 73-5, § 296-24-24509, filed 5/9/73 and Order 73-4, § 296-24-24509, filed 5/7/73.]

WAC 296-24-24511 Maintenance. (1) Preventive maintenance. A preventive maintenance program based on the derrick manufacturer's recommendations shall be established.

(2) Maintenance procedure.

(a) Before adjustments and repairs are started on a derrick the following precautions shall be taken:

(i) The derrick to be repaired shall be arranged so it will cause the least interference with other equipment and operations in the area.

(ii) All hoist drum dogs shall be engaged.

(iii) The main or emergency switch shall be locked in the open position, if an electric hoist is used.

(iv) Warning or out of order signs shall be placed on the derrick and hoist.

(v) The repairs of booms or derricks shall either be made when the booms are lowered and adequately supported or safely tied off.

(vi) A good communication system shall be set up between the hoist operator and the appointed individual in charge of the derrick operations before any work on the equipment is started.

(vii) Welding repairs shall be approved by an appointed person.

(b) After adjustments and repairs have been made the derrick shall not be operated until all guards have been reinstalled, safety devices reactivated, and maintenance equipment removed.

(3) Adjustments and repairs.

(a) Any unsafe conditions disclosed by inspection shall be corrected before operation of the derrick is resumed.

(b) Adjustments shall be maintained to assure correct functioning of components.

(c) Repairs or replacements shall be provided promptly as needed for safe operation. The following are examples of conditions requiring prompt repair or replacement:

(i) Hooks showing defects described in WAC 296-24-24507 (2)(f) shall be discarded.

(ii) All critical parts which are cracked, broken, bent, or excessively worn.

(iii) Pitted or burned electrical contacts should be corrected only by replacement and in sets. Controller parts should be lubricated as recommended by the manufacturer.

(iv) All replacement and repaired parts shall have at least the original safety factor.

[Order 73-5, § 296-24-24511, filed 5/9/73 and Order 73-4, § 296-24-24511, filed 5/7/73.]

WAC 296-24-24513 Rope inspection. (1) Running ropes. A thorough inspection of all ropes in use shall be made at least once a month and a full written, dated, and signed report of rope condition kept on file where readily available. Any deterioration, resulting in appreciable loss of original strength, such as described below, shall be carefully noted and determination made as to whether further use of the rope would constitute a safety hazard:

(a) Reduction of rope diameter below nominal diameter due to loss of core support, internal or external corrosion, or wear of outside wires.

(b) A number of broken outside wires and the degree of distribution or concentration of such broken wires.

(c) Worn outside wires.

(d) Corroded or broken wires at end connections.

(e) Corroded, cracked, bent, worn, or improperly applied end connections.

(f) Severe kinking, crushing, cutting, or unstranding.

(2) Idle ropes. All rope which has been idle for a period of a month or more due to shutdown or storage of derrick on which it is installed shall be given a thorough inspection before it is placed in service. This inspection shall be for all types of deterioration. A written and dated report of the rope condition shall be available.

(3) Nonrotating ropes. Particular care shall be taken in the inspection of nonrotating rope.

Note: Limited travel ropes. Heavy wear and/or broken wires may occur in sections in contact with equalizer sheaves or other sheaves where rope travel is limited, or with saddles. Particular care shall be taken to inspect ropes at these locations.

[Order 73-5, § 296-24-24513, filed 5/9/73 and Order 73-4, § 296-24-24513, filed 5/7/73.]

WAC 296-24-24515 Operations of derricks. Derrick operation shall be directed only by the individual specifically designated for that purpose.

[Order 73-5, § 296-24-24515, filed 5/9/73 and Order 73-4, § 296-24-24515, filed 5/7/73.]

WAC 296-24-24517 Handling the load. (1) Size of load.

(a) No derrick shall be loaded beyond the rated load.

(b) When loads approach the maximum rating of the derrick, it shall be ascertained that the weight of the load has been determined within plus or minus 10 percent before it is lifted.

(2) Attaching the load.

(a) The hoist rope shall not be wrapped around the load.

(b) The load shall be attached to the hook by means of slings or other suitable devices.

(3) Moving the load.

(a) The load shall be well secured and properly balanced in the sling or lifting device before it is lifted more than a few inches.

(b) Before starting to hoist, the following conditions shall be noted:

(i) Hoist rope shall not be kinked.

(ii) Multiple part lines shall not be twisted around each other.

(iii) The hook shall be brought over the load in such a manner as to prevent swinging.

(iv) If there is a slack rope condition, it should be determined that the rope is properly seated on the drum and in the sheaves.

(c) During hoisting, care shall be taken that:

(i) There is no sudden acceleration or deceleration of the moving load.

(ii) Load does not contact any obstructions.

(d) A derrick shall not be used for side loading except when specifically authorized by a responsible person who has determined that the various structural components will not be overstressed.

(e) No hoisting, lowering, or swinging shall be done while anyone is on the load or hook.

(f) The operator shall avoid carrying loads over people.

(g) The operator shall test the brakes each time a load approaching the rated load is handled by raising it a few inches and applying the brakes.

(h) Neither the load nor boom shall be lowered below the point where less than two full wraps of rope remain on their respective drums.

(i) When rotating a derrick, sudden starts and stops shall be avoided. Rotational speed shall be such that the load does not swing out beyond the radius at which it can be controlled.

(j) Boom and hoisting rope systems shall not be twisted.

(4) Holding the load.

(a) The operator shall not be allowed to leave the control position while the load is suspended.

(b) People should not be permitted to stand or pass under a load on the hook.

(c) If the load must remain suspended for any considerable length of time, a dog, or pawl and ratchet, or other equivalent means, rather than the brake alone, shall be used to hold the load.

(5) Use of winch heads.

(a) Ropes shall not be handled on a winch head without the knowledge of the operator.

(b) While a winch head is being used, the operator shall be within convenient reach of the power unit control lever.

(6) Securing boom. Dogs, pawls, or other positive holding mechanism on the hoist shall be engaged. When not in use, the derrick boom shall:

(a) Be laid down;

(b) Be secured to a stationary member, as nearly under the head as possible, by attachment of a sling to the load block; or

(c) Be hoisted to a vertical position and secured to the mast.

[Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-24-24517, filed 7/20/94, effective 9/20/94; Order 73-5, § 296-24-24517, filed 5/9/73 and Order 73-4, § 296-24-24517, filed 5/7/73.]

WAC 296-24-24519 Other requirements. (1) Guards.

(a) Exposed moving parts, such as gears, ropes, set-screws, projecting keys, chains, chain sprockets, and reciprocating components, which constitute a hazard under normal operating conditions shall be guarded.

(b) Guards shall be securely fastened.

(c) Each guard shall be capable of supporting without permanent distortion, the weight of a two hundred-pound person unless the guard is located where it is impossible for a person to step on it.

(2) Hooks.

(a) Hooks shall meet the manufacturer's recommendations and shall not be overloaded.

(b) Safety latch type hooks shall be used or the hooks shall be moused.

(3) Fire extinguishers.

(a) A carbon dioxide, dry chemical, or equivalent fire extinguisher shall be kept in the immediate vicinity of the derrick.

(b) Operating and maintenance personnel shall be familiar with the use and care of the fire extinguishers proved.

(4) Refueling.

(a) Refueling with portable containers shall be done with approved safety type containers equipped with automatic closing spout and flame arrester. Refer to WAC 296-24-58501(19) for definition of approved.

(b) Machines shall not be refueled with the engine running.

(5) Operating near electric powerlines. For operations near overhead electric lines see chapter 296-24 WAC Part L.

(6) Cab or operating enclosure.

(a) Necessary clothing and personnel belongings shall be stored in such a manner as to not interfere with access or operation.

(b) Tools, oilcans, waste, extra fuses, and other necessary articles shall be stored in the toolbox, and shall not be permitted to lie loose in or about the cab or operating enclosure.

[Statutory Authority: Chapter 49.17 RCW. 91-24-017 (Order 91-07), § 296-24-24519, filed 11/22/91, effective 12/24/91; 88-23-054 (Order 88-25), § 296-24-24519, filed 11/14/88. Statutory Authority: RCW 49.17.040, 49.17.150, and 49.17.240. 79-08-115 (Order 79-9), § 296-24-24519, filed 7/31/79; Order 73-5, § 296-24-24519, filed 5/9/73 and Order 73-4, § 296-24-24519, filed 5/7/73.]

WAC 296-24-293 "A" frames. (1) All timbers for "A" frames shall be of correct size, length, and condition to sustain the maximum contemplated loads.

(2) "A" frame timbers shall be braced with two spreaders spaced one-quarter the length of the "A" frame from each end. Cross bracing shall cross between the two spreaders. Bracing material shall be not less than two-thirds of the rated strength of the "A" frame timbers.

(3) Tie rods (staybolts) of not less than one-twelfth the diameter of the main "A" frame timbers shall be used. Tie rods shall be placed directly above the upper spreader and directly below the lower spreader. Ends of bolts shall be secured at each end with malleable washers and nuts.

(4) The base of the "A" frame shall be securely anchored. Elevating type "A" frames shall be set in pinion-type sockets. Pinion bases shall be securely anchored.

(5) Guy lines shall be of sufficient strength to carry the load imposed upon them and shall be securely fastened in place.

[Order 73-5, § 296-24-293, filed 5/9/73 and Order 73-4, § 296-24-293, filed 5/7/73.]

WAC 296-24-294 Rigging.

[Order 73-5, § 296-24-294, filed 5/9/73 and Order 73-4, § 296-24-294, filed 5/7/73.]

WAC 296-24-29401 Wire rope. (1) Safe loads. Whenever used in connection with work, employment, occupations or uses to which these standards are applicable, wire rope shall not be subjected to loads in excess of one-fifth the breaking load as given in the schedule of the cable manufacturer. Except as required in standard for material hoists.

(2) Condemned. When cables deteriorate through rust, wear, broken wires, undue strain or other conditions to the extent of fifteen percent of their original strength, use of cables shall be discontinued.

(3) Straps and ribbons. The strap or steel ribbon type of cable shall not be used in the suspension of scaffolding.

(4) Inspections. There shall be not less than monthly inspection of all wire rope in use, and all wire rope must be inspected before put into use.

(5) Fastening. The following methods of fastening and attaching wire rope shall be adhered to:

(a) Sockets. The end of wire rope to be set into socket fittings held securely with molten babbitt or zinc (not lead). The wires of the cable shall be frayed out and each wire bent toward the outside of socket, so that the end of each wire projects well into the depth of the socket. This method of fastening cables should be left in the hands of an experienced workers in this kind of work.

(b) Wrapping. Thimbles spliced into rope and the splice securely wrapped.

(c) Bolted. Thimbles inserted and held in place by at least a three bolt clamp or three U-bolt clips. Clamps shall be of standard size for the sizes of the cable in use.

(d) Lashing. For temporary work, by-passing rope at least twice around large object such as a post, avoiding sharp points and carrying the end back several feet and securing it by clamps, clips or lashing to the cable.

[Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-24-29401, filed 7/20/94, effective 9/20/94; Order 76-29, § 296-24-29401, filed 9/30/76; Order 73-5, § 296-24-29401, filed 5/9/73 and Order 73-4, § 296-24-29401, filed 5/7/73.]

WAC 296-24-29403 Hemp rope. (1) Quality. Whenever hemp rope is used it shall be first grade long fiber Manila hemp rope.

(2) Strength. Rope shall not be used to support loads in excess of those given in table for hemp and Manila rope.

(3) Lashed. Supporting ropes shall be double lashed at each point of suspension.

(4) Pads. Where supporting ropes are brought over sharp corners of steel, stone, or other material liable to cut the rope, or are in any other way subject to abrasion, they shall be protected at such points by the use of bagging, wooden blocks or other protective padding.

(5) Knot ends. Rope knots shall have their loose and free ends lashed to the standing part in order to prevent their becoming untied.

(6) Inspection. All ropes shall be inspected before used.

(7) Defective rope. Rope badly frayed, rotted, exposed to the action of acid or caustic, or otherwise defective and unsafe, shall be condemned and destroyed to avoid all possibility of future use by mistake.

[Order 73-5, § 296-24-29403, filed 5/9/73 and Order 73-4, § 296-24-29403, filed 5/7/73.]

WAC 296-24-29405 Hemp and wire rope slings. (1) Inspection. All rope slings shall be inspected thoroughly and regularly at intervals of not more than one month, and when not in use, shall be stored in a dry place.

(2) Pads. Rope slings shall be protected with pads or blocks when wrapped around sharp edges of structural shapes, casting, etc.

(3) Slip-noose. Slings shall not be used in single strand slip-noose form.

(4) Acids. Hemp rope shall not be used as slings for handling objects contaminated with acid.

(2007 Ed.)

(5) How attached. Hand-ropes (guide-ropes) shall not be attached to slings but to hoisting tackle, or (only when necessary) attached to the object handled.

(6) Strength. All slings shall be of sufficient strength for handling the imposed loads. See tables given for hemp and wire ropes.

(7) Double slings. Double slings shall be used on all horizontal loads over twelve feet in length, and the distance between the points where slings are attached shall be sufficient to prevent the load from tipping up endwise.

(8) Spreaders. Spreaders shall be used where there is a danger of sling ends or "hitches" slipping together.

(9) Defective—Destroyed. Defective and unsafe slings shall be destroyed in order to avoid possibility of their being used by mistake.

[Order 73-5, § 296-24-29405, filed 5/9/73 and Order 73-4, § 296-24-29405, filed 5/7/73.]

WAC 296-24-29407 Guys. Guy wires and ropes shall be of sufficient strength to carry the load imposed upon them and shall be securely fastened in place.

[Order 73-5, § 296-24-29407, filed 5/9/73 and Order 73-4, § 296-24-29407, filed 5/7/73.]

WAC 296-24-29409 Thimbles. Wherever rope is permanently fastened by a single wrap to a metal object less in diameter or shortest measurement than three times the diameter of the rope, a galvanized thimble (of size intended for the rope) shall be inserted between the object and the loop of the rope.

[Order 73-5, § 296-24-29409, filed 5/9/73 and Order 73-4, § 296-24-29409, filed 5/7/73.]

WAC 296-24-29411 Blocks and falls. Blocks and falls shall be carefully inspected before being used. Blocks shall be of substantial construction and maintained in good condition while in use. Blocks shall fit the sizes of ropes they carry and shall not chafe or abrade the ropes running through them.

[Order 73-5, § 296-24-29411, filed 5/9/73 and Order 73-4, § 296-24-29411, filed 5/7/73.]

WAC 296-24-29413 Chains and cables. (1) If at any time any three foot length of chain is found to have stretched one-third the length of a link it shall be discarded.

(2) The practice of placing bolts or nails between two links to shorten chains is prohibited.

(3) Splicing broken chains by inserting a bolt between two links with the heads of the bolt and the nut sustaining the load, or passing one link through another and inserting a bolt or nail to hold it, is prohibited.

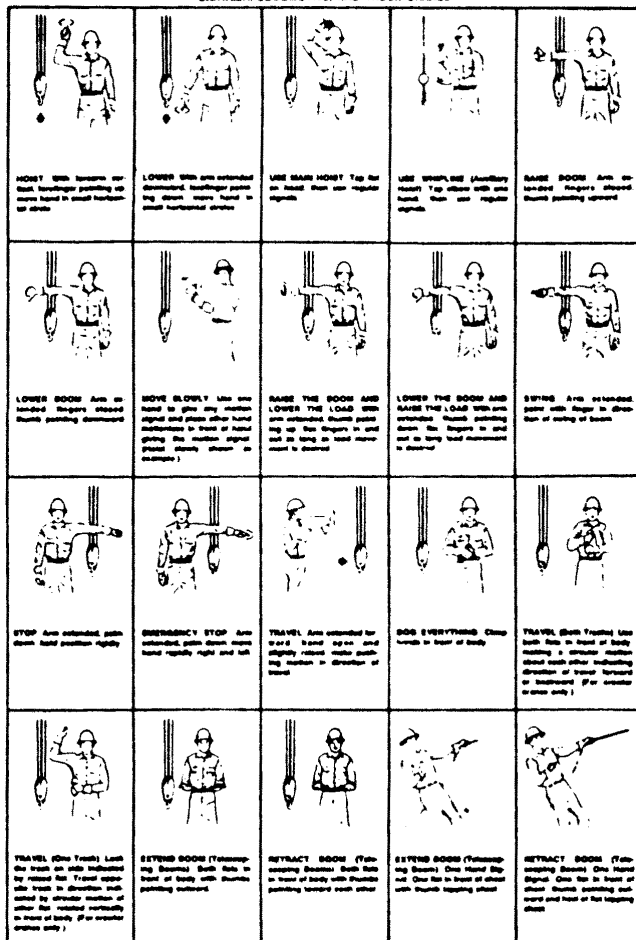
(4) Wherever annealing of chains is attempted, it shall be done in properly equipped annealing furnaces and under the direct supervision of a competent person thoroughly versed in heat treating.

(5) Cables shall be periodically inspected. A copy of the report of the inspections of each running cable shall be filed in a place readily accessible to the department, or authorized representative.

[Order 76-6, § 296-24-29415, filed 3/1/76.]

STANDARD HAND SIGNALS FOR CRANES

CRAWLER, LOCOMOTIVE, AND TRUCK CRANES



STATE OF WASHINGTON DEPARTMENT OF LABOR AND INDUSTRIES DIVISION OF INDUSTRIAL SAFETY & HEALTH

CRANE SIGNALS

- Do not remove the load or the crane unless you understand the floor signal clearly.
- Be careful that the load does not swing to injure your hook-on man/woman or other floorpersons; make certain they are in the clear.
- When raising or lowering the load, see that it will safely clear adjacent stockpiles or machinery.
- Never pick up a load greater than the capacity of your crane. In case of doubt, call your foreperson.
- Never do ANYTHING that is not safe.
- Co-operate with your hook-on or floorperson. You and he/she are a team handling a valuable piece of equipment—Never let it become a hazard.

[Statutory Authority: RCW 49.17.040, 49.17.050, 49.17.240, chapters 43.22 and 42.30 RCW. 80-17-015 (Order 80-21), § 296-24-29413, filed 11/13/80; Order 73-5, § 296-24-29413, filed 5/9/73 and Order 73-4, § 296-24-29413, filed 5/7/73.]

WAC 296-24-29415 Slings. This section applies to slings used in conjunction with other material handling equipment for the movement of material by hoisting, in employments covered by this chapter. The types of slings covered are those made from alloy steel chain, wire rope, metal mesh, natural or synthetic fiber rope (conventional three strand construction), and synthetic web (nylon, polyester, and polypropylene).

[Title 296 WAC—p. 690]

WAC 296-24-29417 Definitions.

(1) **Angle of loading.** Means the inclination of a leg or branch of a sling measured from the horizontal or vertical plane as shown in Fig. D-5: Provided, That an angle of loading of five degrees or less from the vertical may be considered a vertical angle of loading.

(2) **Basket hitch.** Means a sling configuration whereby the sling is passed under the load and has both ends, end attachments, eyes or handles on the hook or a single master link.

(3) **Braided wire rope.** Means a wire rope formed by plaiting component wire ropes.

(4) **Bridle wire rope sling.** Means a sling composed of multiple wire rope legs with the top ends gathered in a fitting that goes over the lifting hook.

(5) **Cable laid endless sling-mechanical joint.** Means a wire rope sling made endlessly by joining the ends of a single length of cable laid rope with one or more metallic fittings.

(6) **Cable laid grommet-hand tucked.** Means an endless wire rope sling made from one length of rope wrapped six times around a core formed by hand tucking the ends of the rope inside the six wraps.

(7) **Cable laid rope.** Means a wire rope composed of six wire ropes wrapped around a fiber or wire rope core.

(8) **Cable laid rope sling-mechanical joint.** Means a wire rope sling made from a cable laid rope with eyes fabricated by pressing or swagging one or more metal sleeves over the rope junction.

(9) **Choker hitch.** Means a sling configuration with one end of the sling passing under the load and through an end attachment, handle or eye on the other end of the sling.

(10) **Coating.** Means an elastomer or other suitable material applied to a sling or to a sling component to impart desirable properties.

(11) **Cross rod.** Means a wire used to join spirals of metal mesh to form a complete fabric. (See Fig. D-2.)

(12) **Designated.** Means selected or assigned by the employer or the employer's representative as being qualified to perform specific duties.

(13) **Equivalent entity.** Means a person or organization (including an employer) which, by possession of equipment, technical knowledge and skills, can perform with equal competence the same repairs and tests as the person or organization with which it is equated.

(14) **Fabric (metal mesh).** Means the flexible portion of a metal mesh sling consisting of a series of transverse coils and cross rods.

(15) **Female handle (choker).** Means a handle with a handle eye and a slot of such dimension as to permit passage of a male handle thereby allowing the use of a metal mesh sling in a choker hitch. (See Fig. D-1.)

(16) **Handle.** Means a terminal fitting to which metal mesh fabric is attached. (See Fig. D-1.)

(17) **Handle eye.** Means an opening in a handle of a metal mesh sling shaped to accept a hook, shackle or other lifting device. (See Fig. D-1.)

(18) **Hitch.** Means a sling configuration whereby the sling is fastened to an object or load, either directly to it or around it.

(2007 Ed.)

(19) Link. Means a single ring of a chain.

(20) Male handle (triangle). Means a handle with a handle eye.

(21) Master coupling link. Means an alloy steel welded coupling link used as an intermediate link to join alloy steel chain to master links. (See Fig. D-3.)

(22) Master link or gathering ring. Means a forged or welded steel link used to support all members (legs) of an alloy steel chain sling or wire rope sling. (See Fig. D-3.)

(23) Mechanical coupling link. Means a nonwelded, mechanically closed steel link used to attach master links, hooks, etc., to alloy steel chain.

(24) Proof load. Means the load applied in performance of a proof test.

(25) Proof test. Means a nondestructive tension test performed by the sling manufacturer or an equivalent entity to verify construction and workmanship of a sling.

(26) Rated capacity or working load limit. Means the maximum working load permitted by the provisions of this section.

(27) Reach. Means the effective length of an alloy steel chain sling measured from the top bearing surface of the upper terminal component to the bottom bearing surface of the lower terminal component.

(28) Selvage edge. Means the finished edge of synthetic webbing designed to prevent unraveling.

(29) Sling. Means an assembly which connects the load to the material handling equipment.

(30) Sling manufacturer. Means a person or organization that assembles sling components into their final form for sale to users.

(31) Spiral. Means a single transverse coil that is the basic element from which metal mesh is fabricated. (See Fig. D-2.)

(32) Strand laid endless sling-mechanical joint. Means a wire rope sling made endless from one length of rope with the ends joined by one or more metallic fittings.

(33) Strand laid grommet-hand tucked. Means an endless wire rope sling made from one length of strand wrapped six times around a core formed by hand tucking the ends of the strand inside the six wraps.

(34) Strand laid rope. Means a wire rope made with strands (usually six or eight) wrapped around a fiber core, wire strand core, or independent wire rope core (IWRC).

(35) Vertical hitch. Means a method of supporting a load by a single, vertical part or leg of the sling. (See Fig. D-4.)

[Order 76-6, § 296-24-29417, filed 3/1/76.]

WAC 296-24-29419 Safe operating practices. Whenever any sling is used, the following practices shall be observed:

(1) Slings that are damaged or defective shall not be used.

(2) Slings shall not be shortened with knots or bolts or other makeshift devices.

(3) Sling legs shall not be kinked.

(4) Slings shall not be loaded in excess of their rated capacities.

(5) Slings used in a basket hitch shall have the loads balanced to prevent slippage.

(2007 Ed.)

(6) Slings shall be securely attached to their loads.

(7) Slings shall be padded or protected from the sharp edges of their loads.

(8) Suspended loads shall be kept clear of all obstructions.

(9) All employees shall be kept clear of loads about to be lifted and of suspended loads.

(10) Hands or fingers shall not be placed between the sling and its load while the sling is being tightened around the load.

(11) Shock loading is prohibited.

(12) A sling shall not be pulled from under a load when the load is resting on the sling.

[Order 76-6, § 296-24-29419, filed 3/1/76.]

WAC 296-24-29421 Inspections. Each day before being used, the sling and all fastenings and attachments shall be inspected for damage or defects by a competent person designated by the employer. Additional inspections shall be performed during sling use, where service conditions warrant. Damaged or defective slings shall be immediately removed from service.

[Order 76-6, § 296-24-29421, filed 3/1/76.]

WAC 296-24-29423 Alloy steel chain slings. (1) Sling identification. Alloy steel chain slings shall have permanently affixed durable identification stating size, grade, rated capacity and reach.

(2) Attachments.

(a) Hooks, rings, oblong links, pear shaped links, welded or mechanical coupling links or other attachments shall have a rated capacity at least equal to that of the alloy steel chain with which they are used or the sling shall not be used in excess of the rated capacity of the weakest component.

(b) Makeshift links or fasteners formed from bolts or rods, or other such attachments, shall not be used.

(3) Inspections.

(a) In addition to the inspection required by WAC 296-24-29421, a thorough periodic inspection of alloy steel chain slings in use shall be made on a regular basis, to be determined on the basis of:

(i) Frequency of sling use;

(ii) Severity of service conditions;

(iii) Nature of lifts being made; and

(iv) Experience gained on the service life of slings used in similar circumstances. Such inspections shall in no event be at intervals greater than once every 12 months.

(b) The employer shall make and maintain a record of the most recent month in which each alloy steel chain sling was thoroughly inspected, and shall make such record available for examination.

(c) The thorough inspection of alloy steel chain slings shall be performed by a competent person designated by the employer, and shall include a thorough inspection for wear, defective welds, deformation and increase in length. Where such defects or deterioration are present, the sling shall be immediately removed from service.

(4) Proof testing. The employer shall ensure that before use, each new, repaired, or reconditioned alloy steel chain sling, including all welded components in the sling assembly,

shall be proof tested by the sling manufacturer or equivalent entity, in accordance with paragraph 5.2 of the American Society of Testing and Materials Specification A391-65 (ANSI G61.1-1968). The employer shall retain a certificate of the proof test and shall make it available for examination.

(5) Sling use. Alloy steel chain slings shall not be used with loads in excess of the rated capacities prescribed in Table D-1. Slings not included in this table shall be used only in accordance with the manufacturer's recommendations.

(6) Safe operating temperatures. Alloy steel chain slings shall be permanently removed from service if they are heated above 1000°F. When exposed to service temperatures in excess of 600°F maximum working load limits permitted in Table D-1 shall be reduced in accordance with the chain or sling manufacturer's recommendations.

(7) Repairing and reconditioning alloy steel chain slings.

(a) Worn or damaged alloy steel chain slings or attachments shall not be used until repaired. When welding or heat testing is performed, slings shall not be used unless repaired, reconditioned and proof tested by the sling manufacturer or an equivalent entity.

(b) Mechanical coupling links or low carbon steel repair links shall not be used to repair broken lengths of chain.

(8) Effects of wear. If the chain size at any point of any links is less than that stated in Table D-2, the sling shall be removed from service.

(9) Deformed attachments.

(a) Alloy steel chain sling with cracked or deformed master links, coupling links or other components shall be removed from service.

(b) Slings shall be removed from service if hooks are cracked, have been opened more than 15 percent of the normal throat opening measured at the narrowest point or twisted more than 10 degrees from the plane of the unbent hook.

[Order 76-29, § 296-24-29423, filed 9/30/76; Order 76-6, § 296-24-29423, filed 3/1/76.]

WAC 296-24-29425 Wire rope slings. (1) Sling use. Wire rope slings shall not be used with loads in excess of the rated capacities shown in Tables D-3 through D-14. Slings not included in these tables shall be used only in accordance with the manufacturer's recommendations.

(2) Minimum sling lengths.

(a) Cable laid and 6x19 and 6x37 slings shall have a minimum clear length of wire rope 10 times the component rope diameter between splices, sleeves or end fittings.

(b) Braided slings shall have a minimum clear length of wire rope 40 times the component rope diameter between the loops or end fittings.

(c) Cable laid grommets, strand laid grommets and endless slings shall have a minimum circumferential length of 96 times their body diameter.

(3) Safe operating temperatures. Fiber core wire rope slings of all grades shall be permanently removed from service if they are exposed to temperatures in excess of 200°F. When nonfiber core wire rope slings of any grade are used at temperatures above 400°F or below minus 60°F, recommendations of the sling manufacturer regarding use at that temperature shall be followed.

(4) End attachments.

(a) Welding of end attachments, except covers to thimbles, shall be performed prior to the assembly of the sling.

(b) All welded end attachments shall not be used unless proof tested by the manufacturer or equivalent entity at twice their rated capacity prior to initial use. The employer shall retain a certificate of the proof test, and make it available for examination.

(5) Removal from service. Wire rope slings shall be immediately removed from service if any of the following conditions are present:

(a) Ten randomly distributed broken wires in one rope lay, or five broken wires in one strand in one rope lay.

(b) Wear or scraping of one-third the original diameter of outside individual wires.

(c) Kinking, crushing, bird caging or any other damage resulting in distortion of the wire rope structure.

(d) Evidence of heat damage.

(e) End attachments that are cracked, deformed or worn.

(f) Hooks that have been opened more than 15 percent of the normal throat opening measured at the narrowest point or twisted more than 10 degrees from the plane of the unbent hook.

(g) Corrosion of the rope or end attachments.

[Statutory Authority: RCW 49.17.040, 49.17.150, and 49.17.240. 79-08-115 (Order 79-9), § 296-24-29425, filed 7/31/79; Order 76-6, § 296-24-29425, filed 3/1/76.]

WAC 296-24-29427 Metal mesh slings. (1) Sling marking. Each metal mesh sling shall have permanently affixed to it a durable marking that states the rated capacity for vertical basket hitch and choker hitch loadings.

(2) Handles. Handles shall have a rated capacity at least equal to the metal fabric and exhibit no deformation after proof testing.

(3) Attachments of handles to fabric. The fabric and handles shall be joined so that:

(a) The rated capacity of the sling is not reduced.

(b) The load is evenly distributed across the width of the fabric.

(c) Sharp edges will not damage the fabric.

(4) Sling coatings. Coatings which diminish the rated capacity of a sling shall not be applied.

(5) Sling testing. All new and repaired metal mesh slings, including handles, shall not be used unless proof tested by the manufacturer or equivalent entity at a minimum of 1-1/2 times their rated capacity. Elastomer impregnated slings shall be proof tested before coating.

(6) Proper use of metal mesh slings. Metal mesh slings shall not be used to lift loads in excess of their rated capacities as prescribed in Table D-15. Slings not included in this table shall be used only in accordance with the manufacturer's recommendations.

(7) Safe operating temperatures. Metal mesh slings which are not impregnated with elastomers may be used in a temperature range from minus 20°F to plus 550°F without decreasing the working load limit. Metal mesh slings impregnated with polyvinyl chloride or neoprene may be used only in a temperature range from zero degrees to plus 200°F. For operations outside these temperature ranges or for metal

mesh slings impregnated with other materials, the sling manufacturer's recommendations shall be followed.

(8) Repairs.

(a) Metal mesh slings which are repaired shall not be used unless repaired by a metal mesh sling manufacturer or an equivalent entity.

(b) Once repaired, each sling shall be permanently marked or tagged, or a written record maintained, to indicate the date and nature of the repairs and the person or organization that performed the repairs. Records of repairs shall be made available for examination.

(9) Removal from service. Metal mesh slings shall be immediately removed from service if any of the following conditions are present:

(a) A broken weld or broken brazed joint along the sling edge.

(b) Reduction in wire diameter of 25 percent due to abrasion or 15 percent due to corrosion.

(c) Lack of flexibility due to distortion of the fabric.

(d) Distortion of the female handle so that the depth of the slot is increased more than 10 percent.

(e) Distortion of either handle so that the width of the eye is decreased more than 10 percent.

(f) A 15 percent reduction of the original cross sectional area of metal at any point around the handle eye.

(g) Distortion of either handle out of its plane.

[Order 76-6, § 296-24-29427, filed 3/1/76.]

WAC 296-24-29429 Natural and synthetic fiber rope slings. (1) Sling use.

(a) Fiber rope slings made from conventional three strand construction fiber rope shall not be used with loads in excess of the rated capacities prescribed in Tables D-16 through D-19.

(b) Fiber rope slings shall have a diameter of curvature meeting at least the minimums specified in Figs. D-4 and D-5.

(c) Slings not included in these tables shall be used only in accordance with the manufacturer's recommendations.

(2) Safe operating temperatures. Natural and synthetic fiber rope slings, except for wet frozen slings, may be used in a temperature range from minus 20°F to plus 180°F without decreasing the working load limit. For operations outside this temperature range and for wet frozen slings, the sling manufacturer's recommendations shall be followed.

(3) Splicing. Spliced fiber rope slings shall not be used unless they have been spliced in accordance with the following minimum requirements and in accordance with any additional recommendations of the manufacturer:

(a) In manila rope, eye splices shall consist of at least three full tucks, and short splices shall consist of at least six full tucks, three on each side of the splice center line.

(b) In synthetic fiber rope, eye splices shall consist of at least four full tucks, and short splices shall consist of at least eight full tucks, four on each side of the center line.

(c) Strand end tails shall not be trimmed flush with the surface of the rope immediately adjacent to the full tucks. This applies to all types of fiber rope and both eye and short splices. For fiber rope under one inch in diameter, the tail shall project at least six rope diameters beyond the last full

tuck. For fiber rope one inch in diameter and larger, the tail shall project at least six inches beyond the last full tuck. Where a projecting tail interferes with the use of the sling, the tail shall be tapered and spliced into the body of the rope using at least two additional tucks (which will require a tail length of approximately six rope diameters beyond the last full tuck).

(d) Fiber rope slings shall have a minimum clear length of rope between eye splices equal to 10 times the rope diameter.

(e) Knots shall not be used in lieu of splices.

(f) Clamps not designed specifically for fiber ropes shall not be used for splicing.

(g) For all eye splices, the eye shall be of such size to provide an included angle of not greater than 60 degrees at the splice when the eye is placed over the load or support.

(4) End attachments. Fiber rope slings shall not be used if end attachments in contact with the rope have sharp edges or projections.

(5) Removal from service. Natural and synthetic fiber rope slings shall be immediately removed from service if any of the following conditions are present:

(a) Abnormal wear.

(b) Powdered fiber between strands.

(c) Broken or cut fibers.

(d) Variations in the size or roundness of strands.

(e) Discoloration or rotting.

(f) Distortion of hardware in the sling.

(6) Repairs. Only fiber rope slings made from new rope shall be used. Use of repaired or reconditioned fiber rope slings is prohibited.

[Order 76-6, § 296-24-29429, filed 3/1/76.]

WAC 296-24-29431 Synthetic web slings. (1) Sling identification. Each sling shall be marked or coded to show the rated capacities for each type of hitch and type of synthetic web material.

(2) Webbing. Synthetic webbing shall be of uniform thickness and width and selvage edges shall not be split from the webbing's width.

(3) Fittings. Fittings shall be:

(a) Of a minimum breaking strength equal to that of the sling; and

(b) Free of all sharp edges that could in any way damage the webbing.

(4) Attachment of end fittings to webbing and formation of eyes. Stitching shall be the only method used to attach end fittings to webbing and to form eyes. The thread shall be in an even pattern and contain a sufficient number of stitches to develop the full breaking strength of the sling.

(5) Sling use. Synthetic web slings illustrated in Figure D-6 shall not be used with loads in excess of the rated capacities specified in Tables D-20 through D-22. Slings not included in these tables shall be used only in accordance with the manufacturer's recommendations.

(6) Environmental conditions. When synthetic web slings are used, the following precautions shall be taken:

(a) Nylon web slings shall not be used where fumes, vapors, sprays, mists or liquids of acids or phenolics are present.

(b) Polyester and polypropylene web slings shall not be used where fumes, vapors, sprays, mists or liquids of caustics are present.

(c) Web slings with aluminum fittings shall not be used where fumes, vapors, sprays, mists or liquids of caustics are present.

(7) Safe operating temperatures. Synthetic web slings of polyester and nylon shall not be used at temperatures in excess of 180°F. Polypropylene web slings shall not be used at temperatures in excess of 200°F.

(8) Repairs.

(a) Synthetic web slings which are repaired shall not be used unless repaired by a sling manufacturer or an equivalent entity.

(b) Each repaired sling shall be proof tested by the manufacturer or equivalent entity to twice the rated capacity prior to its return to service. The employer shall retain a certificate of the proof test and make it available for examination.

(c) Slings, including webbing and fittings, which have been repaired in a temporary manner shall not be used.

(9) Removal from service. Synthetic web slings shall be immediately removed from service if any of the following conditions are present:

- (a) Acid or caustic burns;
- (b) Melting or charring of any part of the sling surface;
- (c) Snags, punctures, tears or cuts;
- (d) Broken or worn stitches; or
- (e) Distortion of fittings.

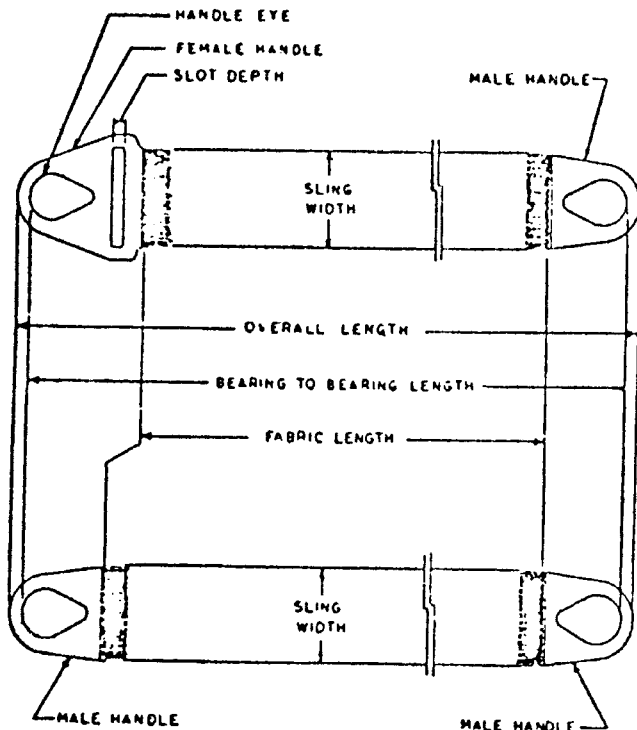


Figure D-1
Metal Mesh Sling (Typical)

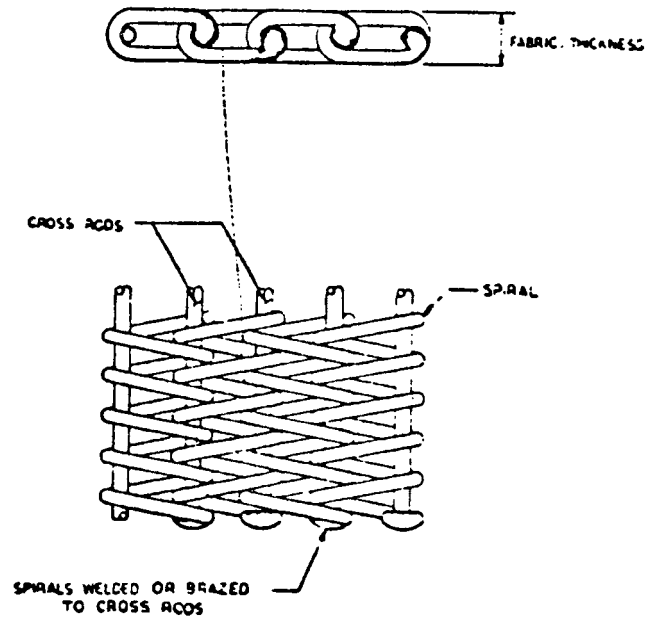


Figure D-2
Metal Mesh Construction

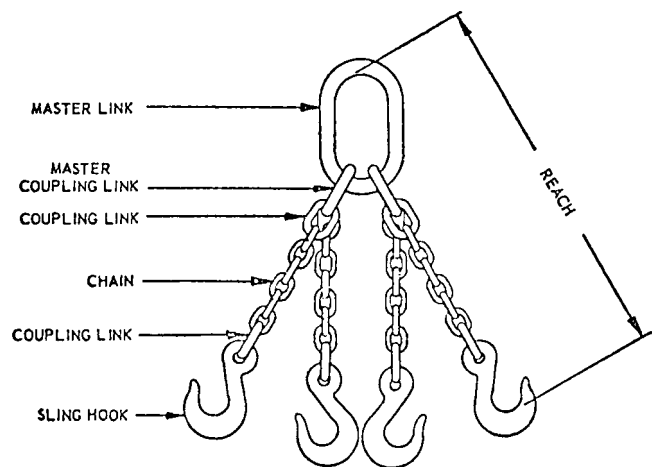


Figure D-3
Major Components of a Quadruple Sling

TABLE D-1

RATED CAPACITY (WORKING LOAD LIMIT), FOR ALLOY STEEL CHAIN SLINGS* RATED CAPACITY (WORKING LOAD LIMIT), POUNDS

TABLE D-1: Part 1—Double Slings

Chain Size, Inches	Single Branch Sling - 90 degree Loading	30 degree	Double Sling Vertical Angle ¹ 45 degree	60 degree
		60 degree	Horizontal Angle ² 45 degree	30 degree
1/4	3,250	5,650	4,550	3,250
3/8	6,600	11,400	9,300	6,600
1/2	11,250	19,500	15,900	11,250
5/8	16,500	28,500	23,300	16,500
3/4	23,000	39,800	32,500	23,000
7/8	28,750	49,800	40,600	28,750

Chain Size, Inches	Single Branch Sling - 90 degree Loading	30 degree	Double Sling Vertical Angle ¹ 45 degree Horizontal Angle ² 45 degree	60 degree
1	38,750	67,100	54,800	38,750
1- 1/8	44,500	77,000	63,000	44,500
1- 1/4	57,500	99,500	81,000	57,500
1- 3/8	67,000	116,000	94,000	67,000
1- 1/2	80,000	138,000	112,500	80,000
1- 3/4	100,000	172,000	140,000	100,000

⁽¹⁾Rating of multileg slings adjusted for angle of loading measured as the included angle between the inclined leg and the vertical as shown in Figure D-5.

⁽²⁾Rating of multileg slings adjusted for angle of loading between the inclined leg and the horizontal plane of the load, as shown in Figure D-5.

⁽³⁾Quadruple sling rating is same as triple sling because normal lifting practice may not distribute load uniformly to all 4 legs.

TABLE D-1: Part 2—Triple and Quadruple Slings

Chain Size, Inches	Single Branch Sling - 90 degree Loading	Triple and Quadruple Sling ⁽³⁾	
		30 degree	60 degree
		Vertical Angle ⁽¹⁾ 45 degree	Horizontal Angle ⁽²⁾ 45 degree
1/4	3,250	8,400	6,800
3/8	6,600	17,000	14,000
1/2	11,250	29,000	24,000
5/8	16,500	43,000	35,000
3/4	23,000	59,500	48,500
7/8	28,750	74,500	61,000
1	38,750	101,000	82,000
1- 1/8	44,500	115,500	94,500
1- 1/4	57,500	149,000	121,500
1- 3/8	67,000	174,000	141,000
1- 1/2	80,000	207,000	169,000
1- 3/4	100,000	258,000	210,000

⁽¹⁾Rating of multileg slings adjusted for angle of loading measured as the included angle between the inclined leg and the vertical as shown in Figure D-5.

⁽²⁾Rating of multileg slings adjusted for angle of loading between the inclined leg and the horizontal plane of the load, as shown in Figure D-5.

⁽³⁾Quadruple sling rating is same as triple sling because normal lifting practice may not distribute load uniformly to all 4 legs.

TABLE D-2

MINIMUM ALLOWABLE CHAIN SIZE
AT ANY POINT OF LINK

Chain Size, Inches	Minimum Allowable Chain Size, Inches
1/4	13/64
3/8	19/64
1/2	25/64
5/8	31/64
3/4	19/32
7/8	45/64
1	13/16
1- 1/8	29/32
1- 1/4	1
1- 3/8	1- 3/32
1- 1/2	1- 3/16
1- 3/4	1-13/32

TABLE D-3

RATED CAPACITIES FOR SINGLE LEG SLINGS 6x19 AND 6x37
CLASSIFICATION IMPROVED PLOW STEEL GRADE ROPE WITH
FIBER CORE (FC)

Rope Dia. (Inches)	Constr.	Rated Capacities, Tons (2,000 lb)								
		Vertical			Choker			Vertical Basket*		
		HT	MS	S	HT	MS	S	HT	MS	S
1/4	6x19	0.49	0.51	0.55	0.37	0.38	0.41	0.99	1.0	1.1
5/16	6x19	0.76	0.79	0.85	0.57	0.59	0.64	1.5	1.6	1.7
3/8	6x19	1.1	1.1	1.2	0.80	0.85	0.91	2.1	2.2	2.4
7/16	6x19	1.4	1.5	1.6	1.1	1.1	1.2	2.9	3.0	3.3
1/2	6x19	1.8	2.0	2.1	1.4	1.5	1.6	3.7	3.9	4.3
9/16	6x19	2.3	2.5	2.7	1.7	1.9	2.0	4.6	5.0	5.4
5/8	6x19	2.8	3.1	3.3	2.1	2.3	2.5	5.6	6.2	6.7
3/4	6x19	3.9	4.4	4.8	2.9	3.3	3.6	7.8	8.8	9.5
7/8	6x19	5.1	5.9	6.4	3.9	4.5	4.8	10.0	12.0	13.0
1	6x19	6.7	7.7	8.4	5.0	5.8	6.3	13.0	15.0	17.0
1- 1/8	6x19	8.4	9.5	10.0	6.3	7.1	7.9	17.0	19.0	21.0
1- 1/4	6x37	9.8	11.0	12.0	7.4	8.3	9.2	20.0	22.0	25.0
1- 3/8	6x37	12.0	13.0	15.0	8.9	10.0	11.0	24.0	27.0	30.0
1- 1/2	6x37	14.0	16.0	17.0	10.0	12.0	13.0	28.0	32.0	35.0
1- 5/8	6x37	16.0	18.0	21.0	12.0	14.0	15.0	33.0	37.0	41.0
1- 3/4	6x37	19.0	21.0	24.0	14.0	16.0	18.0	38.0	43.0	48.0
2	6x37	25.0	28.0	31.0	18.0	21.0	23.0	49.0	55.0	62.0

HT = Hand tucked splice and hidden tuck splice

For hidden tuck splice (IWRC) use value in HT columns.

MS = Mechanical splice.

S = Swaged or zinc poured socket.

* These values only apply when the D/d ratio for HT slings is 10 or greater, and for MS and S slings is 20 or greater where:

D = Diameter of curvature around which the body of the sling is bent.

d = Diameter of rope.

TABLE D-4

RATED CAPACITIES FOR SINGLE LEG SLINGS 6x19 AND 6x37
CLASSIFICATION IMPROVED PLOW STEEL GRADE ROPE WITH
INDEPENDENT WIRE ROPE CORE (IWRC)

Rope Dia. (Inches)	Constr.	Rated Capacities, Tons (2,000 lb)								
		Vertical			Choker			Vertical Basket*		
		HT	MS	S	HT	MS	S	HT	MS	S
1/4	6x19	0.53	0.56	0.59	0.40	0.42	0.44	1.0	1.1	1.2
5/16	6x19	0.81	0.87	0.92	0.61	0.65	0.69	1.6	1.7	1.8
3/8	6x19	1.1	1.2	1.3	0.86	0.93	0.98	2.3	2.5	2.6
7/16	6x19	1.5	1.7	1.8	1.2	1.3	1.3	3.1	3.4	3.5
1/2	6x19	2.0	2.2	2.3	1.5	1.6	1.7	3.9	4.4	4.6
9/16	6x19	2.5	2.7	2.9	1.8	2.1	2.2	4.9	5.5	5.8
5/8	6x19	3.0	3.4	3.6	2.2	2.5	2.7	6.0	6.8	7.2
3/4	6x19	4.2	4.9	5.1	3.1	3.6	3.8	8.4	9.7	10.0
7/8	6x19	5.5	6.6	6.9	4.1	4.9	5.2	11.0	13.0	14.0
1	6x19	7.2	8.5	9.0	5.4	6.4	6.7	14.0	17.0	18.0
1- 1/8	6x19	9.0	10.0	11.0	6.8	7.8	8.5	18.0	21.0	23.0
1- 1/4	6x37	10.0	12.0	13.0	7.9	9.2	9.9	21.0	24.0	26.0
1- 3/8	6x37	13.0	15.0	16.0	9.6	11.0	12.0	25.0	29.0	32.0
1- 1/2	6x37	15.0	17.0	19.0	11.0	13.0	14.0	30.0	35.0	38.0
1- 5/8	6x37	18.0	20.0	22.0	13.0	15.0	17.0	35.0	41.0	44.0
1- 3/4	6x37	20.0	24.0	26.0	15.0	18.0	19.0	41.0	47.0	51.0
2	6x37	26.0	30.0	33.0	20.0	23.0	25.0	53.0	61.0	66.0

HT = Hand tucked splice.

For hidden tuck splice (IWRC) use Table I value in HT columns.

MS = Mechanical splice.

S = Swaged or zinc poured socket.

* These values only apply when the D/d ratio for HT slings is 10 or greater, and for MS and S slings is 20 or greater where:

D = Diameter of curvature around which the body of the sling is bent.

d = Diameter of rope.

TABLE D-5

RATED CAPACITIES FOR SINGLE LEG SLINGS CABLE LAID ROPE
- MECHANICAL SPLICE ONLY 7x7x7 AND 7x7x19 CONSTRUCTION GALVANIZED AIRCRAFT GRADE ROPE 7x6x19 IWRC CONSTRUCTION IMPROVED PLOW STEEL GRADE ROPE

Rope		Rated Capacities, Tons (2,000 lb)		
Dia. (Inches)	Constr.	Vertical	Choker	Vertical Basket*
1/4	7x7x7	0.50	0.38	1.0
3/8	7x7x7	1.1	0.81	2.0
1/2	7x7x7	1.8	1.4	3.7
5/8	7x7x7	2.8	2.1	5.5
3/4	7x7x7	3.8	2.9	7.6
5/8	7x7x19	2.9	2.2	5.8
3/4	7x7x19	4.1	3.0	8.1
7/8	7x7x19	5.4	4.0	11.0
1	7x7x19	6.9	5.1	14.0
1- 1/8	7x7x19	8.2	6.2	16.0
1- 1/4	7x7x19	9.9	7.4	20.0
3/4	7x6x19 IWRC	3.8	2.8	7.6
7/8	7x6x19 IWRC	5.0	3.8	10.0
1	7x6x19 IWRC	6.4	4.8	13.0
1- 1/8	7x6x19 IWRC	7.7	5.8	15.0
1- 1/4	7x6x19 IWRC	9.2	6.9	18.0
1- 5/16	7x6x19 IWRC	10.0	7.5	20.0
1- 3/8	7x6x19 IWRC	11.0	8.2	22.0
1- 1/2	7x6x19 IWRC	13.0	9.6	26.0

* These values only apply when the D/d ratio is 10 or greater where:

D = Diameter of curvature around which the body of the sling is bent.

d = Diameter of rope.

TABLE D-6

RATED CAPACITIES FOR SINGLE LEG SLINGS 8-PART AND 6-PART BRAIDED ROPE 6x7 AND 6x19 CONSTRUCTION IMPROVED PLOW STEEL GRADE ROPE 7x7 CONSTRUCTION GALVANIZED AIRCRAFT GRADE ROPE

Component Ropes		Rated Capacities, Tons (2,000 lb)					
Diameter (inches)	Constr.	Vertical		Choker		Basket Vertical to 30 degrees*	
		8-Part	6-Part	8-Part	6-Part	8-Part	6-Part
3/32	6x7	0.42	0.32	0.32	0.24	0.74	0.55
1/8	6x7	0.76	0.57	0.57	0.42	1.3	0.98
3/16	6x7	1.7	1.3	1.3	0.94	2.9	2.2
3/32	7x7	0.51	0.39	0.38	0.29	0.89	0.67
1/8	7x7	0.95	0.71	0.71	0.53	1.6	1.2
3/16	7x7	2.1	1.5	1.5	1.2	3.6	2.7
3/16	6x19	1.7	1.3	1.3	0.98	3.0	2.2
1/4	6x19	3.1	2.3	2.3	1.7	5.3	4.0
5/16	6x19	4.8	3.6	3.6	2.7	8.3	6.2
3/8	6x19	6.8	5.1	5.1	3.8	12.0	8.9
7/16	6x19	9.3	6.9	6.9	5.2	16.0	12.0
1/2	6x19	12.0	9.0	9.0	6.7	21.0	15.0
9/16	6x19	15.0	11.0	11.0	8.5	26.0	20.0
5/8	6x19	19.0	14.0	14.0	10.0	32.0	24.0
3/4	6x19	27.0	20.0	20.0	15.0	46.0	35.0
7/8	6x19	36.0	27.0	27.0	20.0	62.0	47.0
1	6x19	47.0	35.0	35.0	26.0	81.0	61.0

* These values only apply when the D/d ratio is 20 or greater where:

D = Diameter of curvature around which the body of the sling is bent.

d = Diameter of component rope.

TABLE D-7

RATED CAPACITIES FOR 2-LEG AND 3-LEG BRIDLE SLINGS 6x19 AND 6x37 CLASSIFICATION IMPROVED PLOW STEEL GRADE ROPE WITH FIBER CORE (FC)

TABLE D-7: Part 1— 2-Leg Bridle Slings

Rope		Rated Capacities, Tons (2,000 lb)					
		2-Leg Bridle Slings					
Dia. (Inches)	Constr.	Vert 30 degree		45 degree Angle		Vert 60 degree	
		Horz 60 degree		HT	MS	HT	MS
1/4	6x19	0.85	0.88	0.70	0.72	0.49	0.51
5/16	6x19	1.3	1.4	1.1	1.1	0.76	0.79
3/8	6x19	1.8	1.9	1.5	1.6	1.1	1.1
7/16	6x19	2.5	2.6	2.0	2.2	1.4	1.5
1/2	6x19	3.2	3.4	2.6	2.8	1.8	2.0
9/16	6x19	4.0	4.3	3.2	3.5	2.3	2.5
5/8	6x19	4.8	5.3	4.0	4.4	2.8	3.1
3/4	6x19	6.8	7.6	5.5	6.2	3.9	4.4
7/8	6x19	8.9	10.0	7.3	8.4	5.1	5.9
1	6x19	11.0	13.0	9.4	11.0	6.7	7.7
1-1/8	6x19	14.0	16.0	12.0	13.0	8.4	9.5
1-1/4	6x37	17.0	19.0	14.0	16.0	9.8	11.0
1-3/8	6x37	20.0	23.0	17.0	19.0	12.0	13.0
1-1/2	6x37	24.0	27.0	20.0	22.0	14.0	16.0
1-5/8	6x37	28.0	32.0	23.0	26.0	16.0	18.0
1-3/4	6x37	33.0	37.0	27.0	30.0	19.0	21.0
2	6x37	43.0	48.0	35.0	39.0	25.0	28.0

HT = Hand tucked splice.

MS = Mechanical splice.

TABLE D-7: Part 2— 3-Leg Bridle Slings

Rope		Rated Capacities, Tons (2,000 lb)					
		3-Leg Bridle Slings					
Dia. (Inches)	Constr.	Vert 30 degree		45 degree Angle		Vert 60 degree	
		Horz 60 degree		HT	MS	HT	MS
1/4	6x19	1.3	1.3	1.0	1.1	0.74	0.76
5/16	6x19	2.0	2.0	1.6	1.7	1.1	1.2
3/8	6x19	2.8	2.9	2.3	2.4	1.6	1.7
7/16	6x19	3.7	4.0	3.0	3.2	2.1	2.3
1/2	6x19	4.8	5.1	3.9	4.2	2.8	3.0
9/16	6x19	6.0	6.5	4.9	5.3	3.4	3.7
5/8	6x19	7.3	8.0	5.9	6.5	4.2	4.6
3/4	6x19	10.0	11.0	8.3	9.3	5.8	6.6
7/8	6x19	13.0	15.0	11.0	13.0	7.7	8.9
1	6x19	17.0	20.0	14.0	16.0	10.0	11.0
1-1/8	6x19	22.0	24.0	18.0	20.0	13.0	14.0
1-1/4	6x37	25.0	29.0	21.0	23.0	15.0	17.0
1-3/8	6x37	31.0	35.0	25.0	28.0	18.0	20.0
1-1/2	6x37	36.0	41.0	30.0	33.0	21.0	24.0
1-5/8	6x37	43.0	48.0	35.0	39.0	25.0	28.0
1-3/4	6x37	49.0	56.0	40.0	45.0	28.0	32.0
2	6x37	64.0	72.0	52.0	59.0	37.0	41.0

HT = Hand tucked splice.

MS = Mechanical splice.

TABLE D-8

RATED CAPACITIES FOR 2-LEG AND 3-LEG BRIDLE SLINGS 6x19 AND 6x37 CLASSIFICATION IMPROVED PLOW STEEL GRADE ROPE WITH INDEPENDENT WIRE ROPE CORE (IWRC)

TABLE D-8: Part 1— 2-Leg Bridle Sling

Rope		Rated Capacities, Tons (2,000 lb)					
		2-Leg Bridle Slings					
Dia. (Inches)	Constr.	Vert 30 degree		45 degree Angle		Vert 60 degree	
		Horz 60 degree		HT	MS	HT	MS
1/4	6x19	0.92	0.97	0.75	0.79	0.53	0.56
5/16	6x19	1.4	1.5	1.1	1.2	0.81	0.87
3/8	6x19	2.0	2.1	1.6	1.8	1.1	1.2
7/16	6x19	2.7	2.9	2.2	2.4	1.5	1.7
1/2	6x19	3.4	3.8	2.8	3.1	2.0	2.2
9/16	6x19	4.3	4.8	3.5	3.9	2.5	2.7
5/8	6x19	5.2	5.9	4.2	4.8	3.0	3.4
3/4	6x19	7.3	8.4	5.9	6.9	4.2	4.9
7/8	6x19	9.6	11.0	7.8	9.3	5.5	6.6
1	6x19	12.0	15.0	10.0	12.0	7.2	8.5

Rope		Rated Capacities, Tons (2,000 lb)					
		2-Leg Bridle Slings					
		Vert 30 degree		45 degree		Vert 60 degree	
Dia. (Inches)	Constr.	Horz 60 degree		Angle		Horz 30 degree	
		HT	MS	HT	MS	HT	MS
1-1/8	6x19	16.0	18.0	13.0	15.0	9.0	10.0
1-1/4	6x37	18.0	21.0	15.0	17.0	10.0	12.0
1-3/8	6x37	22.0	25.0	18.0	21.0	13.0	15.0
1-1/2	6x37	26.0	30.0	21.0	25.0	15.0	17.0
1-5/8	6x37	31.0	35.0	25.0	29.0	18.0	20.0
1-3/4	6x37	35.0	41.0	29.0	33.0	20.0	24.0
2	6x37	46.0	53.0	37.0	43.0	26.0	30.0

HT = Hand tucked splice.

MS = Mechanical splice.

TABLE D-8: Part 2— 3-Leg Bridle Slings

Rope		Rated Capacities, Tons (2,000 lb)					
		2-Leg Bridle Sling					
		Vert 30 degree		45 degree		Vert 60 degree	
Dia. (Inches)	Constr.	Horz 60 degree		Angle		Horz 30 degree	
		HT	MS	HT	MS	HT	MS
1/4	6x19	1.4	1.4	1.1	1.2	0.79	0.84
5/16	6x19	2.1	2.3	1.7	1.8	1.2	1.3
3/8	6x19	3.0	3.2	2.4	2.6	1.7	1.9
7/16	6x19	4.0	4.4	3.3	3.6	2.3	2.5
1/2	6x19	5.1	5.7	4.2	4.6	3.0	3.3
9/16	6x19	6.4	7.1	5.2	5.8	3.7	4.1
5/8	6x19	7.8	8.8	6.4	7.2	4.5	5.1
3/4	6x19	11.0	13.0	8.9	10.0	6.3	7.3
7/8	6x19	14.0	17.0	12.0	14.0	8.3	9.9
1	6x19	19.0	22.0	15.0	18.0	11.0	13.0
1-1/8	6x19	23.0	27.0	19.0	22.0	13.0	16.0
1-1/4	6x37	27.0	32.0	22.0	26.0	16.0	18.0
1-3/8	6x37	33.0	38.0	27.0	31.0	19.0	22.0
1-1/2	6x37	39.0	45.0	32.0	37.0	23.0	26.0
1-5/8	6x37	46.0	53.0	38.0	43.0	27.0	31.0
1-3/4	6x37	53.0	61.0	43.0	50.0	31.0	35.0
2	6x37	68.0	79.0	56.0	65.0	40.0	46.0

HT = Hand tucked splice.

MS = Mechanical splice.

TABLE D-9

RATED CAPACITIES FOR 2-LEG AND 3-LEG BRIDLE SLINGS
CABLE LAID ROPE - MECHANICAL SPLICE ONLY 7x7x7 AND
7x7x19 CONSTRUCTIONS GALVANIZED AIRCRAFT GRADE ROPE
7x6x19 IWRC CONSTRUCTION IMPROVED PLOW
STEEL GRADE ROPE

TABLE D-9: Part 1— 2-Leg Bridle Slings

Rope		Rated Capacities, Tons (2,000 lb)			
		2-Leg Bridle Sling			
		Vert 30 degree		45 degree	
Dia. (Inches)	Constr.	Horz 60 degree		Angle	
				Horz 30 degree	
1/4	7x7x7	0.87		0.71	
3/8	7x7x7	1.9		1.5	
1/2	7x7x7	3.2		2.6	
5/8	7x7x7	4.8		3.9	
3/4	7x7x7	6.6		5.4	
5/8	7x7x19	5.0		4.1	
3/4	7x7x19	7.0		5.7	
7/8	7x7x19	9.3		7.6	
1	7x7x19	12.0		9.7	
1-1/8	7x7x19	14.0		12.0	
1-1/4	7x7x19	17.0		14.0	
3/4	7x6x19 IWRC	6.6		5.4	
7/8	7x6x19 IWRC	8.7		7.1	
1	7x6x19 IWRC	11.0		9.0	
1-1/8	7x6x19 IWRC	13.0		11.0	
1-1/4	7x6x19 IWRC	16.0		13.0	
1-5/16	7x6x19 IWRC	17.0		14.0	
1-3/8	7x6x19 IWRC	19.0		15.0	
1-1/2	7x6x19 IWRC	22.0		18.0	

TABLE D-9: Part 2— 3-Leg Bridle Slings

Rope		Rated Capacities, Tons (2,000 lb)			
		3-Leg Bridle Sling			
		Vert 30 degree		45 degree	
Dia. (Inches)	Constr.	Horz 60 degree		Angle	
				Horz 30 degree	
1/4	7x7x7	1.3		1.1	
3/8	7x7x7	2.8		2.3	
1/2	7x7x7	4.8		3.9	
5/8	7x7x7	7.2		5.9	
3/4	7x7x7	9.9		8.1	
5/8	7x7x19	7.5		6.1	
3/4	7x7x19	10.0		8.6	
7/8	7x7x19	14.0		11.0	
1	7x7x19	18.0		14.0	
1-1/8	7x7x19	21.0		17.0	
1-1/4	7x7x19	26.0		21.0	
3/4	7x6x19 IWRC	9.9		8.0	
7/8	7x6x19 IWRC	13.0		11.0	
1	7x6x19 IWRC	17.0		13.0	
1-1/8	7x6x19 IWRC	20.0		16.0	
1-1/4	7x6x19 IWRC	24.0		20.0	
1-5/16	7x6x19 IWRC	26.0		21.0	
1-3/8	7x6x19 IWRC	28.0		23.0	
1-1/2	7x6x19 IWRC	33.0		27.0	

TABLE D-10

RATED CAPACITIES FOR 2-LEG AND 3-LEG BRIDLE SLINGS 8-PART AND 6-PART BRAIDED ROPE 6x7 AND 6x19 CONSTRUCTION
IMPROVED PLOW STEEL GRADE ROPE 7x7 CONSTRUCTION GALVANIZED AIRCRAFT GRADE ROPE

TABLE D-10: Part 1— 2-Leg Bridle Slings

Component Rope		Rated Capacities, Tons (2,000 lb)					
		2-Leg Bridle Slings					
		Vert 30 degree		45 degree		Vert 60 degree	
Dia. (Inches)	Constr.	Horz 60 degree		Angle		Horz 30 degree	
3/32	6x7	0.74	0.55	0.60	0.45	0.42	0.32
1/8	6x7	1.3	0.98	1.1	0.80	0.76	0.57
3/16	6x7	2.9	2.2	2.4	1.8	1.7	1.3
3/32	7x7	0.89	0.67	0.72	0.55	0.51	0.39
1/8	7x7	1.6	1.2	1.3	1.0	0.95	0.71
3/16	7x7	3.6	2.7	2.9	2.2	2.1	1.5
3/16	6x19	3.0	2.2	2.4	1.8	1.7	1.3
1/4	6x19	5.3	4.0	4.3	3.2	3.1	2.3
5/16	6x19	8.3	6.2	6.7	5.0	4.8	3.6
3/8	6x19	12.0	8.9	9.7	7.2	6.8	5.1
7/16	6x19	16.0	12.0	13.0	9.8	9.3	6.9
1/2	6x19	21.0	15.0	17.0	13.0	12.0	9.0
9/16	6x19	26.0	20.0	21.0	16.0	15.0	11.0
5/8	6x19	32.0	24.0	26.0	20.0	19.0	14.0
3/4	6x19	46.0	35.0	38.0	28.0	27.0	20.0
7/8	6x19	62.0	47.0	51.0	38.0	36.0	27.0
1	6x19	81.0	61.0	66.0	50.0	47.0	35.0


TABLE D-10: Part 2— 3-Leg Bridle Slings

Component Rope		Rated Capacities, Tons (2,000 lb)					
		3-Leg Bridle Slings					
		Vert 30 degree		45 degree		Vert 60 degree	
Dia. (Inches)	Constr.	Horz 60 degree		Angle		Horz 30 degree	
3/32	6x7	1.1	0.83	0.90	0.68	0.64	0.48
1/8	6x7	2.0	1.5	1.6	1.2	1.1	0.85
3/16	6x7	4.4	3.3	3.6	2.7	2.5	1.9
3/32	7x7	1.3	1.0	1.1	0.82	0.77	0.58
1/8	7x7	2.5	1.8	2.0	1.5	1.4	1.1
3/16	7x7	5.4	4.0	4.4	3.3	3.1	2.3
3/16	6x19	4.5	3.4	3.7	2.8	2.6	1.9
1/4	6x19	8.0	6.0	6.5	4.9	4.6	3.4
5/16	6x19	12.0	9.3	10.0	7.6	7.1	5.4
3/8	6x19	18.0	13.0	14.0	11.0	10.0	7.7
7/16	6x19	24.0	18.0	20.0	15.0	14.0	10.0
1/2	6x19	31.0	23.0	25.0	19.0	18.0	13.0
9/16	6x19	39.0	29.0	32.0	24.0	23.0	17.0

Component Rope		Rated Capacities, Tons (2,000 lb)					
Dia. (Inches)		3-Leg Bridle Slings					
Constr.		Vert 30 degree		45 degree		Vert 60 degree	
		Horz 60 degree		Angle		Horz 30 degree	
		8-Part	6-Part	8-Part	6-Part	8-Part	6-Part
5/8	6x19	48.0	36.0	40.0	30.0	28.0	21.0
3/4	6x19	69.0	52.0	56.0	42.0	40.0	30.0
7/8	6x19	94.0	70.0	76.0	57.0	54.0	40.0
1	6x19	122.0	91.0	99.0	74.0	70.0	53.0

TABLE D-11

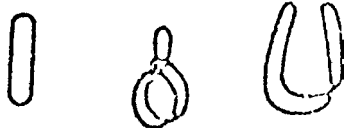
RATED CAPACITIES FOR STRAND LAID GROMMET - HAND TUCKED IMPROVED PLOW STEEL GRADE ROPE

ROPE BODY		RATED CAPACITIES, TONS (2,000 lb)		
				
Dia. (Inches)	Constr.	Vertical	Choker	Vertical Basket*
1/4	7x19	0.85	0.64	1.7
5/16	7x19	1.3	1.0	2.6
3/8	7x19	1.9	1.4	3.8
7/16	7x19	2.6	1.9	5.2
1/2	7x19	3.3	2.5	6.7
9/16	7x19	4.2	3.1	8.4
5/8	7x19	5.2	3.9	10.00
3/4	7x19	7.4	5.6	15.0
7/8	7x19	10.0	7.5	20.0
1	7x19	13.0	9.7	26.0
1-1/8	7x19	16.0	12.0	32.0
1-1/4	7x37	18.0	14.0	37.0
1-3/8	7x37	22.0	16.0	44.0
1-1/2	7x37	26.0	19.0	52.0

* These values only apply when the D/d ratio is 5 or greater where:
D= Diameter of curvature around which rope is bent.
d = Diameter of rope body.

TABLE D-12

RATED CAPACITIES FOR CABLE LAID GROMMET - HAND TUCKED 7x6x7 AND 7x6x19 CONSTRUCTIONS IMPROVED PLOW STEEL GRADE ROPE 7x7x7 CONSTRUCTION GALVANIZED AIR-CRAFT GRADE ROPE

CABLE BODY		RATED CAPACITIES, TONS (2,000 lb)		
				
Dia. (Inches)	Constr.	Vertical	Choker	Vertical Basket*
3/8	7x6x7	1.3	0.95	2.5
9/16	7x6x7	2.8	2.1	5.6
5/8	7x6x7	3.8	2.8	7.6
3/8	7x7x7	1.6	1.2	3.2
9/16	7x7x7	3.5	2.6	6.9
5/8	7x7x7	4.5	3.4	9.0
5/8	7x6x19	3.9	3.0	7.9
3/4	7x6x19	5.1	3.8	10.0
15/16	7x6x19	7.9	5.9	16.0
1-1/8	7x6x19	11.0	8.4	22.0
1-5/16	7x6x19	15.0	11.0	30.0
1-1/2	7x6x19	19.0	14.0	39.0
1-11/16	7x6x19	24.0	18.0	49.0
1-7/8	7x6x19	30.0	22.0	60.0

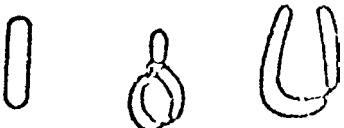
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2-1/4	7x6x19	42.0	31.0	84.0
2-5/8	7x6x19	56.0	42.0	112.0

* These values only apply when the D/d ratio is 5 or greater where:
D= Diameter of curvature around which cable body is bent.
d = Diameter of cable body.

TABLE D-13

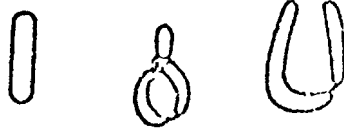
RATED CAPACITIES FOR STRAND LAID ENDLESS SLINGS - MECHANICAL JOINT IMPROVED PLOW STEEL GRADE ROPE

ROPE BODY		RATED CAPACITIES, TONS (2,000 lb)		
				
Dia. (Inches)	Constr.	Vertical	Choker	Vertical Basket*
1/4	6x19 IWRC	0.92	0.69	1.8
3/8	6x19 IWRC	2.0	1.5	4.1
1/2	6x19 IWRC	3.6	2.7	7.2
5/8	6x19 IWRC	5.6	4.2	11.0
3/4	6x19 IWRC	8.0	6.0	16.0
7/8	6x19 IWRC	11.0	8.1	21.0
1	6x19 IWRC	14.0	10.0	28.0
1-1/8	6x19 IWRC	18.0	13.0	35.0
1-1/4	6x37 IWRC	21.0	15.0	41.0
1-3/8	6x37 IWRC	25.0	19.0	50.0
1-1/2	6x37 IWRC	29.0	22.0	59.0

* These values only apply when the D/d ratio is 5 or greater where:
D= Diameter of curvature around which rope is bent.
d = Diameter of rope body.

TABLE D-14

RATED CAPACITIES FOR CABLE LAID ENDLESS SLINGS - MECHANICAL JOINT 7x7x7 AND 7x7x19 CONSTRUCTIONS GALVANIZED AIRCRAFT GRADE ROPE 7x6x19 IWRC CONSTRUCTION IMPROVED PLOW STEEL GRADE ROPE

CABLE BODY		RATED CAPACITIES, TONS (2,000 lb)		
				
Dia. (Inches)	Constr.	Vertical	Choker	Vertical Basket*
1/4	7x7x7	0.83	0.62	1.6
3/8	7x7x7	1.8	1.3	3.5
1/2	7x7x7	3.0	2.3	6.1
5/8	7x7x7	4.5	3.4	9.1
3/4	7x7x7	6.3	4.7	12.0
5/8	7x7x19	4.7	3.5	9.5
3/4	7x7x19	6.7	5.0	13.0
7/8	7x7x19	8.9	6.6	18.0
1	7x7x19	11.0	8.5	22.0
1-1/8	7x7x19	14.0	10.0	28.0
1-1/4	7x7x19	17.0	12.0	33.0
3/4	7x6x19 IWRC	6.2	4.7	12.0
7/8	7x6x19 IWRC	8.3	6.2	16.0
1	7x6x19 IWRC	10.0	7.9	21.0
1-1/8	7x6x19 IWRC	13.0	9.7	26.0
1-1/4	7x6x19 IWRC	16.0	12.0	31.0
1-3/8	7x6x19 IWRC	18.0	14.0	37.0
1-1/2	7x6x19 IWRC	22.0	16.0	43.0

* These values only apply when the D/d value is 5 or greater where:
D= Diameter of curvature around which cable body is bent.
d = Diameter of cable body.

(2007 Ed.)

TABLE D-15
RATED CAPACITIES
CARBON STEEL AND STAINLESS STEEL
METAL MESH SLINGS

SLING WIDTH IN INCHES	EFFECT OF ANGLE ON RATED CAPACITIES IN BASKET HITCH				
	VERTICAL OR CHOKER	VERTICAL BASKET	30 deg Vertical 60 deg Horizontal	45 deg Vertical 45 deg Horizontal	60 deg Vertical 30 deg Horizontal
Heavy Duty-10 Ga 35 Spirals/Ft of sling width					
2	1,500	3,000	2,600	2,100	1,500
3	2,700	5,400	4,700	3,800	2,700
4	4,000	8,000	6,900	5,600	4,000
6	6,000	12,000	10,400	8,400	6,000
8	8,000	16,000	13,800	11,300	8,000
10	10,000	20,000	17,000	14,100	10,000
12	12,000	24,000	20,700	16,900	12,000
14	14,000	28,000	24,200	19,700	14,000
16	16,000	32,000	27,700	22,600	16,000
18	18,000	36,000	31,100	25,400	18,000
20	20,000	40,000	34,600	28,200	20,000
Medium Duty-12 Ga 43 Spirals/Ft of sling width					
2	1,350	2,700	2,300	1,900	1,400
3	2,000	4,000	3,500	2,800	2,000
4	2,700	5,400	4,700	3,800	2,700
6	4,500	9,000	7,800	6,400	4,500
8	6,000	12,000	10,400	8,500	6,000
10	7,500	15,000	13,000	10,600	7,500
12	9,000	18,000	15,600	12,700	9,000
14	10,500	21,000	18,200	14,800	10,500
16	12,000	24,000	20,800	17,000	12,000
18	13,500	27,000	23,400	19,100	13,500
20	15,000	30,000	26,000	21,200	15,000
Light Duty-14 Ga 59 Spirals/Ft of sling width					
2	900	1,800	1,600	1,300	900
3	1,400	2,800	2,400	2,000	1,400
4	2,000	4,000	3,500	2,800	2,000
6	3,000	6,000	5,200	4,200	3,000
8	4,000	8,000	6,900	5,700	4,000
10	5,000	10,000	8,600	7,100	5,000
12	6,000	12,000	10,400	8,500	6,000
14	7,000	14,000	12,100	9,900	7,000
16	8,000	16,000	13,900	11,300	8,000
18	9,000	18,000	15,600	12,700	9,000
20	10,000	20,000	17,300	14,100	10,000

TABLE D-16

MANILA ROPE SLINGS

TABLE D-16: Part 1—Eye and Eye Sling

Rope Dia- meter	EYE & EYE SLING				BASKET HITCH			
	Nomi- nal Weight per 100 ft. in Pounds	Ver- tical Hitch	Chok- er Hitch	Angle of Rope to Horizontal 90° 60° 45° 30°	Angle of Rope to Vertical 0° 30° 45° 60°			
1/2	7.5	480	240	960	830	680	480	
9/16	10.4	620	310	1,240	1,070	875	620	
5/8	13.3	790	395	1,580	1,370	1,120	790	

(2007 Ed.)

3/4	16.7	970	485	1,940	1,680	1,370	970	
13/16	19.5	1,170	585	2,340	2,030	1,650	1,170	
7/8	22.5	1,390	695	2,780	2,410	1,970	1,390	
1"	27.0	1,620	810	3,240	2,810	2,290	1,620	
1 1/16	31.3	1,890	945	3,780	3,270	2,670	1,890	
1 1/8	36.0	2,160	1,080	4,320	3,740	3,050	2,160	
1 1/4	41.7	2,430	1,220	4,860	4,210	3,440	2,430	
1 5/16	47.9	2,700	1,350	5,400	4,680	3,820	2,700	
1 1/2	59.9	3,330	1,670	6,660	5,770	4,710	3,330	
1 5/8	74.6	4,050	2,030	8,100	7,010	5,730	4,050	
1 3/4	89.3	4,770	2,390	9,540	8,260	6,740	4,770	
2"	107.5	5,580	2,790	11,200	9,660	7,890	5,580	
2 1/8	125.0	6,480	3,240	13,000	11,200	9,160	6,480	
2 1/4	146.0	7,380	3,690	14,800	12,800	10,400	7,380	
2 1/2	166.7	8,370	4,190	16,700	14,500	11,800	8,370	
2 5/8	190.8	9,360	4,680	18,700	16,200	13,200	9,360	

See Figures D-4 and D-5 for sling configuration description.

TABLE D-16: Part 2—Endless Sling

Rope Dia- meter	ENDLESS SLING				BASKET HITCH			
	Nomi- nal Weight per 100 ft. in Pounds	Ver- tical Hitch	Chok- er Hitch	Angle of Rope to Horizontal 90° 60° 45° 30°	Angle of Rope to Vertical 0° 30° 45° 60°			
1/2	7.5	865	430	1,730	1,500	1,220	865	
9/16	10.4	1,120	560	2,230	1,930	1,580	1,120	
5/8	13.3	1,420	710	2,840	2,460	2,010	1,420	
3/4	16.7	1,750	875	3,490	3,020	2,470	1,750	
13/16	19.5	2,110	1,050	4,210	3,650	2,980	2,110	
7/8	22.5	2,500	1,250	5,000	4,330	3,540	2,500	
1"	27.0	2,920	1,460	5,830	5,050	4,120	2,920	
1 1/16	31.3	3,400	1,700	6,800	5,890	4,810	3,400	
1 1/8	36.0	3,890	1,940	7,780	6,730	5,500	3,890	
1 1/4	41.7	4,370	2,190	8,750	7,580	6,190	4,370	
1 5/16	47.9	4,860	2,430	9,720	8,420	6,870	4,860	
1 1/2	59.9	5,990	3,000	12,000	10,400	8,480	5,990	
1 5/8	74.6	7,290	3,650	14,600	12,600	10,300	7,290	
1 3/4	89.3	8,590	4,290	17,200	14,900	12,100	8,590	
2"	107.5	10,000	5,020	20,100	17,400	14,200	10,000	
2 1/8	125.0	11,700	5,830	23,300	20,200	16,500	11,700	
2 1/4	146.0	13,300	6,640	26,600	23,000	18,800	13,300	
2 1/2	166.7	15,100	7,530	30,100	26,100	21,300	15,100	
2 5/8	190.8	16,800	8,420	33,700	29,200	23,800	16,800	

See Figures D-4 and D-5 for sling configuration description.

TABLE D-17

NYLON ROPE SLINGS

TABLE D-17: Part 1—Eye and Eye Sling

Rope Dia- meter	EYE & EYE SLING				BASKET HITCH			
	Nomi- nal Weight per 100 ft. in Pounds	Ver- tical Hitch	Chok- er Hitch	Angle of Rope to Horizontal 90° 60° 45° 30°	Angle of Rope to Vertical 0° 30° 45° 60°			
1/2	6.5	635	320	1,270	1,100	900	635	
9/16	8.3	790	395	1,580	1,370	1,120	790	
5/8	10.5	1,030	515	2,060	1,780	1,460	1,030	
3/4	14.5	1,410	705	2,820	2,440	1,990	1,410	
13/16	17.0	1,680	840	3,360	2,910	2,380	1,680	
7/8	20.0	1,980	990	3,960	3,430	2,800	1,980	
1"	26.0	2,480	1,240	4,960	4,300	3,510	2,480	
1 1/16	29.0	2,850	1,430	5,700	4,940	4,030	2,850	
1 1/8	34.0	3,270	1,640	6,540	5,660	4,620	3,270	

[Title 296 WAC—p. 699]

1 1/4	40.0	3,710	1,860	7,420	6,430	5,250	3,710
1 5/16	45.0	4,260	2,130	8,520	7,380	6,020	4,260
1 1/2	55.0	5,250	2,630	10,500	9,090	7,420	5,250
1 5/8	68.0	6,440	3,220	12,900	11,200	9,110	6,440
1 3/4	83.0	7,720	3,860	15,400	13,400	10,900	7,720
2"	95.0	9,110	4,560	18,200	15,800	12,900	9,110
2 1/8	109.0	10,500	5,250	21,000	18,200	14,800	10,500
2 1/4	129.0	12,400	6,200	24,800	21,500	17,500	12,400
2 1/2	149.0	13,900	6,950	27,800	24,100	19,700	13,900
2 5/8	168.0	16,000	8,000	32,000	27,700	22,600	16,000

See Figures D-4 and D-5 for sling configuration description.

TABLE D-17: Part 2—Endless Sling

Rope Diameter	ENDLESS SLING						
	BASKET HITCH						
	Angle of Rope to Horizontal						
	Angle of Rope to Vertical						
	90°	60°	45°	30°	0°	30°	45°
Nominal in Inches	Weight per 100 ft. in Pounds	Vertical Hitch	Choker Hitch				
1/2	6.5	1,140	570	2,290	1,980	1,620	1,140
9/16	8.3	1,420	710	2,840	2,460	2,010	1,420
5/8	10.5	1,850	925	3,710	3,210	2,620	1,850
3/4	14.5	2,540	1,270	5,080	4,400	3,590	2,540
13/16	17.0	3,020	1,510	6,050	5,240	4,280	3,020
7/8	20.0	3,560	1,780	7,130	6,170	5,040	3,560
1"	26.0	4,460	2,230	8,930	7,730	6,310	4,460
1 1/16	29.0	5,130	2,570	10,300	8,890	7,260	5,130
1 1/8	34.0	5,890	2,940	11,800	10,200	8,330	5,890
1 1/4	40.0	6,680	3,340	13,400	11,600	9,450	6,680
1 5/16	45.0	7,670	3,830	15,300	13,300	10,800	7,670
1 1/2	55.0	9,450	4,730	18,900	16,400	13,400	9,450
1 5/8	68.0	11,600	5,800	23,200	20,100	16,400	11,600
1 3/4	83.0	13,900	6,950	27,800	24,100	19,700	13,900
2"	95.0	16,400	8,200	32,800	28,400	23,200	16,400
2 1/8	109.0	18,900	9,450	37,800	32,700	26,700	18,900
2 1/4	129.0	22,300	11,200	44,600	38,700	31,600	22,300
2 1/2	149.0	25,000	12,500	50,000	43,300	35,400	25,000
2 5/8	168.0	28,800	14,400	57,600	49,900	40,700	28,800

See Figures D-4 and D-5 for sling configuration description.

TABLE D-18

POLYESTER ROPE SLINGS

TABLE D-18: Part 1—Eye and Eye Sling

Rope Diameter	EYE & EYE SLING						
	BASKET HITCH						
	Angle of Rope to Horizontal						
	Angle of Rope to Vertical						
	90°	60°	45°	30°	0°	30°	45°
Nominal in Inches	Weight per 100 ft. in Pounds	Vertical Hitch	Choker Hitch				
1/2	8.0	635	320	1,270	1,100	900	635
9/16	10.2	790	395	1,580	1,370	1,120	790
5/8	13.0	990	495	1,980	1,710	1,400	990
3/4	17.5	1,240	620	2,480	2,150	1,750	1,240
13/16	21.0	1,540	770	3,080	2,670	2,180	1,540
7/8	25.0	1,780	890	3,560	3,080	2,520	1,780
1"	30.5	2,180	1,090	4,360	3,780	3,080	2,180
1 1/16	34.5	2,530	1,270	5,060	4,380	3,580	2,530
1 1/8	40.0	2,920	1,460	5,840	5,060	4,130	2,920
1 1/4	46.3	3,290	1,650	6,580	5,700	4,650	3,290
1 5/16	52.5	3,710	1,860	7,420	6,430	5,250	3,710
1 1/2	66.8	4,630	2,320	9,260	8,020	6,550	4,630
1 5/8	82.0	5,640	2,820	11,300	9,770	7,980	5,640
1 3/4	98.0	6,710	3,360	13,400	11,600	9,490	6,710
2"	118.0	7,920	3,960	15,800	13,700	11,200	7,920
2 1/8	135.0	9,110	4,460	18,200	15,800	12,900	9,110

[Title 296 WAC—p. 700]

2 1/4	157.0	10,600	5,300	21,200	18,400	15,000	10,600
2 1/2	181.0	12,100	6,050	24,200	21,000	17,100	12,100
2 5/8	205.0	13,600	6,800	27,200	23,600	19,200	13,600

See Figures D-4 and D-5 for sling configuration description.

TABLE D-18: Part 2—Endless Sling

Rope Diameter	ENDLESS SLING						
	BASKET HITCH						
	Angle of Rope to Horizontal						
	Angle of Rope to Vertical						
	90°	60°	45°	30°	0°	30°	45°
Nominal in Inches	Weight per 100 ft. in Pounds	Vertical Hitch	Choker Hitch				
1/2	8.0	1,140	570	2,290	1,980	1,620	1,140
9/16	10.2	1,420	710	2,840	2,460	2,010	1,420
5/8	13.0	1,780	890	3,570	3,090	2,520	1,780
3/4	17.5	2,230	1,120	4,470	3,870	3,160	2,230
13/16	21.0	2,770	1,390	5,540	4,800	3,920	2,770
7/8	25.0	3,200	1,600	6,410	5,550	4,530	3,200
1"	30.5	3,920	1,960	7,850	6,800	5,550	3,920
1 1/16	34.5	4,550	2,280	9,110	7,990	6,440	4,550
1 1/8	40.0	5,260	2,630	10,500	9,100	7,440	5,260
1 1/4	46.3	5,920	2,960	11,800	10,300	8,380	5,920
1 5/16	52.5	6,680	3,340	13,400	11,600	9,450	6,680
1 1/2	66.8	8,330	4,170	16,700	14,400	11,800	8,330
1 5/8	82.0	10,200	5,080	20,300	17,600	14,400	10,200
1 3/4	98.0	12,100	6,040	24,200	20,900	17,100	12,100
2"	118.0	14,300	7,130	28,500	24,700	20,200	14,300
2 1/8	135.0	16,400	8,200	32,800	28,400	23,200	16,400
2 1/4	157.0	19,100	9,540	38,200	33,100	27,000	19,100
2 1/2	181.0	21,800	10,900	43,600	37,700	30,800	21,800
2 5/8	205.0	24,500	12,200	49,000	42,400	34,600	24,500

See Figures D-4 and D-5 for sling configuration description.

TABLE D-19

POLYPROPYLENE ROPE SLINGS

TABLE D-19: Part 1—Eye and Eye Sling

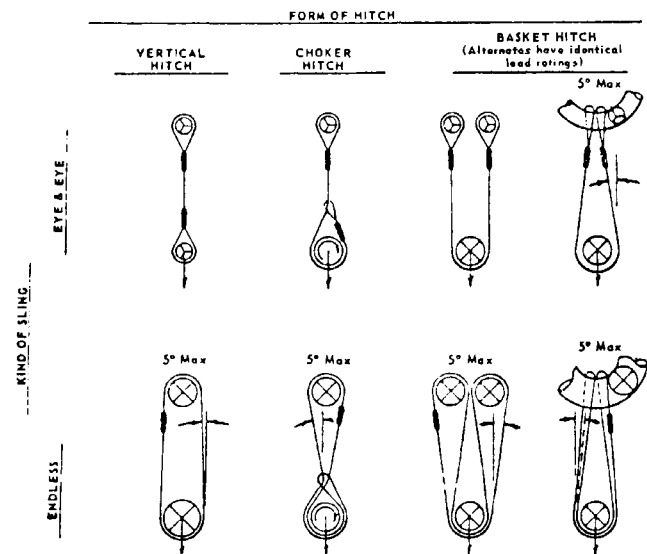
Rope Diameter	EYE & EYE SLING						
	BASKET HITCH						
	Angle of Rope to Horizontal						
	Angle of Rope to Vertical						
	90°	60°	45°	30°	0°	30°	45°
Nominal in Inches	Weight per 100 ft. in Pounds	Vertical Hitch	Choker Hitch				
1/2	4.7	645	325	1,290	1,120	910	645
9/16	6.1	780	390	1,560	1,350	1,100	780
5/8	7.5	950	475	1,900	1,650	1,340	950
3/4	10.7	1,300	650	2,600	2,250	1,840	1,300
13/16	12.7	1,520	760	3,040	2,630	2,150	1,520
7/8	15.0	1,760	880	3,520	3,050	2,490	1,760
1"	18.0	2,140	1,070	4,280	3,700	3,030	2,140
1 1/16	20.4	2,450	1,230	4,900	4,240	3,460	2,450
1 1/8	23.7	2,800	1,400	5,600	4,850	3,960	2,800
1 1/4	27.0	3,210	1,610	6,420	5,560	4,540	3,210
1 5/16	30.5	3,600	1,800	7,200	6,240	5,090	3,600
1 1/2	38.5	4,540	2,270	9,080	7,860	6,420	4,540
1 5/8	47.5	5,510	2,760	11,000	9,540	7,790	5,510
1 3/4	57.0	6,580	3,290	13,200	11,400	9,300	6,580
2"	69.0	7,960	3,980	15,900	13,800	11,300	7,960
2 1/8	80.0	9,330	4,670	18,700	16,200	13,200	9,330
2 1/4	92.0	10,600	5,300	21,200	18,400	15,000	10,600
2 1/2	107.0	12,200	6,100	24,400	21,100	17,300	12,200
2 5/8	120.0	13,800	6,900	27,600	23,900	19,600	13,800

See Figures D-4 and D-5 for sling configuration description.

TABLE D-19: Part 2—Endless Sling

Rope Diameter	Nominal Weight per 100 ft. in Pounds	ENDLESS SLING		BASKET HITCH			
		Vertical Hitch	Choker Hitch	Angle of Rope to Horizontal			
				90°	60°	45°	30°
				Angle of Rope to Vertical			
Nominal in Inches				0°	30°	45°	60°
1/2	4.7	1,160	580	2,320	2,010	1,640	1,160
9/16	6.1	1,400	700	2,810	2,430	1,990	1,400
5/8	7.5	1,710	855	3,420	2,960	2,420	1,710
3/4	10.7	2,340	1,170	4,680	4,050	3,310	2,340
13/16	12.7	2,740	1,370	5,470	4,740	3,870	2,740
7/8	15.0	3,170	1,580	6,340	5,490	4,480	3,170
1"	18.0	3,850	1,930	7,700	6,670	5,450	3,860
1 1/16	20.4	4,410	2,210	8,820	7,640	6,240	4,410
1 1/8	23.7	5,040	2,520	10,100	8,730	7,130	5,040
1 1/4	27.0	5,780	2,890	11,600	10,000	8,170	5,780
1 5/16	30.5	6,480	3,240	13,000	11,200	9,170	6,480
1 1/2	38.5	8,170	4,090	16,300	14,200	11,600	8,170
1 5/8	47.5	9,920	4,960	19,800	17,200	14,000	9,920
1 3/4	57.0	11,800	5,920	23,700	20,500	16,800	11,800
2"	69.0	14,300	7,160	28,700	24,800	20,300	14,300
2 1/8	80.0	16,800	8,400	33,600	29,100	23,800	16,800
2 1/4	92.0	19,100	9,540	38,200	33,100	27,000	19,100
2 1/2	107.0	22,000	11,000	43,900	38,000	31,100	22,000
2 5/8	120.0	24,800	12,400	49,700	43,000	35,100	24,800

See Figures D-4 and D-5 for sling configuration description.



Notes: Angles of 5° or less from the vertical may be considered vertical angles.
For slings with legs more than 5° off vertical, the actual angle as shown in Figure D-5 must be considered.

EXPLANATION OF SYMBOLS: Minimum diameter of curvature



Represents a contact surface which shall have a diameter of curvature at least double the diameter of the rope.



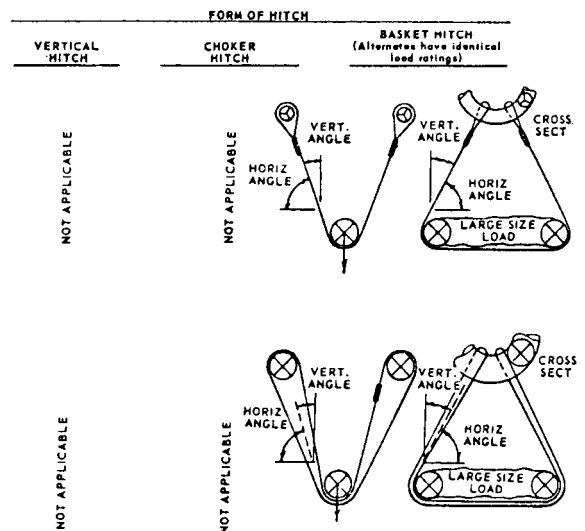
Represents a contact surface which shall have a diameter of curvature at least 8 times the diameter of the rope.



Represents a load in a choker hitch and illustration the rotary force on the load and/or the slippage of the rope in contact with the load. Diameter of curvature of load surface shall be at least double the diameter of the rope.

Figure D-4

Basic Sling Configurations with Vertical Legs



Notes: For vertical angles of 5° or less, refer to Figure D-4 "basic sling configuration with vertical legs."

See Figure D-4 for explanation of symbols.

Figure D-5

Sling Configurations with Angled Legs

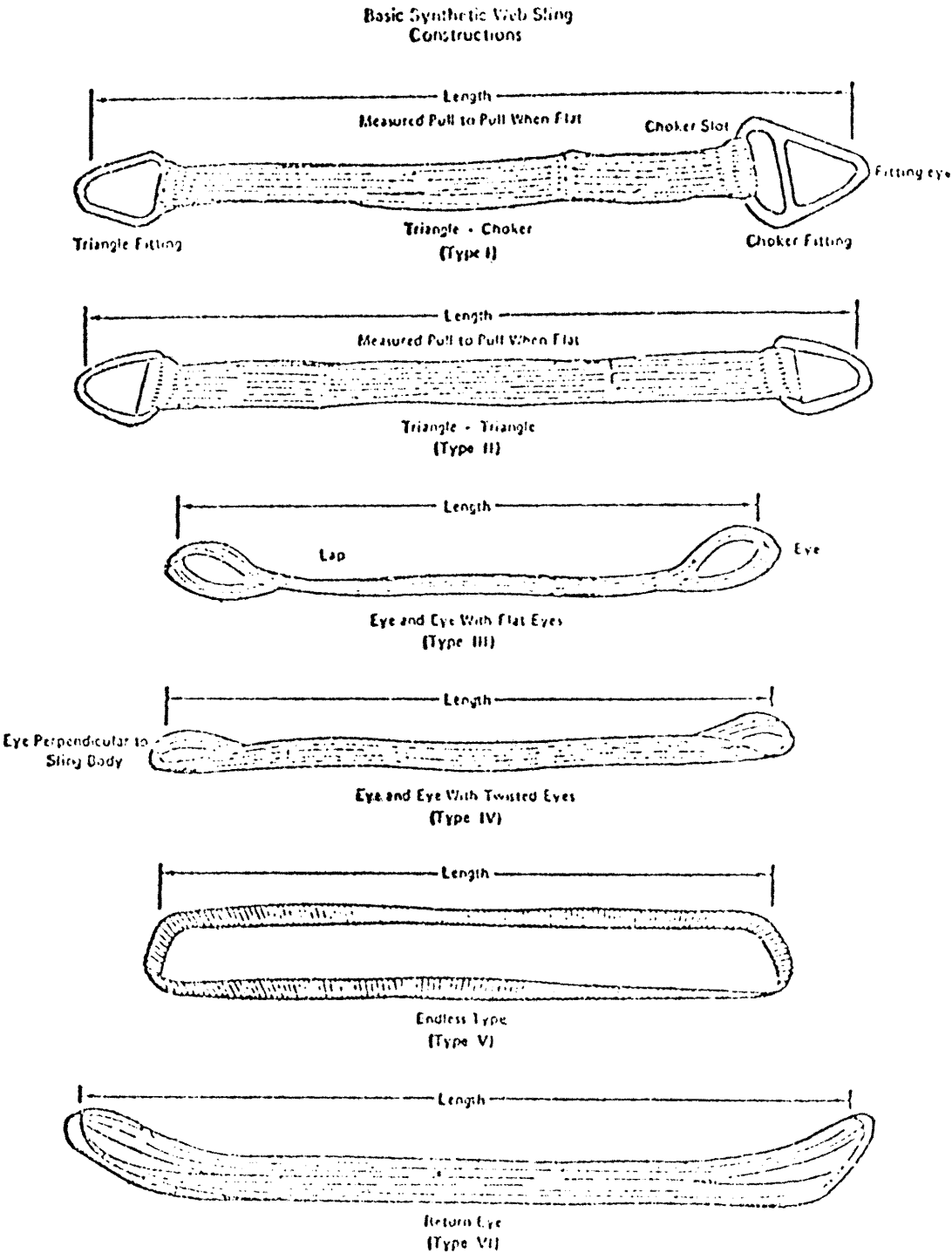


Figure D-6

Basic Synthetic Web Sling Constructions

TABLE D-20

RATED CAPACITY IN POUNDS SYNTHETIC WEB SLINGS 1,000
LBS. PER INCH OF WIDTH SINGLE PLY

(TABLE D-20: Part 1—Types I, II, III, and IV)

Sling Body Width, Inches	Endless Slings, Type V					
	Vert.	Choker	Vert. Basket	30° Basket	45° Basket	60° Basket
1	1,000	750	2,000	1,700	1,400	1,000
2	2,000	1,500	4,000	3,500	2,800	2,000
3	3,000	2,200	6,000	5,200	4,200	3,000
4	4,000	3,000	8,000	6,900	5,700	4,000
5	5,000	3,700	10,000	8,700	7,100	5,000
6	6,000	4,500	12,000	10,400	8,500	6,000

Notes: 1. All angles shown are measured from the vertical.
2. Capacities for intermediate widths not shown may be obtained by interpolation.

(TABLE D-20: Part 2—Type V)

Sling Body Width, Inches	Endless Slings, Type V					
	Vert.	Choker	Vert. Basket	30° Basket	45° Basket	60° Basket
1	1,600	1,300	3,200	2,800	2,300	1,600
2	3,200	2,600	6,400	5,500	4,500	3,200
3	4,800	3,800	9,600	8,300	6,800	4,800
4	6,400	5,100	12,800	11,100	9,000	6,400
5	8,000	6,400	16,000	13,900	11,300	8,000
6	9,600	7,700	19,200	16,600	13,600	9,600

Notes: 1. All angles shown are measured from the vertical.
2. Capacities for intermediate widths not shown may be obtained by interpolation.

(TABLE D-20: Part 3—Type VI)

Sling Body Width, Inches	Return Eye Slings, Type VI					
	Vert.	Choker	Vert. Basket	30° Basket	45° Basket	60° Basket
1	800	650	1,600	1,400	1,150	800
2	1,600	1,300	3,200	2,800	2,300	1,600
3	2,400	1,950	4,800	4,150	3,400	2,400
4	3,200	2,600	6,400	5,500	4,500	3,200
5	4,000	3,250	8,000	6,900	5,650	4,000
6	4,800	3,800	9,600	8,300	6,800	4,800

Notes: 1. All angles shown are measured from the vertical.
2. Capacities for intermediate widths not shown may be obtained by interpolation.

TABLE D-21

RATED CAPACITY IN POUNDS SYNTHETIC WEB SLINGS 1,200
LBS. PER INCH OF WIDTH SINGLE PLY

(TABLE D-21: Part 1—Types I, II, III, and IV)

Sling Body Width, Inches	Endless Slings, Type V					
	Vert.	Choker	Vert. Basket	30° Basket	45° Basket	60° Basket
1	1,200	900	2,400	2,100	1,700	1,200
2	2,400	1,800	4,800	4,200	3,400	2,400
3	3,600	2,700	7,200	6,200	5,100	3,600
4	4,800	3,600	9,600	8,300	6,800	4,800
5	6,000	4,500	12,000	10,400	8,500	6,000
6	7,200	5,400	14,400	12,500	10,200	7,200

Notes: 1. All angles shown are measured from the vertical.
2. Capacities for intermediate widths not shown may be obtained by interpolation.

(2007 Ed.)

(TABLE D-21: Part 2—Type V)

Sling Body Width, Inches	Endless Slings, Type V					
	Vert.	Choker	Vert. Basket	30° Basket	45° Basket	60° Basket
1	1,900	1,500	3,800	3,300	2,700	1,900
2	3,800	3,000	7,600	6,600	5,400	3,800
3	5,800	4,600	11,600	10,000	8,200	5,800
4	7,700	6,200	15,400	13,300	10,900	7,700
5	9,600	7,700	19,200	16,600	13,600	9,600
6	11,500	9,200	23,000	19,900	16,300	11,500

Notes: 1. All angles shown are measured from the vertical.
2. Capacities for intermediate widths not shown may be obtained by interpolation.

(TABLE D-21: Part 3—Type VI)

Sling Body Width, Inches	Return Eye Slings, Type VI					
	Vert.	Choker	Vert. Basket	30° Basket	45° Basket	60° Basket
1	950	750	1,900	1,650	1,350	950
2	1,900	1,500	3,800	3,300	2,700	1,900
3	2,850	2,250	5,700	4,950	4,050	2,850
4	3,800	3,000	7,600	6,600	5,400	3,800
5	4,750	3,750	9,500	8,250	6,750	4,750
6	5,800	4,600	11,600	10,000	8,200	5,800

Notes: 1. All angles shown are measured from the vertical.
2. Capacities for intermediate widths not shown may be obtained by interpolation.

TABLE D-22

RATED CAPACITY IN POUNDS SYNTHETIC WEB SLINGS 1,600
LBS. PER INCH OF WIDTH SINGLE PLY

(TABLE D-22: Part 1—Types I, II, III, and IV)

Sling Body Width, Inches	Endless Slings, Type V					
	Vert.	Choker	Vert. Basket	30° Basket	45° Basket	60° Basket
1	1,600	1,200	3,200	2,800	2,300	1,600
2	3,200	2,400	6,400	5,500	4,500	3,200
3	4,800	3,600	9,600	8,300	6,800	4,800
4	6,400	4,800	12,800	11,100	9,000	6,400
5	8,000	6,000	16,000	13,800	11,300	8,000
6	9,600	7,200	19,200	16,600	13,600	9,600

Notes: 1. All angles shown are measured from the vertical.
2. Capacities for intermediate widths not shown may be obtained by interpolation.

Sling Body Width, Inches	Endless Slings, Type V					
	Vert.	Choker	Vert. Basket	30° Basket	45° Basket	60° Basket
1	2,600	2,100	5,200	4,500	3,700	2,600
2	5,100	4,100	10,200	8,800	7,200	5,100
3	7,700	6,200	15,400	13,300	10,900	7,700
4	10,100	8,200	20,400	17,700	14,400	10,200
5	12,800	10,200	25,600	22,200	18,100	12,800
6	15,400	12,300	30,800	26,700	21,800	15,400

Notes: 1. All angles shown are measured from the vertical.
2. Capacities for intermediate widths not shown may be obtained by interpolation.

(TABLE D-22: Part 3—Type VI)

Sling Body Width, Inches	Return Eye Slings, Type VI					
	Vert.	Choker	Vert. Basket	30° Basket	45° Basket	60° Basket
1	1,050	1,050	2,600	2,250	1,850	1,300
2	2,600	2,100	5,200	4,500	3,700	2,600

[Title 296 WAC—p. 703]

Sling Body Width, Inches	Return Eye Slings, Type VI					
	Vert.	Choker	Vert. Basket	30° Basket	45° Basket	60° Basket
3	3,900	3,150	7,800	6,750	5,500	3,900
4	5,100	4,100	10,200	8,800	7,200	5,100
5	6,400	5,150	12,800	11,050	9,050	6,400
6	7,700	6,200	15,400	13,300	10,900	7,700

Notes: 1. All angles shown are measured from the vertical.
2. Capacities for intermediate widths not shown may be obtained by interpolation.

[Order 76-6, § 296-24-29431, filed 3/1/76.]

PART E HAZARDOUS MATERIALS, FLAMMABLE AND COMBUSTIBLE LIQUIDS, SPRAY FINISHING

Hazardous Materials

WAC 296-24-295 Compressed gases (general requirements).

[Order 73-5, § 296-24-295, filed 5/9/73 and Order 73-4, § 296-24-295, filed 5/7/73.]

WAC 296-24-29501 Inspection of compressed gas cylinders. Each employer shall determine that compressed gas cylinders under the employer's control are in a safe condition to the extent that this can be determined by visual inspection. Visual and other inspections shall be conducted as prescribed in the hazardous materials regulations of the department of transportation (49 CFR Parts 171-179 and 14 CFR Part 103). Where those regulations are not applicable, visual and other inspections shall be conducted in accordance with Compressed Gas Association Pamphlets C-6-1968 and C-8-1962.

[Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-24-29501, filed 7/20/94, effective 9/20/94; Order 73-5, § 296-24-29501, filed 5/9/73 and Order 73-4, § 296-24-29501, filed 5/7/73.]

WAC 296-24-29503 Compressed gases. The in-plant handling, storage, and utilization of all compressed gases in cylinders, portable tanks, rail tankcars, or motor vehicle cargo tanks shall be in accordance with Compressed Gas Association Pamphlet P-1-1965.

[Order 73-5, § 296-24-29503, filed 5/9/73 and Order 73-4, § 296-24-29503, filed 5/7/73.]

WAC 296-24-29505 Safety relief devices for compressed gas containers. Compressed gas cylinders, portable tanks, and cargo tanks shall have pressure relief devices installed and maintained in accordance with Compressed Gas Association Pamphlets S-1.1-1963 and 1965 addenda and S-1.2-1963.

[Order 73-5, § 296-24-29505, filed 5/9/73 and Order 73-4, § 296-24-29505, filed 5/7/73.]

WAC 296-24-310 Acetylene.

[Order 73-5, § 296-24-310, filed 5/9/73 and Order 73-4, § 296-24-310, filed 5/7/73.]

WAC 296-24-31001 Cylinders. The in-plant transfer, handling, storage, and utilization of acetylene in cylinders

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shall be in accordance with Compressed Gas Association Pamphlet G-1-1966.

[Order 73-5, § 296-24-31001, filed 5/9/73 and Order 73-4, § 296-24-31001, filed 5/7/73.]

WAC 296-24-31003 Piped systems. The piped systems for the in-plant transfer and distribution of acetylene shall be designed, installed, maintained, and operated in accordance with Compressed Gas Association Pamphlet G-1.3-1959.

[Order 73-5, § 296-24-31003, filed 5/9/73 and Order 73-4, § 296-24-31003, filed 5/7/73.]

WAC 296-24-31005 Generators and filling cylinders. Plants for the generation of acetylene and the charging (filling) of acetylene cylinders shall be designed, constructed, and tested in accordance with the standards prescribed in Compressed Gas Association Pamphlet G-1.4-1966.

[Order 73-5, § 296-24-31005, filed 5/9/73 and Order 73-4, § 296-24-31005, filed 5/7/73.]

WAC 296-24-315 Hydrogen.

[Order 73-5, § 296-24-315, filed 5/9/73 and Order 73-4, § 296-24-315, filed 5/7/73.]

WAC 296-24-31501 General. (1) Definitions as used in this section.

(a) Gaseous hydrogen system is one in which the hydrogen is delivered, stored and discharged in the gaseous form to consumer's piping. The system includes stationary or movable containers, pressure regulators, safety relief devices, manifolds, interconnecting piping and controls. The system terminates at the point where hydrogen at service pressure first enters the consumer's distribution piping.

(b) Approved—Means unless otherwise indicated, listed or approved by a nationally recognized testing laboratory. Refer to federal regulation 29 CFR 1910.7 for definition of nationally recognized testing laboratory.

(c) Listed—See "approved."

(d) ASME—American Society of Mechanical Engineers.

(e) DOT specifications—Regulations of the department of transportation published in 49 CFR Chapter I.

(f) DOT regulations—See WAC 296-24-315.

(2) Scope.

(a) Gaseous hydrogen systems.

(i) WAC 296-24-31503 applies to the installation of gaseous hydrogen systems on consumer premises where the hydrogen supply to the consumer premises originates outside the consumer premises and is delivered by mobile equipment.

(ii) WAC 296-24-31503 does not apply to gaseous hydrogen systems having a total hydrogen content of less than four hundred cubic feet, nor to hydrogen manufacturing plants or other establishments operated by the hydrogen supplier or their agent for the purpose of storing hydrogen and refilling portable containers, trailers, mobile supply trucks, or tank cars.

(b) Liquefied hydrogen systems.

(i) WAC 296-24-31505 applies to the installation of liquefied hydrogen systems on consumer premises.

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(ii) WAC 296-24-31505 does not apply to liquefied hydrogen portable containers of less than one hundred fifty liters (39.63 gallons) capacity; nor to liquefied hydrogen manufacturing plants or other establishments operated by the hydrogen supplier or supplier's agent for the sole purpose of storing liquefied hydrogen and refilling portable containers, trailers, mobile supply trucks or tank cars.

[Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-24-31501, filed 7/20/94, effective 9/20/94; 88-23-054 (Order 88-25), § 296-24-31501, filed 11/14/88; Order 73-5, § 296-24-31501, filed 5/9/73 and Order 73-4, § 296-24-31501, filed 5/7/73.]

WAC 296-24-31503 Gaseous hydrogen systems. (1)

Design.

(a) Containers.

(i) Hydrogen containers shall comply with one of the following:

(A) Designed, constructed, and tested in accordance with appropriate requirements of ASME Boiler and Pressure Vessel Code, Section VIII—Unfired Pressure Vessels—1968.

(B) Designed, constructed, tested and maintained in accordance with U.S. Department of Transportation specifications and regulations.

(ii) Permanently installed containers shall be provided with substantial noncombustible supports on firm noncombustible foundations.

(iii) Each portable container shall be legibly marked with the name "hydrogen" in accordance with "marking compressed gas containers to identify the material contained" ANSI Z48.1-1954. Each manifolded hydrogen supply unit shall be legibly marked with the name hydrogen or a legend such as "this unit contains hydrogen."

(b) Safety relief devices.

(i) Hydrogen containers shall be equipped with safety relief devices as required by the ASME Boiler and Pressure Vessel Code, Section VIII Unfired Pressure Vessels, 1968 or the DOT specifications and regulations under which the container is fabricated.

(ii) Safety relief devices shall be arranged to discharge upward and unobstructed to the open air in such a manner as to prevent any impingement of escaping gas upon the container, adjacent structure of personnel. This requirement does not apply to DOT specification containers having an internal volume of 2 cubic feet or less.

(iii) Safety relief devices or vent piping shall be designed or located so that moisture cannot collect and freeze in a manner which would interfere with proper operation of the device.

(c) Piping, tubing, and fittings.

(i) Piping, tubing, and fittings shall be suitable for hydrogen service and for the pressures and temperatures involved. Case iron pipe and fittings shall not be used.

(ii) Piping and tubing shall conform to Section 2—"Industrial Gas and Air Piping"—Code for Pressure Piping, ANSI B31.1-1967 with addenda B31.1-1969.

(iii) Joints in piping and tubing may be made by welding or brazing or by use of flanged, threaded, socket, or compression fittings. Gaskets and thread sealants shall be suitable for hydrogen service.

(d) Equipment assembly.

(i) Valves, gauges, regulators, and other accessories shall be suitable for hydrogen service.

(ii) Installation of hydrogen systems shall be supervised by personnel familiar with proper practices with reference to their construction and use.

(iii) Storage containers, piping, valves, regulating equipment, and other accessories shall be readily accessible, and shall be protected against physical damage and against tampering.

(iv) Cabinets or housings containing hydrogen control or operating equipment shall be adequately ventilated.

(v) Each mobile hydrogen supply unit used as part of a hydrogen system shall be adequately secured to prevent movement.

(vi) Mobile hydrogen supply units shall be electrically bonded to the system before discharging hydrogen.

(e) Marking. The hydrogen storage location shall be permanently placarded as follows: "HYDROGEN—FLAMMABLE GAS—NO SMOKING—NO OPEN FLAMES," or equivalent.

(f) Testing. After installations, all piping, tubing, and fittings shall be tested and proved hydrogen gas tight at maximum operating pressure.

(2) Location.

(a) General.

(i) The system shall be located so that it is readily accessible to delivery equipment and to authorized personnel.

(ii) Systems shall be located above ground.

(iii) Systems shall not be located beneath electric power lines.

(iv) Systems shall not be located close to flammable liquid piping or piping of other flammable gases.

(v) Systems near aboveground flammable liquid storage shall be located on ground higher than the flammable liquid storage except when dikes, diversion curbs, grading, or separating solid walls are used to prevent accumulation of flammable liquids under the system.

(b) Specific requirements.

(i) The location of a system, as determined by the maximum total contained volume of hydrogen, shall be in the order of preference as indicated by Roman numerals in Table H-1.

TABLE H-1

Nature of location	Size of hydrogen system		
	Less than 3,000 CF	3,000 CF to 15,000 CF	In excess of 15,000 CF
Outdoors	I	I	I.
In a separate building	II	II	II.
In a special room	III	III	Not permitted.
Inside buildings not in a special room and exposed to other occupancies	IV	Not permitted.	Not permitted.

(ii) The minimum distance in feet from a hydrogen system of indicated capacity located outdoors, in separate build-

ings or in special rooms to any specified outdoor exposure shall be in accordance with Table H-2.

(iii) The distances in Table H-2 Items 1, 14, and 3 to 10 inclusive do not apply where protective structures such as adequate fire walls are located between the system and the exposure.

(iv) Hydrogen systems of less than 3,000 CF when located inside buildings and exposed to other occupancies shall be situated in the building so that the system will be as follows:

(A) In an adequately ventilated area as in (3)(b)(ii) of this section.

(B) Twenty feet from stored flammable materials or oxidizing gases.

(C) Twenty-five feet from open flames, ordinary electrical equipment or other sources of ignition.

(D) Twenty-five feet from concentrations of people.

(E) Fifty feet from intakes of ventilation or air-conditioning equipment and air compressors.

(F) Fifty feet from other flammable gas storage.

(G) Protected against damage or injury due to falling objects or working activity in the area.

(H) More than one system of 3,000 CF or less may be installed in the same room, provided the systems are separated by at least 50 feet. Each such system shall meet all of the requirements of this section.

(3) Design consideration at specific locations.

(a) Outdoor locations.

(i) Where protective walls or roofs are provided, they shall be constructed of noncombustible materials.

(ii) Where the enclosing sides adjoin each other, the area shall be properly ventilated.

(iii) Electrical equipment shall meet the requirements for Class I, Division 2 hazardous locations of WAC 296-24-95613.

(b) Separate buildings.

(i) Separate buildings shall be built of at least noncombustible construction. Windows and doors shall be located so as to be readily accessible in case of emergency. Windows shall be of glass or plastic in metal frames.

(ii) Adequate ventilation to the outdoors shall be provided. Inlet openings shall be located near the floor in exterior walls only. Outlet openings shall be located at the high point of the room in exterior walls or roof. Inlet and outlet openings shall each have minimum total area of one square foot per 1,000 cubic feet of room volume. Discharge from outlet openings shall be directed or conducted to a safe location.

(iii) Explosion venting shall be provided in exterior walls or roof only. The venting area shall be equal to not less than 1 square foot per 30 cubic feet of room volume and may consist of any one or any combination of the following: Walls of light noncombustible material, preferably single thickness, single strength glass; lightly fastened hatch covers; lightly fastened swinging doors in exterior walls opening outward; lightly fastened walls or roof designed to relieve at a maximum pressure of 25 pounds per square foot.

(iv) There shall be no sources of ignition from open flames, electrical equipment, or heating equipment.

(v) Electrical equipment shall meet the requirements of chapter 296-24 WAC Part L.

(vi) Heating, if provided, shall be by steam, hot water, or other indirect means.

(c) Special rooms.

(i) Floor, walls, and ceiling shall have a fire-resistance rating of at least 2 hours. Walls or partitions shall be continuous from floor to ceiling and shall be securely anchored. At least one wall shall be an exterior wall. Openings to other parts of the building shall not be permitted. Windows and doors shall be in exterior walls and shall be located so as to be readily accessible in case of emergency. Windows shall be of glass or plastic in metal frames.

(ii) Ventilation shall be as provided in (3)(b)(ii) of this section.

(iii) Explosion venting shall be as provided in (3)(b)(iii) of this section.

(iv) There shall be no sources of ignition from open flames, electrical equipment or heating equipment.

(v) Electrical equipment shall meet the requirements of chapter 296-24 WAC Part L.

(vi) Heating, if provided, shall be by steam, hot water, or indirect means.

(4) Operating instructions. For installations which require any operation of equipment by the user, legible instructions shall be maintained at operating locations.

(5) Maintenance.

(a) The equipment and functioning of each charged gaseous hydrogen system shall be maintained in a safe operating condition in accordance with the requirements of this section. The area within 15 feet of any hydrogen container shall be kept free of dry vegetation and combustible material.

TABLE H-2

Type of outdoor exposure		Size of hydrogen system		
		Less than 3,000 CF	3,000 CF to 15,000 CF	In excess of 15,000 CF
1.	Building or structure ————			
	Wood frame construction*	- 10	25	50
	Heavy timber, non-combustible or ordinary construction*	- 0	10	**25
	Fire-resistive construction*	- 0	0	0
2.	Wall openings ————			
	- Not above any part of a system ————	10	10	10
	Above any part of a system ————	25	25	25
3.	Flammable liquids above ground ————			
	0 to 1,000 gallons ————	- 10	25	25
	In excess of 1,000 gallons ————	- 25	50	50
4.	Flammable liquids below ground ————			
	0 to 1,000 gallons ————			
	- Tank ————	- 10	10	10
	Vent or fill opening of tank ————	25	25	25

Type of outdoor exposure		Size of hydrogen system		
		Less than 3,000 CF	3,000 CF to 15,000 CF	In excess of 15,000 CF
5.	Flammable liquids below ground—in excess of 1,000 gallons	- Tank _____ Vent or fill opening of tank _____	- 20 25	20 25
6.	Flammable gas storage, either high pressure or low pressure	0 to 15,000 CF capacity _____ In excess of 15,000 CF capacity _____	- 10 25	25 50
7.	Oxygen storage	- 12,000 CF or less More than 12,000 CF	- Refer to NFPA No. 51, gas systems for welding and cutting (1969). Refer to NFPA No. 566, bulk oxygen systems at consumer sites (1969).	
8.	Fast burning solids such as ordinary lumber, excelsior or paper	_____	50	50
9.	Slow burning solids such as heavy timber or coal	_____	25	25
10.	Open flames and other sources of ignition	_____	25	25
11.	Air compressor intakes or inlets to ventilating or air-condition equipment	_____	50	50
12.	Concentration of people***	_____	25	50
13.	Public sidewalks	_____	15	15
14.	Line of adjoining property which may be built upon	_____	5	5

* Refer to NFPA No. 220 standard types of building construction for definitions of various types of construction. (1969 Ed.)

** But not less than one-half the height of adjacent side wall of the structure.

*** In congested areas such as offices, lunchrooms, locker rooms, time-clock areas, and places of public assembly.

[Statutory Authority: Chapter 49.17 RCW. 91-24-017 (Order 91-07), § 296-24-31503, filed 11/22/91, effective 12/24/91; 88-23-054 (Order 88-25), § 296-24-31503, filed 11/14/88. Statutory Authority: RCW 49.17.040 and 49.17.050. 85-10-004 (Order 85-09), § 296-24-31503, filed 4/19/85; Order 76-6, § 296-24-31503, filed 3/1/76; Order 73-5, § 296-24-31503, filed 5/9/73 and Order 73-4, § 296-24-31503, filed 5/7/73.]

WAC 296-24-31505 Liquefied hydrogen systems. (1)

Design.

(a) Containers.

(i) Hydrogen containers shall comply with the following:

Storage containers shall be designed, constructed, and tested in accordance with appropriate requirements of the ASME Boiler and Pressure Vessel Code, Section VIII—Unfired Pressure Vessels (1968) or applicable provisions of API Standard 620, Recommended Rules for Design and Construction of Large, Welded, Low-Pressure Storage Tanks, Second Edition (June 1963) and Appendix R (April 1965).

(2007 Ed.)

(ii) Portable containers shall be designed, constructed and tested in accordance with DOT specifications and regulations.

(b) Supports. Permanently installed containers shall be provided with substantial noncombustible supports securely anchored on firm noncombustible foundations. Steel supports in excess of 18 inches in height shall be protected with a protective coating having a 2-hour fire-resistance rating.

(c) Marking. Each container shall be legibly marked to indicate "LIQUEFIED HYDROGEN—FLAMMABLE GAS."

(d) Safety relief devices.

(i) Stationary liquefied hydrogen containers shall be equipped with safety relief devices sized in accordance with CGA Pamphlet S-1-1966, Part 3, Safety Relief Device Standards for Compressed Gas Storage Containers.

(A) Portable liquefied hydrogen containers complying with the U.S. Department of Transportation regulations shall be equipped with safety relief devices as required in the U.S. Department of Transportation specifications and regulations. Safety relief devices shall be sized in accordance with the requirements of CGA Pamphlet S-1-1966, Safety Relief Device Standards, Part 1, Compressed Gas Cylinders and Part 2, Cargo and Portable Tank Containers.

(ii) Safety relief devices shall be arranged to discharge unobstructed to the outdoors and in such a manner as to prevent impingement of escaping liquid or gas upon the container, adjacent structures or personnel. See (2)(a)(vi) of this section for venting of safety relief devices in special locations.

(iii) Safety relief devices or vent piping shall be designed or located so that moisture cannot collect and freeze in a manner which would interfere with proper operation of the device.

(iv) Safety relief devices shall be provided in piping wherever liquefied hydrogen could be trapped between closures

(e) Piping, tubing, and fittings.

(i) Piping, tubing, and fittings and gasket and thread sealants shall be suitable for hydrogen service at the pressures and temperatures involved. Consideration shall be given to the thermal expansion and contraction of piping systems when exposed to temperature fluctuations of ambient to liquefied hydrogen temperatures.

(ii) Gaseous hydrogen piping and tubing (above—20°F) shall conform to the applicable sections of Pressure Piping Section 2—Industrial Gas and Air Piping, ANSI B31.1-1967 with addenda B31.1-1969. Design of liquefied hydrogen or cold (-20°F or below) gas piping shall use Petroleum Refinery Piping ANSI B31.3-1966 or Refrigeration Piping ANSI B31.5-1966 with addenda B31.5a-1968 as a guide.

(iii) Joints in piping and tubing shall preferably be made by welding or brazing; flanged, threaded, socket, or suitable compression fittings may be used.

(iv) Means shall be provided to minimize exposure of personnel to piping operating at low temperatures and to prevent air condensate from contacting piping, structural members, and surfaces not suitable for cryogenic temperatures. Only those insulating materials which are rated nonburning in accordance with ASTM Procedures D1692-68 may be used. Other protective means may be used to protect person-

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nel. The insulation shall be designed to have a vapor-tight seal in the outer covering to prevent the condensation of air and subsequent oxygen enrichment within the insulation. The insulation material and outside shield shall also be of adequate design to prevent attrition of the insulation due to normal operating conditions.

(v) Uninsulated piping and equipment which operate at liquefied-hydrogen temperature shall not be installed above asphalt surfaces or other combustible materials in order to prevent contact of liquid air with such materials. Drip pans may be installed under uninsulated piping and equipment to retain and vaporize condensed liquid air.

(f) Equipment assembly.

(i) Valves, gauges, regulators, and other accessories shall be suitable for liquefied hydrogen service and for the pressures and temperatures involved.

(ii) Installation of liquefied hydrogen systems shall be supervised by personnel familiar with proper practices and with reference to their construction and use.

(iii) Storage containers, piping, valves, regulating equipment, and other accessories shall be readily accessible and shall be protected against physical damage and against tampering. A shutoff valve shall be located in liquid product withdrawal lines as close to the container as practical. On containers of over 2,000 gallons capacity, this shutoff valve shall be of the remote control type with no connections, flanges, or other appurtenances (other than a welded manual shutoff valve) allowed in the piping between the shutoff valve and its connection to the inner container.

(iv) Cabinets or housings containing hydrogen control equipment shall be ventilated to prevent any accumulation of hydrogen gas.

(g) Testing.

(i) After installation, all field-erected piping shall be tested and proved hydrogen gas-tight at operating pressure and temperature.

(ii) Containers if out of service in excess of 1 year shall be inspected and tested as outlined in (1) of this section. The safety relief devices shall be checked to determine if they are operable and properly set.

(h) Liquefied hydrogen vaporizers.

(i) The vaporizer shall be anchored and its connecting piping shall be sufficiently flexible to provide for the effect of expansion and contraction due to temperature changes.

(ii) The vaporizer and its piping shall be adequately protected on the hydrogen and heating media sections with safety relief devices.

(iii) Heat used in a liquefied hydrogen vaporizer shall be indirectly supplied utilizing media such as air, steam, water, or water solutions.

(iv) A low temperature shutoff switch shall be provided in the vaporizer discharge piping to prevent flow of liquefied hydrogen in the event of the loss of the heat source.

(i) Electrical systems.

(i) Electrical wiring and equipment located within 3 feet of a point where connections are regularly made and disconnected, shall meet the requirements of chapter 296-24 WAC Part L for Class I, Division 1 locations.

(ii) Except as provided in (1) of this section, electrical wiring, and equipment located within 25 feet of a point where connections are regularly made and disconnected or within

25 feet of a liquid hydrogen storage container, shall meet the requirements of chapter 296-24 WAC Part L for Class I, Division 2 locations. When equipment approved for Class I, environments is not commercially available, the equipment may be:

(A) Purged or ventilated in accordance with NFPA No. 496-1967, Standard for Purged Enclosures for Electrical Equipment in Hazardous Locations,

(B) Intrinsically safe, or

(C) Approved for Class I, Group C atmospheres. This requirement does not apply to electrical equipment which is installed on mobile supply trucks or tank cars from which the storage container is filled.

(j) Bonding and grounding. The liquefied hydrogen container and associated piping shall be electrically bonded and grounded.

(2) Location of liquefied hydrogen storage.

(a) General requirements.

(i) The storage containers shall be located so that they are readily accessible to mobile supply equipment at ground level and to authorized personnel.

(ii) The containers shall not be exposed by electric power lines, flammable liquid lines, flammable gas lines, or lines carrying oxidizing materials.

(iii) When locating liquefied hydrogen storage containers near above-ground flammable liquid storage or liquid oxygen storage, locate the liquefied hydrogen container on ground higher than flammable liquid storage or liquid oxygen storage.

(iv) Where it is necessary to locate the liquefied hydrogen container on ground that is level with or lower than adjacent flammable liquid storage or liquid oxygen storage, suitable protective means shall be taken (such as by diking, diversion, curbs, grading), with respect to the adjacent flammable liquid storage or liquid oxygen storage, to prevent accumulation of liquids within 50 feet of the liquefied hydrogen container.

(v) Storage sites shall be fenced and posted to prevent entrance by unauthorized personnel. Sites shall also be placarded as follows: "Liquefied hydrogen—Flammable gas—No smoking—No open flames."

(vi) If liquefied hydrogen is located in (as specified in Table H-3) a separate building, in a special room, or inside buildings when not in a special room and exposed to other occupancies, containers shall have the safety relief devices vented unobstructed to the outdoors at a minimum elevation of 25 feet above grade to a safe location as required in (1)(d)(ii) of this section.

(b) Specific requirements.

(i) The location of liquefied hydrogen storage, as determined by the maximum total quantity of liquefied hydrogen, shall be in the order of preference as indicated by Roman numerals in the following Table H-3.

TABLE H-3

MAXIMUM TOTAL QUANTITY OF LIQUEFIED HYDROGEN STORAGE PERMITTED

Nature of location	Size of hydrogen storage (capacity in gallons)			
	39.63 (150 liters) to 50	51 to 300	301 to 600	In excess of 600
Outdoors	I	I	I	I
In a separate building	II	II	II	Not permitted.
In a special room	III	III	Not permitted	Not permitted.
Inside buildings not in a special room and exposed to other occupancies	IV			
		No permitted	Not permitted	Not permitted.

Note: This table does not apply to the storage in dewars of the type generally used in laboratories for experimental purposes.

(ii) The minimum distance in feet from liquefied hydrogen systems of indicated storage capacity located outdoors, in a separate building, or in a special room to any specified exposure shall be in accordance with Table H-4.

TABLE H-4

MINIMUM DISTANCE (FEET) FROM LIQUEFIED HYDROGEN SYSTEMS TO EXPOSURE

Type of exposure	Liquefied hydrogen storage (capacity in gallons)		
	39.63 (150 liters) to 3,500	3,501 to 15,000	15,001 to 30,000
1. Fire-resistive building and fire walls*	5	5	5
2. Noncombustible building*	25	50	75
3. Other buildings*	50	75	100
4. Wall openings, air-compressor intakes, inlets for air-conditioning or ventilating equipment -	75	75	75
5. Flammable liquids (above ground and vent or fill openings if below ground) (see 513 and 514)	50	75	100
6. Between stationary liquefied hydrogen containers	5	5	5
7. Flammable gas storage -	50	75	100
8. Liquid oxygen storage and other oxidizers (see 513 and 514)	100	100	100
9. Combustible solids	50	75	100
10. Open flames, smoking, and welding	50	50	50
11. Concentrations of people**	75	75	75
12. Public ways, railroads, and property lines	25	50	75

(2007 Ed.)

* Refer to standard types of building construction, NFPA No. 220-1969 for definitions of various types of construction.

** In congested areas such as offices, lunchrooms, locker rooms, time-clock areas, and places of public assembly.

Note 1: The distance in Nos. 2, 3, 5, 7, 9, and 12 in Table H-4 may be reduced where protective structures, such as firewalls equal to height of top of the container, to safeguard the liquefied hydrogen storage system, are located between the liquefied hydrogen storage installation and the exposure.

Note 2: Where protective structures are provided, ventilation and confinement of product should be considered. The 5-foot distance in Nos. 1 and 6 facilitates maintenance and enhances ventilation.

(c) Handling of liquefied hydrogen inside buildings other than separate buildings and special rooms. Portable liquefied hydrogen containers of 50 gallons or less capacity as permitted in Table H-3 and in compliance with (2)(a)(vi) of this section when housed inside buildings not located in a special room and exposed to other occupancies shall comply with the following minimum requirements:

(i) Be located 20 feet from flammable liquids and readily combustible materials such as excelsior or paper.

(ii) Be located 25 feet from ordinary electrical equipment and other sources of ignition including process or analytical equipment.

(iii) Be located 25 feet from concentrations of people.

(iv) Be located 50 feet from intakes of ventilation and air-conditioning equipment or intakes of compressors.

(v) Be located 50 feet from storage of other flammable-gases or storage of oxidizing gases.

(vi) Containers shall be protected against damage or injury due to falling objects or work activity in the area.

(vii) Containers shall be firmly secured and stored in an upright position.

(viii) Welding or cutting operations, and smoking shall be prohibited while hydrogen is in the room.

(ix) The area shall be adequately ventilated. Safety relief devices on the containers shall be vented directly outdoors or to a suitable hood. See (1)(d)(ii) of this section and (2)(a)(vi) of this section.

(3) Design considerations at specific locations.

(a) Outdoor locations.

(i) Outdoor location shall mean outside of any building or structure, and includes locations under a weather shelter or canopy provided such locations are not enclosed by more than two walls set at right angles and are provided with vent-space between the walls and vented roof or canopy.

(ii) Roadways and yard surfaces located below liquefied hydrogen piping, from which liquid air may drop, shall be constructed of noncombustible materials.

(iii) If protective walls are provided, they shall be constructed of noncombustible materials and in accordance with the provisions of (3)(a)(i) of this section as applicable.

(iv) Electrical wiring and equipment shall comply with chapter 296-24 WAC Part L.

(v) Adequate lighting shall be provided for nighttime transfer operation.

(b) Separate buildings.

(i) Separate buildings shall be of light noncombustible construction on a substantial frame. Walls and roofs shall be lightly fastened and designed to relieve at a maximum internal pressure of 25 pounds per square foot. Windows shall be of shatterproof glass or plastic in metal frames. Doors shall

be located in such a manner that they will be readily accessible to personnel in an emergency.

(ii) Adequate ventilation to the outdoors shall be provided. Inlet openings shall be located near the floor level in exterior walls only. Outlet openings shall be located at the high point of the room in exterior walls or roof. Both the inlet and outlet vent openings shall have a minimum total area of 1 square foot per 1,000 cubic feet of room volume. Discharge from outlet openings shall be directed or conducted to a safe location.

(iii) There shall be no sources of ignition.

(iv) Electrical wiring and equipment shall comply with chapter 296-24 WAC Part L.

(v) Heating, if provided, shall be by steam, hot water, or other indirect means.

(c) Special rooms.

(i) Floors, walls, and ceilings shall have a fire resistance rating of at least 2 hours. Walls or partitions shall be continuous from floor to ceiling and shall be securely anchored. At least one wall shall be an exterior wall. Openings to other parts of the building shall not be permitted. Windows and doors shall be in exterior walls and doors shall be located in such a manner that they will be accessible in an emergency. Windows shall be of shatterproof glass or plastic in metal frames.

(ii) Ventilation shall be as provided in (3)(b)(ii) of this section.

(iii) Explosion venting shall be provided in exterior walls or roof only. The venting area shall be equal to not less than 1 square foot per 30 cubic feet of room volume and may consist of any one or any combination of the following: Walls of light noncombustible material; lightly fastened hatch covers; lightly fastened swinging doors opening outward in exterior walls; lightly fastened walls or roofs designed to relieve at a maximum pressure of 25 pounds per square foot.

(iv) There shall be no sources of ignition.

(v) Electrical wiring and equipment shall comply with chapter 296-24 WAC Part L.

(vi) Heating, if provided, shall be steam, hot water, or by other indirect means.

(4) Operating instructions.

(a) Written instructions. For installation which require any operation of equipment by the user, legible instructions shall be maintained at operating locations.

(b) Attendant. A qualified person shall be in attendance at all times while the mobile hydrogen supply unit is being unloaded.

(c) Security. Each mobile liquefied hydrogen supply unit used as part of a hydrogen system shall be adequately secured to prevent movement.

(d) Grounding. The mobile liquefied hydrogen supply unit shall be grounded for static electricity.

(5) Maintenance.

(a) The equipment and functioning of each charged liquefied hydrogen system shall be maintained in a safe operating condition in accordance with the requirements of this section. Weeds or similar combustibles shall not be permitted within 25 feet of any liquefied hydrogen equipment.

[Statutory Authority: Chapter 49.17 RCW. 91-24-017 (Order 91-07), § 296-24-31505, filed 11/22/91, effective 12/24/91; 88-23-054 (Order 88-25), § 296-24-31505, filed 11/14/88. Statutory Authority: RCW 49.17.040 and

49.17.050. 85-10-004 (Order 85-09), § 296-24-31505, filed 4/19/85; Order 76-6, § 296-24-31505, filed 3/1/76; Order 73-5, § 296-24-31505, filed 5/9/73 and Order 73-4, § 296-24-31505, filed 5/7/73.]

WAC 296-24-320 Oxygen.

[Order 73-5, § 296-24-320, filed 5/9/73 and Order 73-4, § 296-24-320, filed 5/7/73.]

WAC 296-24-32001 Scope. This section applies to the installation of bulk oxygen systems on industrial and institutional consumer premises. This section does not apply to oxygen manufacturing plants or other establishments operated by the oxygen supplier or supplier's agent for the purpose of storing oxygen and refilling portable containers, trailers, mobile supply trucks, or tank cars, nor to systems having capacities less than those stated in WAC 296-24-32003(1).

[Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-24-32001, filed 7/20/94, effective 9/20/94; Order 73-5, § 296-24-32001, filed 5/9/73 and Order 73-4, § 296-24-32001, filed 5/7/73.]

WAC 296-24-32003 Bulk oxygen systems. (1) Definitions. As used in this section: A bulk oxygen system is an assembly of equipment, such as oxygen storage containers, pressure regulators, safety devices, vaporizers, manifolds, and interconnecting piping, which has storage capacity of more than 13,000 cubic feet of oxygen, normal temperature and pressure (NTP), connected in service or ready for service, or more than 25,000 cubic feet of oxygen (NTP) including unconnected reserves on hand at the site. The bulk oxygen system terminates at the point where oxygen at service pressure first enters the supply line. The oxygen containers may be stationary or movable, and the oxygen may be stored as gas or liquid.

(2) Location.

(a) General. Bulk oxygen storage systems shall be located above ground out of doors, or shall be installed in a building of noncombustible construction, adequately vented, and used for that purpose exclusively. The location selected shall be such that containers and associated equipment shall not be exposed by electric power lines, flammable or combustible liquid lines, or flammable gas lines.

(b) Accessibility. The system shall be located so that it is readily accessible to mobile supply equipment at ground level and to authorized personnel.

(c) Leakage. Where oxygen is stored as a liquid, noncombustible surfacing shall be provided in an area in which any leakage of liquid oxygen might fall during operation of the system and filling of a storage container. For purposes of these standards, asphaltic or bituminous paving is considered to be combustible.

(d) Elevation. When locating bulk oxygen systems near above ground flammable or combustible liquid storage which may be either indoors or outdoors, it is advisable to locate the system on ground higher than the flammable or combustible liquid storage.

(e) Dikes. Where it is necessary to locate a bulk oxygen system on ground lower than adjacent flammable or combustible liquid storage suitable means shall be taken (such as by diking, diversion curbs, or grading) with respect to the adjacent flammable or combustible liquid storage to prevent accumulation of liquids under the bulk oxygen system.

(3) Distance between systems and exposures.

(a) General. The minimum distance from any bulk oxygen storage container to exposures, measured in the most direct line except as indicated in (3)(f) and (g) of this section shall be as indicated in (3)(b) to (r) of this section inclusive.

(b) Combustible structures. Fifty feet from any combustible structures.

(c) Fire resistive structures. Twenty-five feet from any structures with fire-resistive exterior walls or sprinklered buildings or other construction, but not less than one-half the height of adjacent side wall of the structure.

(d) Openings. At least 10 feet from any opening in adjacent walls of fire resistive structures. Spacing from such structures shall be adequate to permit maintenance, but shall not be less than 1 foot.

(e) Flammable liquid storage above ground.

Distance (feet)	Capacity (gallons)
50	0-1000
90	1001 or more

(f) Flammable liquid storage below ground.

Distance measured horizontally from oxygen storage container to flammable liquid tank (feet)	Distance from oxygen storage container to filling and vent connections or openings to flammable liquid tank (feet)	Capacity gallons
15	50	0-1000
30	50	1001 or more

(g) Combustible liquid storage above ground.

Distance (feet)	Capacity (gallons)
25	0-1000
50	1001 or more

(h) Combustible liquid storage below ground.

Distance measured horizontally from oxygen storage container to combustible liquid tank (feet)	Distance from oxygen storage container to filling and vent connections or openings to combustible liquid tank (feet)
15	40

(i) Flammable gas storage. (Such as compressed flammable gases, liquefied flammable gases and flammable gases in low pressure gas holders):

Distance (feet)	Capacity (cu. ft. NTP)
50	Less than 5000
90	5000 or more

(j) Highly combustible materials. Fifty feet from solid materials which burn rapidly, such as excelsior or paper.

(k) Slow-burning materials. Twenty-five feet from solid materials which burn slowly, such as coal and heavy timber.

(l) Ventilation. Seventy-five feet in one direction and 35 feet in approximately 90° direction from confining walls (not including firewalls less than 20 feet high) to provide adequate ventilation in courtyards and similar confining areas.

(m) Congested areas. Twenty-five feet from congested areas such as offices, lunchrooms, locker rooms, time clock areas, and similar locations where people may congregate.

(n) Public areas. Fifty feet from places of public assembly.

(o) Patients. Fifty feet from areas occupied by nonambulatory patients.

(p) Sidewalks. Ten feet from any public sidewalk.

(q) Adjacent property. Five feet from any line of adjoining property.

(r) Exceptions. The distances in (3)(b), (c), (e) to (k) inclusive, and (p) and (q) of this section do not apply where protective structures such as firewalls of adequate height to safeguard the oxygen storage systems are located between the bulk oxygen storage installation and the exposure. In such cases, the bulk oxygen storage installation may be a minimum distance of 1 foot from the firewall.

(4) Storage containers.

(a) Foundations and supports. Permanently installed containers shall be provided with substantial noncombustible supports on firm noncombustible foundations.

(b) Construction—Liquid. Liquid oxygen storage containers shall be fabricated from materials meeting the impact test requirements of paragraph UG-84 of ASME Boiler and Pressure Vessel Code, Section VIII—Unfired Pressure Vessels—1968. Containers operating at pressures above 15 pounds per square inch gage (p.s.i.g.) shall be designed, constructed, and tested in accordance with appropriate requirements of ASME Boiler and Pressure Vessel Code, Section VII—Unfired Pressure Vessels—1968. Insulation surrounding the liquid oxygen container shall be noncombustible.

(c) Construction—Gaseous. High-pressure gaseous oxygen containers shall comply with one of the following:

(i) Designed, constructed, and tested in accordance with appropriate requirements of ASME Boiler and Pressure Vessel Code, Section VIII—Unfired Pressure Vessels—1968.

(ii) Designed, constructed, tested, and maintained in accordance with DOT specifications and regulations.

(5) Piping, tubing, and fittings.

(a) Selection. Piping, tubing, and fittings shall be suitable for oxygen service and for the pressures and temperatures involved.

(b) Specification. Piping and tubing shall conform to Section 2—Gas and Air Piping Systems of Code for Pressure Piping, ANSI, B31.1-1967 with addenda B31.10a-1969.

(c) Fabrication. Piping or tubing for operating temperatures below -20°F shall be fabricated from materials meeting the impact test requirements of paragraph UG-84 of ASME Boiler and Pressure Vessel Code, Section VIII—Unfired Pressure Vessels—1968, when tested at the minimum operating temperature to which the piping may be subjected in service.

(6) Safety relief devices.

(a) General. Bulk oxygen storage containers, regardless of design pressure shall be equipped with safety relief devices as required by the ASME code or the DOT specifications and regulations.

(b) DOT containers. Bulk oxygen storage containers designed and constructed in accordance with DOT specifications shall be equipped with safety relief devices as required thereby.

(c) ASME containers. Bulk oxygen storage containers designed and constructed in accordance with the ASME Boiler and Pressure Vessel Code, Section VIII—Unfired Pressure Vessel—1968 shall be equipped with safety relief devices meeting the provisions of the Compressed Gas Association Pamphlet "Safety Relief Device Standards for Compressed Gas Storage Containers," S-1, Part 3.

(d) Insulation. Insulation casings on liquid oxygen containers shall be equipped with suitable safety relief devices.

(e) Reliability. All safety relief devices shall be so designed or located that moisture cannot collect and freeze in a manner which would interfere with proper operation of the device.

(7) Liquid oxygen vaporizers.

(a) Mounts and couplings. The vaporizer shall be anchored and its connecting piping be sufficiently flexible to provide for the effect of expansion and contraction due to temperature changes.

(b) Relief devices. The vaporizer and its piping shall be adequately protected on the oxygen and heating medium sections with safety relief devices.

(c) Heating. Heat used in an oxygen vaporizer shall be indirectly supplied only through media such as steam, air, water, or water solutions which do not react with oxygen.

(d) Grounding. If electric heaters are used to provide the primary source of heat, the vaporizing system shall be electrically grounded.

(8) Equipment assembly and installation.

(a) Cleaning. Equipment making up a bulk oxygen system shall be cleaned in order to remove oil, grease or other readily oxidizable materials before placing the system in service.

(b) Joints. Joints in piping and tubing may be made by welding or by use of flanged, threaded, slip, or compression fittings. Gaskets or thread sealants shall be suitable for oxygen service.

(c) Accessories. Valves, gages, regulators, and other accessories shall be suitable for oxygen service.

(d) Installation. Installation of bulk oxygen systems shall be supervised by personnel familiar with proper practices with reference to their construction and use.

(e) Testing. After installation all field erected piping shall be tested and proved gas tight at maximum operating pressure. Any medium used for testing shall be oil free and nonflammable.

(f) Security. Storage containers, piping, valves, regulating equipment, and other accessories shall be protected against physical damage and against tampering.

(g) Venting. Any enclosure containing oxygen control or operating equipment shall be adequately vented.

(h) Placarding. The bulk oxygen storage location shall be permanently placarded to indicate: "OXYGEN—NO SMOKING—NO OPEN FLAMES," or an equivalent warning.

(i) Electrical wiring. Bulk oxygen installations are not hazardous locations as defined and covered by chapter 296-24 WAC Part L. Therefore, general purpose or weatherproof types of electrical wiring and equipment are acceptable depending upon whether the installation is indoors or outdoors. Such equipment shall be installed according to chapter 296-24 WAC Part L.

(9) Operating instructions. For installations which require any operation of equipment by the user, legible instructions shall be maintained at operating locations.

(10) Maintenance.

(a) The equipment and functioning of each charged bulk oxygen system shall be maintained in a safe operating condition in accordance with the requirements of this section. Wood and long dry grass shall be cut back within 15 feet of any bulk oxygen storage container.

[Statutory Authority: Chapter 49.17 RCW. 91-24-017 (Order 91-07), § 296-24-32003, filed 11/22/91, effective 12/24/91. Statutory Authority: RCW 49.17.040 and 49.17.050. 85-10-004 (Order 85-09), § 296-24-32003, filed 4/19/85; Order 76-6, § 296-24-32003, filed 3/1/76; Order 73-5, § 296-24-32003, filed 5/9/73 and Order 73-4, § 296-24-32003, filed 5/7/73.]

WAC 296-24-325 Nitrous oxide. The piped systems for the in-plant transfer and distribution of nitrous oxide shall be designed, installed, maintained, and operated in accordance with Compressed Gas Association Pamphlet G8.1-1964.

[Order 73-5, § 296-24-325, filed 5/9/73 and Order 73-4, § 296-24-325, filed 5/7/73.]

WAC 296-24-330 Flammable and combustible liquids.

[Order 73-5, § 296-24-330, filed 5/9/73 and Order 73-4, § 296-24-330, filed 5/7/73.]

WAC 296-24-33001 Definitions. The following definitions are applicable to all sections of this chapter which include WAC 296-24-330 in the section number.

(1) Aerosol shall mean a material which is dispensed from its container as a mist, spray, or foam by a propellant under pressure.

(2) Atmospheric tank shall mean a storage tank which has been designed to operate at pressures from atmospheric through 0.5 p.s.i.g.

(3) Automotive service station shall mean that portion of property where flammable or combustible liquids used as motor fuels are stored and dispensed from fixed equipment into the fuel tanks of motor vehicles and shall include any facilities available for the sale and service of tires, batteries, and accessories, and for minor automotive maintenance work. Major automotive repairs, painting, body and fender work are excluded.

(4) Basement shall mean a story of a building or structure having one-half or more of its height below ground level and to which access for fire fighting purposes is unduly restricted.

(5) Boiling point shall mean the boiling point of a liquid at a pressure of 14.7 pounds per square inch absolute (p.s.i.a.) (760 mm.). Where an accurate boiling point is unavailable for the material in question, or for mixtures which do not have a constant boiling point, for purposes of this section the ten percent point of a distillation performed in accordance with the Standard Method of Test for Distillation of Petroleum Products, ASTM D-86-62, may be used as the boiling point of the liquid.

(6) Boilover shall mean the expulsion of crude oil (or certain other liquids) from a burning tank. The light fractions of the crude oil burnoff producing a heat wave in the residue,

which on reaching a water strata may result in the expulsion of a portion of the contents of the tank in the form of froth.

(7) Bulk plant shall mean that portion of a property where flammable or combustible liquids are received by tank vessel, pipelines, tank car, or tank vehicle, and are stored or blended in bulk for the purpose of distributing such liquids by tank vessel, pipeline, tank car, tank vehicle, or container.

(8) Chemical plant shall mean a large integrated plant or that portion of such a plant other than a refinery or distillery where flammable or combustible liquids are produced by chemical reactions or used in chemical reactions.

(9) Closed container shall mean a container as herein defined, so sealed by means of a lid or other device that neither liquid nor vapor will escape from it at ordinary temperatures.

(10) Crude petroleum shall mean hydrocarbon mixtures that have a flash point below 150°F and which have not been processed in a refinery.

(11) Distillery shall mean a plant or that portion of a plant where flammable or combustible liquids produced by fermentation are concentrated, and where the concentrated products may also be mixed, stored, or packaged.

(12) Fire area shall mean an area of a building separated from the remainder of the building by construction having a fire resistance of at least one hour and having all communicating openings properly protected by an assembly having a fire resistance rating of at least one hour.

(13) Fire resistance or fire resistive construction shall mean construction to resist the spread of fire.

(14) Flammable aerosol shall mean an aerosol which is required to be labeled "Flammable" under the Federal Hazardous Substances Labeling Act (15 U.S.C. 1261). For the purposes of WAC 296-24-33009, such aerosols are considered Class IA liquids.

(15) "Flashpoint" means the minimum temperature at which a liquid gives off vapor within a test vessel in sufficient concentration to form an ignitable mixture with air near the surface of the liquid, and shall be determined as follows:

(a) For a liquid which has a viscosity of less than 45 SUS at 100°F (37.8°C), does not contain suspended solids, and does not have a tendency to form a surface film while under test, the procedure specified in the Standard Method of Test for Flashpoint by Tag Closed Tester (ASTM D-56-70) shall be used.

(b) For a liquid which has a viscosity of 45 SUS or more at 100°F (37.8°C), or contains suspended solids, or has a tendency to form a surface film while under test, the Standard Method of Test for Flashpoint by Pensky-Martens Closed Tester (ASTM D-93-71) shall be used, except that the methods specified in Note 1 to section 1.1 of ASTM D-93-71 may be used for the respective materials specified in the note.

(c) For a liquid that is a mixture of compounds that have different volatilities and flashpoints, its flashpoint shall be determined by using the procedure specified in (a) or (b) of this subsection on the liquid in the form it is shipped. If the flashpoint, as determined by this test, is 100°F (37.8°C) or higher, an additional flashpoint determination shall be run on a sample of the liquid evaporated to ninety percent of its original volume, and the lower value of the two tests shall be considered the flashpoint of the material.

(d) Organic peroxides, which undergo autoaccelerating thermal decomposition, are excluded from any of the flashpoint determination methods specified in this section.

(16) Hotel shall mean buildings or groups of buildings under the same management in which there are sleeping accommodations for hire primarily used by transients who are lodged with or without meals including but not limited to inns, clubs, motels, and apartment hotels.

(17) Institutional occupancy shall mean the occupancy or use of a building or structure or any portion thereof by persons harbored or detained to receive medical, charitable or other care or treatment, or by persons involuntarily detained.

(18) Liquid shall mean, for the purpose of these standards, any material which has a fluidity greater than that of 300 penetration asphalt when tested in accordance with ASTM Test for Penetration for Bituminous Materials, D-5-65. When not otherwise identified, the term liquid shall include both flammable and combustible liquids.

(19) "Combustible liquid" means any liquid having a flashpoint at or above 100°F (37.8°C). Combustible liquids shall be divided into two classes as follows:

(a) "Class II liquids" shall include those with flashpoints at or above 100°F (37.8°C) and below 140°F (60°C), except any mixture having components with flashpoints of 200°F (93.3°C) or higher, the volume of which make up ninety-nine percent or more of the total volume of the mixture.

(b) "Class III liquids" shall include those with flashpoints at or above 140°F (60°C). Class III liquids are subdivided into two subclasses:

(i) "Class IIIA liquids" shall include those with flashpoints at or above 140°F (60°C) and below 200°F (93.3°C) except any mixture having components with flashpoints of 200°F (93.3°C) or higher, the total volume of which make up ninety-nine percent or more of the total volume of the mixture.

(ii) "Class IIIB liquids" shall include those with flashpoints at or above 200°F (93.3°C). This section does not cover Class IIIB liquids. Where the term "Class III liquids" is used in this section, it shall mean only Class IIIA liquids.

(c) When a combustible liquid is heated for use to within 30°F (16.7°C) of its flashpoint, it shall be handled in accordance with the requirements for the next lower class of liquids.

(20) "Flammable liquid" means any liquid having a flashpoint below 100°F (37.8°C), except any mixture having components with flashpoints of 100°F (37.8°C), or higher, the total of which make up ninety-nine percent or more of the total volume of the mixture. Flammable liquids shall be known as Class I liquids. Class I liquids are divided into three classes as follows:

(a) Class IA shall include liquids having flashpoints below 73°F (22.8°C) and having a boiling point below 100°F (37.8°C).

(b) Class IB shall include liquids having flashpoints below 73°F (22.8°C) and having a boiling point at or above 100°F (37.8°C).

(c) Class IC shall include liquids having flashpoints at or above 73°F (22.8°C) and below 100°F (37.8°C).

(21) Unstable (reactive) liquid shall mean a liquid which in the pure state or as commercially produced or transported will vigorously polymerize, decompose, condense, or will become self-reactive under conditions of shocks, pressure, or temperature.

(22) Low-pressure tank shall mean a storage tank which has been designed to operate at pressures above 0.5 p.s.i.g. but not more than 15 p.s.i.g.

(23) Marine service station shall mean that portion of a property where flammable or combustible liquids used as fuels are stored and dispensed from fixed equipment on shore, piers, wharves, or floating docks into the fuel tanks or self-propelled craft, and shall include all facilities used in connection therewith.

(24) Mercantile occupancy shall mean the occupancy or use of a building or structure or any portion thereof for the displaying, selling, or buying of goods, wares, or merchandise.

(25) Office occupancy shall mean the occupancy or use of a building or structure or any portion thereof for the transaction of business, or the rendering or receiving of professional services.

(26) Portable tank shall mean a closed container having a liquid capacity over sixty United States gallons and not intended for fixed installation.

(27) Pressure vessel shall mean a storage tank or vessel which has been designed to operate at pressures above 15 p.s.i.g.

(28) Protection for exposure shall mean adequate fire protection for structures on property adjacent to tanks, where there are employees of the establishment.

(29) Refinery shall mean a plant in which flammable or combustible liquids are produced on a commercial scale from crude petroleum, natural gasoline, or other hydrocarbon sources.

(30) Safety can shall mean an approved container, of not more than five gallons capacity, having a spring-closing lid and spout cover and so designed that it will safely relieve internal pressure when subjected to fire exposure.

(31) Vapor pressure shall mean the pressure, measured in pounds per square inch (absolute) exerted by a volatile liquid as determined by the "Standard Method of Test for Vapor Pressure of Petroleum Products (Reid Method)," American Society for Testing and Materials ASTM D323-68.

(32) Ventilation as specified in these standards is for the prevention of fire and explosion. It is considered adequate if it is sufficient to prevent accumulation of significant quantities of vapor-air mixtures in concentration over one-fourth of the lower flammable limit.

(33) Storage: Flammable or combustible liquids shall be stored in a tank or in a container that complies with WAC 296-24-33009(2).

(34) Barrel shall mean a volume of forty-two United States gallons.

(35) Container shall mean any can, barrel, or drum.

(36) Approved unless otherwise indicated, approved, or listed by a nationally recognized testing laboratory. Refer to federal regulation 29 CFR 1910.7 for definition of nationally recognized testing laboratory.

(37) Listed see subsection (36) of this section.

(38) "SUS" means Saybolt Universal Seconds as determined by the Standard Method of Test for Saybolt Viscosity (ASTM D-88-56), and may be determined by use of the SUS conversion tables specified in ASTM Method D2161-66 following determination of viscosity in accordance with the procedures specified in the Standard Method of Test for Viscosity of Transparent and Opaque Liquids (ASTM D445-65).

(39) "Viscous" means a viscosity of 45 SUS or more.

Note: The volatility of liquids is increased when artificially heated to temperatures equal to or higher than their flashpoints. When so heated Class II and III liquids shall be subject to the applicable requirements for Class I or II liquids. These standards may also be applied to high flashpoint liquids when so heated even though these same liquids when not heated are outside of its scope.

[Statutory Authority: Chapter 49.17 RCW. 88-23-054 (Order 88-25), § 296-24-33001, filed 11/14/88. Statutory Authority: RCW 49.17.040 and 49.17.050. 82-08-026 (Order 82-10), § 296-24-33001, filed 3/30/82. Statutory Authority: RCW 49.17.040, 49.17.050, 49.17.240, chapters 43.22 and 42.30 RCW. 80-17-015 (Order 80-21), § 296-24-33001, filed 11/13/80; Order 76-29, § 296-24-33001, filed 9/30/76; Order 76-6, § 296-24-33001, filed 3/1/76; Order 74-27, § 296-24-33001, filed 5/7/74; Order 73-5, § 296-24-33001, filed 5/9/73 and Order 73-4, § 296-24-33001, filed 5/7/73.]

WAC 296-24-33003 Scope. This section applies to the handling, storage, and use of flammable and combustible liquids with a flash point below 200°F. This section does not apply to:

- (1) Bulk transportation of flammable and combustible liquids;
- (2) Storage, handling, and use of fuel oil tanks and containers connected with oil burning equipment;
- (3) Storage of flammable and combustible liquids on farms.
- (4) Liquids without flashpoints that may be flammable under some conditions, such as certain halogenated hydrocarbons and mixtures containing halogenated hydrocarbons;
- (5) Mists, sprays, or foams, except flammable aerosols covered in WAC 296-24-33009; or
- (6) Installations made in accordance with requirements of the following standards:
 - (a) National Fire Protection Association Standard for Drycleaning Plants, NFPA No. 32-1970;
 - (b) National Fire Protection Association Standard for the Manufacture of Organic Coatings, NFPA No. 35-1970;
 - (c) National Fire Protection Association Standard for Solvent Extraction Plants, NFPA No. 36-1967; or
 - (d) National Fire Protection Association Standard for the Installation and Use of Stationary Combustion Engines and Gas Turbines, NFPA No. 37-1970.

[Statutory Authority: RCW 49.17.010, [49.17].050 and [49.17].060. 95-22-015, § 296-24-33003, filed 10/20/95, effective 1/16/96. Statutory Authority: Chapter 49.17 RCW. 94-06-068 (Order 93-17), § 296-24-33003, filed 3/2/94, effective 3/1/95; Order 73-5, § 296-24-33003, filed 5/9/73 and Order 73-4, § 296-24-33003, filed 5/7/73.]

WAC 296-24-33005 Tank storage. (1) Design and construction of tanks.

(a) Materials.

(i) Tanks shall be built of steel except as provided in (1)(a)(ii) through (v) of this section.

(ii) Tanks may be built of materials other than steel for installation underground or if required by the properties of

the liquid stored. Tanks located above ground or inside buildings shall be of noncombustible construction.

(iii) Tanks built of materials other than steel shall be designed to specifications embodying principles recognized as good engineering design for the material used.

(iv) Unlined concrete tanks may be used for storing flammable or combustible liquids having a gravity of 40°API or heavier. Concrete tanks with special lining may be used for other services provided the design is in accordance with sound engineering practice.

(v) Tanks may have combustible or noncombustible linings.

(vi) Special engineering consideration shall be required if the specific gravity of the liquid to be stored exceeds that of water or if the tanks are designed to contain flammable or combustible liquids at a liquid temperature below 0°F.

(b) Fabrication.

(i) Tanks may be of any shape or type consistent with sound engineering design.

(ii) Metal tanks shall be welded, riveted, and caulked, brazed, or bolted, or constructed by use of a combination of these methods. Filler metal used in brazing shall be nonferrous metal or an alloy having a melting point above 1000°F and below that of the metal joined.

(c) Atmospheric tanks.

(i) Atmospheric tanks shall be built in accordance with acceptable good standards of design. Atmospheric tanks may be built in accordance with:

(A) Underwriters' Laboratories, Inc., Subjects No. 142, Standard for Steel Aboveground Tanks for Flammable and Combustible Liquids, 1968; No. 58, Standards for Steel Underground Tanks for Flammable and COMBUSTIBLE Liquids, Fifth Edition, December 1961; or No. 80, Standard for Steel Inside Tanks for Oil-Burner Fuel, September 1963.

(B) American Petroleum Institute Standards No. 650, Welded Steel Tanks for Oil Storage, Third Edition, 1966.

(C) American Petroleum Institute Standards No. 12B, Specification for Bolted Production Tanks, Eleventh Edition, May 1958, and Supplement 1, March 1962; No. 12D, Specification for Large Welded Production Tanks, Seventh Edition, August 1957; or No. 12F, Specification for Small Welded Production Tanks, Fifth Edition, March 1961. Tanks built in accordance with these standards shall be used only as production tanks for storage of crude petroleum in oil-producing areas.

(ii) Tanks designed for underground service not exceeding 2,500 gallons capacity may be used aboveground.

(iii) Low-pressure tanks and pressure vessels may be used as atmospheric tanks.

(iv) Atmospheric tanks shall not be used for the storage of a flammable or combustible liquid at a temperature at or above its boiling point.

(d) Low pressure tanks.

(i) The normal operating pressure of the tank shall not exceed the design pressure of the tank.

(ii) Low-pressure tanks shall be built in accordance with acceptable standards of design. Low-pressure tanks may be built in accordance with:

(A) American Petroleum Institute Standard No. 620, Recommended Rules for the Design and Construction of

Large, Welded, Low-Pressure Storage Tanks, Third Edition, 1966.

(B) The principles of the Code for Unfired Pressure Vessels, Section VIII of the ASME Boiler and Pressure Vessels Code, 1968.

(iii) Atmospheric tanks built according to the Underwriters' Laboratories, Inc., requirements in (1)(c)(i) of this section may be used for operating pressures not exceeding 1 p.s.i.g. and shall be limited to 2.5 p.s.i.g. under emergency venting conditions. Pressure vessels may be used as low-pressure tanks.

(e) Pressure vessels.

(i) The normal operating pressure of the vessel shall not exceed the design pressure of the vessel.

(ii) Pressure vessels shall be built in accordance with the Code for Unfired Pressure Vessels, Section VIII of the ASME Boiler and Pressure Vessel Code, 1968.

(f) Provisions for internal corrosion. When tanks are not designed in accordance with the American Petroleum Institute, American Society of Mechanical Engineers, or the Underwriters' Laboratories, Inc.'s standards, or if corrosion is anticipated beyond that provided for in the design formulas used, additional metal thickness or suitable protective coatings or linings shall be provided to compensate for the corrosion loss expected during the design life of the tank.

(2) Installation of outside aboveground tanks.

(a) Location with respect to property lines and public ways.

(i) Every aboveground tank for the storage of flammable or combustible liquids, except those liquids with boil-over characteristics and unstable liquids, operating at pressures not in excess of 2.5 p.s.i.g. and equipped with emergency venting which will not permit pressures to exceed 2.5 p.s.i.g. shall be located in accordance with Table H-5.

(ii) Every aboveground tank for the storage of flammable or combustible liquids, except those liquids with boil-over characteristics and unstable flammable or combustible liquids, operating at pressures exceeding 2.5 p.s.i.g. or equipped with emergency venting which will permit pressures to exceed 2.5 p.s.i.g. shall be located in accordance with Table H-6.

(iii) Every aboveground tank for the storage of flammable or combustible liquids with boil-over characteristics shall be located in accordance with Table H-7.

(iv) Every aboveground tank for the storage of unstable liquids shall be located in accordance with Table H-8.

(v) Reference minimum distances for use in Tables H-5 to H-8 inclusive.

(vi) Where end failure or horizontal pressure tanks and vessels may expose property, the tank shall be placed with the longitudinal axis parallel to the nearest important exposure.

TABLE H-5

Type of tank	Protection	Minimum distance in feet from property line which may be built upon, including the opposite side of a public way.	Minimum distance in feet from nearest side of any public way or from nearest important building and shall be not less than 5 feet.
Floating roof ———	Protection for exposures.	1/2 times diameter of tank but need not exceed 90 ft.	1/6 times diameter of tank but need not exceed 30 ft.
	None ———	Diameter of tank but need not exceed 175 ft.	1/6 times diameter of tank but need not exceed 30 ft.
Vertical with weak roof to shell seam	Approved foam or inerting system on the tank.	1/2 times diameter of tank but need not exceed 90 ft. and shall not be less than 5 ft.	1/6 times diameter of tank but need not exceed 30 ft.
	Protection for exposures.	Diameter of tank but need not exceed 175 ft.	1/3 times diameter of tank but need not exceed 60 ft.
	None ———	2 times diameter of tank but need not exceed 350 ft.	1/3 times diameter of tank but need not exceed 60 ft.
Horizontal and vertical, with emergency relief venting to limit pressures to 2.5 p.s.i.g.	Approved inerting system on the tank or approved foam system on vertical tanks.	1/2 times Table H-9 but shall not be less than 5 ft.	1/2 times Table H-9.
	Protection for exposures. None ———	Table H-9 ——— 2 times table ———	Table H-9 Table H-9

TABLE H-6

Type of tank	Protection	Minimum distance in feet from property line which may be built upon, including the opposite side of a public way.	Minimum distance in feet from nearest side of any public way or from nearest important building.
Any type	Protection for exposures.	1 1/2 times Table H-9 but shall not be less than 25 ft.	1 1/2 times Table H-9 but shall not be less than 25 ft.
	None ———	3 times Table H-9 but shall not be less than 50 ft.	1 1/2 times Table H-9 but shall not be less than 25 ft.

TABLE H-7

Type of tank	Protection	Minimum distance in feet from property line which may be built upon, including the opposite side of a public way.	Minimum distance in feet from nearest side of any public way or from nearest important building.
Floating roof ———	Protection for exposures.	Diameter of tank but need not exceed 175 ft.	1/3 times diameter of tank but need not exceed 60 ft.
	None ———	2 times diameter of tank but need not exceed 350 ft.	1/3 times diameter of tank but need not exceed 60 ft.

Type of tank	Protection	Minimum distance in feet from property line which may be built upon, including the opposite side of a public way.	Minimum distance in feet from nearest side of any public way or from nearest important building.
Fixed roof ———	Approved foam or inerting system.	Diameter of tank but need not exceed 175 ft.	1/3 times diameter of tank but need not exceed 60 ft.
	Protection for exposures.	2 times diameter of tank but need not exceed 350 ft.	2/3 times diameter of tank but need not exceed 120 ft.
	None ———	4 times diameter of tank but need not exceed 350 ft.	2/3 times diameter of tank but need not exceed 120 ft.

TABLE H-8

Type of tank	Protection	Minimum distance in feet from property line which may be built upon, including the opposite side of a public way.	Minimum distance in feet from nearest side of any public way or from nearest important building.
Horizontal and vertical tanks with emergency relief venting to permit pressure not in excess of 2.5 p.s.i.g.	Tank protected with any of the following: Approved water spray, approved inerting, approved insulation and refrigeration, approved barricade.	See Table H-9, but the distance may be not less than 25 ft.	Not less than 25 ft.
	Protection for exposures.	2 1/2 times Table H-9 but not less than 50 ft.	Not less than 50 ft.
	None ———	5 times Table H-9 but not less than 100 ft.	Not less than 100 ft.
Horizontal and vertical tanks with emergency relief venting to permit pressure over 2.5 p.s.i.g.	Tank protected with any one of the following: Approved water spray, approved inerting, approved insulation and refrigeration, approved barricade.	2 times Table H-9 but not less than 50 ft.	Not less than 50 ft.
	Protection for exposures.	4 times Table H-9 but not less than 100 ft.	Not less than 100 ft.
	None ———	8 times Table H-9 but not less than 150 ft.	Not less than 150 ft.

TABLE H-9

Capacity tank gallons	Minimum distance in feet from property line which may be built upon, including the opposite side of a public way.	Minimum distance in feet from nearest side of any public way or from nearest important building.
275 or less	5	5
276 to 750	10	5
751 to 12,000	15	5
12,001 to 30,000	20	5
30,001 to 50,000	30	10
50,001 to 100,000	50	15

TABLE H-9

Capacity tank gallons	Minimum distance in feet from prop- erty line which may be built upon, including the oppo- site side of a public way.	Minimum distance in feet from nearest side of any public way or from nearest important building.
100,001 to 500,000	80	25
500,001 to 1,000,000	100	35
1,000,001 to 2,000,000	135	45
2,000,001 to 3,000,000	165	55
3,000,001 or more	175	60

(b) Spacing (shell-to-shell) between aboveground tanks.

(i) The distance between any two flammable or combustible liquid storage tanks shall not be less than 3 feet.

(ii) Except as provided in (2)(b)(iii) of this section, the distance between any two adjacent tanks shall not be less than one-sixth the sum of their diameters. When the diameter of one tank is less than one-half the diameter of the adjacent tank, the distance between the two tanks shall not be less than one-half the diameter of the smaller tank.

(iii) Where crude petroleum in conjunction with production facilities are located in noncongested areas and have capacities not exceeding 126,000 gallons (3,000 barrels), the distance between such tanks shall not be less than 3 feet.

(iv) Where unstable flammable or combustible liquids are stored, the distance between such tanks shall not be less than one-half the sum of their diameters.

(v) When tanks are compacted in three or more rows or in an irregular pattern, greater spacing or other means shall be provided so that inside tanks are accessible for fire fighting purposes.

(vi) The minimum separation between a liquefied petroleum gas container and a flammable or combustible liquid storage tank shall be 20 feet, except in the case of flammable or combustible liquid tanks operating at pressures exceeding 2.5 p.s.i.g. or equipped with emergency venting which will permit pressures to exceed 2.5 p.s.i.g. in which case the provisions of (2)(b)(i) and (ii) of this section shall apply. Suitable means shall be taken to prevent the accumulation of flammable or combustible liquids under adjacent liquefied petroleum gas containers such as by diversion curbs or grading. When flammable or combustible liquid storage tanks are within a diked area, the liquefied petroleum gas containers shall be outside the diked area and at least 10 feet away from the centerline of the wall of the diked area. The foregoing provisions shall not apply when liquefied petroleum gas containers of 125 gallons or less capacity are installed adjacent to fuel oil supply tanks of 550 gallons or less capacity.

(c) Location of outside aboveground tanks with respect to important buildings on same property. Every outside aboveground tank shall be separated from important buildings on the same property by distances not less than those specified in (2)(a)(i), (ii), (iii) and (iv) of this section, whichever is applicable. The appropriate distance column in Tables H-5, H-6, H-7, H-8, or H-9, that shall be used shall be the one reading: "Minimum distance in feet from nearest side of any public way or from nearest important building."

(d) Normal venting for aboveground tanks.

(i) Atmospheric storage tanks shall be adequately vented to prevent the development of vacuum or pressure sufficient to distort the roof of a cone roof tank or exceed the design

pressure in the case of other atmospheric tanks, as a result of filling or emptying, and atmospheric temperature changes.

(ii) Normal vents shall be sized either in accordance with: (A) The American Petroleum Institute Standard 2000 (1968), Venting Atmospheric and Low-Pressure Storage Tanks; or (B), other accepted standard; or (C) shall be at least as large as the filling or withdrawal connection, whichever is larger but in no case less than 1 1/4 inch nominal inside diameter.

(iii) Low-pressure tanks and pressure vessels shall be adequately vented to prevent development of pressure or vacuum, as a result of filling or emptying and atmospheric temperature changes, from exceeding the design pressure of the tank or vessel. Protection shall also be provided to prevent over-pressure from any pump discharging into the tank or vessel when the pump discharge pressure can exceed the design pressure of the tank or vessel.

(iv) If any tank or pressure vessel has more than one fill or withdrawal connection and simultaneous filling or withdrawal can be made, the vent size shall be based on the maximum anticipated simultaneous flow.

(v) Unless the vent is designed to limit the internal pressure 2.5 p.s.i. or less, the outlet of vents and vent drains shall be arranged to discharge in such a manner as to prevent localized overheating of any part of the tank in the event vapors from such vents are ignited.

(vi) Tanks and pressure vessels storing Class IA liquids shall be equipped with venting devices which shall be normally closed except when venting to pressures or vacuum conditions. Tanks and pressure vessels storing Class IB and IC liquids shall be equipped with venting devices which shall be normally closed except when venting under pressure or vacuum conditions, or with approved flame arresters.

Exemption: Tanks of 3,000 bbls. capacity or less containing crude petroleum in crude-producing areas; and, outside aboveground atmospheric tanks under 1,000 gallons capacity containing other than Class IA flammable liquids may have open vents. (See (2)(f)(ii) of this section.)

(vii) Flame arresters or venting devices required in (2)(e)(vi) of this section may be omitted for Class IB and IC liquids where conditions are such that their use may, in case of obstruction, result in tank damage.

(e) Emergency relief venting for fire exposure for aboveground tanks.

(i) Every aboveground storage tank shall have some form of construction or device that will relieve excessive internal pressure caused by exposure fires.

(ii) In a vertical tank the construction referred to in (2)(e)(i) of this section may take the form of a floating roof, lifter roof, a weak roof-to-shell seam, or other approved pressure relieving construction. The weak roof-to-shell seam shall be constructed to fail preferential to any other seam.

(iii) Where entire dependence for emergency relief is placed upon pressure relieving devices, the total venting capacity of both normal and emergency vents shall be enough to prevent rupture of the shell or bottom of the tank if vertical, or of the shell or heads if horizontal. If unstable liquids are stored, the effects of heat or gas resulting from polymerization, decomposition, condensation, or self-reactivity shall be taken into account. The total capacity of both normal and emergency venting devices shall be not less than that derived

from Table H-10 except as provided in (2)(e)(v) and (vi) of this section. Such device may be a self-closing manhole cover, or one using long bolts that permit the cover to lift under internal pressure, or an additional or larger relief valve or valves. The wetted area of the tank shall be calculated on the basis of 55 percent of the total exposed area of a sphere or spheroid, 75 percent of the total exposed area of a horizontal tank and the first 30 feet above grade of the exposed shell area of a vertical tank.

TABLE 10
WETTED AREA VERSUS CUBIC FEET
FREE AIR PER HOUR
(14.7 psia and 60°F)

Square feet	CFH	Square feet	CFH	Square feet	CFH
20	21,100	200	211,000	1,000	524,000
30	31,600	250	239,000	1,200	557,000
40	42,100	300	265,000	1,400	587,000
50	52,700	350	288,000	1,600	614,000
60	63,200	400	312,000	1,800	639,000
70	73,700	500	354,000	2,000	662,000
80	84,200	600	392,000	2,400	704,000
90	94,800	700	428,000	2,800	742,000
100	105,000	800	462,000	and	
120	126,000	900	493,000	over	
140	147,000	1,000	524,000		
160	168,000				
180	190,000				
200	211,000				

(iv) For tanks and storage vessels designed for pressure over 1 p.s.i.g., the total rate of venting shall be determined in accordance with Table H-10, except that when the exposed wetted area of the surface is greater than 2,800 square feet, the total rate of venting shall be calculated by the following formula:

$$\text{CFH} = 1,107A^{0.82}$$

Where:

CFH = Venting requirement, in cubic feet of free air per hour.

A = Exposed wetted surface, in square feet.

Note: The foregoing formula is based on $Q = 21,000A^{0.82}$.

(v) The total emergency relief venting capacity for any specific stable liquid may be determined by the following formula:

Cubic feet of free air per hour = V

$$V = \frac{1337}{L M}$$

V = Cubic feet of free air per hour from Table H-10.

L = Latent heat of vaporization of specific liquid in B.t.u. per pound.

M = Molecular weight of specific liquids.

(vi) The required airflow rate of (2)(e)(iii) or (v) of this section may be multiplied by the appropriate factor listed in the following schedule when protection is provided as indicated. Only one factor may be used for any one tank.

0.5 for drainage in accordance with (2)(g)(ii) of this section for tanks over 200 square feet of wetted area.

0.3 for approved water spray.

0.3 for approved insulation.

0.15 for approved water spray with approved insulation.

(vii) The outlet of all vents and vent drains on tanks equipped with emergency venting to permit pressures exceeding 2.5 p.s.i.g. shall be arranged to discharge in such a way as to prevent localized overheating of any part of the tank, in the event vapors from such vents are ignited.

(viii) Each commercial tank venting device shall have stamped on it the opening pressure, the pressure at which the valve reaches the full open position, and the flow capacity at the latter pressure, expressed in cubic feet per hour of air at 60°F and at a pressure of 14.7 p.s.i.a.

(ix) The flow capacity of tank venting devices 12 inches and smaller in nominal pipe size shall be determined by actual test of each type and size of vent. These flow tests may be conducted by the manufacturer if certified by a qualified impartial observer, or may be conducted by an outside agency. The flow capacity of tank venting devices larger than 12 inches nominal pipe size, including manhole covers with long bolts or equivalent, may be calculated provided that the opening pressure is actually measured, the rating pressure and corresponding free orifice area are stated, the word "calculated" appears on the nameplate, and the computation is based on a flow coefficient of 0.5 applied to the rated orifice area.

(f) Vent piping for aboveground tanks.

(i) Vent piping shall be constructed in accordance with WAC 296-24-33007 of this section.

(ii) Where vent pipe outlets for tanks storing Class I liquids are adjacent to buildings or public ways, they shall be located so that the vapors are released at a safe point outside of buildings and not less than 12 feet above the adjacent ground level. In order to aid their dispersion, vapors shall be discharged upward or horizontally away from closely adjacent walls. Vent outlets shall be located so that flammable vapors will not be trapped by eaves or other obstructions and shall be at least five feet from building openings.

(iii) When tank vent piping is manifolded, pipe sizes shall be such as to discharge within the pressure limitations of the system, the vapors they may be required to handle when manifolded tanks are subject to the same fire exposure.

(g) Drainage, dikes, and walls for aboveground tanks.

(i) Drainage and diked areas. The area surrounding a tank or a group of tanks shall be provided with drainage as in (2)(g)(ii) of this section, or shall be diked as provided in (2)(g)(iii), to prevent accidental discharge of liquid from endangering adjoining property or reaching waterways.

(ii) Drainage. Where protection of adjoining property or waterways is by means of a natural or manmade drainage system, such systems shall comply with the following:

(A) A slope of not less than 1 percent away from the tank toward the drainage system shall be provided.

(B) The drainage system shall terminate in vacant land or other area or in an impounding basin having a capacity not smaller than that of the largest tank served. This termination area and the route of the drainage system shall be so located that, if the flammable or combustible liquids in the drainage system are ignited, the fire will not seriously expose tanks or adjoining property.

(C) The drainage system, including automatic drainage pumps, shall not discharge to adjoining property, natural water courses, public sewers, or public drains unless the discharge of flammable or combustible liquids would not consti-

tute a hazard, or the system is so designed that it will not permit flammable or combustible liquids to be released.

(iii) Diked areas. Where protection of adjoining property or waterways is accomplished by retaining the liquid around the tank by means of a dike, the volume of the diked area shall comply with the following requirements:

(A) Except as provided in (2)(g)(iii)(B) of this section, the volumetric capacity of the diked area shall not be less than the greatest amount of liquid that can be released from the largest tank within the diked area, assuming a full tank. The capacity of the diked area enclosing more than one tank shall be calculated by deducting the volume of the tanks other than the largest tank below the height of the dike.

(B) For a tank or group of tanks with fixed roofs containing crude petroleum with boilover characteristics, the volumetric capacity of the diked area shall be not less than the capacity of the largest tank served by the enclosure, assuming a full tank. The capacity of the diked enclosure shall be calculated by deducting the volume below the height of the dike of all tanks within the enclosure.

(C) Walls of the diked area shall be of earth, steel, concrete or solid masonry designed to be liquidtight and to withstand a full hydrostatic head. Earthen walls 3 feet or more in height shall have a flat section at the top not less than 2 feet wide. The slope of an earthen wall shall be consistent with the angle of repose of the material of which the wall is constructed.

(D) The walls of the diked area shall be restricted to an average height of 6 feet above interior grade.

(E) Where provision is made for draining water from diked areas, drainage shall be provided at a uniform slope of not less than 1 percent away from tanks toward a sump, drain-box, or other safe means of disposal located at the greatest practical distance from the tank. Such drains shall normally be controlled in a manner so as to prevent flammable or combustible liquids from entering natural water courses, public sewers, or public drains, if their presence would constitute a hazard. Control of drainage shall be accessible under fire conditions.

(F) No loose combustible material, empty or full drum or barrel, shall be permitted within the diked area.

(G) Each diked area containing two or more tanks shall be subdivided preferably by drainage channels or at least by intermediate curbs in order to prevent spills from endangering adjacent tanks within the diked area as follows:

(I) When storing normally stable liquids in vertical cone roof tanks constructed with weak roof-to-shell seam or approved floating roof tanks or when storing crude petroleum in producing areas in any type of tank, one subdivision for each tank in excess of 10,000 bbls. and one subdivision for each group of tanks (no tank exceeding 10,000 bbls. capacity) having an aggregate capacity not exceeding 15,000 bbls.

(II) When storing normally stable flammable or combustible liquids in tanks not covered in (g)(iii)(G)(I) of this subsection, one subdivision for each tank in excess of 100,000 gallons (2,500 bbls.) and one subdivision for each group of tanks (no tank exceeding 100,000 gallons capacity) having an aggregate capacity not exceeding 150,000 gallons (3,570 bbls.).

(III) When storing unstable liquids in any type of tank, one subdivision for each tank except that tanks installed in

accordance with the drainage requirements of NFPA 15-1969, Standard for Water Spray Fixed Systems for Fire Protection shall require no additional subdivision.

(IV) The drainage channels or intermediate curbs shall be located between tanks so as to take full advantage of the available space with due regard for the individual tank capacities. Intermediate curbs, where used, shall be not less than 18 inches in height.

(h) Tank openings other than vents for aboveground tanks.

(i) Connections for all tank openings shall be vaportight and liquidtight. Vents are covered in (2)(d) through (f) of this section.

(ii) Each connection to an aboveground tank through which liquid can normally flow shall be provided with an internal or an external valve located as close as practical to the shell of the tank. Such valves, when external, and their connections to the tank shall be of steel except when the chemical characteristics of the liquid stored are incompatible with steel. When materials other than steel are necessary, they shall be suitable for the pressures, structural stresses, and temperatures involved, including fire exposures.

(iii) Each connection below the liquid level through which liquid does not normally flow shall be provided with a liquidtight closure. This may be a valve, plug, or blind, or a combination of these.

(iv) Openings for gaging shall be provided with a vapor tight cap or cover.

(v) For Class IB and Class IC liquids other than crude oils, gasolines, and asphalts, the fill pipe shall be so designed and installed as to minimize the possibility of generating static electricity. A fill pipe entering the top of a tank shall terminate within 6 inches of the bottom of the tank and shall be installed to avoid excessive vibration.

(vi) Filling and emptying connections which are made and broken shall be located outside of buildings at a location free from any source of ignition and not less than 5 feet away from any building opening. Such connection shall be closed and liquidtight when not in use. The connection shall be properly identified.

(3) Installation of underground tanks.

(a) Location. Excavation for underground storage tanks shall be made with due care to avoid undermining of foundations of existing structures. Underground tanks or tanks under buildings shall be so located with respect to existing building foundations and supports that the loads carried by the latter cannot be transmitted to the tank. The distance from any part of a tank storing Class I liquids to the nearest wall of any basement or pit shall be not less than 1 foot, and to any property line that may be built upon, not less than 3 feet. The distance from any part of a tank storing Class II or Class III liquids to the nearest wall of any basement, pit or property line shall not be less than 1 foot.

(b) Depth and cover. Underground tanks shall be set on firm foundations and surrounded with at least 6 inches of noncorrosive, inert materials such as clean sand, earth, or gravel well tamped in place. The tank shall be placed in the hole with care since dropping or rolling the tank into the hole can break a weld, puncture or damage the tank, or scrape off the protective coating of coated tanks. Tanks shall be covered with a minimum of 2 feet of earth or shall be covered with not

less than 1 foot of earth, on top of which shall be placed a slab of reinforced concrete not less than 4 inches thick. When underground tanks are, or are likely to be, subject to traffic, they shall be protected against damage from vehicles passing over them by at least 3 feet of earth cover, or 18 inches of well-tamped earth, plus 6 inches of reinforced concrete or 8 inches of asphaltic concrete. When asphaltic or reinforced concrete paving is used as part of the protection, it shall extend at least 1 foot horizontally beyond the outline of the tank in all directions.

(c) Corrosion protection. Corrosion protection for the tank and its piping shall be provided by one or more of the following methods:

- (i) Use of protective coatings or wrappings;
- (ii) Cathodic protection; or,
- (iii) Corrosion resistant materials of construction.
- (d) Vents.

(i) Location and arrangement of vents for Class I liquids. Vent pipes from tanks storing Class I liquids shall be so located that the discharge point is outside of buildings, higher than the fill pipe opening, and not less than 12 feet above the adjacent ground level. Vent pipes shall discharge only upward in order to disperse vapors. Vent pipes 2 inches or less in nominal inside diameter shall not be obstructed by devices that will cause excessive back pressure. Vent pipe outlets shall be so located that flammable vapors will not enter building openings, or be trapped under eaves or other obstructions. If the vent pipe is less than 10 feet in length, or greater than 2 inches in nominal inside diameter, the outlet shall be provided with a vacuum and pressure relief device or there shall be an approved flame arrester located in the vent line at the outlet or within the approved distance from the outlet.

(ii) Size of vents. Each tank shall be vented through piping adequate in size to prevent blow-back of vapor or liquid at the fill opening while the tank is being filled. Vent pipes shall be not less than 1 1/4 inch nominal inside diameter.

TABLE H-11
VENT LINE DIAMETERS

Maximum flow GPM	Pipe length*		
	50 feet	100 feet	200 feet
	Inches	Inches	Inches
100	1 1/4	1 1/4	1 1/4
200	1 1/4	1 1/4	1 1/4
300	1 1/4	1 1/4	1 1/2
400	1 1/4	1 1/2	2
500	1 1/2	1 1/2	2
600	1 1/2	2	2
700	2	2	2
800	2	2	3
900	2	2	3
1,000	2	2	3

* Vent lines of 50 ft., 100 ft., and 200 ft. of pipe plus 7 ells.

(iii) Location and arrangement of vents for Class II or Class III liquids. Vent pipes from tanks storing Class II or Class III flammable liquids shall terminate outside of the building and higher than the fill pipe opening. Vent outlets shall be above normal snow level. They may be fitted with return bends, coarse screens or other devices to minimize ingress of foreign material.

(iv) Vent piping shall be constructed in accordance with WAC 296-24-33007. Vent pipes shall be so laid as to drain toward the tank without sags or traps in which liquid can collect. They shall be located so that they will not be subjected to physical damage. The tank end of the vent pipe shall enter the tank through the top.

(v) When tank vent piping is manifolded, pipe sizes shall be such as to discharge, within the pressure limitations of the system, the vapors they may be required to handle when manifolded tanks are filled simultaneously.

(e) Tank openings other than vents.

(i) Connections for all tank openings shall be vapor or liquid tight.

(ii) Openings for manual gaging, if independent of the fill pipe, shall be provided with a liquid-tight cap or cover. If inside a building, each such opening shall be protected against liquid overflow and possible vapor release by means of a spring-loaded check valve or other approved device.

(iii) Fill and discharge lines shall enter tanks only through the top. Fill lines shall be sloped toward the tank.

(iv) For Class IB and Class IC liquids other than crude oils, gasolines, and asphalts, the fill pipe shall be so designed and installed as to minimize the possibility of generating static electricity by terminating within 6 inches of the bottom of the tank.

(v) Filling and emptying connections which are made and broken shall be located outside of buildings at a location free from any source of ignition and not less than 5 feet away from any building opening. Such connection shall be closed and liquidtight when not in use. The connection shall be properly identified.

(4) Installation of tanks inside of buildings.

(a) Location. Tanks shall not be permitted inside of buildings except as provided in WAC 296-24-33011 and 296-24-33015 through 296-24-33019.

(b) Vents. Vents for tanks inside of buildings shall be as provided in (2)(d),(e),(f)(ii) and (3)(d) of this section, except that emergency venting by the use of weak roof seams on tanks shall not be permitted. Vents shall discharge vapors outside the buildings.

(c) Vent piping. Vent piping shall be constructed in accordance with WAC 296-24-33007.

(d) Tank openings other than vents.

(i) Connections for all tank openings shall be vapor or liquidtight. Vents are covered in (4)(b) of this section.

(ii) Each connection to a tank inside of buildings through which liquid can normally flow shall be provided with an internal or an external valve located as close as practical to the shell of the tank. Such valves, when external, and their connections to the tank shall be of steel except when the chemical characteristics of the liquid stored are incompatible with steel. When materials other than steel are necessary, they shall be suitable for the pressures, structural stresses, and temperatures involved, including fire exposures.

(iii) Flammable or combustible liquid tanks located inside of buildings, except in one-story buildings designed and protected for flammable or combustible liquid storage, shall be provided with an automatic-closing heat-actuated valve on each withdrawal connection below the liquid level, except for connections used for emergency disposal, to prevent continued flow in the event of fire in the vicinity of the

tank. This function may be incorporated in the valve required in (4)(d)(ii) of this section, and if a separate valve, shall be located adjacent to the valve required in (4)(d)(ii) of this section.

(iv) Openings for manual gaging, if independent of the fill pipe (see (4)(d)(vi) of this section), shall be provided with a vaportight cap or cover. Each such opening shall be protected against liquid overflow and possible vapor release by means of a spring loaded check valve or other approved device.

(v) For Class IB and Class IC liquids other than crude oils, gasolines, and asphalts, the fill pipe shall be so designed and installed as to minimize the possibility of generating static electricity by terminating within 6 inches of the bottom of the tank.

(vi) The fill pipe inside of the tank shall be installed to avoid excessive vibration of the pipe.

(vii) The inlet of the fill pipe shall be located outside of buildings at a location free from any source of ignition and not less than 5 feet away from any building opening. The inlet of the fill pipe shall be closed and liquidtight when not in use. The fill connection shall be properly identified.

(viii) Tanks inside buildings shall be equipped with a device, or other means shall be provided, to prevent overflow into the building.

(5) Supports, foundations, and anchorage for all tank locations.

(a) General. Tank supports shall be installed on firm foundations. Tank supports shall be of concrete, masonry, or protected steel. Single wood timber supports (not cribbing) laid horizontally may be used for outside aboveground tanks if not more than 12 inches high at their lowest point.

(b) Fire resistance. Steel supports or exposed piling shall be protected by materials having a fire resistance rating of not less than 2 hours, except that steel saddles need not be protected if less than 12 inches high at their lowest point. Water spray protection or its equivalent may be used in lieu of fire-resistant materials to protect supports.

(c) Spheres. The design of the supporting structure for tanks such as spheres shall receive special engineering consideration.

(d) Load distribution. Every tank shall be so supported as to prevent the excessive concentration of loads on the supporting portion of the shell.

(e) Foundations. Tanks shall rest on the ground or on foundations made of concrete, masonry, piling, or steel. Tank foundations shall be designed to minimize the possibility of uneven settling of the tank and to minimize corrosion in any part of the tank resting on the foundation.

(f) Flood areas. Where a tank is located in an area that may be subjected to flooding, the applicable precautions outlined in (5)(f) of this section shall be observed.

(i) No aboveground vertical storage tank containing a flammable or combustible liquid shall be located so that the allowable liquid level within the tank is below the established maximum flood stage, unless the tank is provided with a guiding structure such as described in (5)(f)(xiii), (xiv) and (xv) of this section.

(ii) Independent water supply facilities shall be provided at locations where there is no ample and dependable public

water supply available for loading partially empty tanks with water.

(iii) In addition to the preceding requirements, each tank so located that more than 70 percent, but less than 100 percent, of its allowable liquid storage capacity will be submerged at the established maximum flood stage, shall be safeguarded by one of the following methods: Tank shall be raised, or its height shall be increased, until its top extends above the maximum flood stage a distance equivalent to 30 percent or more of its allowable liquid storage capacity: Provided, however, That the submerged part of the tank shall not exceed two and one-half times the diameter. Or, as an alternative to the foregoing, adequate noncombustible structural guides, designed to permit the tank to float vertically without loss of product, shall be provided.

(iv) Each horizontal tank so located that more than 70 percent of its storage capacity will be submerged at the established flood stage, shall be anchored, attached to a foundation of concrete or of steel and concrete, of sufficient weight to provide adequate load for the tank when filled with flammable or combustible liquid and submerged by flood waters to the established flood stage, or adequately secured by other means.

(v) Spherical and spheroidal tanks shall be protected by applicable methods as specified for either vertical or horizontal tanks.

(vi) At locations where there is no ample and dependable water supply, or where filling of underground tanks with liquid is impracticable because of the character of their contents, their use, or for other reasons, each tank shall be safeguarded against movement when empty and submerged by high ground water or flood waters by anchoring, weighting with concrete or other approved solid loading material, or securing by other means. Each such tank shall be so constructed and installed that it will safely resist external pressures due to high ground water or flood waters.

(vii) At locations where there is an ample and dependable water supply available, underground tanks containing flammable or combustible liquids, so installed that more than 70 percent of their storage capacity will be submerged at the maximum flood stage, shall be so anchored, weighted, or secured by other means, as to prevent movement of such tanks when filled with flammable or combustible liquids, and submerged by flood waters to the established flood stage.

(viii) Pipe connections below the allowable liquid level in a tank shall be provided with valves or cocks located as closely as practicable to the tank shell. Such valves and their connections to tanks shall be of steel or other material suitable for use with the liquid being stored. Cast iron shall not be used.

(ix) At locations where an independent water supply is required, it shall be entirely independent of public power and water supply. Independent source of water shall be available when flood waters reach a level not less than 10 feet below the bottom of the lowest tank on a property.

(x) The self-contained power and pumping unit shall be so located or so designed that pumping into tanks may be carried on continuously throughout the rise in flood waters from a level 10 feet below the lowest tank to the level of the potential flood stage.

(xi) Capacity of the pumping unit shall be such that the rate of rise of water in all tanks shall be equivalent to the established potential average rate of rise of flood waters at any stage.

(xii) Each independent pumping unit shall be tested periodically to insure that it is in satisfactory operating condition.

(xiii) Structural guides for holding floating tanks above their foundations shall be so designed that there will be no resistance to the free rise of a tank, and shall be constructed of noncombustible material.

(xiv) The strength of the structure shall be adequate to resist lateral movement of a tank subject to a horizontal force in any direction equivalent to not less than 25 pounds per square foot acting on the projected vertical cross-sectional area of the tank.

(xv) Where tanks are situated on exposed points or bends in a shoreline where swift currents in flood waters will be present, the structures shall be designed to withstand a unit force of not less than 50 pounds per square foot.

(xvi) The filling of a tank to be protected by water loading shall be started as soon as flood waters reach a dangerous flood stage. The rate of filling shall be at least equal to the rate of rise of the floodwaters (or the established average potential rate of rise).

(xvii) Sufficient fuel to operate the water pumps shall be available at all times to insure adequate power to fill all tankage with water.

(xviii) All valves on connecting pipelines shall be closed and locked in closed position when water loading has been completed.

(xix) Where structural guides are provided for the protection of floating tanks, all rigid connections between tanks and pipelines shall be disconnected and blanked off or blinded before the floodwaters reach the bottom of the tank, unless control valves and their connections to the tank are of a type designed to prevent breakage between the valve and the tank shell.

(xx) All valves attached to tanks other than those used in connection with water loading operations shall be closed and locked.

(xxi) If a tank is equipped with a swing line, the swing pipe shall be raised to and secured at its highest position.

(xxii) Inspections. The director or his/her designated representative shall make periodic inspections of all plants where the storage of flammable or combustible liquids is such as to require compliance with the foregoing requirements, in order to assure the following:

(A) That all flammable or combustible liquid storage tanks are in compliance with these requirements and so maintained.

(B) That detailed printed instructions of what to do in flood emergencies are properly posted.

(C) That station operators and other employees depended upon to carry out such instructions are thoroughly informed as to the location and operation of such valves and other equipment necessary to effect these requirements.

(g) Earthquake areas. In areas subject to earthquakes, the tank supports and connections shall be designed to resist damage as a result of such shocks.

(6) Sources of ignition. In locations where flammable vapors may be present, precautions shall be taken to prevent

ignition by eliminating or controlling sources of ignition. Sources of ignition may include open flames, lightning, smoking, cutting and welding, hot surfaces, frictional heat, sparks (static, electrical, and mechanical), spontaneous ignition, chemical and physical-chemical reactions, and radiant heat.

(7) Testing.

(a) General. All tanks, whether shop built or field erected, shall be strength tested before they are placed in service in accordance with the applicable sections of the code under which they were built. The American Society of Mechanical Engineers (ASME) code stamp, American Petroleum Institute (API) monogram, or the label of the Underwriters' Laboratories, Inc., on a tank shall be evidence of compliance with this strength test. Tanks not marked in accordance with the above codes shall be strength tested before they are placed in service in accordance with good engineering principles and reference shall be made to the sections on testing in the codes listed in (1)(c)(i), (d)(ii) or (e)(ii) of this section.

(b) Strength. When the vertical length of the fill and vent pipes is such that when filled with liquid the static head imposed upon the bottom of the tank exceeds 10 pounds per square inch, the tank and related piping shall be tested hydrostatically to a pressure equal to the static head thus imposed.

(c) Tightness. In addition to the strength test called for in (7)(a) and (b), all tanks and connections shall be tested for tightness. Except for underground tanks, this tightness test shall be made at operating pressure with air, inert gas, or water prior to placing the tank in service. In the case of field-erected tanks the strength test may be considered to be the test for tank tightness. Underground tanks and piping, before being covered, enclosed, or placed in use, shall be tested for tightness hydrostatically, or with air pressure at not less than 3 pounds per square inch and not more than 5 pounds per square inch.

(d) Repairs. All leaks or deformations shall be corrected in an acceptable manner before the tank is placed in service. Mechanical caulking is not permitted for correcting leaks in welded tanks except pinhole leaks in the roof.

(e) Derated operations. Tanks to be operated at pressures below their design pressure may be tested by the applicable provisions of (7)(a) or (b) based upon the pressure developed under full emergency venting of the tank.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060, 06-05-027, § 296-24-33005, filed 2/7/06, effective 4/1/06. Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-24-33005, filed 7/20/94, effective 9/20/94; 88-23-054 (Order 88-25), § 296-24-33005, filed 11/14/88; Order 76-6, § 296-24-33005, filed 3/1/76; Order 73-5, § 296-24-33005, filed 5/9/73 and Order 73-4, § 296-24-33005, filed 5/7/73.]

WAC 296-24-33007 Piping, valves, and fittings. (1)

General.

(a) Design. The design (including selection of materials) fabrication, assembly, test, and inspection of piping systems containing flammable or combustible liquids shall be suitable for the expected working pressures and structural stresses. Conformity with the applicable provisions of Pressure Piping, ANSI B31-1967 series and the provisions of this section, shall be considered prima facie evidence of compliance with the foregoing provisions.

(b) Exceptions. This section does not apply to any of the following:

(i) Tubing or casing on any oil or gas wells and any piping connected directly thereto.

(ii) Motor vehicle, aircraft, boat, or portable or stationary engines.

(iii) Piping within the scope of any applicable boiler and pressures vessel code.

(c) Definitions. As used in this section, piping systems consist of pipe, tubing flanges, bolting, gaskets, valves, fittings, the pressure containing parts of other components such as expansion joints and strainers, and devices which serve such purposes as mixing, separating, snubbing, distributing, metering, or controlling flow.

(2) Materials for piping, valves, and fittings.

(a) Required materials. Materials for piping, valves, or fittings shall be steel, nodular iron or malleable iron, except as provided in subsections (b), (c) and (d).

(b) Exceptions. Materials other than steel, nodular iron, or malleable iron may be used underground, or if required by the properties of the flammable or combustible liquid handled. Material other than steel, nodular iron, or malleable iron shall be designed to specifications embodying principles recognized as good engineering practices for the material used.

(c) Linings. Piping, valves, and fittings may have combustible or noncombustible linings.

(d) Low-melting materials. When low-melting point materials such as aluminum and brass or materials that soften on fire exposure such as plastics, or nonductile materials such as cast iron, are necessary, special consideration shall be given to their behavior on fire exposure. If such materials are used in aboveground piping systems or inside buildings, they shall be suitably protected against fire exposure or so located that any spill resulting from the failure of these materials could not unduly expose persons, important buildings or structures or can be readily controlled by remote valves.

(3) Pipe joints. Joints shall be made liquid tight. Welded or screwed joints or approved connectors shall be used. Threaded joints and connections shall be made up tight with a suitable lubricant or piping compound. Pipe joints dependent upon the friction characteristics of combustible materials for mechanical continuity of piping shall not be used inside buildings. They may be used outside of buildings above or below ground. If used aboveground, the piping shall either be secured to prevent disengagement at the fitting or the piping system shall be so designed that any spill resulting from such disengagement could not unduly expose persons, important buildings or structures, and could be readily controlled by remote valves.

(4) Supports. Piping systems shall be substantially supported and protected against physical damage and excessive stresses arising from settlement, vibration, expansion, or contraction.

(5) Protection against corrosion. All piping for flammable or combustible liquids, both aboveground and underground, where subject to external corrosion, shall be painted or otherwise protected.

(6) Valves. Piping systems shall contain a sufficient number of valves to operate the system properly and to protect the plant. Piping systems in connection with pumps shall contain a sufficient number of valves to control properly the

flow of liquid in normal operation and in the event of physical damage. Each connection to pipelines, by which equipment such as tankcars or tank vehicles discharge liquids by means of pumps into storage tanks, shall be provided with a check valve for automatic protection against backflow if the piping arrangement is such that backflow from the system is possible.

(7) Testing. All piping before being covered, enclosed, or placed in use shall be hydrostatically tested to 150 percent of the maximum anticipated pressure of the system, or pneumatically tested to 110 percent of the maximum anticipated pressure of the system, but not less than 5 pounds per square inch gage at the highest point of the system. This test shall be maintained for a sufficient time to complete visual inspection of all joints and connections, but for at least 10 minutes.

[Order 76-6, § 296-24-33007, filed 3/1/76; Order 73-5, § 296-24-33007, filed 5/9/73 and Order 73-4, § 296-24-33007, filed 5/7/73.]

WAC 296-24-33009 Container and portable tank storage. (1) Scope.

(a) General. This section shall apply only to the storage of flammable or combustible liquids in drums or other containers (including flammable aerosols) not exceeding 60 gallons individual capacity and those portable tanks not exceeding 660 gallons individual capacity.

(b) Exceptions. This section shall not apply to the following:

(i) Storage of containers in bulk plants, service stations, refineries, chemical plants, and distilleries;

(ii) Class I or Class II liquids in the fuel tanks of a motor vehicle, aircraft, boat, or portable or stationary engine;

(iii) Flammable or combustible paints, oils, varnishes, and similar mixtures used for painting or maintenance when not kept for a period in excess of 30 days;

(iv) Beverages when packaged in individual containers not exceeding 1 gallon in size.

(2) Design, construction, and capacity of containers.

(a) General. Only approved containers and portable tanks shall be used. Metal containers and portable tanks meeting the requirements of and containing products authorized by Chapter I, Title 49 of the Code of Federal Regulations - October 1, 1972, (regulations issued by the hazardous materials regulations board, department of transportation), shall be deemed to be acceptable.

(b) Emergency venting. Each portable tank shall be provided with one or more devices installed in the top with sufficient emergency venting capacity to limit internal pressure under fire exposure conditions to 10 p.s.i.g., or 30 percent of the bursting pressure of the tank, whichever is greater. The total venting capacity shall be not less than that specified in WAC 296-24-33005 (2)(e)(iii) or (v). At least one pressure-actuated vent having a minimum capacity of 6,000 cubic feet of free air (14.7 p.s.i.a. and 60°F) shall be used. It shall be set to open at not less than 5 p.s.i.g. If fusible vents are used, they shall be actuated by elements that operate at a temperature not exceeding 300°F.

TABLE H-12
MAXIMUM ALLOWABLE SIZE OF
CONTAINERS AND PORTABLE TANKS

Container Type	Flammable liquids			Combustible Liquids	
	Class IA	Class IB	Class IC	Class II	Class III
Glass or approved plastic _____	1 pt.	1 qu.	1 gal.	1 gal.	1 gal.
Metal (other than DOT drums) _____	1 gal.	5 gal.	5 gal.	5 gal.	5 gal.
Safety cans _____	2 gal.	5 gal.	5 gal.	5 gal.	5 gal.
Metal drums (DOT spec.) _____	60 gal.	60 gal.	60 gal.	60 gal.	60 gal.
Approved portable tanks _____	660 gal.	660 gal.	660 gal.	660 gal.	660 gal.

Container exemptions:

(i) Medicines, beverages, foodstuffs, cosmetics and other common consumer items, when packaged according to commonly accepted practices, shall be exempt from the requirements of (4)(a) and (b) of this section.

(c) Size. Flammable and combustible liquid containers shall be in accordance with Table H-12, except that glass or plastic containers of no more than 1-gallon capacity may be used for a Class IA or IB flammable liquid if:

(i) Such liquid either would be rendered unfit for its intended use by contact with metal or would excessively corrode a metal container so as to create a leakage hazard; and

(ii) The user's process either would require more than 1 pint of Class IA liquid or more than 1 quart of a Class IB liquid of a single assay lot to be used at one time, or would require the maintenance of an analytical standard liquid of a quality which is not met by the specified standards of liquids available, and the quantity of the analytical standard liquid required to be used in any one control process exceeds one-sixteenth the capacity of the container allowed under Table H-12 for the class of liquid; or

(iii) The containers are intended for direct export outside the United States.

(3) Design, construction, and capacity of storage cabinets.

(a) Maximum capacity. Not more than 60 gallons of Class I or Class II liquids, nor more than 120 gallons of Class III liquids may be stored in a storage cabinet.

(b) Fire resistance. Storage cabinets shall be designed and constructed to limit the internal temperature to not more than 325°F when subjected to a 10-minute fire test using the standard time-temperature curve as set forth in Standard Methods of Fire Tests of Building Construction and Materials, NFPA 251-1969. All joints and seams shall remain tight and the door shall remain securely closed during the fire test. Cabinets shall be labeled "Flammable—Keep fire away."

(i) Metal cabinets constructed in the following manner shall be deemed to be in compliance. The bottom, top, door, and sides of cabinet shall be at least No. 18 gage sheet iron and double walled with 1 1/2-inch air space. Joints shall be riveted, welded or made tight by some equally effective means. The door shall be provided with a three-point lock, and the door sill shall be raised at least 2 inches above the bottom of the cabinet.

(ii) Wooden cabinets constructed in the following manner shall be deemed in compliance. The bottom, sides, and top shall be constructed of an approved grade of plywood at

least 1 inch in thickness, which shall not break down or delaminate under fire conditions. All joints shall be rabbetted and shall be fastened in two directions with flathead wood-screws. When more than one door is used, there shall be a rabbetted overlap of not less than 1 inch. Hinges shall be mounted in such a manner as not to lose their holding capacity due to loosening or burning out of the screws when subjected to the fire test.

(4) Design and construction of inside storage rooms.

(a) Construction. Inside storage rooms shall be constructed to meet the required fire-resistive rating for their use. Such construction shall comply with the test specifications set forth in Standard Methods of Fire Tests of Building Construction and Materials, NFPA 251-1969. Where an automatic sprinkler system is provided, the system shall be designed and installed in an acceptable manner. Openings to other rooms or buildings shall be provided with noncombustible liquid-tight raised sills or ramps at least 4 inches in height, or the floor in the storage area shall be at least 4 inches below the surrounding floor. Openings shall be provided with approved self-closing fire doors. The room shall be liquid tight where the walls join the floor. A permissible alternate to the sill or ramp is an open-grated trench inside of the room which drains to a safe location. Where other portions of the building or other properties are exposed, windows shall be protected as set forth in the Standard for Fire Doors and Windows, NFPA No. 80-1968, for Class E or F openings. Wood at least 1 inch nominal thickness may be used for shelving, racks, dunnage, scuffboards, floor overlay, and similar installations.

(b) Rating and capacity. Storage in inside storage rooms shall comply with Table H-13.

TABLE H-13
STORAGE IN INSIDE ROOMS

Fire protection* provided	Fire resistance	Maximum size	Total allowable quantities (gals./sq. Ft./floor area)
Yes	2 hours	500 sq.ft.	10
No	2 hours	500 sq.ft.	4
Yes	1 hour	150 sq.ft.	5
No	1 hour	150 sq.ft.	2

*Fire protection system shall be sprinkler, water spray, carbon dioxide, or other system.

(c) Wiring. Electrical wiring and equipment within inside storage rooms used to store Class I liquids shall comply with the provisions of chapter 296-24 WAC Part L for Class I, Division 2 locations. For inside storage rooms used to store Class II and III liquids the pertinent provisions chapter 296-24 WAC Part L apply.

(d) Ventilation. Every inside storage room shall be provided with either a gravity or a mechanical exhaust ventilation system. Such system shall be designed to provide for a complete change of air within the room at least six times per hour. If a mechanical exhaust system is used, it shall be controlled by a switch located outside of the door. The ventilating equipment and any lighting fixtures shall be operated by the same switch. A pilot light shall be installed adjacent to the switch if Class I flammable liquids are dispensed within the room. Where gravity ventilation is provided, the fresh air

intake, as well as the exhaust outlet from the room, shall be on the exterior of the building in which the room is located.

(e) Storage in inside storage rooms. In every inside storage room there shall be maintained one clear aisle at least 3 feet wide. Containers over 30 gallons capacity shall not be stacked one upon the other. Dispensing shall be by approved pump or self-closing faucet only.

(5) Storage inside building.

(a) Egress. Flammable or combustible liquids, including stock for sale, shall not be stored so as to limit use of exits, stairways, or areas normally used for the safe egress of people.

(b) Containers. The storage of flammable or combustible liquids in containers or portable tanks shall comply with (4)(c) through (e) of this section.

(c) Office occupancies. Storage shall be prohibited except that which is required for maintenance and operation of building and operation of equipment. Such storage shall be kept in closed metal containers stored in a storage cabinet or in safety cans or in an inside storage room not having a door that opens into that portion of the building used by the public.

(d) Mercantile occupancies and other retail stores.

(i) In rooms or areas accessible to the public, storage shall be limited to quantities needed for display and normal merchandising purposes but shall not exceed 2 gallons per square foot of gross floor area. The gross floor area used for computing the maximum quantity permitted shall be considered as that portion of the store actually being used for merchandising flammable and combustible liquids.

(ii) Where the aggregate quantity of additional stock exceeds 60 gallons of Class IA, or 120 gallons of Class IB, or 180 gallons of Class IC, or 240 gallons of Class II, or 500 gallons of Class III liquids, or any combination of Class I and Class II liquids exceeding 240 gallons, it shall be stored in a room or portion of the building that complies with the construction provisions for an inside storage room as prescribed in (4) of this section. For water miscible liquids, these quantities may be doubled.

(iii) Containers in a display area shall not be stacked more than 3 feet or two containers high, whichever is the greater, unless the stacking is done on fixed shelving or is otherwise satisfactorily secured.

(iv) Shelving shall be of stable construction, of sufficient depth and arrangement such that containers displayed thereon shall not be easily displaced.

(v) Leaking containers shall be removed to a storage room or taken to a safe location outside the building and the contents transferred to an undamaged container.

(e) General purpose public warehouses. Storage shall be in accordance with Table H-14 or H-15 and in buildings or in portions of such buildings cut off by standard firewalls. Material creating no fire exposure hazard to the flammable or combustible liquids may be stored in the same area.

TABLE H-14
INDOOR CONTAINER STORAGE

Class liquid	Storage level	Protected storage maximum per pile		Unprotected storage maximum per pile	
		Gal.	Ht.	Gal.	Ht.
IA —	Ground and upper floors —	2,750	3 ft.	660	3 ft.

(2007 Ed.)

Class liquid	Storage level	Protected storage maximum per pile		Unprotected storage maximum per pile	
		Gal.	Ht.	Gal.	Ht.
IB —	Basement —	(50)	(1)	(12)	(1)
	Ground and upper floors —	Not permitted	Not permitted	Not permitted	Not permitted
IC —	Basement —	5,500	6 ft.	1,375	3 ft.
	Ground and upper floors —	(100)	(2)	(25)	(1)
II —	Basement —	Not permitted	Not permitted	Not permitted	Not permitted
	Ground and upper floors —	16,500	6 ft.	4,125	3 ft.
III —	Basement —	(300)	(2)	(75)	(1)
	Ground and upper floors —	Not permitted	Not permitted	Not permitted	Not permitted
II —	Basement —	16,500	9 ft.	4,125	9 ft.
	Ground and upper floors —	(300)	(3)	(75)	(3)
III —	Basement —	5,500	9 ft.	Not permitted	Not permitted
	Ground and upper floors —	(100)	(3)	Not permitted	Not permitted
III —	Basement —	55,000	15 ft.	13,750	12 ft.
	Ground and upper floors —	(1,000)	(5)	(250)	(4)
III —	Basement —	8,250	9 ft.	Not permitted	Not permitted
	Ground and upper floors —	(450)	(3)	Not permitted	Not permitted

Note 1: When 2 or more classes of materials are stored in a single pile, the maximum gallonage permitted in that pile shall be the smallest of the 2 or more separate maximum gallonages.

Note 2: Aisles shall be provided so that no container is more than 12 ft. from an aisle. Main aisles shall be at least 8 ft. wide and side aisles at least 4 ft. wide.

(Numbers in parentheses indicate corresponding number of 55-gal. drums.)

Note 3: Each pile shall be separated from each other by at least 4 ft.

TABLE H-15
INDOOR PORTABLE TANK STORAGE

Class liquid	Storage level	Protected storage maximum per pile		Unprotected storage maximum per pile	
		Gal.	Ht.	Gal.	Ht.
IA —	Ground and upper floors —	Not permitted	Not permitted	Not permitted	Not permitted
IB —	Basement —	Not permitted	Not permitted	Not permitted	Not permitted
IB —	Ground and upper floors —	20,000	7 ft.	2,000	7 ft.
	Basement —	Not permitted	Not permitted	Not permitted	Not permitted
IC —	Ground and upper floors —	40,000	14 ft.	5,500	7 ft.
	Basement —	Not permitted	Not permitted	Not permitted	Not permitted
II —	Ground and upper floors —	40,000	14 ft.	5,500	7 ft.
	Basement —	20,000	7 ft.	Not permitted	Not permitted
III —	Ground and upper floors —	60,000	14 ft.	22,000	7 ft.
	Basement —	20,000	7 ft.	Not permitted	Not permitted

Note 1: When 2 or more classes of materials are stored in a single pile, the maximum gallonage permitted in that pile shall be the smallest of the 2 or more separate maximum gallonages.

Note 2: Aisles shall be provided so that no portable tank is more than 12 ft. from an aisle. Main aisles shall be at least 8 ft. wide and side aisles at least 4 ft. wide.

Note 3: Each pile shall be separated from each other by at least 4 ft.

(f) Flammable and combustible liquid warehouses or storage buildings.

(i) If the storage building is located 50 feet or less from a building or line of adjoining property that may be built upon, the exposing wall shall be a blank wall having a fire-resistance rating of at least 2 hours.

(ii) The total quantity of liquids within a building shall not be restricted, but the arrangement of storage shall comply with Table H-14 or H-15.

(iii) Containers in piles shall be separated by pallets or dunnage where necessary to provide stability and to prevent excessive stress on container walls.

(iv) Portable tanks stored over one tier high shall be designed to nest securely, without dunnage and adequate materials handling equipment shall be available to handle tanks safely at the upper tier level.

(v) No pile shall be closer than 3 feet to the nearest beam, chord, girder, or other obstruction, and shall be 3 feet below sprinkler deflectors or discharge orifices of water spray, or other overhead fire protection systems.

(vi) Aisles of at least 3 feet wide shall be provided where necessary for reasons of access to doors, windows or stand-pipe connections.

(6) Storage outside buildings.

(a) General. Storage outside buildings shall be in accordance with Table H-16 or H-17, and (6)(b) and (d) of this section.

TABLE H-16
OUTDOOR CONTAINER STORAGE

1 Class	2 Maximum per pile (see note 1)	3 Distance between piles (see note 2)	4	5
			Distance to property line that can be built upon (see notes 3 & 4)	Distance to street, alley, public way (see note 4)
	gal.	ft.	ft.	ft.
IA _____	1,100	5	20	10
IB _____	2,200	5	20	10
IC _____	4,400	5	20	10
II _____	8,800	5	10	5
III _____	22,000	5	10	5

- Note 1: When 2 or more classes of materials are stored in a single pile, the maximum gallonage in that pile shall be the smallest of the 2 or more separate gallonages.
- Note 2: Within 200 ft. of each container, there shall be 12-ft. wide access way to permit approach of fire control apparatus.
- Note 3: The distances listed apply to properties that have protection for exposures as defined. If there are exposures, and such protection for exposures does not exist, the distances in column 4 shall be doubled.
- Note 4: When total quantity stored does not exceed 50 percent of maximum per pile, the distances in columns 4 and 5 may be reduced 50 percent, but not less than 3 ft.

(b) Maximum storage. A maximum of 1,100 gallons of flammable or combustible liquids may be located adjacent to buildings located on the same premises and under the same management provided the provisions of (6)(b)(i) and (ii) are complied with.

(i) The building shall be a one-story building devoted principally to the handling and storing of flammable or combustible liquids or the building shall have 2 hour fire-resistive exterior walls having no opening within 10 feet of such storage.

(ii) Where quantity stored exceeds 1,100 gallons, or provisions of (6)(b)(i) cannot be met, a minimum distance of 10 feet between buildings and nearest container of flammable or combustible liquid shall be maintained.

TABLE H-17
OUTDOOR PORTABLE TANK STORAGE

1 Class	2 Maximum per pile	3 Distance between piles	4	5
			Distance to property line that can be built upon	Distance to street, alley, public way
	gal.	ft.	ft.	ft.
IA _____	2,200	5	20	10
IB _____	4,400	5	20	10
IC _____	8,800	5	20	10
II _____	17,600	5	10	5
III _____	44,000	5	10	5

- Note 1: When 2 or more classes of materials are stored in a single pile, the maximum gallonage in that pile shall be the smallest of the 2 or more separate gallonages.
- Note 2: Within 200 ft. of each portable tank, there shall be a 12-ft. wide access way to permit approach of fire control apparatus.
- Note 3: The distances listed apply to properties that have protection for exposures as defined. If there are exposures, and such protection for exposures does not exist, the distances in column 4 shall be doubled.
- Note 4: When total quantity stored does not exceed 50 percent of maximum per pile, the distances in columns 4 and 5 may be reduced 50 percent, but not less than 3 ft.

(c) Spill containment. The storage area shall be graded in a manner to divert possible spills away from buildings or other exposures or shall be surrounded by a curb at least 6 inches high. When curbs are used, provisions shall be made for draining of accumulations of ground or rain water or spills of flammable or combustible liquids. Drains shall terminate at a safe location and shall be accessible to operation under fire conditions.

(d) Security. The storage area shall be protected against tampering or trespassers where necessary and shall be kept free of weeds, debris and other combustible material not necessary to the storage.

(7) Fire control.

(a) Extinguishers. Suitable fire control devices, such as small hose or portable fire extinguishers, shall be available at locations where flammable or combustible liquids are stored.

(i) At least one portable fire extinguisher having a rating of not less than 12-B units shall be located outside of, but not more than 10 feet from, the door opening into any room used for storage.

(ii) At least one portable fire extinguisher having a rating of not less than 12-B units must be located not less than 10 feet, nor more than 25 feet, from any Class I or Class II liquid storage area located outside of a storage room but inside a building.

Note: For additional requirements relating to portable fire extinguishers see WAC 296-800-300.

(b) Sprinklers. When sprinklers are provided, they shall be installed in accordance with chapter 296-24 WAC, Part G-3.

(c) Open flames and smoking. Open flames and smoking shall not be permitted in flammable or combustible liquid storage areas.

(d) Water reactive materials. Materials which will react with water shall not be stored in the same room with flammable or combustible liquids.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. 04-18-080, § 296-24-33009, filed 8/31/04, effective 11/1/04. Statutory Author-

ity: RCW 49.17.010, [49.17].040, and [49.17].050. 01-17-033, § 296-24-33009, filed 8/8/01, effective 9/1/01. Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-24-33009, filed 7/20/94, effective 9/20/94; 91-24-017 (Order 91-07), § 296-24-33009, filed 11/22/91, effective 12/24/91. Statutory Authority: RCW 49.17.040 and 49.17.050. 85-10-004 (Order 85-09), § 296-24-33009, filed 4/19/85; Order 76-6, § 296-24-33009, filed 3/1/76; Order 74-27, § 296-24-33009, filed 5/7/74; Order 73-5, § 296-24-33009, filed 5/9/73 and Order 73-4, § 296-24-33009, filed 5/7/73.]

WAC 296-24-33011 Industrial plants. (1) Scope.

(a) Application. This section shall apply to those industrial plants where:

(i) The use of flammable or combustible liquids is incidental to the principal business, or

(ii) Where flammable or combustible liquids are handled or used only in unit physical operations such as mixing, drying, evaporating, filtering, distillation, and similar operations which do not involve chemical reaction. This section shall not apply to chemical plants, refineries or distilleries.

(b) Exceptions. Where portions of such plants involve chemical reactions such as oxidation, reduction, halogenation, hydrogenation, alkylation, polymerization, and other chemical processes, those portions of the plant shall be in accordance with WAC 296-24-33017.

(2) Incidental storage or use of flammable and combustible liquids.

(a) Application. This shall be applicable to those portions of an industrial plant where the use and handling of flammable or combustible liquids is only incidental to the principal business, such as automobile assembly, construction of electronic equipment, furniture manufacturing, or other similar activities.

(b) Containers. Flammable or combustible liquids shall be stored in tanks or closed containers.

(i) Except as provided in (b)(ii) and (iii) of this subsection all storage shall comply with WAC 296-24-33009 (3) or (4).

(A) When the only operation involved is the storage of flammables in containers or tanks that are closed and remain closed throughout the storage, WAC 296-24-33009(5) and tables H-14 and H-15 will apply.

(B) When the procedure involved is mixing, transferring, or other exposure of liquids to vaporization through operational procedures in which containers or tanks do not remain closed in the storage area, WAC 296-24-33009(4) and table H-13 shall be used to determine permissible quantities.

(ii) The quantity of liquid that may be located outside of an inside storage room or storage cabinet in a building or in any one fire area of a building shall not exceed:

(A) Twenty-five gallons of Class IA liquids in containers.

(B) One hundred twenty gallons of Class IB, IC, II, or III liquids in containers.

(C) Six hundred sixty gallons of Class IB, IC, II, or III liquids in a single portable tank.

(iii) Where large quantities of flammable or combustible liquids are necessary, storage may be in tanks which shall comply with the applicable requirements of WAC 296-24-33005.

(c) Separation and protection. Areas in which flammable or combustible liquids are transferred from one tank or container to another container shall be separated from other oper-

ations in the building by adequate distance or by construction having adequate fire resistance. Drainage or other means shall be provided to control spills. Adequate natural or mechanical ventilation shall be provided.

(d) Handling liquids at point of final use.

(i) Flammable liquids shall be kept in covered containers when not actually in use.

(ii) Where flammable or combustible liquids are used or handled, except in closed containers, means shall be provided to dispose promptly and safely of leakage or spills.

(iii) Class I liquids may be used only where there are no open flames or other sources of ignition within the possible path of vapor travel.

(iv) Flammable or combustible liquids shall be drawn from or transferred into vessels, containers, or portable tanks within a building only through a closed piping system, from safety cans, by means of a device drawing through the top, or from a container or portable tanks by gravity through an approved self-closing valve. Transferring by means of air pressure on the container or portable tanks shall be prohibited.

(3) Unit physical operations.

(a) Application. This subsection (3) shall be applicable in those portions of industrial plants where flammable or combustible liquids are handled or used in unit physical operations such as mixing, drying, evaporating, filtering, distillation, and similar operations which do not involve chemical change. Examples are plants compounding cosmetics, pharmaceuticals, solvents, cleaning fluids, insecticides, and similar types of activities.

(b) Location. Industrial plants shall be located so that each building or unit of equipment is accessible from at least one side for fire fighting and fire control purposes. Buildings shall be located with respect to lines of adjoining property which may be built upon as set forth in WAC 296-24-33017 (2)(a) and (b) except that the blank wall referred to in WAC 296-24-33017 (2)(b) shall have a fire resistance rating of at least two hours.

(c) Chemical processes. Areas where unstable liquids are handled or small scale unit chemical processes are carried on shall be separated from the remainder of the plant by a fire wall of two-hour minimum fire resistance rating.

(d) Drainage.

(i) Emergency drainage systems shall be provided to direct flammable or combustible liquid leakage and fire protection water to a safe location. This may require curbs, scuppers, or special drainage systems to control the spread of fire; see WAC 296-24-33005 (2)(g)(ii).

(ii) Emergency drainage systems, if connected to public sewers or discharged into public waterways, shall be equipped with traps or separators.

(iii) The industrial plant shall be designed and operated to prevent the normal discharge of flammable or combustible liquids into public waterways, public sewers, or adjoining property.

(e) Ventilation.

(i) Areas as defined in subsection (1)(a) of this section using Class I liquids shall be ventilated at a rate of not less than one cubic foot per minute per square foot of solid floor area. This shall be accomplished by natural or mechanical ventilation with discharge or exhaust to a safe location out-

side of the building. Provision shall be made for introduction of makeup air in such a manner as not to short circuit the ventilation. Ventilation shall be arranged to include all floor areas or pits where flammable vapors may collect.

(ii) Equipment used in a building and the ventilation of the building shall be designed so as to limit flammable vapor-air mixtures under normal operating conditions to the interior of equipment, and to not more than five feet from equipment which exposes Class I liquids to the air. Examples of such equipment are dispensing stations, open centrifuges, plate and frame filters, open vacuum filters, and surfaces of open equipment.

(f) Storage and handling. The storage, transfer, and handling of liquid shall comply with WAC 296-24-33017(4).

(4) Tank vehicle and tank car loading and unloading.

Tank vehicle and tank car loading or unloading facilities shall be separated from aboveground tanks, warehouses, other plant buildings or nearest line of adjoining property which may be built upon by a distance of twenty-five feet for Class I liquids and fifteen feet for Class II and Class III liquids measured from the nearest position of any fill stem. Buildings for pumps or shelters for personnel may be a part of the facility. Operations of the facility shall comply with the appropriate portions of WAC 296-24-33013(3).

(5) Fire control.

(a) Portable and special equipment. Portable fire extinguishment and control equipment shall be provided in such quantities and types as are needed for the special hazards of operation and storage.

(b) Water supply. Water shall be available in volume and at adequate pressure to supply water hose streams, foam-producing equipment, automatic sprinklers, or water spray systems as the need is indicated by the special hazards of operation, dispensing and storage.

(c) Special extinguishers. Special extinguishing equipment such as that utilizing foam, inert gas, or dry chemical shall be provided as the need is indicated by the special hazards of operation dispensing and storage.

(d) Special hazards. Where the need is indicated by special hazards of operation, flammable or combustible liquid processing equipment, major piping, and supporting steel shall be protected by approved water spray systems, deluge systems, approved fire-resistant coatings, insulation, or any combination of these.

(e) Maintenance. All plant fire protection facilities shall be adequately maintained and periodically inspected and tested to make sure they are always in satisfactory operating condition, and they will serve their purpose in time of emergency.

(6) Sources of ignition.

(a) General. Adequate precautions shall be taken to prevent the ignition of flammable vapors. Sources of ignition include but are not limited to open flames; lightning; smoking; cutting and welding; hot surfaces; frictional heat; static, electrical and mechanical sparks; spontaneous ignition, including heat-producing chemical reactions; and radiant heat.

(b) Grounding. Class I liquids shall not be dispensed into containers unless the nozzle and container are electrically interconnected. Where the metallic floorplate on which the container stands while filling is electrically connected to the

fill stem or where the fill stem is bonded to the container during filling operations by means of a bond wire, the provisions of these standards shall be deemed to have been complied with.

(7) Electrical.

(a) All electrical wiring and equipment shall be installed according to chapter 296-24 WAC Part L.

(b) Locations where flammable vapor-air mixtures may exist under normal operations shall be classified Class I, Division 1 according to the requirements of chapter 296-24 WAC Part L. For those pieces of equipment installed in accordance with the requirements of subsection (3)(e)(ii) of this section, the Division 1 area shall extend five feet in all directions from all points of vapor liberation. All areas within pits shall be classified Division 1 if any part of the pit is within a Division 1 or 2 classified area, unless the pit is provided with mechanical ventilation.

(c) Locations where flammable vapor-air mixtures may exist under abnormal conditions and for a distance beyond Division 1 locations shall be classified Division 2 according to the requirements of chapter 296-24 WAC Part L. These locations include an area within twenty feet horizontally, three feet vertically beyond a Division 1 area, and up to three feet above floor or grade level within twenty-five feet, if indoors, or ten feet if outdoors, from any pump, bleeder, withdrawal fitting, meter, or similar device handling Class I liquids. Pits provided with adequate mechanical ventilation within a Division 1 or 2 area shall be classified Division 2. If Class II or Class III liquids only are handled, then ordinary electrical equipment is satisfactory though care shall be used in locating electrical apparatus to prevent hot metal from falling into open equipment.

(d) Where the provisions of (a), (b), and (c) of this subsection require the installation of electrical equipment suitable for Class I, Division 1 or Division 2 locations, ordinary electrical equipment including switchgear may be used if installed in a room or enclosure which is maintained under positive pressure with respect to the hazardous area. Ventilation makeup air shall be uncontaminated by flammable vapors.

(8) Repairs to equipment. Hot work, such as welding or cutting operations, use of spark-producing power tools, and chipping operations shall be permitted only under supervision of an individual in responsible charge. The individual in responsible charge shall make an inspection of the area to be sure that it is safe for the work to be done and that safe procedures will be followed for the work specified.

(9) Housekeeping.

(a) General. Maintenance and operating practices shall be in accordance with established procedures which will tend to control leakage and prevent the accidental escape of flammable or combustible liquids. Spills shall be cleaned up promptly.

(b) Access. Adequate aisles shall be maintained for unobstructed movement of personnel and so that fire protection equipment can be brought to bear on any part of flammable or combustible liquid storage, use, or any unit physical operation.

(c) Waste and residue. Combustible waste material and residues in a building or unit operating area shall be kept to a

minimum, stored in covered metal receptacles and disposed of daily.

(d) Clear zone. Ground area around buildings and unit operating areas shall be kept free of weeds, trash, or other unnecessary combustible materials.

[Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-24-33011, filed 7/20/94, effective 9/20/94; 91-24-017 (Order 91-07), § 296-24-33011, filed 11/22/91, effective 12/24/91; 89-11-035 (Order 89-03), § 296-24-33011, filed 5/15/89, effective 6/30/89. Statutory Authority: RCW 49.17.040 and 49.17.050. 85-10-004 (Order 85-09), § 296-24-33011, filed 4/19/85; Order 76-6, § 296-24-33011, filed 3/1/76; Order 73-5, § 296-24-33011, filed 5/9/73 and Order 73-4, § 296-24-33011, filed 5/7/73.]

WAC 296-24-33013 Bulk plants. (1) Storage.

(a) Class I liquids. Class I liquids shall be stored in closed containers, or in storage tanks above ground outside of buildings, or underground in accordance with WAC 296-24-33005.

(b) Class II and III liquids. Class II and Class III liquids shall be stored in containers, or in tanks within buildings or above ground outside of buildings, or underground in accordance with WAC 296-24-33005.

(c) Piling containers. Containers of flammable or combustible liquids when piled one upon the other shall be separated by dunnage sufficient to provide stability and to prevent excessive stress on container walls. The height of the pile shall be consistent with the stability and strength of containers.

(2) Buildings.

(a) Exits. Rooms in which flammable or combustible liquids are stored or handled by pumps shall have exit facilities arranged to prevent occupants from being trapped in the event of fire.

(b) Heating. Rooms in which Class I liquids are stored or handled shall be heated only by means not constituting a source of ignition, such as steam or hot water. Rooms containing heating appliances involving sources of ignition shall be located and arranged to prevent entry of flammable vapors.

(c) Ventilation.

(i) Ventilation shall be provided for all rooms, buildings, or enclosures in which Class I liquids are pumped or dispensed. Design of ventilation systems shall take into account the relatively high specific gravity of the vapors. Ventilation may be provided by adequate openings in outside walls at floor level unobstructed except by louvers or course screens. Where natural ventilation is inadequate, mechanical ventilation shall be provided.

(ii) Class I liquids shall not be stored or handled within a building having a basement or pit into which flammable vapors may travel, unless such area is provided with ventilation designed to prevent the accumulation of flammable vapors therein.

(iii) Containers of Class I liquids shall not be drawn from or filled within buildings unless provision is made to prevent the accumulation of flammable vapors in hazardous concentrations. Where mechanical ventilation is required, it shall be kept in operation while flammable liquids are being handled.

(3) Loading and unloading facilities.

(a) Separation. Tank vehicle and tank car loading or unloading facilities shall be separated from aboveground tanks, warehouses, other plant buildings or nearest line of

adjoining property that may be built upon by a distance of 25 feet for Class I liquids and 15 feet for Class II and Class III liquids measured from the nearest position of any fill spout. Buildings for pumps or shelters for personnel may be a part of the facility.

(b) Class restriction. Equipment such as piping, pumps, and meters used for the transfer of Class I liquids between storage tanks and the fill stem of the loading rack shall not be used for the transfer of Class II or Class III liquids.

(c) Valves. Valves used for the final control for filling tank vehicles shall be of the self-closing type and manually held open except where automatic means are provided for shutting off the flow when the vehicle is full or after filling of a preset amount.

(d) Static protection.

(i) Bonding facilities for protection against static sparks during the loading of tank vehicles through open domes shall be provided:

(A) Where Class I liquids are loaded, or

(B) Where Class II or Class III liquids are loaded into vehicles which may contain vapors from previous cargoes of Class I liquids.

(ii) Protection as required in (3)(d)(i) of this section shall consist of a metallic bond wire permanently electrically connected to the fill stem or to some part of the rack structure in electrical contact with the fill stem. The free end of such wire shall be provided with a clamp or equivalent device for convenient attachment to some metallic part in electrical contact with the cargo tank of the tank vehicle.

(iii) Such bonding connection shall be made fast to the vehicle or tank before dome covers are raised and shall remain in place until filling is completed and all dome covers have been closed and secured.

(iv) Bonding as specified in (3)(d)(i), (ii) and (iii) of this section is not required:

(A) Where vehicles are loaded exclusively with products not having a static accumulating tendency, such as asphalt, most crude oils, residual oils, and water soluble liquids;

(B) Where no Class I liquids are handled at the loading facility and the tank vehicles loaded are used exclusively for Class II and Class III liquids; and

(C) Where vehicles are loaded or unloaded through closed bottom or top connections.

(v) Filling through open domes into the tanks of tank vehicles or tank cars, that contain vapor-air mixtures within the flammable range or where the liquid being filled can form such a mixture, shall be by means of a downspout which extends near the bottom of the tank. This precaution is not required when loading liquids which are nonaccumulators of static charges.

(e) Stray currents. Tank car loading facilities where Class I liquids are loaded through open domes shall be protected against stray currents by bonding the pipe to at least one rail and to the rack structure if of metal. Multiple lines entering the rack area shall be electrically bonded together. In addition, in areas where excessive stray currents are known to exist, all pipe entering the rack area shall be provided with insulating sections to electrically isolate the rack piping from the pipelines. No bonding between the tank car and the rack or piping is required during either loading or unloading of Class II or III liquids.

(f) Container filling facilities. Class I liquids shall not be dispensed into containers unless the nozzle and container are electrically interconnected. Where the metallic floorplate on which the container stands while filling is electrically connected to the fill stem or where the fill stem is bonded to the container during filling operations by means of a bond wire, the provisions of these standards shall be deemed to have been complied with.

(4) Wharves.

(a) Definition, application. The term wharf shall mean any wharf, pier, bulkhead, or other structure over or contiguous to navigable water used in conjunction with a bulk plant, the primary function of which is the transfer of flammable or combustible liquid cargo in bulk between the bulk plant and any tank vessel, ship, barge, lighter boat, or other mobile floating craft; and this subparagraph shall apply to all such installations except marine service stations as covered in WAC 296-24-33015.

(b) Package cargo. Package cargo of flammable and combustible liquids, including full and empty drums, bulk fuel, and stores may be handled over a wharf and at such times and places as may be agreed upon by the wharf superintendent and the senior deck officer on duty.

(c) Location. Wharves at which flammable or combustible liquid cargoes are to be transferred in bulk quantities to or from tank vessels shall be at least 100 feet from any bridge over a navigable waterway, or from an entrance to or superstructure of any vehicular or railroad tunnel under a waterway. The termination of the wharf loading or unloading fixed piping shall be at least 200 feet from a bridge or from an entrance to or superstructure of a tunnel.

(d) Design and construction. Substructure and deck shall be substantially designed for the use intended. Deck may employ any material which will afford the desired combination of flexibility, resistance to shock, durability, strength, and fire resistance. Heavy timber construction is acceptable.

(e) Tanks. Tanks used exclusively for ballast water or Class II or Class III liquids may be installed on suitably designed wharves.

(f) Pumps. Loading pumps capable of building up pressures in excess of the safe working pressure of cargo hose or loading arms shall be provided with bypasses, relief valves, or other arrangement to protect the loading facilities against excessive pressure. Relief devices shall be tested at not more than yearly intervals to determine that they function satisfactorily at the pressure at which they are set.

(g) Hoses and couplings. All pressure hoses and couplings shall be inspected at intervals appropriate to the service. The hose and couplings shall be tested with the hose extended and using the "inservice maximum operating pressures." Any hose showing material deteriorations, signs of leakage, or weakness in its carcass or at the couplings shall be withdrawn from service and repaired or discarded.

(h) Piping and fittings. Piping, valves, and fittings shall be in accordance with WAC 296-24-33007 with the following exceptions and additions:

(i) Flexibility of piping shall be assured by appropriate layout and arrangement of piping supports so that motion of the wharf structure resulting from wave action, currents, tides, or the mooring of vessels will not subject the pipe to repeated strain beyond the elastic limit.

(ii) Pipe joints depending upon the friction characteristics of combustible materials or grooving of pipe ends for mechanical continuity of piping shall not be used.

(iii) Swivel joints may be used in piping to which hoses are connected, and for articulated swivel-joint transfer systems, provided that the design is such that the mechanical strength of joint will not be impaired if the packing material should fail, as by exposure to fire.

(iv) Piping systems shall contain a sufficient number of valves to operate the system properly and to control the flow of liquid in normal operation and in the event of physical damage.

(v) In addition to the requirements of (4)(h)(iv), each line conveying flammable liquids leading to a wharf shall be provided with a readily accessible block valve located on shore near the approach to the wharf and outside of any diked area. Where more than one line is involved, the valves shall be grouped in one location.

(vi) Means of easy access shall be provided for cargo line valves located below the wharf deck.

(vii) Pipelines on flammable or combustible liquids wharves shall be adequately bonded and grounded. If excessive stray currents are encountered, insulating points shall be installed. Bonding and grounding connections on all pipelines shall be located on wharfside of hose-riser insulating flanges, if used, and shall be accessible for inspection.

(viii) Hose or articulated swivel-joint pipe connections used for cargo transfer shall be capable of accommodating the combined effects of change in draft and maximum tidal range, and mooring lines shall be kept adjusted to prevent the surge of the vessel from placing stress on the cargo transfer system.

(ix) Hose shall be supported so as to avoid kinking and damage from chafing.

(i) Fire protection. Suitable portable fire extinguishers with a rating of not less than 12-BC shall be located with 75 feet of those portions of the facility where fires are likely to occur, such as hose connections, pumps, and separator tanks.

(i) Where piped water is available, ready-connected fire hose in size appropriate for the water supply shall be provided so that manifolds where connections are made and broken can be reached by at least one hose stream.

(ii) Material shall not be placed on wharves in such a manner as to obstruct access to fire fighting equipment, or important pipeline control valves.

(iii) Where the wharf is accessible to vehicle traffic, an unobstructed roadway to the shore end of the wharf shall be maintained for access of fire fighting apparatus.

(j) Operations control. Loading or discharging shall not commence until the wharf superintendent and officer in charge of the tank vessel agree that the tank vessel is properly moored and all connections are properly made. Mechanical work shall not be performed on the wharf during cargo transfer, except under special authorization by a delegated person or the delegated persons authorized representative based on a review of the area involved, methods to be employed, and precaution necessary.

(5) Electrical equipment.

(a) Application. This subsection shall apply to areas where Class I liquids are stored or handled. For areas where Class II or Class III liquids only are stored or handled, the

electrical equipment may be installed according to chapter 296-24 WAC Part L for ordinary locations.

(b) Conformance. All electrical equipment and wiring shall be of a type specified by and shall be installed according to chapter 296-24 WAC Part L.

(c) Classification. So far as it applies Table H-18 shall be used to delineate and classify hazardous areas for the purpose of installation of electrical equipment under normal circumstances. In Table H-18 a classified area shall not extend beyond an unpierced wall, roof, or other solid partition. The area classifications listed shall be based on the premise that the installation meets the applicable requirements of this section in all respects.

TABLE H-18
ELECTRICAL EQUIPMENT HAZARDOUS
AREAS—BULK PLANTS

Location	Class I Group D division	Extent of classified area
Tank vehicle and tank car: ¹ Loading through open dome	1	Within 3 feet of edge of dome, extending in all directions.
	2	Area between 3 feet and 5 feet from edge of dome, extending in all directions.
Loading through bottom connections with atmospheric venting	1	Within 3 feet of point of venting to atmosphere, extending in all directions.
	2	Area between 3 feet and 5 feet from point of venting to atmosphere, extending in all directions. Also up to 18 inches above grade within a horizontal radius of 10 feet from point of loading connection.
Loading through closed dome with atmospheric venting	1	Within 3 feet of open end of vent, extending in all directions.
	2	Area between 3 feet and 5 feet from open end of vent, extending in all directions. Also within 3 feet of edge of dome, extending in all directions.
Loading through closed dome with vapor recovery	2	Within 3 feet of point of connection of both fill and vapor lines, extending in all directions.

Location	Class I Group D division	Extent of classified area
Bottom loading with vapor recovery or any bottom unloading	2	Within 3 feet of point of connections extending in all directions. Also up to 18 inches above grade within a horizontal radius of 10 feet from point of connection.
Drum and container filling: Outdoors, or indoors with adequate ventilation	1	Within 3 feet of vent and fill opening, extending in all directions.
	2	Area between 3 feet and 5 feet from vent or fill opening, extending in all directions. Also up to 18 inches above floor or grade level within a horizontal radius of 10 feet from vent or fill opening.
Outdoors, or indoors with adequate ventilation	1	Within 3 feet of vent and fill opening, extending in all directions.
	2	Area between 3 feet and 5 feet from vent or fill opening, extending in all directions. Also up to 18 inches above floor or grade level within a horizontal radius of 10 feet from vent or fill opening.
Tank—Aboveground: Shell, ends, or roof and dike area	2	Within 10 feet from shell, ends, or roof of tank, area inside dikes to level of top of dike.
Vent	1	Within 5 feet of open end of vent, extending in all directions.
	2	Area between 5 feet and 10 feet from open end of vent, extending in all directions.
Floating roof	1	Area above the roof and within the shell.
Pits:		
Without mechanical ventilation	1	Entire area within pit if any part is within a Division 1 or 2 classified area.
With mechanical ventilation	2	Entire area within pit if any part is within a Division 1 or 2 classified area.
Containing valves, fittings or piping, and not within a Division 1 or 2 classified area	2	Entire pit.

Location	Class I Group D division	Extent of classified area
Pumps, bleeders, withdrawal fittings, meters and similar devices: Indoors _____	2	Within 5 feet of any edge of such devices, extending in all directions. Also up to 3 feet above floor or grade level within 25 feet hori- zontally from any edge of such devices.
Outdoors _____	2	Within 3 feet of any edge of such devices, extending in all directions. Also up to 18 inches above grade level within 10 feet horizontally from any edge of such devices.
Storage and repair garage for tank vehicles _____	1	All pits or spaces below floor level.
	2	Area up to 18 inches above floor or grade level for entire stor- age or repair garage.
Drainage ditches, separators, impounding basins _____	2	Area up to 18 inches above ditch, separa- tor or basin. Also up to 18 inches above grade within 15 feet horizontally from any edge.
Garages for other than tank vehicles _____	Ordinary	If there is any opening to these rooms within the extent of an out- door classified area, the entire room shall be classified the same as the area classification at the point of the open- ing.
Outdoor drum storage _____	Ordinary	
Indoor warehousing where there is no flammable liquid transfer _____	Ordinary	If there is any opening to these rooms within the extent of an indoor classified area, the room shall be classified the same as if the wall, curb or partition did not exist.
Office and rest rooms _____	Ordinary	

¹ When classifying the extent of the area, consideration shall be given to the fact that tank cars or tank vehicles may be spotted at varying points. Therefore, the extremities of the loading or unloading positions shall be used.

(6) Sources of ignition. Class I liquids shall not be handled, drawn, or dispensed where flammable vapors may reach a source of ignition. Smoking shall be prohibited

except in designated localities. "No smoking" signs shall be conspicuously posted where hazard from flammable liquid vapors is normally present.

(7) Drainage and waste disposal. Provision shall be made to prevent flammable or combustible liquids which may be spilled at loading or unloading points from entering public sewers and drainage systems, or natural waterways. Connection to such sewers, drains, or waterways by which flammable or combustible liquids might enter shall be provided with separator boxes or other approved means whereby such entry is precluded. Crankcase drainings and flammable or combustible liquids shall not be dumped into sewers, but shall be stored in tanks or tight drums outside of any building until removed from the premises.

(8) Fire control. Suitable fire-control devices, such as small hose or portable fire extinguishers, shall be available to locations where fires are likely to occur. Additional fire-control equipment may be required where a tank of more than 50,000 gallons individual capacity contains Class I liquids and where an unusual exposure hazard exists from surrounding property. Such additional fire-control equipment shall be sufficient to extinguish a fire in the largest tank. The design and amount of such equipment shall be in accordance with approved engineering standards.

[Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-24-33013, filed 7/20/94, effective 9/20/94; 91-24-017 (Order 91-07), § 296-24-33013, filed 11/22/91, effective 12/24/91. Statutory Authority: RCW 49.17.040 and 49.17.050. 85-10-004 (Order 85-09), § 296-24-33013, filed 4/19/85; Order 76-6, § 296-24-33013, filed 3/1/76; Order 73-5, § 296-24-33013, filed 5/9/73 and Order 73-4, § 296-24-33013, filed 5/7/73.]

WAC 296-24-33015 Service stations. (1) Storage and handling.

(a) General provisions.

(i) Liquids shall be stored in approved closed containers not exceeding 60 gallons capacity, in tanks located underground, in tanks in special enclosures as described in (b) of this subsection, or in aboveground tanks as provided for in (3)(b)(i), (ii), (iii) and (iv) of this section.

(ii) Aboveground tanks, located in an adjoining bulk plant, may be connected by piping to service station underground tanks if, in addition to valves at aboveground tanks, a valve is also installed within control of service station personnel.

(iii) Apparatus dispensing Class I liquids into the fuel tanks of motor vehicles of the public shall not be located at a bulk plant unless separated by a fence or similar barrier from the area in which bulk operations are conducted.

(iv) The provisions of subsection (1) of this section shall not prohibit the dispensing of flammable liquids in the open from a tank vehicle to a motor vehicle. Such dispensing shall be permitted provided:

(A) The tank vehicle complies with the requirements covered in the Standard on Tank Vehicles for Flammable Liquids, NFPA 385-1966.

(B) The dispensing is done on premises not open to the public.

(C) The dispensing hose does not exceed 50 feet in length.

(D) The dispensing nozzle is a listed automatic-closing type without a latch-open device.

(vi) Class I liquids shall not be stored or handled within a building having a basement or pit into which flammable vapors may travel, unless such area is provided with ventilation designed to prevent the accumulation of flammable vapors therein.

(vii) Accurate inventory records shall be maintained and reconciled on all Class I liquid storage tanks for possible indication of leakage from tanks or piping.

(b) Special enclosures.

(i) When installation of tanks in accordance with WAC 296-24-33005(3) is impractical because of property or building limitations, tanks for flammable or combustible liquids may be installed in buildings if properly enclosed.

(ii) The enclosure shall be substantially liquid and vapor-tight without backfill. Sides, top, and bottom of the enclosure shall be of reinforced concrete at least 6 inches thick, with openings for inspection through the top only. Tank connections shall be so piped or closed that neither vapors nor liquid can escape into the enclosed space. Means shall be provided whereby portable equipment may be employed to discharge to the outside any liquid or vapors which might accumulate should leakage occur.

(iii) At automotive service stations provided in connection with tenant or customer parking facilities at or below grade level in large buildings of commercial, mercantile, or residential occupancy, tanks containing Class I liquids, installed of necessity in accordance with subsection (1)(b)(ii) of this section, shall not exceed 6,000 gallons individual or 18,000 gallons aggregate capacity.

(c) Inside buildings.

(i) Except where stored in tanks as provided in subsection (1)(b) of this section, no Class I liquids shall be stored within any service station building except in closed containers of aggregate capacity not exceeding 60 gallons. One container not exceeding 60 gallons capacity equipped with an approved pump is permitted.

(ii) Class I liquids may be transferred from one container to another in lubrication or service rooms of a service station building provided the electrical installation complies with Table H-19 and provided that any heating equipment complies with subsection (5) of this section.

(iii) Class II and Class III liquids may be stored and dispensed inside service station buildings from tanks of not more than 120 gallons capacity each.

(d) Labeling. No sale or purchase of any Class I, II, or III liquids shall be made in containers unless such containers are clearly marked with the name of the product contained therein.

(e) Dispensing into portable containers. No delivery of any Class I liquids shall be made into portable containers unless the container is constructed of metal, has a tight closure with screwed or spring cover, and is fitted with a spout or so designed that the contents can be poured without spilling.

(2) Dispensing systems.

(a) Location. Dispensing devices at automotive service stations shall be so located that all parts of the vehicle being served will be on the premises of the service station.

(b) Inside location. Approved dispensing units may be located inside of buildings. The dispensing area shall be separated from other areas in an approved manner. The dispens-

ing unit and its piping shall be mounted either on a concrete island or protected against collision damage by suitable means and shall be located in a position where it cannot be struck by a vehicle descending a ramp or other slope out of control. The dispensing area shall be provided with an approved mechanical or gravity ventilation system. When dispensing units are located below grade, only approved mechanical ventilation shall be used and the entire dispensing area shall be protected by an approved automatic sprinkler system. Ventilating systems shall be electrically interlocked with gasoline dispensing units so that the dispensing units cannot be operated unless the ventilating fan motors are energized.

(c) Emergency power cutoff. A clearly identified and easily accessible switch(es) or a circuit breaker(s) shall be provided at a location remote from dispensing devices, including remote pumping systems, to shut off the power to all dispensing devices in the event of an emergency.

(d) Dispensing units.

(i) Class I liquids shall be transferred from tanks by means of fixed pumps so designed and equipped as to allow control of the flow and to prevent leakage or accidental discharge.

(ii) Only listed devices may be used for dispensing Class I liquids. No such device may be used if it shows evidence of having been dismantled.

(iii) Every dispensing device for Class I liquids installed after December 31, 1978, shall contain evidence of listing so placed that any attempt to dismantle the device will result in damage to such evidence, visible without disassembly or dismounting of the nozzle.

(iv) Class I liquids shall not be dispensed by pressure from drums, barrels, and similar containers. Approved pumps taking suction through the top of the container or approved self-closing faucets shall be used.

(v) The dispensing units, except those attached to containers, shall be mounted either on a concrete island or protected against collision damage by suitable means.

(e) Remote pumping systems.

(i) This subdivision shall apply to systems for dispensing Class I liquids where such liquids are transferred from storage to individual or multiple dispensing units by pumps located elsewhere than at the dispensing units.

(ii) Pumps shall be designed or equipped so that no part of the system will be subjected to pressures above its allowable working pressure. Pumps installed above grade, outside of buildings, shall be located not less than 10 feet from lines of adjoining property which is/ or may be built upon, and not less than 5 feet from any building opening. When an outside pump location is impractical, pumps may be installed inside of buildings, as provided for dispensers in (b) of this subsection, or in pits as provided in (e)(iii) of this subsection. Pumps shall be substantially anchored and protected against physical damage by vehicles.

(iii) Pits for subsurface pumps or piping manifolds of submersible pumps shall withstand the external forces to which they may be subjected without damage to the pump, tank, or piping. The pit shall be no larger than necessary for inspection and maintenance and shall be provided with a fitted cover.

(iv) A control shall be provided that will permit the pump to operate only when a dispensing nozzle is removed from its bracket on the dispensing unit and the switch on this dispensing unit is manually actuated. This control shall also stop the pump when all nozzles have been returned to their brackets.

(v) An approved impact valve, incorporating a fusible link, designed to close automatically in the event of severe impact or fire exposure shall be properly installed in the dispensing supply line at the base of each individual dispensing device.

(vi) Testing. After the completion of the installation, including any paving, that section of the pressure piping system between the pump discharge and the connection for the dispensing facility shall be tested for at least 30 minutes at the maximum operating pressure of the system. Such tests shall be repeated at 5-year intervals thereafter.

(f) Delivery nozzles.

(i) A listed manual or automatic-closing type hose nozzle valve shall be provided on dispensers used for the dispensing of Class I liquids.

(ii) Manual-closing type valves shall be held open manually during dispensing. Automatic-closing type valves may be used in conjunction with an approved latch-open device.

(g) Special type dispensers.

(i) Emergency controls shall be installed at an acceptable location, but controls shall not be more than 100 feet from dispensers.

(ii) Instructions for the operation of dispensers shall be conspicuously posted.

(3) Marine service stations.

(a) Dispensing.

(i) The dispensing area shall be located away from other structures so as to provide room for safe ingress and egress of craft to be fueled. Dispensing units shall in all cases be at least 20 feet from any activity involving fixed sources of ignition.

(ii) Dispensing shall be by approved dispensing units with or without integral pumps and may be located on open piers, wharves, or floating docks or on shore or on piers of the solid fill type.

(iii) Dispensing nozzles shall be automatic-closing without a hold-open latch.

(b) Tanks and pumps.

(i) Tanks, and pumps not integral with the dispensing unit, shall be on shore or on a pier of the solid fill type, except as provided below.

(ii) Where shore location would require excessively long supply lines to dispensers, tanks may be installed on a pier provided that applicable portions of WAC 296-24-33005 relative to spacing, diking, and piping are complied with and the quantity so stored does not exceed 1,100 gallons aggregate capacity.

(iii) Shore tanks supplying marine service stations may be located above ground, where rock ledges or high water table make underground tanks impractical.

(iv) Where tanks are at an elevation which would produce gravity head on the dispensing unit, the tank outlet shall be equipped with a pressure control valve positioned adjacent to and outside the tank block valve specified in WAC 296-24-

33005 (2)(h)(ii), so adjusted that liquid cannot flow by gravity from the tank in case of piping or hose failure.

(c) Piping.

(i) Piping between shore tanks and dispensing units shall be as described in WAC 296-24-33007, except that, where dispensing is from a floating structure, suitable lengths of oil-resistant flexible hose may be employed between the shore piping and the piping on the floating structure as made necessary by change in water level or shoreline.

(ii) A readily accessible valve to shut off the supply from shore shall be provided in each pipeline at or near the approach to the pier and at the shore end of each pipeline adjacent to the point where flexible hose is attached.

(iii) Piping shall be located so as to be protected from physical damage.

(iv) Piping handling Class I liquids shall be grounded to control stray currents.

(4) Electrical equipment.

(a) Application. This subsection shall apply to areas where Class I liquids are stored or handled. For areas where Class II or Class III liquids are stored or handled the electrical equipment may be installed according to the provisions of chapter 296-24 WAC Part L for ordinary locations.

(b) All electrical equipment and wiring shall be of a type specified by and shall be installed according to chapter 296-24 WAC Part L.

(c) So far as it applies, Table H-19 shall be used to delineate and classify hazardous areas for the purpose of installation of electrical equipment under normal circumstances. A classified area shall not extend beyond an unpierced wall, roof, or other solid partition.

(d) The area classifications listed shall be based on the assumption that the installation meets the applicable requirements of this section in all respects.

TABLE H-19
ELECTRICAL EQUIPMENT HAZARDOUS
AREAS—SERVICE STATIONS

Location	Class I, Group D division	Extent of classified area
Underground tank: Fill opening _____	1	Any pit, box or space below grade level, any part of which is within the Division 1 or 2 classified area.
	2	Up to 18 inches above grade level within a horizontal radius of 10 feet from a loose fill connection and within a horizontal radius of 5 feet from a tight fill connection.
Vent—Discharging upward _____	1	Within 3 feet of open end of vent, extending in all directions.
	2	Area between 3 feet and 5 feet of open end of vent, extending in all directions.

TABLE H-19
ELECTRICAL EQUIPMENT HAZARDOUS
AREAS—SERVICE STATIONS

Location	Class I, Group D division	Extent of classified area
Dispenser:		
Pits —————	1	Any pit, box or space below grade level, any part of which is within the Division 1 or 2 classified area.
Dispenser enclosure —————	1	The area 4 feet vertically above base within the enclosure and 18 inches horizontally in all directions.
Outdoor —————	2	Up to 18 inches above grade level within 20 feet horizontally of any edge of enclosure.
Indoor:		
With mechanical ventilation —————	2	Up to 18 inches above grade or floor level within 20 feet horizontally of any edge of enclosure.
With gravity ventilation —————	2	Up to 18 inches above grade or floor level within 25 feet horizontally of any edge of enclosure.
Remote pump—Outdoor —————	1	Any pit, box or space below grade level if any part is within a horizontal distance of 10 feet from any edge of pump.
	2	Within 3 feet of any edge of pump, extending in all directions. Also up to 18 inches above grade level within 10 feet horizontally from any edge of pump.
Remote pump—Indoor —————	1	Entire area within any pit.
	2	Within 5 feet of any edge of pump, extending in all directions. Also up to 3 feet above floor or grade level within 25 feet horizontally from any edge of pump.
Lubrication or service room —————	1	Entire area within any pit.
	2	Area up to 18 inches above floor or grade level within entire lubrication room.

TABLE H-19
ELECTRICAL EQUIPMENT HAZARDOUS
AREAS—SERVICE STATIONS

Location	Class I, Group D division	Extent of classified area
Dispenser for Class I liquids —————	2	Within 3 feet of any fill or dispensing point, extending in all directions.
Special enclosure inside building per WAC 296-24-33013 (1)(b) —————	1	Entire enclosure.
Sales, storage and rest rooms —————	Ordinary	If there is any opening to these rooms within the extent of a Division 1 area, the entire room shall be classified as Division 1.

(5) Heating equipment.

(a) Conformance. Heating equipment shall be installed as provided in (b) through (e) of this subsection.

(b) Application. Heating equipment may be installed in the conventional manner in an area except as provided in (c), (d) or (e) of this subsection.

(c) Special room. Heating equipment may be installed in a special room separated from an area classified by Table H-19 by walls having a fire resistance rating of at least 1 hour and without any openings in the walls within 8 feet of the floor into an area classified in Table H-19. This room shall not be used for combustible storage and all air for combustion purposes shall come from outside the building.

(d) Work areas. Heating equipment using gas or oil fuel may be installed in the lubrication, sales, or service room where there is no dispensing or transferring of Class I liquids provided the bottom of the combustion chamber is at least 18 inches above the floor and the heating equipment is protected from physical damage by vehicles. Heating equipment using gas or oil fuel listed for use in garages may be installed in the lubrication or service room where Class I liquids are dispensed provided the equipment is installed at least 8 feet above the floor.

(e) Electric heat. Electrical heating equipment shall conform to subsection (4) of this section.

(6) Drainage and waste disposal. Provision shall be made in the area where Class I liquids are dispensed to prevent spilled liquids from flowing into the interior of service station buildings. Such provision may be by grading driveways, raising door sills, or other equally effective means. Crankcase drainings and flammable or combustible liquids shall not be dumped into sewers but shall be stored in tanks or drums outside of any building until removed from the premises.

(7) Sources of ignition. In addition to the previous restrictions of this section, the following shall apply: There shall be no smoking or open flames in the areas used for fueling, servicing fuel systems for internal combustion engines, receiving or dispensing of flammable or combustible liquids. Conspicuous and legible signs prohibiting smoking shall be posted within sight of the customer being served. The motors

of all equipment being fueled shall be shut off during the fueling operation.

(8) Fire control. Each service station shall be provided with at least one fire extinguisher having a minimum approved classification of 6 B, C located so that an extinguisher will be within 75 feet of each pump, dispenser, underground fill pipe opening, and lubrication or service room.

Note: For additional requirements relating to portable fire extinguishers see WAC 296-800-300.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 01-17-033, § 296-24-33015, filed 8/8/01, effective 9/1/01. Statutory Authority: Chapter 49.17 RCW. 91-24-017 (Order 91-07), § 296-24-33015, filed 11/22/91, effective 12/24/91. Statutory Authority: RCW 49.17.040 and 49.17.050. 85-10-004 (Order 85-09), § 296-24-33015, filed 4/19/85; 83-24-013 (Order 83-34), § 296-24-33015, filed 11/30/83; Order 76-6, § 296-24-33015, filed 3/1/76; Order 73-5, § 296-24-33015, filed 5/9/73 and Order 73-4, § 296-24-33015, filed 5/7/73.]

WAC 296-24-33017 Processing plants. (1) Scope. This section shall apply to those plants or buildings which contain chemical operations such as oxidation, reduction, halogenation, hydrogenation, alkylation, polymerization, and other chemical processes but shall not apply to chemical plants, refineries or distilleries.

(2) Location.

(a) Classification. The location of each processing vessel shall be based upon its flammable or combustible liquid capacity. Processing vessels shall be located, with respect to distances to lines of adjoining property which may be built upon, in accordance with Table H-20, except when the processing plant is designed in accordance with (2)(b) of this section.

TABLE H - 20

Processing vessels with emergency relief venting to permit pressure	Stable liquids	Unstable liquids
Not in excess of 2.5 p.s.i.g.	Table H-9	2 1/2 times Table H-9.
Over 2.5 p.s.i.g.	1 1/2 times Table H-9.	4 times Table H-9.

(b) Exception. The distances required in (2)(a) of this section may be waived when the vessels are housed within a building and the exterior wall facing the line of adjoining property which may be built upon is a blank wall having a fire-resistance rating of not less than 4 hours. When Class IA or unstable liquids are handled, the blank wall shall have explosion resistance in accordance with good engineering practice, see (3)(d) of this section.

(3) Processing building.

(a) Construction.

(i) Processing buildings shall be of fire-resistance or noncombustible construction, except heavy timber construction with load-bearing walls may be permitted for plants utilizing only stable Class II or Class III liquids. Except as provided in (2)(b) of this section or in the case of explosion resistant walls used in conjunction with explosion relieving facilities, see (3)(d) of this section, loadbearing walls are prohibited. Buildings shall be without basements or covered pits.

(ii) Areas shall have adequate exit facilities arranged to prevent occupants from being trapped in the event of fire. Exits shall not be exposed by the drainage facilities described in (3)(b) of this section.

(b) Drainage.

(i) Emergency drainage systems shall be provided to direct flammable or combustible liquid leakage and fire protection water to a safe location. This may require curbs, scuppers, or special drainage systems to control the spread of fire, see WAC 296-24-33005 (2)(g)(ii).

(ii) Emergency drainage systems, if connected to public sewers or discharged into public waterways, shall be equipped with traps or separators.

(iii) The processing plant shall be designed and operated to prevent the normal discharge of flammable or combustible liquids to public waterways, public sewers, or adjoining property.

(c) Ventilation.

(i) Enclosed processing buildings shall be ventilated at a rate of not less than 1 cubic foot per minute per square foot of solid floor area. This shall be accomplished by natural or mechanical ventilation with discharge or exhaust to a safe location outside of the building. Provision shall be made for introduction of makeup air in such a manner as not to short circuit the ventilation. Ventilation shall be arranged to include all floor areas or pits where flammable vapors may collect.

(ii) Equipment used in a building and the ventilation of the building shall be designed so as to limit flammable vapor-air mixtures under normal operating conditions to the interior of equipment, and to not more than 5 feet from equipment which exposes Class I liquids to the air. Examples of such equipment are dispensing stations, open centrifuges, plate and frame filters, open vacuum filters, and surfaces of open equipment.

(d) Explosion relief. Areas where Class IA or unstable liquids are processed shall have explosion venting through one or more of the following methods:

(i) Open air construction.

(ii) Lightweight walls and roof.

(iii) Lightweight wall panels and roof hatches.

(iv) Windows of explosion venting type.

(4) Liquid handling.

(a) Storage.

(i) The storage of flammable or combustible liquids in tanks shall be in accordance with the applicable provisions of WAC 296-24-33005.

(ii) If the storage of flammable or combustible liquids in outside aboveground or underground tanks is not practical because of temperature or production considerations, tanks may be permitted inside of buildings or structures in accordance with the applicable provisions of WAC 296-24-33005.

(iii) Storage tanks inside of buildings shall be permitted only in areas at or above grade which have adequate drainage and are separated from the processing area by construction having a fire resistance rating of at least 2 hours.

(iv) The storage of flammable or combustible liquids in containers shall be in accordance with the applicable provisions of WAC 296-24-33009.

(b) Piping, valves, and fittings.

(i) Piping, valves, and fittings shall be in accordance with WAC 296-24-33007.

(ii) Approved flexible connectors may be used where vibration exists or where frequent movement is necessary. Approved hose may be used at transfer stations.

(iii) Piping containing flammable or combustible liquids shall be identified.

(c) Transfer.

(i) The transfer of large quantities of flammable or combustible liquids shall be through piping by means of pumps or water displacement. Except as required in process equipment, gravity flow shall not be used. The use of compressed air as a transferring medium is prohibited.

(ii) Positive displacement pumps shall be provided with pressure relief discharging back to the tank or to pump suction.

(d) Equipment.

(i) Equipment shall be designed and arranged to prevent the unintentional escape of liquids and vapors and to minimize the quantity escaping in the event of accidental release.

(ii) Where the vapor space of equipment is usually within the flammable range, the probability of explosion damage to the equipment can be limited by inerting, by providing an explosion suppression system, or by designing the equipment to contain the peak explosion pressure which may be modified by explosion relief. Where the special hazards of operation, sources of ignition, or exposures indicate a need, consideration shall be given to providing protection by one or more of the above means.

(5) Tank vehicle and tank car loading and unloading. Tank vehicle and tank car loading or unloading facilities shall be separated from aboveground tanks, warehouses, other plant buildings, or nearest line of adjoining property which may be built upon by a distance of 25 feet for Class I liquids and 15 feet for Class II and Class III liquids measured from the nearest position of any fill stem. Buildings for pumps or shelters for personnel may be a part of the facility. Operations of the facility shall comply with the appropriate portions of WAC 296-24-33013(3).

(6) Fire control.

(a) Portable extinguishers. Approved portable fire extinguishers of appropriate size, type and number shall be provided.

(b) Other controls. Where the special hazards of operation or exposure indicate a need, the following fire control provision shall be provided.

(i) A reliable water supply shall be available in pressure and quantity adequate to meet the probable fire demands.

(ii) Hydrants shall be provided in accordance with accepted good practice.

(iii) Hose connected to a source of water shall be installed so that all vessels, pumps, and other equipment containing flammable or combustible liquids can be reached with at least one hose stream. Nozzles that are capable of discharging a water spray shall be provided.

(iv) Processing plants shall be protected by an approved automatic sprinkler system or equivalent extinguishing system. If special extinguishing systems including but not limited to those employing foam, carbon dioxide, or dry chemical are provided, approved equipment shall be used and installed in an approved manner.

(c) Alarm systems. An approved means for prompt notification of fire to those within the plant and any public fire department available shall be provided. It may be advisable to connect the plant system with the public system where public fire alarm system is available.

(d) Maintenance. All plant fire protection facilities shall be adequately maintained and periodically inspected and tested to make sure they are always in satisfactory operating condition and that they will serve their purpose in time of emergency.

(7) Sources of ignition.

(a) General.

(i) Precautions shall be taken to prevent the ignition of flammable vapors. Sources of ignition include but are not limited to open flames; lightning; smoking; cutting and welding; hot surfaces; frictional heat; static, electrical, any mechanical sparks; spontaneous ignition, including heat-producing chemical reactions; and radiant heat.

(ii) Class I liquids shall not be dispensed into containers unless the nozzle and container are electrically interconnected. Where the metallic floorplate on which the container stands while filling is electrically connected to the fill stem or where the fill stem is bonded to the container during filling operations by means of a bond wire, the provisions of this section shall be deemed to have been complied with.

(b) Maintenance and repair.

(i) When necessary to do maintenance work in a flammable or combustible liquid processing area, the work shall be authorized by a responsible representative of the employer.

(ii) Hot work such as welding or cutting operations, use of spark-producing power tools, and chipping operations shall be permitted only under supervision of an individual in responsible charge who shall make an inspection of the area to be sure that it is safe for the work to be done and that safe procedures will be followed for the work specified.

(c) Electrical.

(i) All electrical wiring and equipment within storage or processing areas shall be installed according to chapter 296-24 WAC Part L.

(ii) Locations where flammable vapor-air mixtures may exist under normal operations shall be classified Class I, Division 1 according to the requirements of chapter 296-24 WAC Part L. For those pieces of equipment installed in accordance with (3)(c)(ii) of this section, the Division 1 area shall extend 5 feet in all directions from all points of vapor liberation. All areas within pits shall be classified Division 1 if any part of the pit is within a Division 1 or 2 classified area, unless the pit is provided with mechanical ventilation.

(iii) Locations where flammable vapor-air mixtures may exist under abnormal conditions and for a distance beyond Division 1 locations shall be classified Division 2 according to the requirements of chapter 296-24 WAC Part L. These locations include an area within 20 feet horizontally, 3 feet vertically beyond a Division 1 area, and up to 3 feet above floor or grade level within 25 feet, if indoors, or 10 feet if outdoors, from any pump, bleeder, withdrawal fittings, meter, or similar device handling Class I liquids. Pits provided with adequate mechanical ventilation within a Division 1 or 2 area shall be classified Division 2. If Class II or Class III liquids only are handled, then ordinary electrical equipment is satisfactory though care shall be used in locating electrical apparatus to prevent hot metal from falling into open equipment.

(iv) Where the provisions of (7)(c)(i), (ii), and (iii) of this section require the installation of explosion-proof equipment, ordinary electrical equipment including switchgear may be

used if installed in a room or enclosure which is maintained under positive pressure with respect to the hazardous area. Ventilation makeup air shall be uncontaminated by flammable vapors.

(8) Housekeeping.

(a) General. Maintenance and operating practices shall be in accordance with established procedures which will tend to control leakage and prevent the accidental escape of flammable or combustible liquids. Spills shall be cleaned up promptly.

(b) Access. Adequate aisles shall be maintained for unobstructed movement of personnel and so that fire protection equipment can be brought to bear on any part of the processing equipment.

(c) Waste and residues. Combustible waste material and residues in a building or operating area shall be kept to a minimum, stored in closed metal waste cans, and disposed of daily.

(d) Clear zone. Ground area around buildings and operating areas shall be kept free of tall grass, weeds, trash, or other combustible materials.

[Statutory Authority: Chapter 49.17 RCW. 91-24-017 (Order 91-07), § 296-24-33017, filed 11/22/91, effective 12/24/91. Statutory Authority: RCW 49.17.040 and 49.17.050. 85-10-004 (Order 85-09), § 296-24-33017, filed 4/19/85; Order 76-6, § 296-24-33017, filed 3/1/76; Order 73-5, § 296-24-33017, filed 5/9/73 and Order 73-4, § 296-24-33017, filed 5/7/73.]

WAC 296-24-33019 Refineries, chemical plants, and distilleries. (1) Storage tanks. Flammable or combustible liquids shall be stored in tanks, in containers, or in portable tanks. Tanks shall be installed in accordance with WAC 296-24-33005. Tanks for the storage of flammable or combustible liquids in tank farms and in locations other than process areas shall be located in accordance with WAC 296-24-33005 (2)(a) and (b).

(2) Wharves. Wharves handling flammable or combustible liquids shall be in accordance with WAC 296-24-33013(4).

(3) Fired and unfired pressure vessels.

(a) Fired vessels. Fired pressure vessels shall be constructed in accordance with the Code for Fired Pressure Vessels, section I of the ASME Boiler and Pressure Vessel Code—1968.

(b) Unfired vessels shall be constructed in accordance with the Code for Unfired Pressure Vessels, section VIII of the ASME Boiler and Pressure Vessel Code—1968.

(4) Location of process units. Process units shall be located so that they are accessible from at least one side for the purpose of fire control. Where topographical conditions are such that flammable or combustible liquids may flow from a processing area so as to constitute a fire hazard to property of others, provision shall be made to divert or impound the flow by curbs, drains, or other suitable means.

(5) Fire control.

(a) Portable equipment. Portable fire extinguishment and control equipment shall be provided in such quantities and types as are needed for the special hazards of operation and storage.

(b) Water supply. Water shall be available in volume and at adequate pressure to supply water hose streams, foam producing equipment, automatic sprinklers, or water spray systems

as the need is indicated by the special hazards of operation and storage.

(c) Special equipment. Special extinguishing equipment such as that utilizing foam, inert gas, or dry chemical shall be provided as the need is indicated by the special hazards of operation and storage.

[Order 73-5, § 296-24-33019, filed 5/9/73 and Order 73-4, § 296-24-33019, filed 5/7/73.]

WAC 296-24-370 Spray finishing using flammable and combustible materials.

[Order 73-5, § 296-24-370, filed 5/9/73 and Order 73-4, § 296-24-370, filed 5/7/73.]

WAC 296-24-37001 Definitions. (1) Aerated solid powders. Aerated powders shall mean any powdered material used as a coating material which shall be fluidized within a container by passing air uniformly from below. It is common practice to fluidize such materials to form a fluidized powder bed and then dip the part to be coated into the bed in a manner similar to that used in liquid dipping. Such beds are also used as sources for powder spray operations.

(2) Spraying area. Any area in which dangerous quantities of flammable vapors or mists, or combustible residues, dusts, or deposits are present due to the operation of spraying processes.

(3) Spray booth. A power-ventilated structure provided to enclose or accommodate a spraying operation to confine and limit the escape of spray, vapor, and residue, and to safely conduct or direct them to an exhaust system.

(4) Waterwash spray booth. A spray booth equipped with a water washing system designed to minimize dusts or residues entering exhaust ducts and to permit the recovery of overspray finishing material.

(5) Dry spray booth. A spray booth not equipped with a water washing system as described in subsection (4) of this section. A dry spray booth may be equipped with (a) distribution or baffle plates to promote an even flow of air through the booth or cause the deposit of overspray before it enters the exhaust duct; or (b) overspray dry filters to minimize dusts; or (c) overspray dry filters to minimize dusts or residues entering exhaust ducts; or (d) overspray dry filter rolls designed to minimize dusts or residues entering exhaust ducts; or (e) where dry powders are being sprayed, with powder collection systems so arranged in the exhaust to capture oversprayed material.

(6) Fluidized bed. A container holding powder coating material which is aerated from below so as to form an air-supported expanded cloud of such material through which the preheated object to be coated is immersed and transported.

(7) Electrostatic fluidized bed. A container holding powder coating material which is aerated from below so as to form an air-supported expanded cloud of such material which is electrically charged with a charge opposite to the charge of the object to be coated; such object is transported through the container immediately above the charged and aerated materials in order to be coated.

(8) Approved. Shall mean approved and listed by a nationally recognized testing laboratory. Refer to federal regulation 29 CFR 1910.7 for definition of nationally recognized testing laboratory.

(9) Listed. See "approved" in subsection (8) of this section.

[Statutory Authority: Chapter 49.17 RCW. 88-23-054 (Order 88-25), § 296-24-37001, filed 11/14/88; Order 76-6, § 296-24-37001, filed 3/1/76; Order 73-5, § 296-24-37001, filed 5/9/73 and Order 73-4, § 296-24-37001, filed 5/7/73.]

WAC 296-24-37003 Spray booths. (1) Construction. Spray booths shall be substantially constructed of steel, securely and rigidly supported, or of concrete or masonry except that aluminum or other substantial noncombustible material may be used for intermittent or low volume spraying. Spray booths shall be designed to sweep air currents toward the exhaust outlet.

(2) Interiors. The interior surfaces of spray booths shall be smooth and continuous without edges and otherwise designed to prevent pocketing of residues and facilitate cleaning and washing without injury.

(3) Floors. The floor surface of a spray booth and operator's working area, if combustible, shall be covered with noncombustible material of such character as to facilitate the safe cleaning and removal of residues.

(4) Distribution or baffle plates. Distribution or baffle plates, if installed to promote an even flow of air through the booth or cause the deposit of overspray before it enters the exhaust duct, shall be of noncombustible material and readily removable or accessible on both sides for cleaning. Such plates shall not be located in exhaust ducts.

(5) Dry type overspray collectors—(Exhaust air filters). In conventional dry type spray booths, overspray dry filters or filter rolls, if installed, shall conform to the following:

(a) The spraying operations except electrostatic spraying operations shall be so designed, installed and maintained that the average air velocity over the open face of the booth (or booth cross section during spraying operations) shall be not less than 100 linear feet per minute. Electrostatic spraying operations may be conducted with an air velocity over the open face of the booth of not less than 60 linear feet per minute, or more, depending on the volume of the finishing material being applied and its flammability and explosion characteristics. Visible gauges or audible alarm or pressure activated devices shall be installed to indicate or insure that the required air velocity is maintained. Dry spray booths equipped with a filter roll which is automatically advanced when the air velocity is reduced to that specified in this section should be arranged to cause shutdown of spraying operations if the filter roll fails to advance automatically. Maintenance procedures should be established to assure replacing filter pads before excessive restriction to airflow occurs. Filter pads should be inspected after each period of use and clogged filter pads discarded and replaced. Filter rolls shall be inspected to insure proper replacement of filter media.

(b) All discarded filter pads and filter rolls shall be immediately removed to a safe, well-detached location or placed in a water-filled metal container and disposed of at the close of the day's operation unless maintained completely in water.

(c) The location of filters in a spray booth shall be so as to not reduce the effective booth enclosure of the articles being sprayed.

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(d) Space within the spray booth on the downstream and upstream sides of filters shall be protected with an approved automatic sprinkler system meeting one of the following requirements:

(i) An automatic sprinkler system as defined in WAC 296-24-607; or

(ii) A fixed dry chemical extinguishing system as defined in WAC 296-24-622; or

(iii) A fixed carbon dioxide gaseous agent system as defined in WAC 296-24-623.

(e) Filters or filter rolls shall not be used when applying a spray material known to be highly susceptible to spontaneous heating and ignition.

(f) Clean filters or filter rolls shall be noncombustible or of a type having a combustibility not in excess of Class 2 filters as listed by Underwriters' Laboratories, Inc. Filters and filter rolls shall not be alternately used for different types of coating materials, where the combination of materials may be conducive to spontaneous ignition. See also WAC 296-24-37013(6).

(6) Frontal area. Each spray booth having a frontal area larger than 9 square feet shall have a metal deflector or curtain not less than 2 1/2 inches deep installed at the upper outer edge of the booth over the opening.

(7) Conveyors. Where conveyors are arranged to carry work into or out of spray booths, the openings therefor shall be as small as practical.

(8) Separation of operations. Each spray booth shall be separated from other operations by not less than 3 feet, or by a greater distance, or by such partition or wall as to reduce the danger from juxtaposition of hazardous operations. See also WAC 296-24-37005(1).

(9) Cleaning. Spray booths shall be so installed that all portions are readily accessible for cleaning. A clear space of not less than 3 feet on all sides shall be kept free from storage or combustible construction.

(10) Illumination. When spraying areas are illuminated through glass panels or other transparent materials, only fixed lighting units shall be used as a source of illumination. Panels shall effectively isolate the spraying area from the area in which the lighting unit is located, and shall be of a noncombustible material of such a nature or so protected that breakage will be unlikely. Panels shall be so arranged that normal accumulations of residue on the exposed surface of the panel will not be raised to a dangerous temperature by radiation or conduction from the source of illumination.

[Statutory Authority: Chapter 49.17 RCW. 89-11-035 (Order 89-03), § 296-24-37003, filed 5/15/89, effective 6/30/89; Order 76-6, § 296-24-37003, filed 3/1/76; Order 73-5, § 296-24-37003, filed 5/9/73 and Order 73-4, § 296-24-37003, filed 5/7/73.]

WAC 296-24-37005 Electrical and other sources of ignition. (1) Conformance. All electrical equipment, open flames and other sources of ignition shall conform to the requirements of this section, except as follows:

(a) Electrostatic apparatus shall conform to the requirements of WAC 296-24-37015 and 296-24-37017.

(b) Drying, curing, and fusion apparatus shall conform to the requirements of WAC 296-24-37019.

(c) Automobile undercoating spray operations in garages shall conform to the requirements of WAC 296-24-37021.

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(d) Powder coating equipment shall conform to the requirements of WAC 296-24-37023.

(2) Minimum separation. There shall be no open flame or spark producing equipment in any spraying area nor within 20 feet thereof, unless separated by a partition.

(3) Hot surfaces. Space-heating appliances, steampipes, or hot surfaces shall not be located in a spraying area where deposits of combustible residues may readily accumulate.

(4) Wiring conformance. Electrical wiring and equipment shall conform to the provisions of this section and chapter 296-24 WAC Part L.

(5) Combustible residues, areas. Unless specifically approved for locations containing both deposits of readily ignitable residue and explosive vapors, there shall be no electrical equipment in any spraying area, whereon deposits of combustible residues may readily accumulate, except wiring in rigid conduit or in boxes or fittings containing no taps, splices, or terminal connections.

(6) Wiring type approved. Electrical wiring and equipment not subject to deposits of combustible residues but located in a spraying area as herein defined shall be of explosion-proof type approved for Class I, Group D locations and conform to the provisions of chapter 296-24 WAC Part L, for Class I, Division 1, hazardous locations. Electrical wiring, motors, and other equipment outside of but within twenty feet of any spraying area, and not separated therefrom by partitions, shall not produce sparks under normal operating conditions and conform to the provisions of chapter 296-24 WAC Part L for Class I, Division 2, hazardous locations.

(7) Lamps. Electric lamps outside of, but within twenty feet of any spraying area, and not separated therefrom by a partition, shall be totally enclosed to prevent the falling of hot particles and shall be protected from mechanical injury by suitable guards or by location.

(8) Portable lamps. Portable electric lamps shall not be used in any spraying area during spraying operations. Portable electric lamps, if used during cleaning or repairing operations, shall be of the type approved for hazardous Class I locations.

(9) Grounding.

(a) All metal parts of spray booths, exhaust ducts, and piping systems conveying flammable or combustible liquids or aerated solids shall be properly electrically grounded in an effective and permanent manner.

(b) "Airless" high-fluid pressure spray guns and any conductive object being sprayed should be properly electrically grounded.

[Statutory Authority: Chapter 49.17 RCW. 91-24-017 (Order 91-07), § 296-24-37005, filed 11/22/91, effective 12/24/91. Statutory Authority: RCW 49.17.040 and 49.17.050. 85-10-004 (Order 85-09), § 296-24-37005, filed 4/19/85; Order 76-6, § 296-24-37005, filed 3/1/76; Order 73-5, § 296-24-37005, filed 5/9/73 and Order 73-4, § 296-24-37005, filed 5/7/73.]

WAC 296-24-37007 Ventilation. (1) Conformance. Ventilating and exhaust systems shall be in accordance with the Standard for Blower and Exhaust Systems for Vapor Removal, NFPA No. 91-1961, where applicable and shall also conform to the provisions of this section.

(2) General. All spraying areas shall be provided with mechanical ventilation adequate to remove flammable vapors, mists or powders to a safe location and to confine and

control combustible residues so that life is not endangered. Mechanical ventilation shall be kept in operation at all times while spraying operations are being conducted and for a sufficient time thereafter to allow vapors from drying coated articles and drying finishing material residue to be exhausted.

(3) Independent exhaust. Each spray booth shall have an independent exhaust duct system discharging to the exterior of the building, except that multiple cabinet spray booths in which identical spray finishing material is used with a combined frontal area of not more than 18 square feet may have a common exhaust. If more than one fan serves one booth, all fans shall be so interconnected that one fan cannot operate without all fans being operated.

(4) Fan-rotating element. The fan-rotating element shall be nonferrous or nonsparking or the casing shall consist of or be lined with such material. There shall be ample clearance between the fan-rotating element and the fan casing to avoid a fire by friction, necessary allowance being made for ordinary expansion and loading to prevent contact between moving parts and the duct or fan housing. Fan blades shall be mounted on a shaft sufficiently heavy to maintain perfect alignment even when the blades of the fan are heavily loaded, the shaft preferably to have bearings outside the duct and booth. All bearings shall be of the self-lubricating type, or lubricated from the outside duct.

(5) Electric motors. Electric motors driving exhaust fans shall not be placed inside booths or ducts. See also WAC 296-24-37005.

(6) Belts. Belts shall not enter the duct or booth unless the belt and pulley within the duct or booth are thoroughly enclosed.

(7) Exhaust ducts. Exhaust ducts shall be constructed of steel and shall be substantially supported. Exhaust ducts without dampers are preferred; however, if dampers are installed, they shall be maintained so that they will be in a full open position at all times the ventilating system is in operation.

(a) Exhaust ducts shall be protected against mechanical damage and have a clearance from unprotected combustible construction or other combustible material of not less than 18 inches.

(b) If combustible construction is provided with the following protection applied to all surfaces within 18 inches, clearances may be reduced to the distances indicated:

(i) 8-gage sheet metal on 1/4-inch 12 inches.

asbestos mill board.

(ii) 28-gage sheet metal on 1/8-inch 9 inches.

asbestos mill board spaced out 1 inch on noncombustible spacers.

(iii) 22-gage sheet metal on 1-inch 3 inches.

rockwool batts reinforced with wire mesh or the equivalent.

(iv) Where ducts are protected with an approved automatic sprinkler system, properly maintained, the clearance required in (7)(a) of this section may be reduced to 6 inches.

(8) Discharge clearance. Unless the spray booth exhaust duct terminal is from a water-wash spray booth, the terminal discharge point shall be not less than 6 feet from any combustible exterior wall or roof nor discharge in the direction of any combustible construction or unprotected opening in any non-combustible exterior wall within 25 feet.

(9) Air exhaust. Air exhaust from spray operations shall not be directed so that it will contaminate makeup air being introduced into the spraying area or other ventilating intakes, nor directed so as to create a nuisance. Air exhausted from spray operations shall not be recirculated.

(10) Access doors. When necessary to facilitate cleaning, exhaust ducts shall be provided with an ample number of access doors.

(11) Room intakes. Air intake openings to rooms containing spray finishing operations shall be adequate for the efficient operation of exhaust fans and shall be so located as to minimize the creation of dead air pockets.

(12) Drying spaces. Freshly sprayed articles shall be dried only in spaces provided with adequate ventilation to prevent the formation of explosive vapors. In the event adequate and reliable ventilation is not provided such drying spaces shall be considered a spraying area. (See also WAC 296-24-37019.)

[Order 76-6, § 296-24-37007, filed 3/1/76; Order 73-5, § 296-24-37007, filed 5/9/73 and Order 73-4, § 296-24-37007, filed 5/7/73.]

WAC 296-24-37009 Flammable and combustible liquids—Storage and handling. (1) Conformance. The storage of flammable or combustible liquids in connection with spraying operations shall conform to the requirements of WAC 296-24-330, where applicable.

(2) Quantity. The quantity of flammable or combustible liquids kept in the vicinity of spraying operations shall be the minimum required for operations and should ordinarily not exceed a supply for 1 day or one shift. Bulk storage of portable containers of flammable or combustible liquids shall be in a separate, constructed building detached from other important buildings or cut off in a standard manner.

(3) Containers. Original closed containers, approved portable tanks, approved safety cans or a properly arranged system of piping shall be used for bringing flammable or combustible liquids into spray finishing room. Open or glass containers shall not be used.

(4) Transferring liquids. Except as provided in (5) of this section, the withdrawal of flammable and combustible liquids from containers having a capacity of greater than 60 gallons shall be by approved pumps. The withdrawal of flammable or combustible liquids from containers and the filling of containers, including portable mixing tanks, shall be done only in a suitable mixing room or in a spraying area when the ventilating system is in operation. Adequate precautions shall be taken to protect against liquid spillage and sources of ignition.

(5) Spraying containers. Containers supplying spray nozzles shall be of closed type or provided with metal covers kept closed. Containers not resting on floors shall be on metal supports or suspended by wire cables. Containers supplying spray nozzles by gravity flow shall not exceed 10 gallons capacity. Original shipping containers shall not be subject to air pressure for supplying spray nozzles. Containers under air pressure supplying spray nozzles shall be of limited capacity, not exceeding that necessary for 1 day's operation; shall be designed and approved for such use; shall be provided with a visible pressure gage; and shall be provided with a relief valve set to operate in conformance with the requirements of the Code for Unfired Pressure Vessels, Section VIII of the

ASME Boiler and Pressure Vessel Code—1968. Containers under air pressure supplying spray nozzles, air-storage tanks and coolers shall conform to the standards of the Code for Unfired Pressure Vessels, Section VIII of the ASME Boiler and Pressure Vessel Code—1968 for construction, tests, and maintenance.

(6) Pipes and hoses.

(a) All containers or piping to which is attached a hose or flexible connection shall be provided with a shutoff valve at the connection. Such valves shall be kept shut when spraying operations are not being conducted.

(b) When a pump is used to deliver products, automatic means shall be provided to prevent pressure in excess of the design working pressure of accessories, piping, and hose.

(c) All pressure hose and couplings shall be inspected at regular intervals appropriate to this service. The hose and couplings shall be tested with the hose extended, and using the "inservice maximum operating pressures." Any hose showing material deteriorations, signs of leakage, or weakness in its carcass or at the couplings, shall be withdrawn from service and repaired or discarded.

(d) Piping systems conveying flammable or combustible liquids shall be of steel or other material having comparable properties of resistance to heat and physical damage. Piping systems shall be properly bonded and grounded.

(7) Spray liquid heaters. Electrically powered spray liquid heaters shall be approved and listed for the specific location in which used (see WAC 296-24-37005). Heaters shall not be located in spray booths nor other locations subject to the accumulation of deposits or combustible residue. Agitators, if used, should preferably be driven by compressed air, water, or low-pressure steam. If an electric motor is used, (see WAC 296-24-37005).

(8) Pump relief. If flammable or combustible liquids are supplied to spray nozzles by positive displacement pumps, the pump discharge line shall be provided with an approved relief valve discharging to a pump suction or a safe detached location, or a device provided to stop the prime mover if the discharge pressure exceeds the safe operating pressure of the system.

(9) Grounding. Whenever flammable or combustible liquids are transferred from one container to another, both containers shall be effectively bonded and grounded to prevent discharge sparks of static electricity.

[Order 73-5, § 296-24-37009, filed 5/9/73 and Order 73-4, § 296-24-37009, filed 5/7/73.]

WAC 296-24-37011 Protection. (1) Conformance. In sprinklered buildings, the automatic sprinkler system in rooms containing spray finishing operations shall conform to the requirements of WAC 296-24-607. In unsprinklered buildings where sprinklers are installed only to protect spraying areas, the installation shall conform to such standards insofar as they are applicable. Sprinkler heads shall be located so as to provide water distribution throughout the entire booth.

(2) Valve access. Automatic sprinklers protecting each spray booth (together with its connecting exhaust) shall be under an accessibly located separate outside stem and yoke (OS&Y) subcontrol valve.

(3) Cleaning of heads. Sprinklers protecting spraying areas shall be kept as free from deposits as practical by cleaning daily if necessary. (See also WAC 296-24-37013.)

(4) Portable extinguishers. An adequate supply of suitable portable fire extinguishers shall be installed near all spraying areas.

[Statutory Authority: RCW 49.17.040 and 49.17.050. 82-02-003 (Order 81-32), § 296-24-37011, filed 12/24/81; Order 73-5, § 296-24-37011, filed 5/9/73 and Order 73-4, § 296-24-37011, filed 5/7/73.]

WAC 296-24-37013 Operations and maintenance.

(1) Spraying. Spraying shall not be conducted outside of predetermined spraying areas.

(2) Cleaning. All spraying areas shall be kept as free from the accumulation of deposits of combustible residues as practical, with cleaning conducted daily if necessary. Scrapers, spuds, or other such tools used for cleaning purposes shall be of nonsparking material.

(3) Residue disposal. Residue scrapings and debris contaminated with residue shall be immediately removed from the premises and properly disposed of. Approved metal waste cans shall be provided wherever rags or waste are impregnated with finishing material and all such rags or waste deposited therein immediately after use. The contents of waste cans shall be properly disposed of at least once daily or at the end of each shift.

(4) Clothing storage. Spray finishing employees' clothing shall not be left on the premises overnight unless kept in metal lockers.

(5) Cleaning solvents. The use of solvents for cleaning operations shall be restricted to those having flashpoints not less than 100°F; however, for cleaning spray nozzles and auxiliary equipment, solvents having flashpoints not less than those normally used in spray operations may be used. Such cleaning shall be conducted inside spray booths and ventilating equipment operated during cleaning.

(6) Hazardous materials combinations. Spray booths shall not be alternately used for different types of coating materials, where the combination of the materials may be conducive to spontaneous ignition, unless all deposits of the first used material are removed from the booth and exhaust ducts prior to spraying with the second used material.

(7) "No smoking" signs. "No smoking" signs in large letters on contrasting color background shall be conspicuously posted at all spraying areas and paint storage rooms.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. 04-18-080, § 296-24-37013, filed 8/31/04, effective 11/1/04; Order 73-5, § 296-24-37013, filed 5/9/73 and Order 73-4, § 296-24-37013, filed 5/7/73.]

WAC 296-24-37015 Fixed electrostatic apparatus.

(1) Conformance. Where installation and use of electrostatic spraying equipment is used, such installation and use shall conform to all other requirements contained in WAC 296-24-370 through 296-24-37027.

(2) Type approval. Electrostatic apparatus and devices used in connection with coating operations shall be of approved types.

(3) Location. Transformers, power packs, control apparatus, and all other electrical portions of the equipment, with the exception of high-voltage grids, electrodes, and electrostatic atomizing heads and their connections, shall be located

outside of the spraying area, or shall otherwise conform to the requirements of WAC 296-24-37005.

(4) Support. Electrodes and electrostatic atomizing heads shall be adequately supported in permanent locations and shall be effectively insulated from the ground. Electrodes and electrostatic atomizing heads which are permanently attached to their bases, supports, or reciprocators, shall be deemed to comply with this section. Insulators shall be nonporous and noncombustible.

(5) Insulators, grounding. High-voltage leads to electrodes shall be properly insulated and protected from mechanical injury or exposure to destructive chemicals. Electrostatic atomizing heads shall be effectively and permanently supported on suitable insulators and shall be effectively guarded against accidental contact or grounding. An automatic means shall be provided for grounding the electrode system when it is electrically deenergized for any reason. All insulators shall be kept clean and dry.

(6) Safe distance. A safe distance shall be maintained between goods being painted and electrodes or electrostatic atomizing heads or conductors of at least twice the sparking distance. A suitable sign indicating this safe distance shall be conspicuously posted near the assembly.

(7) Conveyors required. Goods being painted using this process are to be supported on conveyors. The conveyors shall be so arranged as to maintain safe distances between the goods and the electrodes or electrostatic atomizing heads at all times. Any irregularly shaped or other goods subject to possible swinging or movement shall be rigidly supported to prevent such swinging or movement which would reduce the clearance to less than that specified in (6) of this section.

(8) Prohibition. This process is not acceptable where goods being coated are manipulated by hand. When finishing materials are applied by electrostatic equipment which is manipulated by hand, see WAC 296-24-37017 for applicable requirements. (Rev. 1-23-76)

(9) Fail-safe controls. Electrostatic apparatus shall be equipped with automatic controls which will operate without time delay to disconnect the power supply to the high voltage transformer and to signal the operator under any of the following conditions:

(a) Stoppage of ventilating fans or failure of ventilating equipment from any cause.

(b) Stoppage of the conveyor carrying goods through the high voltage field.

(c) Occurrence of a ground or of an imminent ground at any point on the high voltage system.

(d) Reduction of clearance below that specified in (6) of this section.

(10) Guarding. Adequate booths, fencing, railings, or guards shall be so placed about the equipment that they, either by their location or character or both, assure that a safe isolation of the process is maintained from plant storage or personnel. Such railings, fencing, and guards shall be of conducting material, adequately grounded.

(11) Ventilation. Where electrostatic atomization is used the spraying area shall be so ventilated as to insure safe conditions from a fire and health standpoint.

(12) Fire protection. All areas used for spraying, including the interior of the booth, shall be protected by automatic sprinklers where this protection is available. Where this pro-

tection is not available, other approved automatic extinguishing equipment shall be provided.

[Order 76-6, § 296-24-37015, filed 3/1/76; Order 73-5, § 296-24-37015, filed 5/9/73 and Order 73-4, § 296-24-37015, filed 5/7/73.]

WAC 296-24-37017 Electrostatic hand spraying equipment. (1) Application. This section shall apply to any equipment using electrostatically charged elements for the atomization and/or, precipitation of materials for coatings on articles, or for other similar purposes in which the atomizing device is hand held and manipulated during the spraying operation.

(2) Conformance. Electrostatic hand spraying equipment shall conform with the other provisions of WAC 296-24-370 through 296-24-37027.

(3) Equipment approval and specifications. Electrostatic hand spray apparatus and devices used in connection with coating operations shall be of approved types. The equipment should be so designed that the maximum surface temperature of the equipment in the spraying area shall not exceed 150°F under any condition. The high voltage circuits shall be designed so as to not produce a spark of sufficient intensity to ignite any vapor-air mixtures nor result in appreciable shock hazard upon coming in contact with a grounded object under all normal operating conditions. The electrostatically charged exposed elements of the handgun shall be capable of being energized only by a switch which also controls the coating material supply.

(4) Electrical support equipment. Transformers, power-packs, control apparatus, and all other electrical portions of the equipment, with the exception of the handgun itself and its connections to the powder supply shall be located outside of the spraying area or shall otherwise conform to the requirements of WAC 296-24-37005.

(5) Spray gun ground. The handle of the spraying gun shall be electrically connected to ground by a metallic connection and to be so constructed that the operator in normal operating position is in intimate electrical contact with the grounded handle.

(6) Grounding—General. All electrically conductive objects in the spraying area shall be adequately grounded. This requirement shall apply to paint containers, wash cans, and any other objects or devices in the area. The equipment shall carry a prominent permanently installed warning regarding the necessity for this grounding feature.

(7) Maintenance of grounds. Objects being painted or coated shall be maintained in metallic contact with the conveyor or other grounded support. Hooks shall be regularly cleaned to insure this contact and areas of contact shall be sharp points or knife edges where possible. Points of support of the object shall be concealed from random spray where feasible and where the objects being sprayed are supported from a conveyor, the point of attachment to the conveyor shall be so located as to not collect spray material during normal operation.

(8) Interlocks. The electrical equipment shall be so interlocked with the ventilation of the spraying area that the equipment cannot be operated unless the ventilation fans are in operation.

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(9) Ventilation. The spraying operation shall take place within a spray area which is adequately ventilated to remove solvent vapors released from the operation.

[Order 73-5, § 296-24-37017, filed 5/9/73 and Order 73-4, § 296-24-37017, filed 5/7/73.]

WAC 296-24-37019 Drying, curing, or fusion apparatus. (1) Conformance. Drying, curing, or fusion apparatus in connection with spray application of flammable and combustible finishes shall conform to the Standard for Ovens and Furnaces, NFPA 86A-1969, where applicable and shall also conform with the following requirements of this section.

(2) Alternate use prohibited. Spray booths, rooms, or other enclosures used for spraying operations shall not alternately be used for the purpose of drying by any arrangement which will cause a material increase in the surface temperature of the spray booth, room, or enclosure.

(3) Adjacent system interlocked. Except as specifically provided in (4) of this section, drying, curing, or fusion units utilizing a heating system having open flames or which may produce sparks shall not be installed in a spraying area, but may be installed adjacent thereto when equipped with an interlocked ventilating system arranged to:

(a) Thoroughly ventilate the drying space before the heating system can be started;

(b) Maintain a safe atmosphere at any source of ignition;

(c) Automatically shut down the heating system in the event of failure of the ventilating system.

(4) Alternate use permitted. Automobile refinishing spray booths or enclosures, otherwise installed and maintained in full conformity with this section, may alternately be used for drying with portable electrical infrared drying apparatus when conforming with the following:

(a) Interior (especially floors) of spray enclosures shall be kept free of overspray deposits.

(b) During spray operations, the drying apparatus and electrical connections and wiring thereto shall not be located within spray enclosure nor in any other location where spray residues may be deposited thereon.

(c) The spraying apparatus, the drying apparatus, and the ventilating system of the spray enclosure shall be equipped with suitable interlocks so arranged that:

(i) The spraying apparatus cannot be operated while the drying apparatus is inside the spray enclosure.

(ii) The spray enclosure will be purged of spray vapors for a period of not less than 3 minutes before the drying apparatus can be energized.

(iii) The ventilating system will maintain a safe atmosphere within the enclosure during the drying process and the drying process apparatus will automatically shut off in the event of failure of the ventilating system.

(d) All electrical wiring and equipment of the drying apparatus shall conform with the applicable sections of chapter 296-24 WAC Part L. Only equipment of a type approved for Class I, Division 2 hazardous locations shall be located within 18 inches of floor level. All metallic parts of the drying apparatus shall be properly electrically bonded and grounded.

(e) The drying apparatus shall contain a prominently located, permanently attached warning sign indicating that ventilation should be maintained during the drying period

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and that spraying should not be conducted in the vicinity that spray will deposit on apparatus.

[Statutory Authority: Chapter 49.17 RCW. 91-24-017 (Order 91-07), § 296-24-37019, filed 11/22/91, effective 12/24/91. Statutory Authority: RCW 49.17.040 and 49.17.050. 85-10-004 (Order 85-09), § 296-24-37019, filed 4/19/85; Order 76-6, § 296-24-37019, filed 3/1/76; Order 73-5, § 296-24-37019, filed 5/9/73 and Order 73-4, § 296-24-37019, filed 5/7/73.]

WAC 296-24-37021 Automobile undercoating in garages. Automobile undercoating spray operations in garages, conducted in areas having adequate natural or mechanical ventilation, are exempt from the requirements pertaining to spray finishing operations, when using undercoating materials not more hazardous than kerosene (as listed by Underwriters' Laboratories in respect to fire hazard rating 30-40) or undercoating materials using only solvents listed as having a flash point in excess of 100°F. Undercoating spray operations not conforming to these provisions are subject to all requirements of WAC 296-24-370 through 296-24-37027, pertaining to spray finishing operations.

[Order 73-5, § 296-24-37021, filed 5/9/73 and Order 73-4, § 296-24-37021, filed 5/7/73.]

WAC 296-24-37023 Powder coating. (1) Electrical and other sources of ignition. Electrical equipment and other sources of ignition shall conform to the requirements of WAC 296-24-37005 and chapter 296-24 WAC Part L.

(2) Ventilation.

(a) In addition to the provisions of WAC 296-24-37007, where applicable, exhaust ventilation shall be sufficient to maintain the atmosphere below the lowest explosive limits for the materials being applied. All nondeposited air-suspended powders shall be safely removed via exhaust ducts to the powder recovery cyclone or receptacle. Each installation shall be designed and operated to meet the foregoing performance specification.

(b) Powders shall not be released to the outside atmosphere.

(3) Drying, curing, or fusion equipment. The provisions of the Standard for Ovens and Furnaces, NFPA No. 86A-1969 shall apply where applicable.

(4) Operation and maintenance.

(a) All areas shall be kept free of the accumulation of powder coating dusts, particularly such horizontal surfaces as ledges, beams, pipes, hoods, booths, and floors.

(b) Surfaces shall be cleaned in such manner as to avoid scattering dust to other places or creating dust clouds.

(c) "No smoking" signs in large letters on contrasting color background shall be conspicuously posted at all powder coating areas and powder storage rooms.

(5) Fixed electrostatic spraying equipment. The provisions of WAC 296-24-37015 and other subsections of this section shall apply to fixed electrostatic equipment, except that electrical equipment not covered therein shall conform to (1) of this section.

(6) Electrostatic hand spraying equipment. The provisions of WAC 296-24-37017 and other subsections of this section, shall apply to electrostatic handguns when used in powder coating, except that electrical equipment not covered therein shall conform to (1) of this section.

(7) Electrostatic fluidized beds.

(a) Electrostatic fluidized beds and associated equipment shall be of approved types. The maximum surface temperature of this equipment in the coating area shall not exceed 150°F. The high voltage circuits shall be so designed as to not produce a spark of sufficient intensity to ignite any powder-air mixtures nor result in appreciable shock hazard upon coming in contact with a grounded object under normal operating conditions.

(b) Transformers, powerpacks, control apparatus, and all other electrical portions of the equipment, with the exception of the charging electrodes and their connections to the power supply shall be located outside of the powder coating area or shall otherwise conform to the requirements of (1) of this section.

(c) All electrically conductive objects within the charging influence of the electrodes shall be adequately grounded. The powder coating equipment shall carry a prominent, permanently installed warning regarding the necessity for grounding these objects.

(d) Objects being coated shall be maintained in contact with the conveyor or other support in order to insure proper grounding. Hangers shall be regularly cleaned to insure effective contact and areas of contact shall be sharp points or knife edges where possible.

(e) The electrical equipment shall be so interlocked with the ventilation system that the equipment cannot be operated unless the ventilation fans are in operation.

[Statutory Authority: Chapter 49.17 RCW. 91-24-017 (Order 91-07), § 296-24-37023, filed 11/22/91, effective 12/24/91. Statutory Authority: RCW 49.17.040 and 49.17.050. 85-10-004 (Order 85-09), § 296-24-37023, filed 4/19/85; Order 76-6, § 296-24-37023, filed 3/1/76; Order 73-5, § 296-24-37023, filed 5/9/73 and Order 73-4, § 296-24-37023, filed 5/7/73.]

WAC 296-24-37025 Organic peroxides and dual component coatings. (1) Conformance. All spraying operations involving the use of organic peroxides and other dual component coatings shall be conducted in approved sprinklered spray booths meeting the requirements of this section.

(2) Smoking. Smoking shall be prohibited and "no smoking" signs shall be prominently displayed and only nonsparking tools shall be used in any area where organic peroxides are stored, mixed or applied.

[Order 73-5, § 296-24-37025, filed 5/9/73 and Order 73-4, § 296-24-37025, filed 5/7/73.]

WAC 296-24-37027 Scope. This section applies to flammable and combustible finishing materials when applied as a spray by compressed air, "airless" or "hydraulic atomization," steam, electrostatic methods, or by any other means in continuous or intermittent processes. The section also covers the application of combustible powders by powder spray guns, electrostatic powder spray guns, fluidized beds, or electrostatic fluidized beds. The section does not apply to outdoor spray application of buildings, tanks or other similar structures, nor to small portable spraying apparatus not used repeatedly in the same location.

[Order 73-5, § 296-24-37027, filed 5/9/73 and Order 73-4, § 296-24-37027, filed 5/7/73.]

WAC 296-24-450 Chlorine cylinders used in chlorinator systems. Ventilation, storage of tanks and use of tanks

shall meet specifications of The Chlorine Manual, The Chlorine Institute, Inc., fifth edition, 1986.

[Statutory Authority: Chapter 49.17 RCW. 91-03-044 (Order 90-18), § 296-24-450, filed 1/10/91, effective 2/12/91; Order 74-27, § 296-24-450, filed 5/7/74.]

PART F-1 STORAGE AND HANDLING OF LIQUEFIED PETROLEUM GASES

WAC 296-24-475 Storage and handling of liquefied petroleum gases.

[Order 73-5, § 296-24-475, filed 5/9/73 and Order 73-4, § 296-24-475, filed 5/7/73.]

WAC 296-24-47501 Definitions. (1) API-ASME container. A container constructed in accordance with the requirements of WAC 296-24-47505 (3)(a).

(2) ASME container. A container constructed in accordance with the requirements of WAC 296-24-47505 (3)(a).

(3) Container assembly. An assembly consisting essentially of the container and fittings for all container openings, including shutoff valves, excess flow valves, liquid-level gaging devices, safety relief devices, and protective housing.

(4) Containers. All vessels, such as tanks, cylinders, or drums, used for transportation or storing liquefied petroleum gases.

(5) DOT. Department of transportation.

(6) DOT container. A container constructed in accordance with the applicable requirements of 49 CFR chapter 1.

(7) "Liquefied petroleum gases." "LPG" and "LP-gas." Any material which is composed predominantly of any of the following hydrocarbons, or mixtures of them; propane, propylene, butanes (normal butane or iso-butane), and butylenes.

(8) Movable fuel storage tenders or farm carts. Containers not in excess of 1,200 gallons water capacity, equipped with wheels to be towed from one location of usage to another. They are basically nonhighway vehicles, but may occasionally be moved over public roads or highways. They are used as a fuel supply for farm tractors, construction machinery and similar equipment.

(9) P.S.I.G. Pounds per square inch gauge.

(10) P.S.I.A. Pounds per square inch absolute.

(11) Systems. An assembly of equipment consisting essentially of the container or containers, major devices such as vaporizers, safety relief valves, excess flow valves, regulators, and piping connecting such parts.

(12) Vaporizer-burner. An integral vaporizer-burner unit, dependent upon the heat generated by the burner as the source of heat to vaporize the liquid used for dehydrators or dryers.

(13) Ventilation, adequate. When specified for the prevention of fire during normal operation, ventilation shall be considered adequate when the concentration of the gas in a gas-air mixture does not exceed 25 percent of the lower flammable limit.

(14) Approved. Unless otherwise indicated, listing or approval by a nationally recognized testing laboratory. Refer to 29 CFR 1910.7 for definition of nationally recognized testing laboratory.

(15) Listed. See "approved" in WAC 296-24-47501(14).

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(16) DOT specifications. Regulations of the department of transportation published in 49 CFR chapter I.

(17) DOT regulations. See WAC 296-24-47501(16).

(18) DOT requirements. See WAC 296-24-47501(16).

(19) DOT cylinders. Cylinders meeting the requirements of 49 CFR chapter I.

[Statutory Authority: Chapter 49.17 RCW. 88-23-054 (Order 88-25), § 296-24-47501, filed 11/14/88; Order 73-5, § 296-24-47501, filed 5/9/73 and Order 73-4, § 296-24-47501, filed 5/7/73.]

WAC 296-24-47503 Scope. (1) Application.

(a) WAC 296-24-47505 applies to installations made in accordance with the requirements of WAC 296-24-47507 through 296-24-47511, 296-24-47515 and 296-24-47517, except as noted in each of those sections.

(b) WAC 296-24-47507 through 296-24-47517 apply as provided in each of those sections.

(2) Inapplicability. These sections do not apply to:

(a) Marine and pipeline terminals, natural gas processing plants, refineries, or tank farms other than those at industrial sites.

(b) LP-gas refrigerated storage systems;

(c) LP-gas when used with oxygen. The requirements of WAC 296-24-680 through 296-24-722 shall apply to such use;

(d) LP-gas when used in utility gas plants. The National Fire Protection Association Standard for the Storage and Handling of Liquefied Petroleum Gases at Utility Gas Plants, NFPA No. 59-1968, shall apply to such use;

(e) Low-pressure (not in excess of one-half pound per square inch or 14 inches water column) LP-gas piping systems, and the installation and operation of residential and commercial appliances including their inlet connections, supplied through such systems. For such systems, the National Fire Protection Association Standard for the Installation of Gas Appliances and Gas Piping, NFPA 54-1969 shall apply.

(3) Retroactivity. Unless otherwise stated, it is not intended that the provisions of these sections be retroactive.

(a) Existing plants, appliances, equipment, buildings, structures, and installations for the storage, handling or use of LP-gas, which were in compliance with the current provisions of the National Fire Protection Association Standard for the Storage and Handling of Liquefied Petroleum Gases NFPA No. 58-1972, 1973 at the time of manufacture or installation may be continued in use, if such continued use does not constitute a recognized hazard that is causing or is likely to cause death or serious physical harm to employees.

(b) Stocks of equipment and appliances on hand in such locations as manufacturers' storage, distribution warehouses, and dealers' storage and showrooms, which were in compliance with the current provisions of the National Fire Protection Association Standard for the Storage and Handling of Liquefied Petroleum Gases, NFPA No. 58-1972, 1973, at the time of manufacture, may be placed in service, if such use does not constitute a recognized hazard that is causing or is likely to cause death or serious physical harm to employees.

[Order 73-5, § 296-24-47503, filed 5/9/73 and Order 73-4, § 296-24-47503, filed 5/7/73.]

WAC 296-24-47505 Basic rules. (1) Odorizing gases.

(a) All liquefied petroleum gases shall be effectively odorized by an approved agent of such character as to indicate positively, by distinct odor, the presence of gas down to concentration in air of not over one-fifth the lower limit of flammability. Odorization, however, is not required if harmful in the use of further processing of the liquefied petroleum gas, or if odorization will serve no useful purpose as a warning agent in such use or further processing.

(b) The odorization requirement of (a) of this subsection shall be considered to be met by the use of 1.0 pounds of ethyl mercaptan, 1.0 pounds of thiophane or 1.4 pounds of amyl mercaptan per ten thousand gallons of LP-gas. However, this listing of odorants and quantities shall not exclude the use of other odorants that meet the odorization requirements of (a) of this subsection.

(2) Approval of equipment and systems.

(a) Each system utilizing DOT containers in accordance with 49 CFR Part 178 shall have its container valves, connectors, manifold valve assemblies, and regulators approved.

(b) Each system for domestic or commercial use utilizing containers of two thousand gallons or less water capacity, other than those constructed in accordance with 49 CFR Part 178, shall consist of a container assembly and one or more regulators, and may include other parts. The system as a unit or the container assembly as a unit, and the regulator or regulators, shall be individually listed.

(c) In systems utilizing containers of over two thousand gallons water capacity, each regulator, container, valve, excess flow valve, gaging device, and relief valve installed on or at the container, shall have its correctness as to design, construction, and performance determined by listing by a nationally recognized testing laboratory. Refer to federal regulation 29 CFR 1910.7 for definition of nationally recognized testing laboratory.

(d) The provisions of subsection (3)(a) of this section shall not be construed as prohibiting the continued use or reinstallation of containers constructed and maintained in accordance with the standard for the Storage and Handling of Liquefied Petroleum Gases NFPA No. 58 in effect at the time of fabrication.

(e) Containers used with systems embodied in this section and WAC 296-24-47509 (3)(c) and 296-24-47513, shall be constructed, tested, and stamped in accordance with DOT specifications effective at the date of their manufacture.

(3) Requirements for construction and original test of containers.

(a) Containers used with systems embodied in WAC 296-24-47509, 296-24-47513 through 296-24-47517, except as provided in WAC 296-24-47511 (3)(c), shall be designed, constructed, and tested in accordance with the Rules for Construction of Unfired Pressure Vessels, section VIII, Division 1, American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code, 1968 edition.

(b) Containers constructed according to the 1949 and earlier editions of the ASME Code do not have to comply with U-2 through U-10 and U-19 thereof. Containers constructed according to U-70 in the 1949 and earlier editions do not meet the requirements of this section.

(c) Containers designed, constructed, and tested prior to July 1, 1961, according to the Code for Unfired Pressure Ves-

sels for Petroleum Liquids and Gases, 1951 edition with 1954 Addenda, of the American Petroleum Institute and the American Society of Mechanical Engineers shall be considered in conformance. Containers constructed according to API-ASME Code do not have to comply with section I or with appendix to section I. W-601 to W-606 inclusive in the 1943 and earlier editions do not apply.

(4) Welding of containers.

(a) Welding to the shell, head, or any other part of the container subject to internal pressure, shall be done in compliance with the code under which the tank was fabricated. Other welding is permitted only on saddle plates, lugs, or brackets attached to the container by the tank manufacturer.

(b) Where repair or modification involving welding of DOT containers is required, the container shall be returned to a qualified manufacturer making containers of the same type, and the repair or modification made in compliance with DOT regulations.

(5) Markings on container.

(a) Each container covered in subsection (3)(a) of this section except as provided in subsection (2)(d) of this section shall be marked as specified in the following:

(i) With a marking identifying compliance with, and other markings required by, the rules of the reference under which the container is constructed; or with the stamp and other markings required by the laws, rules or regulations as administered by the state of Washington, department of labor and industries pertaining to such containers.

(ii) With notation as to whether the container is designed for underground or aboveground installation or both. If intended for both and different style hoods are provided, the marking shall indicate the proper hood for each type of installation.

(iii) With the name and address of the supplier of the container, or with the trade name of the container.

(iv) With the water capacity of the container in pounds or gallons, United States standard.

(v) With the pressure in p.s.i.g., for which the container is designed.

(vi) With the wording "This container shall not contain a product having a vapor pressure in excess of—p.s.i.g. at 100°F," see WAC 296-24-47509, Table H-31.

(vii) With the tare weight in pounds or other identified unit of weight for containers with a water capacity of three hundred pounds or less.

(viii) With marking indicating the maximum level to which the container may be filled with liquid at temperatures between 20°F and 130°F, except on containers provided with fixed maximum level indicators or which are filled by weighing. Markings shall be increments of not more than 20°F. This marking may be located on the liquid level gaging device.

(ix) With the outside surface area in square feet.

(b) Markings specified shall be on a metal nameplate attached to the container and located in such a manner as to remain visible after the container is installed.

(c) When LP-gas and one or more other gases are stored or used in the same area, the containers shall be marked to identify their content. Marking shall be in compliance with American National Standard Z48.1-1954, "Method of Mark-

ing Portable Compressed Gas Containers to Identify the Material Contained."

(6) Location of containers and regulating equipment.

(a) Containers, and first stage regulating equipment if used, shall be located outside of buildings, except under one or more of the following:

(i) In buildings used exclusively for container charging, vaporization pressure reduction, gas mixing, gas manufacturing, or distribution.

(ii) When portable use is necessary and in accordance with WAC 296-24-47507(5).

(iii) LP-gas fueled stationary or portable engines in accordance with WAC 296-24-47511 (11) or (12).

(iv) LP-gas fueled industrial trucks used in accordance with WAC 296-24-47511(13).

(v) LP-gas fueled vehicles garaged in accordance with WAC 296-24-47511(14).

(vi) Containers awaiting use or resale when stored in accordance with WAC 296-24-47513.

(b) Each individual container shall be located with respect to the nearest important building or group of buildings or line of adjoining property which may be built on in accordance with Table H-23.

TABLE H-23

Water capacity per container	Minimum distances		Between above-ground containers
	Under-ground	Above-ground	
Less than 125 gals ¹	10 feet	None	None
125 to 250 gallons	10 feet	10 feet	None.
251 to 500 gallons	10 feet	10 feet	3 feet.
501 to 2,000 gallons	25 feet ²	25 feet ²	3 feet.
2,001 to 30,000 gallons	50 feet	50 feet	5 feet.
30,001 to 70,000 gallons	50 feet	75 feet	1/4 of sum diameters of adjacent containers.
70,001 to 90,000 gallons	50 feet	100 feet	

¹If the aggregate water capacity of a multicontainer installation at a consumer site is five hundred one gallons or greater, the minimum distance shall comply with the appropriate portion of this table, applying the aggregate capacity rather than the capacity per container. If more than one installation is made, each installation shall be separated from another installation by at least twenty-five feet. Do not apply the MINIMUM DISTANCES BETWEEN ABOVE-GROUND CONTAINERS to such installations.

²Note: The above distance requirements may be reduced to not less than ten feet for a single container of one thousand two hundred gallons water capacity or less, providing such a container is at least twenty-five feet from any other LP-gas container of more than one hundred twenty-five gallons water capacity.

(c) Containers installed for use shall not be stacked one above the other.

(d) In industrial installations involving containers of one hundred eighty thousand gallons aggregate water capacity or more, where serious mutual exposures between the container

and adjacent properties prevail, firewalls or other means of special protection designed and constructed in accordance with good engineering practices are required.

(e) In the case of buildings devoted exclusively to gas manufacturing and distributing operations, the distances required by Table H-23 may be reduced provided that in no case shall containers of water capacity exceeding five hundred gallons be located closer than ten feet to such gas manufacturing and distributing buildings.

(f) Readily ignitable material such as weeds and long dry grass shall be removed within ten feet of any container.

(g) The minimum separation between liquefied petroleum gas containers and flammable liquid tanks shall be twenty feet, and the minimum separation between a container and the centerline of the dike shall be ten feet. The foregoing provision shall not apply when LP-gas containers of one hundred twenty-five gallons or less capacity are installed adjacent to Class III flammable liquid tanks of two hundred seventy-five gallons or less capacity.

(h) Suitable means shall be taken to prevent the accumulation of flammable liquids under adjacent liquefied petroleum gas containers, such as by diking, diversion curbs, or grading.

(i) When dikes are used with flammable liquid tanks, no liquefied petroleum gas containers shall be located within the diked area.

(7) Container valves and container accessories.

(a) Valves, fittings, and accessories connected directly to the container including primary shutoff valves, shall have a rated working pressure of at least 250 p.s.i.g. and shall be of material and design suitable for LP-gas service. Cast iron shall not be used for container valves, fittings, and accessories. This does not prohibit the use of container valves made of malleable or nodular iron.

(b) Connections to containers, except safety relief connections, liquid level gaging devices, and plugged openings, shall have shutoff valves located as close to the container as practicable.

(c) Excess flow valves, where required shall close automatically at the rated flows of vapor or liquid as specified by the manufacturer. The connections or line including valves, fittings, etc., being protected by an excess flow valve shall have a greater capacity than the rated flow of the excess flow valve.

(d) Liquid level gaging devices which are so constructed that outward flow of container contents shall not exceed that passed by a No. 54 drill size opening, need not be equipped with excess flow valves.

(e) Openings from container or through fittings attached directly on container to which pressure gage connection is made, need not be equipped with shutoff or excess flow valves if such openings are restricted to not larger than No. 54 drill size opening.

(f) Except as provided in WAC 296-24-47507 (5)(a)(ii), excess flow and back pressure check valves where required by this section shall be located inside of the container or at a point outside where the line enters the container; in the latter case, installation shall be made in such manner that any undue strain beyond the excess flow or back pressure check valve will not cause breakage between the container and such valve.

(g) Excess flow valves shall be designed with a bypass, not to exceed a No. 60 drill size opening to allow equalization of pressures.

(h) Containers of more than thirty gallons water capacity and less than two thousand gallons water capacity, filled on a volumetric basis, and manufactured after December 1, 1963, shall be equipped for filling into the vapor space.

(8) Piping—Including pipe, tubing, and fittings.

(a) Pipe, except as provided in WAC 296-24-47511 (6)(a) shall be wrought iron or steel (black or galvanized), brass, copper, or aluminum alloy. Aluminum alloy pipe shall be at least Schedule 40 in accordance with the specifications for Aluminum Alloy Pipe, American National Standards Institute (ANSI) H38.7-1969 (ASTM, B241-1969), except that the use of alloy 5456 is prohibited and shall be suitably marked at each end of each length indicating compliance with American National Standard Institute specifications. Aluminum alloy pipe shall be protected against external corrosion when it is in contact with dissimilar metals other than galvanized steel, or its location is subject to repeated wetting by such liquids as water (except rain water), detergents, sewage, or leaking from other piping, or it passes through flooring, plaster, masonry, or insulation. Galvanized sheet steel or pipe, galvanized inside and out, may be considered suitable protection. The maximum nominal pipe size for aluminum pipe shall be three-fourths inch and shall not be used for pressures exceeding 20 p.s.i.g. Aluminum alloy pipe shall not be installed within six inches of the ground.

(i) Vapor piping with operating pressures not exceeding 125 p.s.i.g. shall be suitable for a working pressure of at least 125 p.s.i.g. Pipe shall be at least Schedule 40 ASTM A-53-69, Grade B Electric Resistance Welded and Electric Flash Welded Pipe or equal.

(ii) Vapor piping with operating pressures over 125 p.s.i.g. and all liquid piping shall be suitable for a working pressure of at least 250 p.s.i.g. Pipe shall be at least Schedule 80 if joints are threaded or threaded and back welded. At least Schedule 40 (ASTM A-53-1969 Grade B Electric Resistance Welded and Electric Flash Welded Pipe or equal) shall be used if joints are welded, or welded and flanged.

(b) Tubing shall be seamless and of copper, brass, steel, or aluminum alloy. Copper tubing shall be of Type K or L or equivalent as covered in the Specification for Seamless Copper Water Tube, ANSI H23.1-1970 (ASTM B88-1969). Aluminum alloy tubing shall be of Type A or B or equivalent as covered in Specification ASTM B210-1968 and shall be suitably marked every eighteen inches indicating compliance with ASTM specifications. The minimum nominal wall thickness of copper tubing and aluminum alloy tubing shall be as specified in Table H-24 and Table H-25.

TABLE H-24

WALL THICKNESS OF COPPER TUBING¹

Note: The standard size by which tube is designated is one-eighth-inch smaller than its nominal outside diameter.

Standard size (inches)	Nominal O.D. (inches)	Nominal wall thickness (inches)	
		Type K	Type L
1/4	0.375	0.035	0.030
3/8	0.500	0.049	0.035
1/2	0.625	0.049	0.040
5/8	0.750	0.049	0.042

Standard size (inches)	Nominal O.D. (inches)	Nominal wall thickness (inches)	
		Type K	Type L
3/4	0.875	0.065	0.045
1	1.125	0.065	0.050
1 1/4	1.375	0.065	0.055
1 1/2	1.625	0.072	0.060
2	2.125	0.083	0.070

¹Based on data in Specification for Seamless Copper Water Tubing, ANSI H23.1-1970 (ASTM B-88-69).

TABLE H-25

WALL THICKNESS OF ALUMINUM ALLOY TUBING¹

Outside diameter (inches)	Nominal wall thickness (inches)	
	Type A	Type B
3/8	0.035	0.049
1/2	0.035	0.049
5/8	0.042	0.049
3/4	0.049	0.058

¹Based on data in Standard Specification for Aluminum-Alloy Drawn Seamless Coiled Tubes for Special Purpose Applications, ASTM B210-68.

Aluminum alloy tubing shall be protected against external corrosion when it is in contact with dissimilar metals other than galvanized steel, or its location is subject to repeated wetting by liquids such as water (except rainwater), detergents, sewage, or leakage from other piping, or it passes through flooring, plaster, masonry, or insulation. Galvanized sheet steel or pipe, galvanized inside and out, may be considered suitable protection. The maximum outside diameter for aluminum alloy tubing shall be three-fourths inch and shall not be used for pressures exceeding 20 p.s.i.g. Aluminum alloy tubing shall not be installed within six inches of the ground.

(c) In systems where the gas in liquid form without pressure reduction enters the building, only heavy walled seamless brass or copper tubing with an internal diameter not greater than three thirty-seconds inch, and a wall thickness of not less than three sixty-fourths inch shall be used. This requirement shall not apply to research and experimental laboratories, buildings, or separate fire divisions of buildings used exclusively for housing internal combustion engines, and to commercial gas plants or bulk stations where containers are charged, nor to industrial vaporizer buildings, nor to buildings, structures, or equipment under construction or undergoing major renovation.

(d) Pipe joints may be screwed, flanged, welded, soldered, or brazed with a material having a melting point exceeding 1,000°F. Joints on seamless copper, brass, steel, or aluminum alloy gas tubing shall be made by means of approved gas tubing fittings, or soldered or brazed with a material having a melting point exceeding 1,000°F.

(e) For operating pressures of 125 p.s.i.g. or less, fittings shall be designed for a pressure of at least 125 p.s.i.g. For operating pressures above 125 p.s.i.g., fittings shall be designed for a minimum of 250 p.s.i.g.

(f) The use of threaded cast iron pipe fittings such as ells, tees, crosses, couplings, and unions is prohibited. Aluminum alloy fittings shall be used with aluminum alloy pipe and tubing. Insulated fittings shall be used where aluminum alloy pipe or tubing connects with a dissimilar metal.

(g) Strainers, regulators, meters, compressors, pumps, etc., are not to be considered as pipe fittings. This does not prohibit the use of malleable, nodular, or higher strength gray iron for such equipment.

(h) All materials such as valve seats, packing, gaskets, diaphragms, etc., shall be of such quality as to be resistant to the action of liquefied petroleum gas under the service conditions to which they are subjected.

(i) All piping, tubing, or hose shall be tested after assembly and proved free from leaks at not less than normal operating pressures. After installation, piping and tubing of all domestic and commercial systems shall be tested and proved free of leaks using a manometer or equivalent device that will indicate a drop in pressure. Test shall not be made with a flame.

(j) Provision shall be made to compensate for expansion, contraction, jarring, and vibration, and for settling. This may be accomplished by flexible connections.

(k) Piping outside buildings may be buried, above ground, or both, but shall be well supported and protected against physical damage. Where soil conditions warrant, all piping shall be protected against corrosion. Where condensation may occur, the piping shall be pitched back to the container, or suitable means shall be provided for revaporization of the condensate.

(9) Hose specifications.

(a) Hose shall be fabricated of materials that are resistant to the action of LP-gas in the liquid and vapor phases. If wire braid is used for reinforcing the hose, it shall be of corrosion-resistant material such as stainless steel.

(b) Hose subject to container pressure shall be marked "LP-gas" or "LPG" at not greater than ten-foot intervals.

(c) Hose subject to container pressure shall be designed for a bursting pressure of not less than 1,250 p.s.i.g.

(d) Hose subject to container pressure shall have its correctness as to design construction and performance determined by being listed (see WAC 296-24-47501(15)).

(e) Hose connections subject to container pressure shall be capable of withstanding, without leakage, a test pressure of not less than 500 p.s.i.g.

(f) Hose and hose connections on the low-pressure side of the regulator or reducing valve shall be designed for a bursting pressure of not less than 125 p.s.i.g. or five times the set pressure of the relief devices protecting that portion of the system, whichever is higher.

(g) Hose may be used on the low-pressure side of regulators to connect to other than domestic and commercial gas appliances under the following conditions:

(i) The appliances connected with hose shall be portable and need a flexible connection.

(ii) For use inside buildings the hose shall be of minimum practical length, but shall not exceed six feet except as provided in WAC 296-24-47507 (5)(a)(vii) and shall not extend from one room to another, nor pass through any walls, partitions, ceilings, or floors. Such hose shall not be concealed from view or used in a concealed location. For use outside of buildings, the hose may exceed this length but shall be kept as short as practical.

(iii) The hose shall be approved and shall not be used where it is likely to be subjected to temperatures above

125°F. The hose shall be securely connected to the appliance and the use of rubber slip ends shall not be permitted.

(iv) The shutoff valve for an appliance connected by hose shall be in the metal pipe or tubing and not at the appliance end of the hose. When shutoff valves are installed close to each other, precautions shall be taken to prevent operation of the wrong valve.

(v) Hose used for connecting to wall outlets shall be protected from physical damage.

(10) Safety devices.

(a) Every container except those constructed in accordance with DOT specifications and every vaporizer (except motor fuel vaporizers and except vaporizers described in subsection (11)(b)(iii) of this section and WAC 296-24-47509 (4)(e)(i)) whether heated by artificial means or not, shall be provided with one or more safety relief valves of spring-loaded or equivalent type. These valves shall be arranged to afford free vent to the outer air with discharge not less than five feet horizontally away from any opening into the building which is below such discharge. The rate of discharge shall be in accordance with the requirements of (b) or (d) of this subsection in the case of vaporizers.

(b) Minimum required rate of discharge in cubic feet per minute of air at one hundred twenty percent of the maximum permitted start to discharge pressure for safety relief valves to be used on containers other than those constructed in accordance with DOT specification shall be as follows:

Surface area (sq. ft.)	Flow rate CFM air
20 or less	626
25	751
30	872
35	990
40	1,100
45	1,220
50	1,330
55	1,430
60	1,540
65	1,640
70	1,750
75	1,850
80	1,950
85	2,050
90	2,150
95	2,240
100	2,340
105	2,440
110	2,530
115	2,630
120	2,720
125	2,810
130	2,900
135	2,990
140	3,080
145	3,170
150	3,260
155	3,350
160	3,440
165	3,530
170	3,620
175	3,700
180	3,790
185	3,880
190	3,960
195	4,050
200	4,130
210	4,300
220	4,470

Surface area (sq. ft.)	Flow rate CFM air
230	4,630
240	4,800
250	4,960
260	5,130
270	5,290
280	5,450
290	5,610
300	5,760
310	5,920
320	6,080
330	6,230
340	6,390
350	6,540
360	6,690
370	6,840
380	7,000
390	7,150
400	7,300
450	8,040
500	8,760
550	9,470
600	10,170
650	10,860
700	11,550
750	12,220
800	12,880
850	13,540
900	14,190
950	14,830
1,000	15,470
1,050	16,100
1,100	16,720
1,150	17,350
1,200	17,960
1,250	18,570
1,300	19,180
1,350	19,780
1,400	20,380
1,450	20,980
1,500	21,570
1,550	22,160
1,600	22,740
1,650	23,320
1,700	23,900
1,750	24,470
1,800	25,050
1,850	25,620
1,900	26,180
1,950	26,750
2,000	27,310

Surface area = total outside surface area of container in square feet.

(c) When the surface area is not stamped on the nameplate or when the marking is not legible, the area can be calculated by using one of the following formulas:

(i) Cylindrical container with hemispherical heads:

Area = Overall length x outside diameter x 3.1416.

(ii) Cylindrical container with other than hemispherical heads:

Area = (Overall length + 0.3 outside diameter) x outside diameter x 3.1416.

Note: This formula is not exact, but will give results within the limits of practical accuracy for the sole purpose of sizing relief valves.

(iii) Spherical container:

Area = Outside diameter squared x 3.1416.

Flow rate-CFM air = Required flow capacity in cubic feet per minute of air at standard conditions, 60°F and atmospheric pressure (14.7 p.s.i.a.).

The rate of discharge may be interpolated for intermediate values of surface area. For containers with total outside surface area greater than two thousand square feet, the required flow rate can be calculated using the formula, flow rate-CFM air = $53.632 A^{0.82}$.

A = Total outside surface area of the container in square feet.

Valves not marked "air" have flow rate marking in cubic feet per minute of liquefied petroleum gas. These can be converted to ratings in cubic feet per minute of air by multiplying the liquefied petroleum gas ratings by factors listed below. Air flow ratings can be converted to ratings in cubic feet per minute of liquefied petroleum gas by dividing the air ratings by the factors listed below.

AIR CONVERSION FACTORS

Container type	100	125	150	175	200
Air conversion factor	1.162	1.142	1.113	1.078	1.010

(d) Minimum required rate of discharge for safety relief valves for liquefied petroleum gas vaporizers (steam heated, water heated, and direct fired).

The minimum required rate of discharge for safety relief valves shall be determined as follows:

(i) Obtain the total surface area by adding the surface area of vaporizer shell in square feet directly in contact with LP-gas and the heat exchanged surface area in square feet directly in contact with LP-gas.

(ii) Obtain the minimum required rate of discharge in cubic feet of air per minute, at 60°F and 14.7 p.s.i.a. from (b) of this subsection, for this total surface area.

(e) Container and vaporizer safety relief valves shall be set to start-to-discharge, with relation to the design pressure of the container, in accordance with Table H-26.

TABLE H-26

Containers	Minimum (percent)	Maximum (percent)
ASME Code; Par. U-68, U-69— 1949 and earlier editions	110	¹ 125
ASME Code; Par. U-200, U-201— 1949 edition	88	¹ 100
ASME Code—1950, 1952, 1956, 1959, 1962, 1965 and 1968 (Division I) editions	88	¹ 100
API—ASME Code— all editions	88	¹ 100
DOT—As prescribed in 49 CFR Chapter I		

¹Manufacturers of safety relief valves are allowed a plus tolerance not exceeding ten percent of the set pressure marked on the valve.

(f) Safety relief devices used with systems employing containers other than those constructed according to DOT specifications shall be so constructed as to discharge at not

less than the rates shown in (b) of this subsection, before the pressure is in excess of one hundred twenty percent of the maximum (not including the ten percent referred to in (e) of this subsection) permitted start to discharge pressure setting of the device.

(g) In certain locations sufficiently sustained high temperatures prevail which require the use of a lower vapor pressure product to be stored or the use of a higher designed pressure vessel in order to prevent the safety valves opening as the result of these temperatures. As an alternative the tanks may be protected by cooling devices such as by spraying, by shading, or other effective means.

(h) Safety relief valves shall be arranged so that the possibility of tampering will be minimized. If pressure setting or adjustment is external, the relief valves shall be provided with approved means for sealing adjustment.

(i) Shutoff valves shall not be installed between the safety relief devices and the container, or the equipment or piping to which the safety relief device is connected except that a shutoff valve may be used where the arrangement of this valve is such that full required capacity flow through the safety relief device is always afforded.

(j) Safety relief valves shall have direct communication with the vapor space of the container at all times.

(k) Each container safety relief valve used with systems covered by WAC 296-24-47509, 296-24-47511, and 296-24-47517, except as provided in WAC 296-24-47511 (3)(c) shall be plainly and permanently marked with the following: "Container type" of the pressure vessel on which the valve is designed to be installed; the pressure in p.s.i.g. at which the valve is set to discharge; the actual rate of discharge of the valve in cubic feet per minute of air at 60°F and 14.7 p.s.i.a.; and the manufacturer's name and catalog number, for example: T200-250-4050 AIR—indicating that the valve is suitable for use on a Type 200 container, that it is set to start to discharge at 250 p.s.i.g.; and that its rate of discharge is four thousand fifty cubic feet per minute of air as determined in (b) of this subsection.

(l) Safety relief valve assemblies, including their connections, shall be of sufficient size so as to provide the rate of flow required for the container on which they are installed.

(m) A hydrostatic relief valve shall be installed between each pair of shutoff valves on liquefied petroleum gas liquid piping so as to relieve into a safe atmosphere. The start-to-discharge pressure setting of such relief valves shall not be in excess of 500 p.s.i.g. The minimum setting on relief valves installed in piping connected to other than DOT containers shall not be lower than one hundred forty percent of the container relief valve setting and in piping connected to DOT containers not lower than 400 p.s.i.g. Such a relief valve should not be installed in the pump discharge piping if the same protection can be provided by installing the relief valve in the suction piping. The start-to-discharge pressure setting of such a relief valve, if installed on the discharge side of a pump, shall be greater than the maximum pressure permitted by the recirculation device in the system.

(n) The discharge from any safety relief device shall not terminate in or beneath any building, except relief devices covered by subsection (6)(a)(i) through (vi) of this section, or WAC 296-24-47507 (4)(a) or (5).

(o) Container safety relief devices and regulator relief vents shall be located not less than five feet in any direction from air openings into sealed combustion system appliances or mechanical ventilation air intakes.

(11) Vaporizer and housing.

(a) Indirect fired vaporizers utilizing steam, water, or other heating medium shall be constructed and installed as follows:

(i) Vaporizers shall be constructed in accordance with the requirements of subsection (3)(a) through (c) of this section and shall be permanently marked as follows:

(A) With the code marking signifying the specifications to which the vaporizer is constructed.

(B) With the allowable working pressure and temperature for which the vaporizer is designed.

(C) With the sum of the outside surface area and the inside heat exchange surface area expressed in square feet.

(D) With the name or symbol of the manufacturer.

(ii) Vaporizers having an inside diameter of six inches or less exempted by the ASME Unfired Pressure Vessel Code, Section VIII of the ASME Boiler and Pressure Vessel Code—1968 shall have a design pressure not less than 250 p.s.i.g. and need not be permanently marked.

(iii) Heating or cooling coils shall not be installed inside a storage container.

(iv) Vaporizers may be installed in buildings, rooms, sheds, or lean-tos used exclusively for gas manufacturing or distribution, or in other structures of light, noncombustible construction or equivalent, well ventilated near the floor line and roof.

When vaporizing and/or mixing equipment is located in a structure or building not used exclusively for gas manufacturing or distribution, either attached to or within such a building, such structure or room shall be separated from the remainder of the building by a wall designed to withstand a static pressure of at least one hundred pounds per square foot. This wall shall have no openings or pipe or conduit passing through it. Such structure or room shall be provided with adequate ventilation and shall have a roof or at least one exterior wall of lightweight construction.

(v) Vaporizers shall have, at or near the discharge, a safety relief valve providing an effective rate of discharge in accordance with subsection (10)(d) of this section, except as provided in WAC 296-24-47509 (4)(e)(i).

(vi) The heating medium lines into and leaving the vaporizer shall be provided with suitable means for preventing the flow of gas into the heat systems in the event of tube rupture in the vaporizer. Vaporizers shall be provided with suitable automatic means to prevent liquid passing through the vaporizers to the gas discharge piping.

(vii) The device that supplies the necessary heat for producing steam, hot water, or other heating medium may be installed in a building, compartment, room, or lean-to which shall be ventilated near the floorline and roof to the outside. The device location shall be separated from all compartments or rooms containing liquefied petroleum gas vaporizers, pumps, and central gas mixing devices by a wall designed to withstand a static pressure of at least one hundred pounds per square foot. This wall shall have no openings or pipes or conduit passing through it. This requirement does not apply to

the domestic water heaters which may supply heat for a vaporizer in a domestic system.

(viii) Gas-fired heating systems supplying heat exclusively for vaporization purposes shall be equipped with automatic safety devices to shut off the flow of gas to main burners, if the pilot light should fail.

(ix) Vaporizers may be an integral part of a fuel storage container directly connected to the liquid section or gas section or both.

(x) Vaporizers shall not be equipped with fusible plugs.

(xi) Vaporizer houses shall not have unprotected drains to sewers or sump pits.

(b) Atmospheric vaporizers employing heat from the ground or surrounding air shall be installed as follows:

(i) Buried underground, or

(ii) Located inside the building close to a point at which pipe enters the building provided the capacity of the unit does not exceed one quart.

(iii) Vaporizers of less than one quart capacity heated by the ground or surrounding air, need not be equipped with safety relief valves provided that adequate tests demonstrate that the assembly is safe without safety relief valves.

(c) Direct gas-fired vaporizers shall be constructed, marked, and installed as follows:

(i) In accordance with the requirements of the American Society of Mechanical Engineers Boiler and Pressure Vessel Code—1968 that are applicable to the maximum working conditions for which the vaporizer is designed.

(ii) With the name of the manufacturer; rated BTU input to the burner; the area of the heat exchange surface in square feet; the outside surface of the vaporizer in square feet; and the maximum vaporizing capacity in gallons per hour.

(iii) Vaporizers may be connected to the liquid section or the gas section of the storage container, or both; but in any case there shall be at the container a manually operated valve in each connection to permit completely shutting off when desired, of all flow of gas or liquid from container to vaporizer.

(iv) Vaporizers with capacity not exceeding thirty-five gallons per hour shall be located at least five feet from container shutoff valves. Vaporizers having capacity of more than thirty-five gallons but not exceeding one hundred gallons per hour shall be located at least ten feet from the container shutoff valves. Vaporizers having a capacity greater than one hundred gallons per hour shall be located at least fifteen feet from container shutoff valves.

(v) Vaporizers may be installed in buildings, rooms, housings, sheds, or lean-tos used exclusively for vaporizing or mixing of liquefied petroleum gas. Vaporizing housing structures shall be of noncombustible construction, well ventilated near the floorline and the highest point of the roof. When vaporizer and/or mixing equipment is located in a structure or room attached to or within a building, such structure or room shall be separated from the remainder of the building by a wall designed to withstand a static pressure of at least one hundred pounds per square foot. This wall shall have no openings or pipes or conduit passing through it. Such structure or room shall be provided with adequate ventilation, and shall have a roof or at least one exterior wall of lightweight construction.

(vi) Vaporizers shall have at or near the discharge, a safety relief valve providing an effective rate of discharge in accordance with subsection (10)(d) of this section. The relief valve shall be so located as not to be subjected to temperatures in excess of 140°F.

(vii) Vaporizers shall be provided with suitable automatic means to prevent liquid passing from the vaporizer to the gas discharge piping of the vaporizer.

(viii) Vaporizers shall be provided with means for manually turning off the gas to the main burner and pilot.

(ix) Vaporizers shall be equipped with automatic safety devices to shut off the flow of gas to main burners if the pilot light should fail. When the flow through the pilot exceeds 2,000 B.T.U. per hour, the pilot also shall be equipped with an automatic safety device to shut off the flow of gas to the pilot should the pilot flame be extinguished.

(x) Pressure regulating and pressure reducing equipment if located within ten feet of a direct fired vaporizer shall be separated from the open flame by a substantially airtight non-combustible partition or partitions.

(xi) Except as provided in (c)(v) of this subsection, the following minimum distances shall be maintained between direct fired vaporizers and the nearest important building or group of buildings or line of adjoining property which may be built upon:

(A) Ten feet for vaporizers having a capacity of fifteen gallons per hour or less vaporizing capacity.

(B) Twenty-five feet for vaporizers having a vaporizing capacity of sixteen to one hundred gallons per hour.

(C) Fifty feet for vaporizers having a vaporizing capacity exceeding one hundred gallons per hour.

(xii) Direct fired vaporizers shall not raise the product pressure above the design pressure of the vaporizer equipment nor shall they raise the product pressure within the storage container above the pressure shown in the second column of Table H-31. (See WAC 296-24-47509.)

(xiii) Vaporizers shall not be provided with fusible plugs.

(xiv) Vaporizers shall not have unprotected drains to sewers or sump pits.

(d) Direct gas-fired tank heaters, shall be constructed and installed as follows:

(i) Direct gas-fired tank heaters, and tanks to which they are applied, shall only be installed above ground.

(ii) Tank heaters shall be permanently marked with the name of the manufacturer, the rated B.T.U. input to the burner, and the maximum vaporizing capacity in gallons per hour.

Note: Tank heaters may be an integral part of a fuel storage container directly connected to the container liquid section, or vapor section, or both.

(iii) Tank heaters shall be provided with a means for manually turning off the gas to the main burner and pilot.

(iv) Tank heaters shall be equipped with an automatic safety device to shut off the flow of gas to main burners, if the pilot light should fail. When flow through pilot exceeds 2,000 B.T.U. per hour, the pilot also shall be equipped with an automatic safety device to shut off the flow of gas to the pilot should the pilot flame be extinguished.

(v) Pressure regulating and pressure reducing equipment if located within ten feet of a direct fired tank heater shall be separated from the open flame by a substantially airtight non-combustible partition.

(vi) The following minimum distances shall be maintained between a storage tank heated by a direct fired tank heater and the nearest important building or group of buildings or line of adjoining property which may be built upon:

(A) Ten feet for storage containers of less than five hundred gallons water capacity.

(B) Twenty-five feet for storage containers of five hundred to one thousand two hundred gallons water capacity.

(C) Fifty feet for storage containers of over one thousand two hundred gallons water capacity.

(vii) No direct fired tank heater shall raise the product pressure within the storage container over seventy-five percent of the pressure set out in the second column of Table H-31. (See WAC 296-24-47509.)

(e) The vaporizer section of vaporizer-burners used for dehydrators or dryers shall be located outside of buildings; they shall be constructed and installed as follows:

(i) Vaporizer-burners shall have a minimum design pressure of 250 p.s.i.g. with a factor of safety of five.

(ii) Manually operated positive shutoff valves shall be located at the containers to shut off all flow to the vaporizer-burners.

(iii) Minimum distances between storage containers and vaporizer-burners shall be as follows:

Water capacity per container (gallons)	Minimum distances (feet)
Less than 501	10
501 to 2,000	25
Over 2,000	50

(iv) The vaporizer section of vaporizer-burners shall be protected by a hydrostatic relief valve. The relief valve shall be located so as not to be subjected to temperatures in excess of 140°F. The start-to-discharge pressure setting shall be such as to protect the components involved, but not less than 250 p.s.i.g. The discharge shall be directed upward and away from component parts of the equipment and away from operating personnel.

(v) Vaporizer-burners shall be provided with means for manually turning off the gas to the main burner and pilot.

(vi) Vaporizer-burners shall be equipped with automatic safety devices to shut off the flow of gas to the main burner and pilot in the event the pilot is extinguished.

(vii) Pressure regulating and control equipment shall be located or protected so that the temperatures surrounding this equipment shall not exceed 140°F except that equipment components may be used at higher temperatures if designed to withstand such temperatures.

(viii) Pressure regulating and control equipment when located downstream of the vaporizer shall be designed to withstand the maximum discharge temperature of the vapor.

(ix) The vaporizer section of vaporizer-burners shall not be provided with fusible plugs.

(x) Vaporizer coils or jackets shall be made of ferrous metal or high temperature alloys.

(xi) Equipment utilizing vaporizer-burners shall be equipped with automatic shutoff devices upstream and down-

stream of the vaporizer section connected so as to operate in the event of excessive temperature, flame failure, and, if applicable, insufficient airflow.

(12) Filling densities.

(a) The "filling density" is defined as the percent ratio of the weight of the gas in a container to the weight of water the container will hold at 60°F. All containers shall be filled according to the filling densities shown in Table H-27.

TABLE H-27
MAXIMUM PERMITTED FILLING DENSITY

	Above ground containers		Under-ground containers, all capacities
	0 to 1,200 U.S. gals. (1,000 imp. gal. 4,550 liters) total water cap. Percent	Over 1,200 U.S. gals. (1,000 imp. gals. 4,550 liters) total water cap. Percent	
Specific gravity at 60°F (15.6°C)			
0.496-0.503	41	44	45
.504-.510	42	45	46
.511-.519	43	46	47
.520-.527	44	47	48
.528-.536	45	48	49
.537-.544	46	49	50
.545-.552	47	50	51
.553-.560	48	51	52
.561-.568	49	52	53
.569-.576	50	53	54
.577-.584	51	54	55
.585-.592	52	55	56
.593-.600	53	56	57

(b) Except as provided in (c) of this subsection, any container including mobile cargo tanks and portable tank containers regardless of size or construction, shipped under DOT jurisdiction or constructed in accordance with 49 CFR Chapter I specifications shall be charged according to 49 CFR Chapter I requirements.

(c) Portable containers not subject to DOT jurisdiction (such as, but not limited to, motor fuel containers on industrial and lift trucks, and farm tractors covered in subsection (5) of this section, or containers recharged at the installation) may be filled either by weight, or by volume using a fixed length dip tube gaging device.

(13) LP-gas in buildings.

(a) Vapor shall be piped into buildings at pressures in excess of 20 p.s.i.g. only if the buildings or separate areas thereof,

(i) Are constructed in accordance with this section;

(ii) Are used exclusively to house equipment for vaporization, pressure reduction, gas mixing, gas manufacturing, or distribution, or to house internal combustion engines, industrial processes, research and experimental laboratories, or equipment and processes using such gas and having similar hazard;

(iii) Buildings, structures, or equipment under construction or undergoing major renovation.

(b) Liquid may be permitted in buildings as follows:

(i) Buildings, or separate areas of buildings, used exclusively to house equipment for vaporization, pressure reduc-

tion, gas mixing, gas manufacturing, or distribution, or to house internal combustion engines, industrial processes, research and experimental laboratories, or equipment and processes using such gas and having similar hazard; and when such buildings, or separate areas thereof are constructed in accordance with this section.

(ii) Buildings, structures, or equipment under construction or undergoing major renovation provided the temporary piping meets the following conditions:

(A) Liquid piping inside the building shall conform to the requirements of subsection (8) of this section, and shall not exceed three-fourths iron pipe size. Copper tubing with an outside diameter of three-fourths inch or less may be used provided it conforms to Type K of Specifications for Seamless Water Tube, ANSI H23.1-1970 (ASTM B88-1969) (see WAC 296-24-47505 Table H-24). All such piping shall be protected against construction hazards. Liquid piping inside buildings shall be kept to a minimum. Such piping shall be securely fastened to walls or other surfaces so as to provide adequate protection from breakage and so located as to subject the liquid line to lowest ambient temperatures.

(B) A shutoff valve shall be installed in each intermediate branch line where it takes off the main line and shall be readily accessible. A shutoff valve shall also be placed at the appliance end of the intermediate branch line. Such shutoff valve shall be upstream of any flexible connector used with the appliance.

(C) Suitable excess flow valves shall be installed in the container outlet line supplying liquid LP-gas to the building. A suitable excess flow valve shall be installed immediately downstream of each shutoff valve. Suitable excess flow valves shall be installed where piping size is reduced and shall be sized for the reduced size piping.

(D) Hydrostatic relief valves shall be installed in accordance with subsection (10)(m) of this section.

(E) The use of hose to carry liquid between the container and the building or at any point in the liquid line, except at the appliance connector, shall be prohibited.

(F) Where flexible connectors are necessary for appliance installation, such connectors shall be as short as practicable and shall comply with subsection (8)(b) or (9) of this section.

(G) Release of fuel when any section of piping or appliances is disconnected shall be minimized by either of the following methods:

(I) Using an approved automatic quick-closing coupling (a type closing in both directions when coupled in the fuel line), or

(II) Closing the valve nearest to the appliance and allowing the appliance to operate until the fuel in the line is consumed.

(III) Portable containers shall not be taken into buildings except as provided in subsection (6)(a) of this section.

(14) Transfer of liquids. The employer shall assure that:

(a) At least one attendant shall remain close to the transfer connection from the time the connections are first made until they are finally disconnected, during the transfer of the product.

(b) Containers shall be filled or used only upon authorization of the owner.

(c) Containers manufactured in accordance with specifications of 49 CFR Part 178 and authorized by 49 CFR Chapter 1 as a "single trip" or "nonrefillable container" shall not be refilled or reused in LP-gas service.

(d) Gas or liquid shall not be vented to the atmosphere to assist in transferring contents of one container to another, except as provided in WAC 296-24-47511 (5)(d) and except that this shall not preclude the use of listed pump utilizing LP-gas in the vapor phase as a source of energy and venting such gas to the atmosphere at a rate not to exceed that from a No. 31 drill size opening and provided that such venting and liquid transfer shall be located not less than fifty feet from the nearest important building.

(e) Filling of fuel containers for industrial trucks or motor vehicles from industrial bulk storage containers shall be performed not less than ten feet from the nearest important masonry-walled building or not less than twenty-five feet from the nearest important building or other construction and, in any event, not less than twenty-five feet from any building opening.

(f) Filling of portable containers, containers mounted on skids, fuel containers on farm tractors, or similar applications, from storage containers used in domestic or commercial service, shall be performed not less than fifty feet from the nearest important building.

(g) The filling connection and the vent from the liquid level gages in containers, filled at point of installation, shall not be less than ten feet in any direction from air openings into sealed combustion system appliances or mechanical ventilation air intakes.

(h) Fuel supply containers shall be gaged and charged only in the open air or in buildings especially provided for that purpose.

(i) The maximum vapor pressure of the product at 100°F which may be transferred into a container shall be in accordance with WAC 296-24-47509(2) and 296-24-47511(3). (For DOT containers use DOT requirements.)

(j) Marketers and users shall exercise precaution to assure that only those gases for which the system is designed, examined, and listed, are employed in its operation, particularly with regard to pressures.

(k) Pumps or compressors shall be designed for use with LP-gas. When compressors are used they shall normally take suction from the vapor space of the container being filled and discharge to the vapor space of the container being emptied.

(l) Pumping systems, when equipped with a positive displacement pump, shall include a recirculating device which shall limit the differential pressure on the pump under normal operating conditions to the maximum differential pressure rating of the pump. The discharge of the pumping system shall be protected so that pressure does not exceed 350 p.s.i.g. If a recirculation system discharges into the supply tank and contains a manual shutoff valve, an adequate secondary safety recirculation system shall be incorporated which shall have no means of rendering it inoperative. Manual shutoff valves in recirculation systems shall be kept open except during an emergency or when repairs are being made to the system.

(m) When necessary, unloading piping or hoses shall be provided with suitable bleeder valves for relieving pressure before disconnection.

(n) Agricultural air moving equipment, including crop dryers, shall be shut down when supply containers are being filled unless the air intakes and sources of ignition on the equipment are located fifty feet or more from the container.

(o) Agricultural equipment employing open flames or equipment with integral containers, such as flame cultivators, weed burners, and, in addition, tractors, shall be shut down during refueling.

(15) Tank car or transport truck loading or unloading points and operations.

(a) The track of tank car siding shall be relatively level.

(b) A "tank car connected" sign, as covered by DOT rules, shall be installed at the active end or ends of the siding while the tank car is connected.

(c) While cars are on side track for loading or unloading, the wheels at both ends shall be blocked on the rails.

(d) The employer shall insure that an employee is in attendance at all times while the tank car, cars, or trucks are being loaded or unloaded.

(e) A backflow check valve, excess-flow valve, or a shutoff valve with means of remote closing, to protect against uncontrolled discharge of LP-gas from storage tank piping shall be installed close to the point where the liquid piping and hose or swing joint pipe is connected.

(f) Where practical, the distance of the unloading or loading point shall conform to the distances in subsection (6)(b) of this section.

(16) Instructions. Personnel performing installation, removal, operation, and maintenance work shall be properly trained in such function.

(17) Electrical equipment and other sources of ignition.

(a) Electrical equipment and wiring shall be of a type specified by and shall be installed according to chapter 296-24 WAC Part L, for ordinary locations except that fixed electrical equipment in classified areas shall comply with subsection (18) of this section.

(b) Open flames or other sources of ignition shall not be permitted in vaporizer rooms (except those housing direct-fired vaporizers), pumphouses, container charging rooms or other similar locations. Direct-fired vaporizers shall not be permitted in pumphouses or container charging rooms.

Note: Liquefied petroleum gas storage containers do not require lightning protection. Since liquefied petroleum gas is contained in a closed system of piping and equipment, the system need not be electrically conductive or electrically bonded for protection against static electricity (see NFPA No. 77-1972-1973, Recommended Practice for Static Electricity).

(c) Open flames (except as provided for in (b) of this subsection), cutting or welding, portable electric tools, and extension lights capable of igniting LP-gas, shall not be permitted within classified areas specified in Table H-28 of this section unless the LP-gas facilities have been freed of all liquid and vapor, or special precautions observed under carefully controlled conditions.

(18) Fixed electrical equipment in classified areas. Fixed electrical equipment and wiring installed within classified areas shall comply with Table H-28 of this section and shall be installed according to chapter 296-24 WAC Part L. This provision does not apply to fixed electrical equipment at res-

idential or commercial installations of LP-gas systems or to systems covered by WAC 296-24-47511.

(19) Liquid-level gaging device.

(a) Each container manufactured after December 31, 1965, and filled on a volumetric basis shall be equipped with a fixed liquid-level gage to indicate the maximum permitted filling level as provided in (e) of this subsection. Each container manufactured after December 31, 1969, shall have permanently attached to the container adjacent to the fixed level gage a marking showing the percentage full that will be shown by that gage. When a variable liquid-level gage is also provided, the fixed liquid-level gage will also serve as a means for checking the variable gage. These gages shall be used in charging containers as required in subsection (12) of this section.

(b) All variable gaging devices shall be arranged so that the maximum liquid level for butane, for a fifty-fifty mixture of butane and propane, and for propane, to which the container may be charged is readily determinable. The markings indicating the various liquid levels from empty to full shall be on the system nameplate or gaging device or part may be on the system nameplate and part on the gaging device. Dials of magnetic or rotary gages shall show whether they are for cylindrical or spherical containers and whether for above-ground or underground service. The dials of gages intended for use only on aboveground containers of over one thousand two hundred gallons water capacity shall be so marked.

(c) Gaging devices that require bleeding of the product to the atmosphere, such as the rotary tube, fixed tube, and slip tube, shall be designed so that the bleed valve maximum opening is not larger than a No. 54 drill size, unless provided with excess flow valve.

(d) Gaging devices shall have a design working pressure of at least 250 p.s.i.g.

(e) Length of tube or position of fixed liquid-level gage shall be designed to indicate the maximum level to which the container may be filled for the product contained. This level shall be based on the volume of the product at 40°F at its maximum permitted filling density for aboveground containers and at 50°F for underground containers. The employer shall calculate the filling point for which the fixed liquid level gage shall be designed according to the method in this subsection.

TABLE H-28

Part	Location	Extent of classified area ¹	Equipment shall be suitable for Class I, Group D ² Division 2.
A	Storage containers other than DOT cylinders.	Within 15 feet in all directions from connections, except connections otherwise covered in Table H-28.	
B	Tank vehicle and tank car loading and unloading. ³	Within 5 feet in all directions from connections regularly made or disconnected for product transfer.	Division 1.

Part	Location	Extent of classified area ¹	Equipment shall be suitable for Class I, Group D ² Division 2.	Part	Location	Extent of classified area ¹	Equipment shall be suitable for Class I, Group D ² Division 1.
		Beyond 5 feet but within 15 feet in all directions from a point where connections are regularly made or disconnected and within the cylindrical volume between the horizontal equator of the sphere and grade. (See Figure H-1.)		F	Service station dispensing units.	Entire space within dispenser enclosure, and 18 inches horizontally from enclosure exterior up to an elevation 4 ft. above dispenser base. Entire pit or open space beneath dispenser.	
C	Gage vent openings other than those on DOT cylinders.	Within 5 feet in all directions from point of discharge.	Division 1.			Up to 18 inches abovegrade within 20 ft. horizontally from any edge of enclosure.	Division 2.
		Beyond 5 feet but within 15 feet in all directions from point of discharge.	Division 2.			NOTE: For pits within this area, see Part F of this table.	
D	Relief valve discharge other than those on DOT cylinders.	Within direct path of discharge.	Division 1. NOTE—Fixed electrical equipment should preferably not be installed. Division 1.	G	Pits or trenches containing or located beneath LP-gas valves, pumps, compressors, regulators, and similar equipment.		
		Within 5 feet in all directions from point of discharge.			Without mechanical ventilation.	Entire pit or trench	Division 1.
		Beyond 5 feet but within 15 feet in all directions from point of discharge except within the direct path of discharge.	Division 2.			Entire room and any adjacent room not separated by a gastight partition.	Division 2.
						Within 15 feet in all directions from pit or trench when located outdoors.	Division 2.
E	Pumps, compressors, gas-air mixers and vaporizers other than direct fired.				With adequate mechanical ventilation.	Entire pit or trench	Division 2
	Indoors without ventilation	Entire room and any adjacent room not separated by a gastight partition.	Division 1.			Entire room and any adjacent room not separated by a gastight partition.	Division 2.
		Within 15 feet of the exterior side of any exterior wall or roof that is not vaportight or within 15 feet of any exterior opening.	Division 2.			Within 15 feet in all directions from pit or trench when located outdoors.	Division 2.
	Indoors with adequate ventilation. ⁴	Entire room and any adjacent room not separated by a gastight partition.	Division 2.	H	Special buildings or rooms for storage of portable containers.	Entire room	Division 2.
	Outdoors in open air at or abovegrade.	Within 15 feet in all directions from this equipment and within the cylindrical volume between the horizontal equator of the sphere and grade. See Figure H-1.	Division 2.	I	Pipelines and connections containing operational bleeds, drips, vents or drains.	Within 5 ft. in all directions from point of discharge.	Division 1.
						Beyond 5 ft. from point of discharge, same as Part E of this table.	
				J	Container filling: Indoors without ventilation.	Entire room	Division 1.
					Indoors with adequate ventilation. ⁴	Within 5 feet in all directions from connections regularly made or disconnected for product transfer.	Division 1.
						Beyond 5 feet and entire room	Division 2.

Part	Location	Extent of classified area ¹	Equipment shall be suitable for Class I, Group D ² Division 1.
	Outdoors in open air	Within 5 feet in all directions from connections regularly made or disconnected for product transfer.	Division 1.
		Beyond 5 feet but within 15 feet in all directions from a point where connections are regularly made or disconnected and within the cylindrical volume between the horizontal equator of the sphere and grade (See Fig. H-1.)	Division 2.

¹The classified area shall not extend beyond an unpierced wall, roof, or solid vaportight partition.

²See chapter 296-46 WAC, and chapter 296-24 WAC Part L.

³When classifying extent of hazardous area, consideration shall be given to possible variations in the spotting of tank cars and tank vehicles at the unloading points and the effect these variations of actual spotting point may have on the point of connection.

⁴Ventilation, either natural or mechanical, is considered adequate when the concentration of the gas in a gas-air mixture does not exceed twenty-five percent of the lower flammable limit under normal operating conditions.

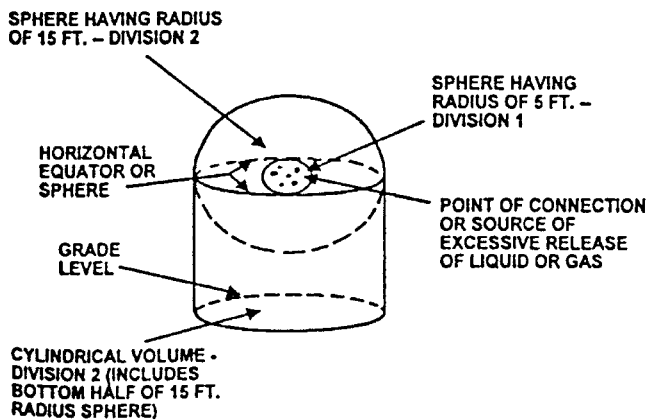


Figure H-1

Note: It is impossible to set out in a table the length of a fixed dip tube for various capacity tanks because of the varying tank diameters and lengths and because the tank may be installed either in a vertical or horizontal position. Knowing the maximum permitted filling volume in gallons, however, the length of the fixed tube can be determined by the use of a strapping table obtained from the container manufacturer. The length of the fixed tube should be such that when its lower end touches the surface of the liquid in the container, the contents of the container will be the maximum permitted volume as determined by the following formula:

$$\frac{\text{Water capacity (gals.) of container} \times \text{filling density}^{**}}{\text{Specific gravity of LP-gas} \times \text{volume correction factor}^{***} \times 100} = \text{Maximum volume of LP-gas}$$

* Measure at 60°F.

** From subsection (12)(a) of this section "filling densities."

*** For aboveground containers the liquid temperature is assumed to be 40°F and for underground containers the liquid temperature is assumed to be 50°F. To correct the liquid volumes at these temperatures to 60°F the following factors shall be used.

(i) Formula for determining maximum volume of liquefied petroleum gas for which a fixed length of dip tube shall be set:

TABLE H-29
VOLUME CORRECTION FACTORS

Specific gravity	Aboveground	Underground
0.500	1.033	1.017
.510	1.031	1.016
.520	1.029	1.015
.530	1.028	1.014
.540	1.026	1.013
.550	1.025	1.013
.560	1.024	1.012
.570	1.023	1.011
.580	1.021	1.011
.590	1.020	1.010

(ii) The maximum volume of LP-gas which can be placed in a container when determining the length of the dip tube expressed as a percentage of total water content of the container is calculated by the following formula.

(iii) The maximum weight of LP-gas which may be placed in a container for determining the length of a fixed dip tube is determined by multiplying the maximum volume of liquefied petroleum gas obtained by the formula in (e)(i) of this subsection by the pounds of liquefied petroleum gas in a gallon at 40°F for aboveground and at 50°F for underground containers. For example, typical pounds per gallon are specified below:

Example: Assume a one hundred-gallon total water capacity tank for aboveground storage of propane having a specific gravity of 0.510 at 60°F.

$$\frac{100 \text{ (gals.)} \times 42 \text{ (filling density from (12)(a) of this subsection)}}{0.510 \times 1.031 \text{ (correction factor from Table H-29)} \times 100} = \frac{4200}{52.6}$$

$$\frac{4200}{52.6} = 79.8 \text{ gallons propane, the maximum amount permitted to be placed in a 100-gallon total water capacity aboveground container equipped with a fixed dip tube.}$$

$$\frac{\text{Maximum volume of LP-gas (from formula in (e)(i) of this subsection)} \times 100}{\text{Total water content of container in gallons}} = \text{Maximum percent of LP-gas}$$

	Aboveground, pounds per gallon	Underground, pounds per gallon
Propane	4.37	4.31
N Butane	4.97	4.92

(f) Fixed liquid-level gages used on containers other than DOT containers shall be stamped on the exterior of the gage

with the letters "DT" followed by the vertical distance (expressed in inches and carried out to one decimal place) from the top of container to the end of the dip tube or to the centerline of the gage when it is located at the maximum permitted filling level. For portable containers that may be filled in the horizontal and/or vertical position the letters "DT" shall be followed by "V" with the vertical distance from the top of the container to the end of the dip tube for vertical filling and with "H" followed by the proper distance for horizontal filling. For DOT containers the stamping shall be placed both on the exterior of the gage and on the container. On aboveground or cargo containers where the gages are positioned at specific levels, the marking may be specified in percent of total tank contents and the marking shall be stamped on the container.

(g) Gage glasses of the columnar type shall be restricted to charging plants where the fuel is withdrawn in the liquid phase only. They shall be equipped with valves having metallic handwheels, with excess flow valves, and with extra-heavy glass adequately protected with a metal housing applied by the gage manufacturer. They shall be shielded against the direct rays of the sun. Gage glasses of the columnar type are prohibited on tank trucks, and on motor fuel tanks, and on containers used in domestic, commercial, and industrial installations.

(h) Gaging devices of the float, or equivalent type which do not require flow for their operation and having connections extending to a point outside the container do not have to be equipped with excess flow valves provided the piping and fittings are adequately designed to withstand the container pressure and are properly protected against physical damage and breakage.

(20) Requirements for appliances.

(a) Except as provided in (b) of this subsection, new commercial and industrial gas consuming appliances shall be approved.

(b) Any appliance that was originally manufactured for operation with a gaseous fuel other than LP-gas and is in good condition may be used with LP-gas only after it is properly converted, adapted, and tested for performance with LP-gas before the appliance is placed in use.

(c) Unattended heaters used inside buildings for the purpose of animal or poultry production or care shall be equipped with an approved automatic device designed to shut off the flow of gas to the main burners, and pilot if used, in the event of flame extinguishment.

(d) All commercial, industrial, and agricultural appliances or equipment shall be installed in accordance with the requirements of these standards and in accordance with the following:

(i) Domestic and commercial appliances—NFPA 54-1969, Standard for the Installation of Gas Appliances and Gas Piping.

(ii) Industrial appliances—NFPA 54A-1969, Standard for the Installation of Gas Piping and Gas Equipment on Industrial Premises and Certain Other Premises.

(iii) Standard for the Installation and Use of Stationary Combustion Engines and Gas Turbines—NFPA 37-1970.

(iv) Standard for the Installation of Equipment for the Removal of Smoke and Grease-Laden Vapors from Commercial Cooking Equipment, NFPA 96-1970.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-094, § 296-24-47505, filed 8/17/99, effective 12/1/99. Statutory Authority: Chapter 49.17 RCW. 91-24-017 (Order 91-07), § 296-24-47505, filed 11/22/91, effective 12/24/91; 88-23-054 (Order 88-25), § 296-24-47505, filed 11/14/88. Statutory Authority: RCW 49.17.040 and 49.17.050. 85-10-004 (Order 85-09), § 296-24-47505, filed 4/19/85; Order 76-6, § 296-24-47505, filed 3/1/76; Order 73-5, § 296-24-47505, filed 5/9/73 and Order 73-4, § 296-24-47505, filed 5/7/73.]

WAC 296-24-47507 Cylinder systems. (1) Application. This section applies specifically to systems utilizing containers constructed in accordance with DOT specifications. All requirements of WAC 296-24-47505 apply to this section unless otherwise noted in WAC 296-24-47505.

(2) Marking of containers. Containers shall be marked in accordance with DOT regulations. Additional markings not in conflict with DOT regulations may be used.

(3) Description of a system. A system shall include the container base or bracket, containers, container valves, connectors, manifold valve assembly, regulators, and relief valves.

(4) Containers and regulating equipment installed outside of buildings or structures.

(a) Containers shall not be buried below ground. However, this shall not prohibit the installation in a compartment or recess below grade level, such as a niche in a slope or terrace wall which is used for no other purpose, providing that the container and regulating equipment are not in contact with the ground and the compartment or recess is drained and ventilated horizontally to the outside air from its lowest level, with the outlet at least three feet away from any building opening which is below the level of such outlet.

Except as provided in WAC 296-24-47505 (10)(n), the discharge from safety relief devices shall be located not less than three feet horizontally away from any building opening which is below the level of such discharge and shall not terminate beneath any building unless such space is well ventilated to the outside and is not enclosed on more than two sides.

(b) Containers shall be set upon firm foundation or otherwise firmly secured; the possible effect on the outlet piping of settling shall be guarded against by a flexible connection or special fitting.

(5) Containers and equipment used inside of buildings or structures.

(a) When operational requirements make portable use of containers necessary and their location outside of buildings or structures is impracticable, containers and equipment are permitted to be used inside of buildings or structures in accordance with (a)(i) through (xii) of this subsection, and, in addition, such other provisions of this section as are applicable to the particular use or occupancy.

(i) Containers in use shall mean connected for use.

(ii) Systems utilizing containers having a water capacity greater than two and one-half pounds (nominal one pound LP-gas capacity) shall be equipped with excess flow valves. Such excess flow valves shall be either integral with the container valves or in the connections to the container valve outlets. In either case, an excess flow valve shall be installed in such a manner that any undue strain beyond the excess flow valve will not cause breakage between the container and the

excess flow valve. The installation of excess flow valves shall take into account the type of valve protection provided.

(iii) Regulators, if used, shall be either directly connected to the container valves or to manifolds connected to the container valves. The regulator shall be suitable for use with LP-gas. Manifolds and fittings connecting containers to pressure regulator inlets shall be designed for at least 250 p.s.i.g. service pressure.

(iv) Valves on containers having a water capacity greater than fifty pounds (nominal twenty pounds LP-gas capacity) shall be protected while in use.

(v) Containers shall be marked in accordance with WAC 296-24-47505 (5)(c) and subsection (2) of this section.

(vi) Pipe or tubing shall conform to WAC 296-24-47505(8) except that aluminum pipe or tubing shall not be used.

(vii) Hose shall be designed for a working pressure of at least 250 p.s.i.g. Hose and hose connections shall have their correctness as to design, construction and performance determined by listing by a nationally recognized testing laboratory.

(A) The hose length may exceed the length specified in WAC 296-24-47505 (9)(g)(ii), but shall be as short as practicable. Refer to federal regulation 29 CFR 1910.7 for definition of nationally recognized testing laboratory.

(B) Hose shall be long enough to permit compliance with spacing provisions of this section without kinking or straining or causing hose to be so close to a burner as to be damaged by heat.

(viii) Portable heaters, including salamanders, shall be equipped with an approved automatic device to shut off the flow of gas to the main burner, and pilot if used, in the event of flame extinguishment. Such heaters having inputs above 50,000 B.t.u. manufactured on or after May 17, 1967, and such heaters having inputs above 100,000 B.t.u. manufactured before May 17, 1967, shall be equipped with either:

(A) A pilot which must be lighted and proved before the main burner can be turned on; or

(B) An electric ignition system. The provisions of (a)(viii) of this subsection do not apply to tar kettle burners, torches, melting pots, nor do they apply to portable heaters under 7,500 B.t.u.h. input when used with containers having a maximum water capacity of two and one-half pounds. Container valves, connectors, regulators, manifolds, piping, and tubing shall not be used as structural supports for heaters.

(ix) Containers, regulating equipment, manifolds, pipe, tubing, and hose shall be located so as to minimize exposure to abnormally high temperatures (such as may result from exposure to convection or radiation from heating equipment or installation in confined spaces), physical damage, or tampering by unauthorized persons.

(x) Heat producing equipment shall be located and used so as to minimize the possibility of ignition of combustibles.

(xi) Containers having water capacity greater than two and one-half pounds (nominal one pound LP-gas capacity) connected for use, shall stand on a firm and substantially level surface and, when necessary, shall be secured in an upright position.

(xii) Containers, including the valve protective devices, shall be installed so as to minimize the probability of

impingement of discharge of safety relief devices upon containers.

(b) Containers having a maximum water capacity of two and one-half pounds (nominal one pound LP-gas capacity) are permitted to be used inside of buildings as part of approved self-contained hand torch assemblies or similar appliances.

(c) Containers having a maximum water capacity of twelve pounds (nominal five pounds LP-gas capacity) are permitted to be used temporarily inside of buildings for public exhibition or demonstration purposes, including use for classroom demonstrations.

(d) When buildings frequented by the public are open to the public, containers are permitted to be used for repair or minor renovation as follows:

(i) The maximum water capacity of individual containers shall be fifty pounds (nominal twenty pounds LP-gas capacity).

(ii) The number of LP-gas containers shall not exceed the number of workers assigned to using the LP-gas.

(iii) Containers having a water capacity of greater than two and one-half pounds (nominal one pound LP-gas capacity) shall not be left unattended in such buildings.

(e) When buildings frequented by the public are not open to the public, containers are permitted to be used for repair or minor renovations, as follows:

The provisions of (f) of this subsection shall apply except that containers having a water capacity greater than two and one-half pounds (nominal one pound LP-gas capacity) shall not be left unattended in such buildings.

(f) Containers are permitted to be used in buildings or structures under construction or undergoing major renovation when such buildings or structures are not occupied by the public, as follows:

(i) The maximum water capacity of individual containers shall be two hundred forty-five pounds (nominal one hundred pounds LP-gas capacity).

(ii) For temporary heating such as curing concrete, drying plaster and similar applications, heaters (other than integral heater-container units) shall be located at least six feet from any LP-gas container. This shall not prohibit the use of heaters specifically designed for attachment to the container or to a supporting standard, provided they are designed and installed so as to prevent direct or radiant heat application from the heater onto the container. Blower and radiant type heater shall not be directed toward any LP-gas container within twenty feet.

(iii) If two or more heater-container units, of either the integral or nonintegral type, are located in an unpartitioned area on the same floor, the container or containers of each unit shall be separated from the container or containers of any other unit by at least twenty feet.

(iv) When heaters are connected to containers for use in an unpartitioned area on the same floor, the total water capacity of containers manifolded together for connection to a heater or heaters shall not be greater than seven hundred thirty-five pounds (nominal three hundred pounds LP-gas capacity). Such manifolds shall be separated by at least twenty feet.

(v) On floors on which heaters are not connected for use, containers are permitted to be manifolded together for connection to a heater or heaters on another floor, provided:

(A) The total water capacity of containers connected to any one manifold is not greater than two thousand four hundred fifty pounds (nominal one thousand pounds LP-gas capacity) and;

(B) Where more than one manifold having a total water capacity greater than seven hundred thirty-five pounds (nominal three hundred pounds LP-gas capacity) are located in the same unpartitioned area, they shall be separated by at least fifty feet.

(vi) Storage of containers awaiting use shall be in accordance with WAC 296-24-47513.

(g) Containers are permitted to be used in industrial occupancies for processing, research, or experimental purposes as follows:

(i) The maximum water capacity of individual containers shall be two hundred forty-five pounds (nominal one hundred pounds LP-gas capacity).

(ii) Containers connected to a manifold shall have a total water capacity not greater than seven hundred thirty-five pounds (nominal three hundred pounds LP-gas capacity) and not more than one such manifold may be located in the same room unless separated at least twenty feet from a similar unit.

(iii) The amount of LP-gas in containers for research and experimental use shall be limited to the smallest practical quantity.

(h) Containers are permitted to be used in industrial occupancies with essentially noncombustible contents where portable equipment for space heating is essential and where a permanent heating installation is not practical, as follows: Containers and heaters shall comply with and be used in accordance with (f) of this subsection.

(i) Containers are permitted to be used in buildings for temporary emergency heating purposes, if necessary to prevent damage to the buildings or contents, when the permanent heating system is temporarily out of service, as follows:

(i) Containers and heaters shall comply with and be used in accordance with (f) of this subsection.

(ii) The temporary heating equipment shall not be left unattended.

(j) Containers are permitted to be used temporarily in buildings for training purposes related in installation and use of LP-gas systems, as follows:

(i) The maximum water capacity of individual containers shall be two hundred forty-five pounds (nominal one hundred pounds LP-gas capacity), but the maximum quantity of LP-gas that may be placed in each container shall be twenty pounds.

(ii) If more than one such container is located in the same room, the containers shall be separated by at least twenty feet.

(iii) Containers shall be removed from the building when the training class has terminated.

(6) Container valves and accessories.

(a) Valves in the assembly of multiple container systems shall be arranged so that replacement of containers can be made without shutting off the flow of gas in the system.

Note: This provision is not to be construed as requiring an automatic changeover device.

(b) Regulators and low-pressure relief devices shall be rigidly attached to the cylinder valves, cylinders, supporting standards, the building walls or otherwise rigidly secured and shall be so installed or protected that the elements (sleet, snow, or ice) will not affect their operation.

(c) Valves and connections to the containers shall be protected while in transit, in storage, and while being moved into final utilization, as follows:

(i) By setting into the recess of the container to prevent the possibility of their being struck if the container is dropped upon a flat surface, or

(ii) By ventilated cap or collar, fastened to the container capable of withstanding a blow from any direction equivalent to that of a thirty-pound weight dropped four feet. Construction must be such that a blow will not be transmitted to the valve or other connection.

(d) When containers are not connected to the system, the outlet valves shall be kept tightly closed or plugged, even though containers are considered empty.

(e) Containers having a water capacity in excess of fifty pounds (approximately twenty-one pounds LP-gas capacity), recharged at the installation, shall be provided with excess flow or backflow check valves to prevent the discharge of container contents in case of failure of the filling or equalizing connection.

(7) Safety devices.

(a) Containers shall be provided with safety devices as required by DOT regulations.

(b) A final stage regulator of an LP-gas system (excluding any appliance regulator) shall be equipped on the low-pressure side with a relief valve which is set to start to discharge within the limits specified in Table H-30.

TABLE H-30

Regulatory delivery pressure	Relief valve start to discharge pressure setting (percent of regulator deliver pressure)	
	Minimum	Maximum
1 p.s.i.g. or less	200	300
Above 1 p.s.i.g. but not over 3 p.s.i.g.	140	200
Above 3 p.s.i.g.	125	200

(c) When a regulator or pressure relief valve is used inside a building for other than purposes specified in WAC 296-24-47505 (6)(a)(i) through (vi), the relief valve and the space above the regulator and relief valve diaphragms shall be vented to the outside air with the discharge outlet located not less than three feet horizontally away from any building opening which is below such discharge. These provisions do not apply to individual appliance regulators when protection is otherwise provided nor to subsection (5) of this section and WAC 296-24-47505 (10)(n). In buildings devoted exclusively to gas distribution purposes, the space above the diaphragm need not be vented to the outside.

(8) Reinstallation of containers. Containers shall not be reinstalled unless they are requalified in accordance with DOT regulations.

Permissible product. A product shall not be placed in a container marked with a service pressure less than four-fifths of the maximum vapor pressure of product at 130°F.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-094, § 296-24-47507, filed 8/17/99, effective 12/1/99. Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-24-47507, filed

7/20/94, effective 9/20/94; 88-23-054 (Order 88-25), § 296-24-47507, filed 11/14/88; Order 73-5, § 296-24-47507, filed 5/9/73 and Order 73-4, § 296-24-47507, filed 5/7/73.]

WAC 296-24-47509 Systems utilizing containers other than DOT containers. (1) Application. This section applies specifically to systems utilizing storage containers other than those constructed in accordance with DOT specifications. WAC 296-24-47505 of this section applies to this section unless otherwise noted in WAC 296-24-47505.

(2) Design pressure and classification of storage containers. Storage containers shall be designed and classified in accordance with Table H-31.

(3) Container valves and accessories, filler pipes, and discharge pipes.

(a) The filling pipe inlet terminal shall not be located inside a building. For containers with a water capacity of 125 gallons or more, such terminals shall be located not less than 10 feet from any building (see WAC 296-24-47505 (6)(b)), and preferably not less than 5 feet from any driveway, and shall be located in a protective housing built for the purpose.

TABLE H-31

Container type	For gases with vapor press. Not to exceed lb. per sq. in. gage at 100°F (37.8°C.)	Minimum design pressures of container lb. per sq. in. gage	
		1949 and earlier editions of ASME Code (Par. U-68 U-69)	1949 edition of Code (Par. U-200, U-201); 1950, 1952, 1956, 1959, 1962, 1965, and 1968 (Division I) editions of ASME Code; All editions of API-ASME Code ³
80 ¹	80 ¹	80 ¹	100 ¹
100	100	100	125
125	125	125	156
150	150	150	187
175	175	175	219
200 ²	215	200	250

¹New storage containers of the 80 type have not been authorized since Dec. 31, 1947.

²Container type may be increased by increments of 25. The minimum design pressure of containers shall be 100% of the container type designations when constructed under 1949 or earlier editions of the ASME Code (Par. U-68 and U-69). The minimum design pressure of containers shall be 125% of the container type designation when constructed under: (1) The 1949 ASME Code (Par. U-200 and U-201), (2) 1950, 1952, 1956, 1959, 1962, 1965, and 1968 (Division I) editions of the ASME Code, and (3) all editions of the API-ASME Code.

³Construction of containers under the API-ASME Code is not authorized after July 1, 1961.

(b) The filling connection shall be fitted with one of the following:

(i) Combination back-pressure check valve and excess flow valve.

(ii) One double or two single back-pressure check valves.

(iii) A positive shut-off valve in conjunction with either:

(A) An internal back pressure valve, or

(B) An internal excess flow valve.

(c) All openings in a container shall be equipped with approved automatic excess flow valves except in the following: Filling connections as provided in (3)(b) of this section;

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safety relief connections, liquid-level gaging devices as provided in WAC 296-24-47505 (7)(d), (19)(c) and (19)(h); pressure gage connections as provided in WAC 296-24-47505 (7)(e), as provided in (3)(d), (f) and (g) of this section.

(d) An excess flow valve is not required in the withdrawal service line providing the following are complied with:

(i) Such systems' total water capacity does not exceed 2,000 U.S. gallons.

(ii) The discharge from the service outlet is controlled by a suitable manually operated shut-off valve which is:

(A) Threaded directly into the service outlet of the container; or

(B) Is an integral part of a substantial fitting threaded into or on the service outlet of the container; or

(C) Threaded directly into a substantial fitting threaded into or on the service outlet of the container.

(iii) The shut-off valve is equipped with an attached handwheel or the equivalent.

(iv) The controlling orifice between the contents of the container and the outlet of the shut-off valve does not exceed five-sixteenths inch in diameter for vapor withdrawal systems and one-eighth inch in diameter for liquid withdrawal systems.

(v) An approved pressure-reducing regulator is directly attached to the outlet of the shut-off valve and is rigidly supported, or that an approved pressure-reducing regulator is attached to the outlet of the shut-off valve by means of a suitable flexible connection, provided the regulator is adequately supported and properly protected on or at the tank.

(e) All inlet and outlet connections except safety relief valves, liquid level gaging devices and pressure gages on containers of 2,000 gallons water capacity, or more, and on any container used to supply fuel directly to an internal combustion engine, shall be labeled to designate whether they communicate with vapor or liquid space. Labels may be on valves.

(f) In lieu of an excess flow valve openings may be fitted with a quick-closing internal valve which, except during operating periods shall remain closed. The internal mechanism for such valves may be provided with a secondary control which shall be equipped with a fusible plug (not over 220°F melting point) which will cause the internal valve to close automatically in case of fire.

(g) Not more than two plugged openings shall be permitted on a container of 2,000 gallons or less water capacity.

(h) Containers of 125 gallons water capacity or more manufactured after July 1, 1961, shall be provided with an approved device for liquid evacuation, the size of which shall be three-fourths inch national pipe thread minimum. A plugged opening will not satisfy this requirements.

(4) Safety devices.

(a) All safety devices shall comply with the following:

(i) All container safety relief devices shall be located on the containers and shall have direct communication with the vapor space of the container.

(ii) In industrial and gas manufacturing plants, discharge pipe from safety relief valves on pipe lines within a building shall discharge vertically upward and shall be piped to a point outside a building.

(iii) Safety relief device discharge terminals shall be so located as to provide protection against physical damage and such discharge pipes shall be fitted with loose raincaps. Return bends and restrictive pipefittings shall not be permitted.

(iv) If desired, discharge lines from two or more safety relief devices located on the same unit, or similar lines from two or more different units, may be run into a common discharge header, provided that the cross-sectional area of such header be at least equal to the sum of the cross-sectional area of the individual discharge lines, and that the setting of safety relief valves are the same.

(v) Each storage container of over 2,000 gallons water capacity shall be provided with a suitable pressure gage.

(vi) A final stage regulator of an LP-gas system (excluding any appliance regulator) shall be equipped on the low-pressure side with a relief valve which is set to start to discharge within the limits specified in Table H-30.

(vii) When a regulator or pressure relief valve is installed inside a building, the relief valve and the space above the regulator and relief valve diaphragms shall be vented to the outside air with the discharge outlet located not less than 3 feet horizontally away from any opening into the building which is below such discharge. (These provisions do not apply to individual appliance regulators when protection is otherwise provided. In buildings devoted exclusively to gas distribution purposes, the space above the diaphragm need not be vented to the outside.)

(b) Safety devices for aboveground containers shall be provided as follows:

(i) Containers of 1,200 gallons water capacity or less which may contain liquid fuel when installed above ground shall have the rate of discharge required by WAC 296-24-47505 (10)(b) provided by a spring-loaded relief valve or valves. In addition to the required spring-loaded relief valve(s) suitable fuse plug(s) may be used provided the total discharge area of the fuse plug(s) for each container does not exceed 0.25 square inch.

(ii) The fusible metal of the fuse plugs shall have a yield temperature of 208°F minimum and 220°F maximum. Relief valves and fuse plugs shall have direct communication with the vapor space of the container.

(iii) On a container having a water capacity greater than 125 gallons, but not over 2,000 gallons, the discharge from the safety relief valves shall be vented away from the container vertically upwards and unobstructed to the open air in such a manner as to prevent any impingement of escaping gas upon the container; loose-fitting rain caps shall be used. Suitable provision shall be made for draining condensate which may accumulate in the relief valve or its discharge pipe.

(iv) On containers of 125 gallons water capacity or less, the discharge from safety relief devices shall be located not less than 5 feet horizontally away from any opening into the building below the level of such discharge.

(v) On a container having a water capacity greater than 2,000 gallons, the discharge from the safety relief valves shall be vented away from the container vertically upwards to a point at least 7 feet above the container, and unobstructed to the open air in such a manner as to prevent any impingement of escaping gas upon the container; loose-fitting rain caps shall be used. Suitable provision shall be made so that any

liquid or condensate that may accumulate inside of the safety relief valve or its discharge pipe will not render the valve inoperative. If a drain is used, a means shall be provided to protect the container, adjacent containers, piping, or equipment against impingement of flame resulting from ignition of product escaping from the drain.

(c) On all containers which are installed underground and which contain no liquid fuel until buried and covered, the rate of discharge of the spring-loaded relief valve installed thereon may be reduced to a minimum of 30 percent of the rate of discharge specified in WAC 296-24-47505 (10)(b). Containers so protected shall not be uncovered after installation until the liquid fuel has been removed therefrom. Containers which may contain liquid fuel before being installed under ground and before being completely covered with earth are to be considered aboveground containers when determining the rate of discharge requirement of the relief valves.

(d) On underground containers of more than 2,000 gallons water capacity, the discharge from safety relief devices shall be piped vertically and directly upward to a point at least 7 feet above the ground.

Where there is a probability of the manhole or housing becoming flooded, the discharge from regulator vent lines shall be above the highest probable water level. All manholes or housings shall be provided with ventilated louvers or their equivalent, the area of such openings equaling or exceeding the combined discharge areas of the safety relief valves and other vent lines which discharge their content into the manhole housing.

(e) Safety devices for vaporizers shall be provided as follows:

(i) Vaporizers of less than 1 quart total capacity, heated by the ground or the surrounding air, need not be equipped with safety relief valves provided that adequate tests certified by any of the authorities referred to in WAC 296-24-47505 (2), demonstrate that the assembly is safe without safety relief valves.

(ii) No vaporizer shall be equipped with fusible plugs.

(iii) In industrial and gas manufacturing plants, safety relief valves on vaporizers within a building shall be piped to a point outside the building and be discharged upward.

(5) Reinstallation of containers. Containers may be reinstalled if they do not show any evidence of harmful external corrosion or other damage. Where containers are reinstalled underground, the corrosion resistant coating shall be put in good condition (see (7)(f) of this section). Where containers are reinstalled above ground, the safety devices and gaging devices shall comply with (4) of this section and WAC 296-24-47505(19) respectively for aboveground containers.

(6) Capacity of containers. A storage container shall not exceed 90,000 gallons water capacity.

(7) Installation of storage containers.

(a) Containers installed above ground, except as provided in (7)(g) of this section, shall be provided with substantial masonry or noncombustible structural supports on firm masonry foundation.

(b) Aboveground containers shall be supported as follows:

(i) Horizontal containers shall be mounted on saddles in such a manner as to permit expansion and contraction. Structural metal supports may be employed when they are pro-

tected against fire in an approved manner. Suitable means of preventing corrosion shall be provided on that portion of the container in contact with the foundations or saddles.

(ii) Containers of 2,000 gallons water capacity or less may be installed with nonfireproofed ferrous metal supports if mounted on concrete pads or footings, and if the distance from the outside bottom of the container shell to the concrete pad, footing, or the ground does not exceed 24 inches.

(c) Any container may be installed with nonfireproofed ferrous metal supports if mounted on concrete pads or footings, and if the distance from the outside bottom of the container to the ground does not exceed 5 feet, provided the container is in an isolated location.

(d) Containers may be partially buried providing the following requirements are met:

(i) The portion of the container below the surface and for a vertical distance not less than 3 inches above the surface of the ground is protected to resist corrosion, and the container is protected against settling and corrosion as required for fully buried containers.

(ii) Spacing requirements shall be as specified for underground tanks in WAC 296-24-47505 (6)(b).

(iii) Relief valve capacity shall be as required for aboveground containers.

(iv) Container is located so as not to be subject to vehicular damage, or is adequately protected against such damage.

(v) Filling densities shall be as required for aboveground containers as specified in Table H-27. See WAC 296-24-47505.

(e) Containers buried underground shall be placed so that the top of the container is not less than 6 inches below grade. Where an underground container might be subject to abrasive action or physical damage due to vehicular traffic or other causes, then it shall be:

(i) Placed not less than 2 feet below grade, or

(ii) Otherwise protected against such physical damage.

It will not be necessary to cover the portion of the container to which manhole and other connections are affixed; however, where necessary, protection shall be provided against vehicular damage. When necessary to prevent floating, containers shall be securely anchored or weighted.

(f) Containers shall be given a protective coating before being placed underground. This coating shall be equivalent to hot-dip galvanizing or to two coatings of red lead followed by a heavy coating of coal tar or asphalt. In lowering the container into place, care shall be exercised to prevent damage to the coating. Any damage to the coating shall be repaired before backfilling.

(i) Containers shall be set on a firm foundation (firm earth may be used) and surrounded with earth or sand firmly tamped in place. Backfill should be free of rocks or other abrasive materials.

(g) Containers with foundations attached (portable or semiportable containers with suitable steel "runners" or "skids" and popularly known in the industry as "skid tanks") shall be designed, installed, and used in accordance with these rules subject to the following provisions:

(i) If they are to be used at a given general location for a temporary period not to exceed 6 months they need not have fire-resisting foundations or saddles but shall have adequate ferrous metal supports.

(ii) They shall not be located with the outside bottom of the container shell more than 5 feet above the surface of the ground unless fire-resisting supports are provided.

(iii) The bottom of the skids shall not be less than 2 inches or more than 12 inches below the outside bottom of the container shell.

(iv) Flanges, nozzles, valves, fittings, and the like, having communication with the interior of the container, shall be protected against physical damage.

(v) When not permanently located on fire-resisting foundations, piping connections shall be sufficiently flexible to minimize the possibility of breakage or leakage of connections if the container settles, moves, or is otherwise displaced.

(vi) Skids, or lugs for attachment of skids, shall be secured to the container in accordance with the code or rules under which the container is designed and built (with a minimum factor of safety of four) to withstand loading in any direction equal to four times the weight of the container and attachments when filled to the maximum permissible loaded weight.

(h) Field welding where necessary shall be made only on saddle plates or brackets which were applied by the manufacturer of the tank.

(i) For aboveground containers, secure anchorage or adequate pier height shall be provided against possible container flotation wherever sufficiently high floodwater might occur.

(j) When permanently installed containers are interconnected, provision shall be made to compensate for expansion, contraction, vibration, and settling of containers, and interconnecting piping. Where flexible connections are used, they shall be of an approved type and shall be designed for a bursting pressure of not less than five times the vapor pressure of the product at 100°F. The use of nonmetallic hose is prohibited for permanently interconnecting such containers.

(k) Container assemblies listed for interchangeable installation above ground or under ground shall conform to the requirements for aboveground installations with respect to safety relief capacity and filling density. For installation above ground all other requirements for aboveground installations shall apply. For installation under ground all other requirements for underground installations shall apply.

(8) Protection of container accessories.

(a) Valves, regulating, gaging, and other container accessory equipment shall be protected against tampering and physical damage. Such accessories shall also be so protected during the transit of containers intended for installation underground.

(b) On underground or combination aboveground-underground containers, the service valve handwheel, the terminal for connecting the hose, and the opening through which there can be a flow from safety relief valves shall be at least 4 inches above the container and this opening shall be located in the dome or housing. Underground systems shall be so installed that all the above openings, including the regulator vent, are located above the normal maximum water table.

(c) All connections to the underground containers shall be located within a substantial dome, housing, or manhole and with access thereto protected by a substantial cover.

(9) Drips for condensed gas. Where vaporized gas on the low-pressure side of the system may condense to a liquid at

normal operating temperatures and pressures, suitable means shall be provided for revaporization of the condensate.

(10) Damage from vehicles. When damage to LP-gas systems from vehicular traffic is a possibility, precautions against such damage shall be taken.

(11) Pits and drains. Every effort should be made to avoid the use of pits, except pits fitted with automatic flammable vapor detecting devices. No drains or blowoff lines shall be directed into or in proximity to sewer systems used for other purposes.

(12) General provisions applicable to systems in industrial plants (of 2,000 gallons water capacity and more) and to bulk filling plants.

(a) When standard watch service is provided, it shall be extended to the LP-gas installation and personnel properly trained.

(b) If loading and unloading are normally done during other than daylight hours, adequate lights shall be provided to illuminate storage containers, control valves, and other equipment.

(c) Suitable roadways or means of access for extinguishing equipment such as wheeled extinguishers or fire department apparatus shall be provided.

(d) To minimize trespassing or tampering, the area which includes container appurtenances, pumping equipment, loading and unloading facilities, and cylinder-filling facilities shall be enclosed with at least a 6-foot-high industrial type fence unless otherwise adequately protected. There shall be at least two means of emergency access.

(13) Container-charging plants.

(a) The container-charging room shall be located not less than:

(i) Ten feet from bulk storage containers.

(ii) Twenty-five feet from line of adjoining property which may be built upon.

(b) Tank truck filling station outlets shall be located not less than:

(i) Twenty-five feet from line of adjoining property which may be built upon.

(ii) Ten feet from pumps and compressors if housed in one or more separate buildings.

(c) The pumps or compressors may be located in the container-charging room or building, in a separate building, or outside of buildings. When housed in separate building, such building (a small noncombustible weather cover is not to be construed as a building) shall be located not less than:

(i) Ten feet from bulk storage tanks.

(ii) Twenty-five feet from line of adjoining property which may be built upon.

(iii) Twenty-five feet from sources of ignition.

(d) When a part of the container-charging building is to be used for a boiler room or where open flames or similar sources of ignition exist or are employed, the space to be so occupied shall be separated from container charging room by a partition wall or walls of fire-resistant construction continuous from floor to roof or ceiling. Such separation walls shall be without openings and shall be joined to the floor, other walls, and ceiling or roof in a manner to effect a permanent gas-tight joint.

(e) Electrical equipment and installations shall conform with WAC 296-24-47505 (17) and (18).

(14) Fire protection.

(a) Each bulk plant shall be provided with at least one approved portable fire extinguisher having a minimum rating of 12-B, C.

Note: For additional requirements relating to portable fire extinguishers see WAC 296-800-300.

(b) In industrial installations involving containers of 150,000 gallons aggregate water capacity or more, provision shall be made for an adequate supply of water at the container site for fire protection in the container area, unless other adequate means for fire control are provided. Water hydrants shall be readily accessible and so spaced as to provide water protection for all containers. Sufficient lengths of firehose shall be provided at each hydrant location on a hose cart, or other means provided to facilitate easy movement of the hose in the container area. It is desirable to equip the outlet of each hose line with a combination fog nozzle. A shelter shall be provided to protect the hose and its conveyor from the weather.

(15) Painting. Aboveground containers shall be kept properly painted.

(16) Lighting. Electrical equipment and installations shall conform to WAC 296-24-47505 (17) and (18).

(17) Vaporizers for internal combustion engines. The provisions of WAC 296-24-47511(8) shall apply.

(18) Gas regulating and mixing equipment for internal combustion engines. The provisions of WAC 296-24-47511(9) shall apply.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 01-17-033, § 296-24-47509, filed 8/8/01, effective 9/1/01; Order 73-5, § 296-24-47509, filed 5/9/73 and Order 73-4, § 296-24-47509, filed 5/7/73.]

WAC 296-24-47511 Liquefied petroleum gas as a motor fuel. (1) Application.

(a) This section applies to internal combustion engines, fuel containers, and pertinent equipment for the use of liquefied petroleum gases as a motor fuel on easily movable, readily portable units including self-propelled vehicles.

(b) Fuel containers and pertinent equipment for internal combustion engines using liquefied petroleum gas where installation is of the stationary type are covered by WAC 296-24-47509. This section does not apply to containers for transportation of liquefied petroleum gases nor to marine fuel use. All requirements of WAC 296-24-47505 apply to this section, unless otherwise noted in WAC 296-24-47505.

(2) General.

(a) Fuel may be used from the cargo tank of a truck while in transit, but not from cargo tanks on trailers or semitrailers. The use of fuel from the cargo tanks to operate stationary engines is permitted providing wheels are securely blocked.

(b) Passenger-carrying vehicles shall not be fueled while passengers are on board.

(c) Reserved.

(d) LP-gas fueled industrial trucks shall comply with the Standard for Type Designations, Areas of Use, Maintenance and Operation of Powered Industrial Trucks, NFPA 505-1969.

(e) Engines on vehicles shall be shut down while fueling if the fueling operation involves venting to the atmosphere.

(3) Design pressure and classification of fuel containers.

(a) Except as covered in (3)(b) and (c) of this section, containers shall be in accordance with Table H-32.

(b) Reserved.

TABLE H-32

Container type	For gases with vapor press. Not to exceed lb. per sq. in. (37.8°C.)	Minimum design pressure of container lb. per sq. in. gage	
		1949 and earlier editions of ASME Code (Par. U-68, U-69)	1949 edition of ASME Code (Par. U-200, 1U-201); 1950, 1952, 1956, 1959, 1962, 1965, and 1968 (Division I) editions of ASME Code; All editions of API-ASME Code ²
200 ¹	215	200	250

¹ Container type may be increased by increments of 25. The minimum design pressure of containers shall be 100% of the container type designation when constructed under 1949 or earlier editions of the ASME Code (Par. U-68 and U-69). The minimum design pressure of containers shall be 125% of the container type designation when constructed under: (1) The 1949 ASME Code (Par. U-200 and U-201), (2) 1950, 1952, 1956, 1959, 1962, 1965, and 1968 (Division I) editions of the ASME Code, and (3) all editions of the API-ASME Code.

² Construction of containers under the API-ASME Code is not authorized after July 1, 1961.

(c) Containers manufactured and maintained under DOT specifications and regulations may be used as fuel containers. When so used they shall conform to all requirements of this section.

(d) All container inlets and outlets except safety relief valves and gaging devices shall be labeled to designate whether they communicate with vapor or liquid space. (Labels may be on valves.)

(4) Installation of fuel containers.

(a) Containers shall be located in a place and in a manner to minimize the possibility of damage to the container. Containers located in the rear of trucks and buses, when protected by substantial bumpers, will be considered in conformance with this requirement. Fuel containers on passenger-carrying vehicles shall be installed as far from the engine as is practicable, and the passenger space and any space containing radio equipment shall be sealed from the container space to prevent direct seepage of gas to these spaces. The container compartment shall be vented to the outside. In case the fuel container is mounted near the engine or the exhaust system, the container shall be shielded against direct heat radiation.

(b) Containers shall be installed with as much clearance as practicable but never less than the minimum road clearance of the vehicle under maximum spring deflection. This minimum clearance shall be to the bottom of the container or to the lowest fitting on the container or housing, whichever is lower.

(c) Permanent and removable fuel containers shall be securely mounted to prevent jarring loose, slipping, or rotating, and the fastenings shall be designed and constructed to withstand static loading in any direction equal to twice the weight of the tank and attachments when filled with fuel using a safety factor of not less than four based on the ultimate strength of the material to be used. Field welding, when necessary, shall be made only on saddle plates, lugs or brackets, originally attached to the container by the tank manufacturer.

(d) Fuel containers on buses shall be permanently installed.

(e) Containers from which vapor only is to be withdrawn shall be installed and equipped with suitable connections to minimize the accidental withdrawal of liquid.

(5) Valves and accessories.

(a) Container valves and accessories shall have a rated working pressure of at least 250 p.s.i.g., and shall be of a type suitable for liquefied petroleum gas service.

(b) The filling connection shall be fitted with an approved double back-pressure check valve, or a positive shutoff in conjunction with an internal back-pressure check valve. On a removable container the filler valve may be a hand operated shutoff valve with an internal excess flow valve. Main shutoff valves on the container on liquid and vapor must be readily accessible.

(c) With the exceptions of (5)(d)(iii) of this section, filling connections equipped with approved automatic back-pressure check valves, and safety relief valves, all connections to the containers having openings for the flow of gas in excess of a No. 54 drill size shall be equipped with approved automatic excess flow valves to prevent discharge of content in case connections are broken.

(d) Liquid-level gaging devices:

(i) Variable liquid-level gages which require the venting of fuel to the atmosphere shall not be used on fuel containers of industrial trucks (including lift trucks).

(ii) On portable containers that may be filled in the vertical and/or horizontal position, the fixed liquid-level gage shall indicate maximum permitted filling level for both vertical and horizontal filling with the container oriented to place the safety relief valve in communication with the vapor space.

(iii) In the case of containers used solely in farm tractor service and charged at a point at least 50 feet from any important building, the fixed liquid-level gaging device may be so constructed that the outward flow of container content exceeds that passed by a No. 54 drill size opening, but in no case shall the flow exceed that passed by a No. 31 drill-size opening. An excess flow valve is not required. Fittings equipped with such restricted drill size opening and container on which they are used shall be marked to indicate the size of the opening.

(iv) All valves and connections on containers shall be adequately protected to prevent damage due to accidental contact with stationary objects or from loose objects thrown up from the road, and all valves shall be safeguarded against damage due to collision, overturning or other accident. For farm tractors where parts of the vehicle provide such protection to valves and fittings, the foregoing requirements shall be considered fulfilled. However, on removable type containers the protection for the fittings shall be permanently attached to the container.

(v) (Exchange of removable fuel containers preferably should be done outdoors but may be done indoors.) When removable fuel containers are used, means shall be provided in the fuel system to minimize the escape of fuel when the containers are exchanged. This shall be accomplished by one of the following methods:

(A) Using an approved automatic quick-closing coupling (a type closing in both directions when uncoupled) in the fuel line, or

(B) Closing the valve at the fuel container and allowing the engine to run until the fuel in the line is consumed.

(6) Piping—Including pipe, tubing, and fittings.

(a) Pipe from fuel container to first-stage regulator shall be not less than schedule 80 wrought iron or steel (black or galvanized), brass or copper; or seamless copper, brass, or steel tubing. Steel tubing shall have a minimum wall thickness of 0.049 inch. Steel pipe or tubing shall be adequately protected against exterior corrosion. Copper tubing shall be types K or L or equivalent having a minimum wall thickness of 0.032 inch. Approved flexible connections may be used between container and regulator or between regulator and gas-air mixer within the limits of approval. The use of aluminum pipe or tubing is prohibited. In the case of removable containers an approved flexible connection shall be used between the container and the fuel line.

(b) All piping shall be installed, braced, and supported so as to reduce to a minimum the possibility of vibration strains or wear.

(7) Safety devices.

(a) Spring-loaded internal type safety relief valves shall be used on all motor fuel containers.

(b) The discharge outlet from safety relief valves shall be located on the outside of enclosed spaces and as far as practicable from possible sources of ignition, and vented upward within 45 degrees of the vertical in such a manner as to prevent impingement of escaping gas upon containers, or parts of vehicles, or on vehicles in adjacent lines of traffic. A rain cap or other protector shall be used to keep water and dirt from collecting in the valve.

(c) When a discharge line from the container safety relief valve is used, the line shall be metallic, other than aluminum, and shall be sized, located, and maintained so as not to restrict the required flow of gas from the safety relief valve. Such discharge line shall be able to withstand the pressure resulting from the discharge of vapor when the safety relief valve is in the full open position. When flexibility is necessary, flexible metal hose or tubing shall be used.

(d) Portable containers equipped for volumetric filling may be filled in either the vertical or horizontal position only when oriented to place the safety relief valve in communication with the vapor space.

(e) WAC 296-24-47505 (10)(l) for hydrostatic relief valves shall apply.

(8) Vaporizers.

(a) Vaporizers and any part thereof and other devices that may be subjected to container pressure shall have a design pressure of at least 250 p.s.i.g.

(b) Each vaporizer shall have a valve or suitable plug which will permit substantially complete draining of the vaporizer. It shall be located at or near the lowest portion of the section occupied by the water or other heating medium.

(c) Vaporizers shall be securely fastened so as to minimize the possibility of becoming loosened.

(d) Each vaporizer shall be permanently marked at a visible point as follows:

(i) With the design pressure of the fuel-containing portion in p.s.i.g.

(ii) With the water capacity of the fuel-containing portion of the vaporizer in pounds.

(e) Devices to supply heat directly to a fuel container shall be equipped with an automatic device to cut off the supply of heat before the pressure inside the fuel container reaches 80 percent of the start to discharge pressure setting of the safety relief device on the fuel container.

(f) Engine exhaust gases may be used as a direct source of heat supply for the vaporization of fuel if the materials of construction of those parts of the vaporizer in contact with exhaust gases are resistant to the corrosive action of exhaust gases and the vaporizer system is designed to prevent excessive pressures.

(g) Vaporizers shall not be equipped with fusible plugs.

(9) Gas regulating and mixing equipment.

(a) Approved automatic pressure reducing equipment shall be installed in a secure manner between the fuel supply container and gas-air mixer for the purpose of reducing the pressure of the fuel delivered to the gas-air mixer.

(b) An approved automatic shutoff valve shall be provided in the fuel system at some point ahead of the inlet of the gas-air mixer, designed to prevent flow of fuel to the mixer when the ignition is off and the engine is not running. In the case of industrial trucks and engines operating in buildings other than those used exclusively to house engines, the automatic shutoff valve shall be designed to operate if the engine should stop. Atmospheric type regulators (zero governors) shall be considered adequate as an automatic shutoff valve only in cases of outdoor operation such as farm tractors, construction equipment, irrigation pump engines, and other outdoor stationary engine installations.

(c) The source of the air for combustion shall be completely isolated from the passenger compartment, ventilating system, or air-conditioning system.

(10) Stationary engines in buildings. Stationary engines and gas turbines installed in buildings, including portable engines used instead of or to supplement stationary engines, shall comply with the Standard for the Installation and Use of Stationary Combustion Engines and Gas Turbines, NFPA 37-1970, and the appropriate provisions of WAC 296-24-47505 through 296-24-47509.

(11) Portable engines in buildings.

(a) Portable engines may be used in buildings only for emergency use, except as provided by (11) of this section.

(b) Exhaust gases shall be discharged to outside the building or to an area where they will not constitute a hazard.

(c) Provision shall be made to supply sufficient air for combustion and cooling.

(d) An approved automatic shutoff valve shall be provided in the fuel system ahead of the engine, designed to prevent flow of fuel to the engine when the ignition is off or if the engine should stop.

(e) The capacity of LP-gas containers used with such engines shall comply with the applicable occupancy provision of WAC 296-24-47507(5).

(12) Industrial trucks inside buildings.

(a) Reserved.

(b) Reserved.

(c) Reserved.

(d) Trucks shall not be left unattended in areas occupied by the public.

(e) Reserved.

(13) Garaging LP-gas-fueled vehicles.

(a) LP-gas-fueled vehicles may be stored or serviced inside garages provided there are no leaks in the fuel system and the fuel tanks are not filled beyond the maximum filling capacity specified in WAC 296-24-47505 (12)(a).

(b) LP-gas-fueled vehicles being repaired in garages shall have the container shutoff valve closed except when fuel is required for engine operation.

(c) Such vehicles shall not be parked near sources of heat, open flames, or similar sources of ignition or near open pits unless such pits are adequately ventilated.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. 04-19-051, § 296-24-47511, filed 9/14/04, effective 2/1/05. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-094, § 296-24-47511, filed 8/17/99, effective 12/1/99; Order 73-5, § 296-24-47511, filed 5/9/73 and Order 73-4, § 296-24-47511, filed 5/7/73.]

WAC 296-24-47513 Storage of containers awaiting use or resale. (1) Application. This section shall apply to the storage of portable containers not in excess of one thousand pounds water capacity, filled or partially filled, at user location but not connected for use, or in storage for resale by dealers or resellers. This section shall not apply to containers stored at charging plants or at plants devoted primarily to the storage and distribution of LP-gas or other petroleum products.

(2) General.

(a) Containers in storage shall be located so as to minimize exposure to excessive temperature rise, physical damage, or tampering by unauthorized persons.

(b) Containers when stored inside shall not be located near exits, stairways, or in areas normally used or intended for the safe exit of people.

(c) Container valves shall be protected while in storage as follows:

(i) By setting into recess of container to prevent the possibility of their being struck if the container is dropped upon a flat surface, or

(ii) By ventilated cap or collar, fastened to container capable of withstanding blow from any direction equivalent to that of a thirty-pound weight dropped four feet. Construction must be such that a blow will not be transmitted to a valve or other connection.

(d) The outlet valves of containers in storage shall be closed.

(e) Empty containers which have been in LP-gas service should preferably be stored in the open. When stored inside, they shall be considered as full containers for the purpose of determining the maximum quantity of LP-gas permitted by this section.

(3) Storage within buildings frequented by the public.

(a) DOT specification containers having a maximum individual water capacity of two and one-half pounds, used with completely self-contained hand torches and similar applications, are permitted to be stored or displayed in a building frequented by the public. The display of such containers shall be limited to a total of twenty-four units of each brand and size. The total quantity on display and in storage shall not exceed two hundred pounds LP-gas.

(b) Storage as provided in subsection (5) of this section shall not be permitted within or attached to such a building.

(4) Storage within buildings not frequented by the public (such as industrial buildings).

(a) The quantity of LP-gas stored shall not exceed three hundred pounds (approximately two thousand five hundred fifty cubic feet in vapor form) except as provided in subsection (5) of this section.

(b) Containers carried as a part of service equipment on highway mobile vehicles are not to be considered in the total storage capacity in (a) of this subsection provided such vehicles are stored in private garages, and are limited to one container per vehicle with an LP-gas capacity of not more than one hundred pounds. All container valves shall be closed.

(5) Storage within special buildings or rooms.

(a) The quantity of LP-gas stored in special buildings or rooms shall not exceed ten thousand pounds.

(b) The walls, floors, and ceilings of container storage rooms that are within or adjacent to other parts of the building shall be constructed of material having at least a two-hour fire resistance rating.

(c) A portion of the exterior walls or roof having an area not less than ten percent of that of the combined area of the enclosing walls and roof shall be of explosion relieving construction.

(d) Each opening from such storage rooms to other parts of the building shall be protected by a one and one-half-hour "(B)" fire door listed by a nationally recognized testing laboratory. Refer to federal regulation 29 CFR 1910.7 for definition of nationally recognized testing laboratory.

(e) Such rooms shall have no open flames for heating or lighting.

(f) Such rooms shall be adequately ventilated both top and bottom to the outside only. The openings from such vents shall be at least five feet away from any other opening into any building.

(g) The floors of such rooms shall not be below ground level. Any space below the floor shall be of solid fill or properly ventilated to the open air.

(h) Such storage rooms shall not be located adjoining the line of property occupied by schools, churches, hospitals, athletic fields or other points of public gathering.

(i) Fixed electrical equipment shall be installed in accordance with WAC 296-24-47505(18).

(6) Storage outside of buildings.

(a) Storage outside of buildings, for containers awaiting use or resale, shall be located in accordance with Table H-33 with respect to:

(i) The nearest important building or group of buildings;

(ii) The line of adjoining property which may be built upon;

(iii) Busy thoroughfares;

(vi) The line of adjoining property occupied by schools, churches, hospitals, athletic fields, or other points of public gathering.

TABLE H-33

Quantity of LP-Gas Stored:	Distance
500 pounds or less _____	0
501 to 2,500 pounds _____	0*
2,501 to 6,000 pounds _____	10 feet
6,001 to 10,000 pounds _____	20 feet
Over 10,000 pounds _____	25 feet

* Container or containers shall be at least ten feet from any building on adjoining property, any sidewalk, or any of the exposures described in (a)(iii) or (iv) of this subsection.

(b) Containers shall be in a suitable enclosure or otherwise protected against tampering.

(7) Fire protection. Storage locations other than supply depots separated and located apart from dealer, reseller, or user establishments shall be provided with at least one approved portable fire extinguisher having a minimum rating of 8-B, C.

Note: For additional requirements relating to portable fire extinguishers see WAC 296-800-300.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 01-17-033, § 296-24-47513, filed 8/8/01, effective 9/1/01. Statutory Authority: Chapter 49.17 RCW. 88-23-054 (Order 88-25), § 296-24-47513, filed 11/14/88. Statutory Authority: RCW 49.17.040, 49.17.050, 49.17.240, chapters 43.22 and 42.30 RCW. 80-17-015 (Order 80-21), § 296-24-47513, filed 11/13/80; Order 76-6, § 296-24-47513, filed 3/1/76; Order 73-5, § 296-24-47513, filed 5/9/73 and Order 73-4, § 296-24-47513, filed 5/7/73.]

WAC 296-24-47517 Liquefied petroleum gas service stations. (1) Application. This section applies to storage containers, and dispensing devices, and pertinent equipment in service stations where LP-gas is stored and is dispensed into fuel tanks of motor vehicles. See WAC 296-24-47511 for requirements covering use of LP-gas as a motor fuel. All requirements of WAC 296-24-47505 apply to this section unless otherwise noted.

(2) Design pressure and classification of storage containers. Storage containers shall be designed and classified in accordance with Table H-34.

(3) Container valves and accessories.

(a) A filling connection on the container shall be fitted with one of the following:

(i) A combination back-pressure check and excess flow valve.

(ii) One double or two single back-pressure valves.

(iii) A positive shutoff valve, in conjunction with either:

(A) An internal back-pressure valve, or

(B) An internal excess flow valve.

In lieu of an excess flow valve, filling connections may be fitted with a quick-closing internal valve, which shall remain closed except during operating periods. The mechanism for such valves may be provided with a secondary control which will cause it to close automatically in case of fire. When a fusible plug is used its melting point shall not exceed 220°F.

TABLE H-34

Container type	For gases with vapor press. not to exceed lb. per sq. in. gage at 100°F. (37.8°C.)	Minimum design pressure of container, lb. per sq. in. gage	
		1949 and earlier editions of ASME Code (Par. U-68, U-69)	1949 edition of ASME Code (Par. U-200, U-201); 1950, 1952 1956, 1959, 1962, 1965, and 1968 (Division I) editions of ASME Code; All editions of API-ASME Code ²
200 ¹	215	200	250

¹ Container type may be increased by increments of 25. The minimum design pressure of containers shall be 100% of the container type designation when constructed under 1949 or earlier editions of ASME Code (Par. U-68 and U-69). The minimum design pressure of containers shall be 125% of the container type designation when constructed

under: (1) The 1949 ASME Code (Par. U-200 and U-201), (2) 1950, 1952, 1956, 1959, 1962, 1965, and 1968 (Division I) editions of the ASME Code, and (3) all editions of the API-ASME Code.

² Construction of containers under the API-ASME Code is not authorized after July 1, 1961.

(b) A filling pipe inlet terminal not on the container shall be fitted with a positive shutoff valve in conjunction with either:

(i) A back pressure check valve, or

(ii) An excess flow check valve.

(c) All openings in the container except those listed below shall be equipped with approved excess flow check valves:

(i) Filling connections as provided in (3)(a) of this section.

(ii) Safety relief connections as provided in WAC 296-24-47505 (7)(b).

(iii) Liquid-level gaging devices as provided in WAC 296-24-47505 (7)(d) and (19)(d).

(iv) Pressure gage connections as provided in WAC 296-24-47505 (7)(e).

(d) All container inlets and outlets except those listed below shall be labeled to designate whether they connect with vapor or liquid (labels may be on valves):

(i) Safety relief valves.

(ii) Liquid-level gaging devices.

(iii) Pressure gages.

(e) Each storage container shall be provided with a suitable pressure gage.

(4) Safety-relief valves.

(a) All safety-relief devices shall be installed as follows:

(i) On the container and directly connected with the vapor space.

(ii) Safety-relief valves and discharge piping shall be protected against physical damage. The outlet shall be provided with loose-fitting rain caps. There shall be no return bends or restrictions in the discharge piping.

(iii) The discharge from two or more safety relief valves having the same pressure settings may be run into a common discharge header. The cross-sectional area of such header shall be at least equal to the sum of the individual discharges.

(iv) Discharge from any safety relief device shall not terminate in any building nor beneath any building.

(b) Aboveground containers shall be provided with safety relief valves as follows:

(i) The rate of discharge, which may be provided by one or more valves, shall be not less than that specified in WAC 296-24-47505 (10)(b).

(ii) The discharge from safety relief valves shall be vented to the open air unobstructed and vertically upwards in such a manner as to prevent any impingement of escaping gas upon the container; loose-fitting rain caps shall be used. On a container having a water capacity greater than 2,000 gallons, the discharge from the safety relief valves shall be vented away from the container vertically upwards to a point at least 7 feet above the container. Suitable provisions shall be made so that any liquid or condensate that may accumulate inside of the relief valve or its discharge pipe will not render the valve inoperative. If a drain is used, a means shall be provided to protect the container, adjacent containers, piping, or

equipment against impingement of flame resulting from ignition of the product escaping from the drain.

(c) Underground containers shall be provided with safety relief valves as follows:

(i) The discharge from safety-relief valves shall be piped vertically upward to a point at least 10 feet above the ground. The discharge lines or pipes shall be adequately supported and protected against physical damage.

(ii) Where there is a probability of the manhole or housing becoming flooded, the discharge from regulator vent lines should be above the highest probable water level.

(iii) If no liquid is put into a container until after it is buried and covered, the rate of discharge of the relief valves may be reduced to not less than 30 percent of the rate shown in WAC 296-24-47505 (10)(b). If liquid fuel is present during installation of containers, the rate of discharge shall be the same as for aboveground containers. Such containers shall not be uncovered until emptied of liquid fuel.

(5) Capacity of liquid containers. Individual storage containers shall not exceed 30,000 gallons water capacity.

(6) Installation of storage containers.

(a) Each storage container used exclusively in service station operation shall comply with the following table which specifies minimum distances to a building, groups of buildings, and adjoining property lines which may be built upon.

Water capacity per container (gallons)	Minimum distances	
	Aboveground and underground (feet)	Between aboveground containers (feet)
Up to 2,000	25	3
Over 2,000	50	5

Note: The above distances may be reduced to not less than 10 feet for service station buildings of other than wood frame construction.

(i) Readily ignitable material including weeds and long dry grass, shall be removed within 10 feet of containers.

(ii) The minimum separation between LP-gas containers and flammable liquid tanks shall be 20 feet and the minimum separation between a container and the centerline of the dike shall be 10 feet.

(iii) LP-gas containers located near flammable liquid containers shall be protected against the flow or accumulation of flammable liquids by diking, diversion curbs, or grading.

(iv) LP-gas containers shall not be located within diked areas for flammable liquid containers.

(v) Field welding is permitted only on saddle plates or brackets which were applied by the container manufacturer.

(vi) When permanently installed containers are interconnected, provision shall be made to compensate for expansion, contraction, vibration, and settling of containers and interconnecting piping. Where flexible connections are used, they shall be of an approved type and shall be designed for a bursting pressure of not less than five times the vapor pressure of the product at 100°F. The use of nonmetallic hose is prohibited for interconnecting such containers.

(vii) Where high water table or flood conditions may be encountered protection against container flotation shall be provided.

(b) Aboveground containers shall be installed in accordance with this section.

(i) Containers may be installed horizontally or vertically.

(ii) Containers shall be protected by crash rails or guards to prevent physical damage unless they are so protected by virtue of their location. Vehicles shall not be serviced within 10 feet of containers.

(iii) Container foundations shall be of substantial masonry or other noncombustible material. Containers shall be mounted on saddles which shall permit expansion and contraction, and shall provide against the excessive concentration of stresses. Corrosion protection shall be provided for tank-mounting areas. Structural metal container supports shall be protected against fire. This protection is not required on prefabricated storage and pump assemblies, mounted on a common base, with container bottom not more than 24 inches above ground and whose water capacity is 2,000 gallons or less if the piping connected to the storage and pump assembly is sufficiently flexible to minimize the possibility of breakage or leakage in the event of failure of the container supports.

(c) Underground containers shall be installed in accordance with this section.

(i) Containers shall be given a protective coating before being placed under ground. This coating shall be equivalent to hot-dip galvanizing or to two coatings of red lead followed by a heavy coating of coal tar or asphalt. In lowering the container into place, care shall be exercised to minimize abrasion or other damage to the coating. Damage to the coating shall be repaired before back-filling.

(ii) Containers shall be set on a firm foundation (firm earth may be used) and surrounded with earth or sand firmly tamped in place. Backfill should be free of rocks or other abrasive materials.

(iii) A minimum of 2 feet of earth cover shall be provided. Where ground conditions make compliance with this requirement impractical, equivalent protection against physical damage shall be provided. The portion of the container to which manhole and other connections are attached need not be covered. If the location is subjected to vehicular traffic, containers shall be protected by a concrete slab or other cover adequate to prevent the weight of a loaded vehicle imposing concentrated direct loads on the container shell.

(7) Protection of container fittings. Valves, regulators, gages, and other container fittings shall be protected against tampering and physical damage.

(8) Transport truck unloading point.

(a) During unloading, the transport truck shall not be parked on public thoroughfares and shall be at least 5 feet from storage containers and shall be positioned so that shut-off valves are readily accessible.

(b) The filling pipe inlet terminal shall not be located within a building nor within 10 feet of any building or driveway. It shall be protected against physical damage.

(9) Piping, valves, and fittings.

(a) Piping may be underground, above ground, or a combination of both. It shall be well supported and protected against physical damage and corrosion.

(b) Piping laid beneath driveways shall be installed to prevent physical damage by vehicles.

(c) Piping shall be wrought iron or steel (black or galvanized), brass or copper pipe; or seamless copper, brass, or steel tubing and shall be suitable for a minimum pressure of 250 p.s.i.g. Pipe joints may be screwed, flanged, brazed, or

welded. The use of aluminum alloy piping or tubing is prohibited.

(d) All shutoff valves (liquid or gas) shall be suitable for liquefied petroleum gas service and designed for not less than the maximum pressure to which they may be subjected. Valves which may be subjected to container pressure shall have a rated working pressure of at least 250 p.s.i.g.

(e) All materials used for valve seats, packing, gaskets, diaphragms, etc., shall be resistant to the action of LP-gas.

(f) Fittings shall be steel, malleable iron, or brass having a minimum working pressure of 250 p.s.i.g. Cast iron pipe fittings, such as ells, tees and unions shall not be used.

(g) All piping shall be tested after assembly and proved free from leaks at not less than normal operating pressures.

(h) Provision shall be made for expansion, contraction, jarring, and vibration, and for settling. This may be accomplished by flexible connections.

(10) Pumps and accessories. All pumps and accessory equipment shall be suitable for LP-gas service, and designed for not less than the maximum pressure to which they may be subjected. Accessories shall have a minimum rated working pressure of 250 p.s.i.g. Positive displacement pumps shall be equipped with suitable pressure actuated bypass valves permitting flow from pump discharge to storage container or pump suction.

(11) Dispensing devices.

(a) Meters, vapor separators, valves, and fittings in the dispenser shall be suitable for LP-gas service and shall be designed for a minimum working pressure of 250 p.s.i.g.

(b) Provisions shall be made for venting LP-gas contained in a dispensing device to a safe location.

(c) Pumps used to transfer LP-gas shall be equipped to allow control of the flow and to prevent leakage or accidental discharge. Means shall be provided outside the dispensing device to readily shut off the power in the event of fire or accident.

(d) A manual shutoff valve and an excess flow check valve shall be installed downstream of the pump and ahead of the dispenser inlet.

(i) Dispensing hose shall be resistant to the action of LP-gas in the liquid phase and designed for a minimum bursting pressure of 1,250 p.s.i.g.

(ii) An excess flow check valve or automatic shutoff valve shall be installed at the terminus of the liquid line at the point of attachment of the dispensing hose.

(e) LP-gas dispensing devices shall be located not less than 10 feet from aboveground storage containers greater than 2,000 gallons water capacity. The dispensing devices shall not be less than 20 feet from any building (not including canopies), basement, cellar, pit, or line of adjoining property which may be built upon and not less than 10 feet from sidewalks, streets, or thoroughfares. No drains or blowoff lines shall be directed into or in proximity to the sewer systems used for other purposes.

(i) LP-gas dispensing devices shall be installed on a concrete foundation or as part of a complete storage and dispensing assembly mounted on a common base, and shall be adequately protected from physical damage.

(ii) LP-gas dispensing devices shall not be installed within a building except that they may be located under a weather shelter or canopy provided this area is not enclosed

on more than two sides. If the enclosing sides are adjacent to each other, the area shall be properly ventilated.

(f) The dispensing of LP-gas into the fuel container of a vehicle shall be performed by a competent attendant who shall remain at the LP-gas dispenser during the entire transfer operation.

(12) Additional standards. There shall be no smoking on the driveway of service stations in the dispensing areas or transport truck unloading areas. Conspicuous signs prohibiting smoking shall be posted within sight of the customer being served. Letters on such signs shall be not less than 4 inches high. The motors of all vehicles being fueled shall be shut off during the fueling operations.

(13) Electrical. Electrical equipment and installations shall conform to WAC 296-24-47505 (17) and (18).

(14) Fire protection. Each service station shall be provided with at least one approved portable fire extinguisher having at least an 8-B, C, rating.

Note: For additional requirements relating to portable fire extinguishers see WAC 296-800-300.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 01-17-033, § 296-24-47517, filed 8/8/01, effective 9/1/01; Order 73-5, § 296-24-47517, filed 5/9/73 and Order 73-4, § 296-24-47517, filed 5/7/73.]

PART F-2 STORAGE AND HANDLING OF ANHYDROUS AMMONIA

Note: Storage and handling of anhydrous ammonia has been moved to chapter 296-826 WAC

PART G-1 MEANS OF EGRESS

WAC 296-24-55001 Definitions. (1) Approved. For the purposes of chapter 296-24 WAC, Parts G-1, G-2 and G-3, approved shall mean listed or approved equipment by a nationally recognized testing laboratory. Refer to WAC 296-24-58503 (3)(c)(iv)(A) for definition of listed, and federal regulation 29 CFR 1910.7 for nationally recognized testing laboratory.

(2) Emergency action plan. A plan for a workplace, or parts thereof, describing what procedures the employer and employees must take to ensure employee safety from fire or other emergencies.

(3) Emergency escape route. The route that employees are directed to follow in the event they are required to evacuate the workplace or seek a designated refuge area.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 01-17-033, § 296-24-55001, filed 8/8/01, effective 9/1/01. Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-24-55001, filed 7/20/94, effective 9/20/94; 88-23-054 (Order 88-25), § 296-24-55001, filed 11/14/88. Statutory Authority: RCW 49.17.040 and 49.17.050. 82-02-003 (Order 81-32), § 296-24-55001, filed 12/24/81; Order 73-5, § 296-24-55001, filed 5/9/73 and Order 73-4, § 296-24-55001, filed 5/7/73.]

WAC 296-24-56525 Automatic sprinkler systems. All automatic sprinkler systems shall be continuously maintained in reliable operating condition at all times, and such periodic inspections and tests shall be made as are necessary to assure proper maintenance.

[Order 73-5, § 296-24-56525, filed 5/9/73 and Order 73-4, § 296-24-56525, filed 5/7/73.]

WAC 296-24-56527 Fire alarm signaling systems.

The employer shall assure that fire alarm signaling systems are maintained and tested in accordance with the requirements of WAC 296-800-31080.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060. 04-07-161, § 296-24-56527, filed 3/23/04, effective 6/1/04. Statutory Authority: RCW 49.17.040 and 49.17.050. 82-02-003 (Order 81-32), § 296-24-56527, filed 12/24/81; Order 73-5, § 296-24-56527, filed 5/9/73 and Order 73-4, § 296-24-56527, filed 5/7/73.]

WAC 296-24-567 Employee emergency plans and fire prevention plans. (1) Emergency action plan.

(a) Scope and application. This subdivision applies to all emergency action plans required by a particular WISHA standard. The emergency action plan shall be in writing, and shall cover those designated actions employers and employees must take to ensure employee safety from fire and other emergencies.

(b) Elements. The following elements, at a minimum, shall be included in the plan:

(i) Emergency escape procedures and emergency escape route assignments;

(ii) Procedures to be followed by employees who remain to operate critical plant operations before they evacuate;

(iii) Procedures to account for all employees after emergency evacuation has been completed;

(iv) Rescue and medical duties for those employees who are to perform them;

(v) The preferred means of reporting fires and other emergencies; and

(vi) Names or regular job titles of persons or departments who can be contacted for further information or explanation of duties under the plan.

(c) Alarm systems.

You must establish an employee alarm system which complies with WAC 296-800-310. The employee alarm system must provide warning for necessary emergency action as called for in your emergency action plan. The employee alarm must be distinctive and recognizable as a signal to perform actions designed under the emergency action plan.

(d) Evacuation. The employer shall establish in the emergency action plan the types of evacuation to be used in emergency circumstances.

(e) Training.

(i) Before implementing the emergency action plan, the employer shall designate and train a sufficient number of persons to assist in the safe and orderly emergency evacuation of employees.

(ii) The employer shall review the plan with each employee covered by the plan at the following times:

(A) Initially when the plan is developed;

(B) Whenever the employee's responsibilities or designated actions under the plan change; and

(C) Whenever the plan is changed.

(iii) The employer shall review with each employee upon initial assignment those parts of the plan which the employee must know to protect the employee in the event of an emergency. The written plan shall be kept at the workplace and made available for employee review.

(2) Fire prevention plan.

(a) Scope and application. This subsection applies to all fire prevention plans required by a particular WISHA standard. The fire prevention plan shall be in writing.

(b) Elements. The following elements, at a minimum, shall be included in the fire prevention plan:

(i) A list of the major workplace fire hazards and their proper handling and storage procedures, potential ignition sources (such as welding, smoking and others) and their control procedures, and the type of fire protection equipment or systems which can control a fire involving them;

(ii) Names or regular job titles of those personnel responsible for maintenance of equipment and systems installed to prevent or control ignitions or fires; and

(iii) Names or regular job titles of those personnel responsible for control of fuel source hazards.

(c) Housekeeping. The employer shall control accumulations of flammable and combustible waste materials and residues so that they do not contribute to a fire emergency. The housekeeping procedures shall be included in the written fire prevention plan.

(d) Training.

(i) The employer shall apprise employees of the fire hazards of the materials and processes to which they are exposed.

(ii) The employer shall review with each employee upon initial assignment those parts of the fire prevention plan which the employee must know to protect the employee in the event of an emergency. The written plan shall be kept in the workplace and made available for employee review.

(e) Maintenance. The employer shall regularly and properly maintain, according to established procedures, equipment and systems installed on heat producing equipment to prevent accidental ignition of combustible materials. The maintenance procedures shall be included in the written fire prevention plan.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 01-11-038, § 296-24-567, filed 5/9/01, effective 9/1/01. Statutory Authority: Chapter 49.17 RCW. 89-11-035 (Order 89-03), § 296-24-567, filed 5/15/89, effective 6/30/89. Statutory Authority: RCW 49.17.040 and 49.17.050. 82-02-003 (Order 81-32), § 296-24-567, filed 12/24/81.]

WAC 296-24-56701 Appendix. This appendix serves as a nonmandatory guideline to assist employers in complying with the appropriate requirements.

(1) Employee emergency plans. Emergency action plan elements. The emergency action plan should address emergencies that the employer may reasonably expect in the workplace. Examples are: Fire, toxic chemical releases; hurricanes; tornadoes; blizzards; floods; and others. The elements of the emergency action plan presented in WAC 296-24-567 (1)(b) can be supplemented by the following to more effectively achieve employee safety and health in an emergency. The employer should list in detail the procedures to be taken by those employees who have been selected to remain behind to care for essential plant operations until their evacuations become absolutely necessary. Essential plant operations may include the monitoring of plant power supplies, water supplies, and other essential services which cannot be shut down for every emergency alarm. Essential plant operations may also include chemical or manufacturing processes

which must be shut down in stages or steps where certain employees must be present to assure that safe shut down procedures are completed.

The use of floor plans or workplace maps which clearly show the emergency escape routes should be included in the emergency action plan. Color coding will aid employees in determining their route assignments.

The employer should also develop and explain in detail what rescue and medical first-aid duties are to be performed and by whom. All employees are to be told what actions they are to take in these emergency situations that the employer anticipates may occur in the workplace.

(2) Emergency evacuation. At the time of an emergency, employees should know what type of evacuation is necessary and what their role is in carrying out the plan. In some cases where the emergency is very grave, total and immediate evacuation of all employees is necessary. In other emergencies, a partial evacuation of nonessential employees with a delayed evacuation of others may be necessary for continued plant operation. In some cases, only those employees in the immediate area of the fire may be expected to evacuate or move to a safe area such as when a local application fire suppression system discharge employee alarm is sounded. Employees must be sure that they know what is expected of them in all such emergency possibilities which have been planned in order to provide assurance of their safety from fire or other emergency.

The designation of refuge or safe areas for evacuation should be determined and identified in the plan. In a building divided into fire zones by fire walls, the refuge area may still be within the same building but in a different zone from where the emergency occurs.

Exterior refuge or safe areas may include parking lots, open fields or streets which are located away from the site of the emergency and which provide sufficient space to accommodate the employees. Employees should be instructed to move away from the exit discharge doors of the building, and to avoid congregating close to the building where they may hamper emergency operations.

(3) Emergency action plan training. The employer should assure that an adequate number of employees are available at all times during working hours to act as evacuation wardens so that employees can be swiftly moved from the danger location to the safe areas. Generally, one warden for each twenty employees in the workplace should be able to provide adequate guidance and instruction at the time of a fire emergency. The employees selected or who volunteer to serve as wardens should be trained in the complete workplace layout and the various alternative escape routes from the workplace. All wardens and fellow employees should be made aware of handicapped employees who may need extra assistance, such as using the buddy system, and of hazardous areas to be avoided during emergencies. Before leaving, wardens should check rooms and other enclosed spaces in the workplace for employees who may be trapped or otherwise unable to evacuate the area.

After the desired degree of evacuation is completed, the wardens should be able to account for or otherwise verify that all employees are in the safe areas.

In buildings with several places of employment, employers are encouraged to coordinate their plans with the other

employers in the building. A building-wide or standardized plan for the whole building is acceptable provided that the employers inform their respective employees of their duties and responsibilities under the plan. The standardized plan need not be kept by each employer in the multiemployer building provided there is an accessible location within the building where the plan can be reviewed by affected employees. When multiemployer, building-wide plans are not feasible, employers should coordinate their plans with the other employers within the building to assure that conflicts and confusion are avoided during time of emergencies. In multi-story buildings where more than one employer is on a single floor, it is essential that these employers coordinate their plans with each other to avoid conflicts and confusion.

(4) Fire prevention housekeeping. The standard calls for the control of accumulations of flammable and combustible waste materials.

It is the intent of this standard to assure that hazardous accumulations of combustible waste materials are controlled so that a fast developing fire, rapid spread of toxic smoke, or an explosion will not occur. This does not necessarily mean that each room has to be swept each day. Employers and employees should be aware of the hazardous properties of materials in their workplaces, and the degree of hazard each poses. Certainly, oil soaked rags have to be treated differently than general paper trash in office areas. However, large accumulations of waste paper or corrugated boxes, etc., can pose a significant fire hazard. Accumulations of materials which can cause large fires or generate dense smoke that are easily ignited or may start from spontaneous combustion, are the types of materials with which this standard is concerned. Such combustible materials may be easily ignited by matches, welder's sparks, cigarettes, and similar low level energy ignition sources.

(5) Maintenance of equipment under the fire prevention plan. Certain equipment is often installed in workplaces to control heat sources or to detect fuel leaks. An example is a temperature limit switch often found on deep-fat food fryers found in restaurants. There may be similar switches for high temperature dip tanks, or flame failure and flashback arrester devices on furnaces and similar heat producing equipment. If these devices are not properly maintained or if they become inoperative, a definite fire hazard exists. Again employees and supervisors should be aware of the specific type of control devices on equipment involved with combustible materials in the workplace and should make sure, through periodic inspection or testing, that these controls are operable. Manufacturers' recommendations should be followed to assure proper maintenance procedures.

[Statutory Authority: RCW 49.17.040 and 49.17.050. 82-02-003 (Order 81-32), § 296-24-56701, filed 12/24/81.]

PART G-2 FIRE PROTECTION

WAC 296-24-585 Fire protection.

[Order 73-5, § 296-24-585, filed 5/9/73 and Order 73-4, § 296-24-585, filed 5/7/73.]

WAC 296-24-58501 Definitions applicable to fire protection. (1) "Class A fires" are fires in ordinary combustible materials, such as wood, cloth, paper, and rubber.

(2) "Class B fires" are fires in flammable liquids, gases, and greases.

(3) "Class C fires" are fires which involve energized electrical equipment where the electrical nonconductivity of the extinguishing media is of importance. (When electrical equipment is deenergized, extinguisher for Class A or B fires may be used safely.)

(4) "Class D fires" are fires in combustible metals, such as magnesium, titanium, zirconium, sodium, and potassium.

(5) Classification of portable fire extinguishers: "Portable fire extinguishers" are classified for use on certain classes of fires and rated for relative extinguishing effectiveness at a temperature of plus 70°F by nationally recognized testing laboratories. This is based upon the preceding classification of fires and the fire extinguishment potentials as determined by fire tests.

Note: The classification and rating system described in this section is that used by Underwriters' Laboratories, Inc. and Underwriters' Laboratories of Canada and is based on extinguishing preplanned fires of determined size and description as follows:

(a) Class A rating—Wood and excelsior fires excluding deep-seated conditions.

(b) Class B rating—Two-inch depth gasoline fires in square pans.

(c) Class C rating—No fire test. Agent must be a non-conductor of electricity.

(d) Class D rating—Special tests on specific combustible metal fires.

(6) A "light hazard" is a situation where the amount of combustibles or flammable liquids present is such that fires of small size may be expected. These may include offices, schoolrooms, churches, assembly halls, telephone exchanges, etc.

(7) An "ordinary hazard" is a situation where the amount of combustibles or flammable liquids present is such that fires of moderate size may be expected. These may include mercantile storage and display, auto showrooms, parking garages, light manufacturing, warehouses not classified as extra hazard, school shop areas, etc.

(8) An "extra hazard" is a situation where the amount of combustibles or flammable liquids present is such that fires of severe magnitude may be expected. These may include woodworking, auto repair, aircraft servicing, warehouses with high-piled (14 feet or higher) combustibles, and processes such as flammable liquid handling, painting, dipping, etc.

(9) Sprinkler system: A "sprinkler system," for fire protection purposes, is an integrated system of underground and overhead piping designed in accordance with fire protection engineering standards. The system includes a suitable water supply, such as a gravity tank, fire pump, reservoir, or pressure tank and/or connection by underground piping to a city main. The portion of the sprinkler system above ground is a network of specially sized or hydraulically designed piping installed in a building, structure or area, generally overhead, and to which sprinklers are connected in a systematic pattern. The system includes a controlling valve and a device for actu-

ating an alarm when the system is in operation. The system is usually activated by heat from a fire and discharges water over the fire area.

Note: The design and installation of water supply facilities such as gravity tanks, fire pumps, reservoirs, or pressure tanks, and underground piping are covered by NFPA Standards No. 22-1970, Water Tanks for Private Fire Protection; No. 20-1970, Installation of Centrifugal Fire Pumps and No. 24-1970, Outside Protection.

(10) Sprinkler alarms: A "sprinkler alarm" unit is an assembly of apparatus approved for the service and so constructed and installed that any flow of water from a sprinkler system equal to or greater than that from a single automatic sprinkler will result in an audible alarm signal on the premises.

(11) Class of service—Standpipe systems: "Standpipe systems" are grouped into three general classes of service for the intended use in the extinguishment of fire.

(a) Class I: For use by fire departments and those trained in handling heavy fire streams (2 1/2-inch hose).

(b) Class II: For use primarily by the building occupants until the arrival of the fire department (small hose).

(c) Class III: For use by either fire departments and those trained in handling heavy hose streams or by the building occupants.

(12) Class I service: "Class I service" is a standpipe system capable of furnishing the effective fire streams required during the more advanced stages of fire on the inside of buildings or for exposure fire.

(13) Class II service: "Class II service" is a standpipe system which affords a ready means for the control of incipient fires by the occupants of buildings during working hours and by watchperson and those present during the night time and holidays.

(14) Class III service: "Class III service" is a standpipe system capable of furnishing the effective fire streams required during the more advanced stages of fire on the inside of buildings as well as providing a ready means for the control of fires by the occupants of the building.

(15) Standpipe system: "Standpipe systems" are usually of the following types:

(a) A wet standpipe system having a supply valve open and water pressure maintained at all times.

(b) A standpipe system so arranged through the use of approved devices as to admit water to the system automatically by opening a hose valve.

(c) A standpipe system arranged to admit water to the system through manual operation of approved remote control devices located at each hose station.

(d) Dry standpipe having no permanent water supply. See also (11) of this section.

(16) Type I storage: "Type I storage" is that in which combustible commodities or noncombustible commodities involving combustible packaging or storage aids are stored over 15 feet but not more than 21 feet high in solid piles or over 12 feet but not more than 21 feet high in piles that contain horizontal channels. Minor quantities of commodities of hazard greater than ordinary combustibles may be included without affecting this general classification.

(17) Type II storage: "Type II storage" is that in which combustible commodities or noncombustible commodities

involving combustible packaging or storage aids are stored not over 15 feet high in solid piles or not over 12 feet high in piles that contain horizontal channels. Minor quantities of commodities of hazard greater than ordinary combustibles may be included without affecting this general classification.

(18) Type III storage: "Type III storage" is that in which the stored commodities, packaging, and storage aids are non-combustible or contain only a small concentration of combustibles which are incapable of producing a fire that would cause appreciable damage to the commodities stored or to noncombustible wall, floor or roof construction. Ordinary combustible commodities in completely sealed noncombustible containers may qualify in this classification. General commodity storage that is subject to frequent changing and storage of combustible packaging and storage aids is excluded from this category.

(19) Approved: "Approved" means listed or approved by: (a) At least one of the following nationally recognized testing laboratories: Factory Mutual Engineering Corp.; Underwriters' Laboratories, Inc., or (b) federal agencies such as Mine Safety and Health Administration (MSHA); the National Institute for Occupational Safety and Health (NIOSH); Department of Transportation; or U.S. Coast Guard, which issue approvals for such equipment.

[Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-24-58501, filed 7/20/94, effective 9/20/94; Order 74-27, § 296-24-58501, filed 5/7/74; Order 73-5, § 296-24-58501, filed 5/9/73 and Order 73-4, § 296-24-58501, filed 5/7/73.]

WAC 296-24-58503 Scope, application and definitions applicable. (1) Scope. This section contains requirements for fire brigades, and all portable and fixed fire suppression equipment, fire detection systems, and fire or employee alarm systems installed to meet the fire protection requirements of this chapter.

(2) Application. This section applies to all employments except for maritime, construction and agriculture.

(3) Definitions applicable to this section.

(a) "After-flame," means the time a test specimen continues to flame after the flame source has been removed.

(b) "Aqueous film forming foam (AFFF)," means a fluorinated surfactant with a foam stabilizer which is diluted with water to act as a temporary barrier to exclude air from mixing with the fuel vapor by developing an aqueous film on the fuel surface of some hydrocarbons which is capable of suppressing the generation of fuel vapors.

(c) "Approved," means acceptable to the director under the following criteria:

(i) If it is accepted, or certified, or listed, or labeled or otherwise determined to be safe by a nationally recognized testing laboratory; or

(ii) With respect to an installation or equipment of a kind which no nationally recognized testing laboratory accepts, certifies, lists, labels, or determines to be safe, if it is inspected or tested by another federal agency and found in compliance with the provisions of the applicable National Fire Protection Association Fire Code; or

(iii) With respect to custom-made equipment or related installations which are designed, fabricated for, and intended for use by its manufacturer on the basis of test data which the

employer keeps and makes available for inspection to the director; and

(iv) For the purposes of (c) of this subsection:

(A) Equipment is listed if it is of a kind mentioned in a list which is published by a nationally recognized testing laboratory which makes periodic inspections of the production of such equipment and which states that such equipment meets nationally recognized standards or has been tested and found safe for use in a specified manner;

(B) Equipment is labeled if there is attached to it a label, symbol, or other identifying mark of a nationally recognized testing laboratory which makes periodic inspections of the production of such equipment and whose labeling indicates compliance with nationally recognized standards or tests to determine safe use in a specified manner;

(C) Equipment is accepted if it has been inspected and found by a nationally recognized testing laboratory to conform to specified plans or to procedures of applicable codes;

(D) Equipment is certified if it has been tested and found by a nationally recognized testing laboratory to meet nationally recognized standards or to be safe for use in a specified manner or is of a kind whose production is periodically inspected by a nationally recognized testing laboratory, and if it bears a label, tag, or other record of certification; and

(E) Refer to federal regulation 29 CFR 1910.7 for definition of nationally recognized testing laboratory.

(d) "Automatic fire detection device," means a device designed to automatically detect the presence of fire by heat, flame, light, smoke or other products of combustion.

(e) "Buddy-breathing device," means an accessory to self-contained breathing apparatus which permits a second person to share the same air supply as that of the wearer of the apparatus.

(f) "Carbon dioxide," means a colorless, odorless, electrically nonconductive inert gas (chemical formula CO₂) that is a medium for extinguishing fires by reducing the concentration of oxygen or fuel vapor in the air to the point where combustion is impossible.

(g) "Class A fire," means a fire involving ordinary combustible materials such as paper, wood, cloth, and some rubber and plastic materials.

(h) "Class B fire," means a fire involving flammable or combustible liquids, flammable gases, greases and similar materials, and some rubber and plastic materials.

(i) "Class C fire," means a fire involving energized electrical equipment where safety to the employee requires the use of electrically nonconductive extinguishing media.

(j) "Class D fire," means a fire involving combustible metals such as magnesium, titanium, zirconium, sodium, lithium and potassium.

(k) "Dry chemical," means an extinguishing agent composed of very small particles of chemicals such as, but not limited to, sodium bicarbonate, potassium bicarbonate, urea-based potassium bicarbonate, potassium chloride, or monoammonium phosphate supplemented by special treatment to provide resistance to packing and moisture absorption (caking) as well as to provide proper flow capabilities. Dry chemical does not include dry powders.

(l) "Dry powder," means a compound used to extinguish or control Class D fires.

(m) "Education," means the process of imparting knowledge or skill through systematic instruction. It does not require formal classroom instruction.

(n) "Enclosed structure," means a structure with a roof or ceiling and at least two walls which may present fire hazards to employees, such as accumulations of smoke, toxic gases and heat similar to those found in buildings.

(o) "Extinguisher classification," means the letter classification given an extinguisher to designate the class or classes of fire on which an extinguisher will be effective.

(p) "Extinguisher rating," means the numerical rating given to an extinguisher which indicates the extinguishing potential of the unit based on standardized tests developed by Underwriters' Laboratories, Inc.

(q) "Fixed extinguishing system," means a permanently installed system that either extinguishes or controls a fire at the location of the system.

(r) "Flame resistance," is the property of materials, or combinations of component materials, to retard ignition and restrict the spread of flame.

(s) "Foam," means a stable aggregation of small bubbles which flow freely over a burning liquid surface and form a coherent blanket which seals combustible vapors and thereby extinguishes the fire.

(t) "Gaseous agent," is a fire extinguishing agent which is in the gaseous state at normal room temperature and pressure. It has low viscosity, can expand or contract with changes in pressure and temperature, and has the ability to diffuse readily and to distribute itself uniformly throughout an enclosure.

(u) "Halon 1211," means a colorless, faintly sweet smelling, electrically nonconductive liquefied gas (chemical formula CBrClF_2) which is a medium for extinguishing fires by inhibiting the chemical chain reaction of fuel and oxygen. It is also known as bromochlorodifluoromethane.

(v) "Halon 1301," means a colorless, odorless, electrically nonconductive gas (chemical formula CBrF_3) which is a medium for extinguishing fires by inhibiting the chemical chain reaction of fuel and oxygen. It is also known as bromotrifluoromethane.

(w) "Helmet," is a head protective device consisting of a rigid shell, energy absorption system and chin strap intended to be worn to provide protection for the head or portions thereof, against impact, flying or falling objects, electric shock, penetration, heat and flame.

(x) "Incipient stage fire," means a fire which is in the initial or beginning stage and which can be controlled or extinguished by portable fire extinguishers, Class II standpipe or small hose systems without the need for protective clothing or breathing apparatus.

(y) Industrial fire brigade: An organized group of employees whose primary employment is other than fire fighting who are knowledgeable, trained and skilled in specialized operations based on site-specific hazards present at a single commercial facility or facilities under the same management.

(z) "Inspection," means a visual check of fire protection systems and equipment to ensure that they are in place, charged, and ready for use in the event of a fire.

(aa) "Interior structural fire fighting," means the physical activity of fire suppression, rescue or both, inside of build-

ings or enclosed structures which are involved in a fire situation beyond the incipient stage.

(bb) "Lining," means a material permanently attached to the inside of the outer shell of a garment for the purpose of thermal protection and padding.

(cc) "Local application system," means a fixed fire suppression system which has a supply of extinguishing agent, with nozzles arranged to automatically discharge extinguishing agent directly on the burning material to extinguish or control a fire.

(dd) "Maintenance," means the performance of services on fire protection equipment and systems to assure that they will perform as expected in the event of a fire. Maintenance differs from inspection in that maintenance requires the checking of internal fitting, devices and agent supplies.

(ee) "Multipurpose dry chemical," means a dry chemical which is approved for use on Class A, Class B and Class C fires.

(ff) "Outer shell," is the exterior layer of material on the fire coat and protective trousers which forms the outermost barrier between the fire fighter and the environment. It is attached to the vapor barrier and liner and is usually constructed with a storm flap, suitable closures, and pockets.

(gg) "Positive-pressure breathing apparatus," means self-contained breathing apparatus in which the pressure in the breathing zone is positive in relation to the immediate environment during inhalation and exhalation.

(hh) "Predischage employee alarm," means an alarm which will sound at a set time prior to actual discharge of an extinguishing system so that employees may evacuate the discharge area prior to system discharge.

(ii) "Quick disconnect valve," means a device which starts the flow of air by inserting of the hose (which leads from the facepiece) into the regulator of self-contained breathing apparatus, and stops the flow of air by disconnection of the hose from the regulator.

(jj) "Sprinkler alarm," means an approved device installed so that any waterflow from a sprinkler system equal to or greater than that from single automatic sprinkler will result in an audible alarm signal on the premises.

(kk) "Sprinkler system," means a system of piping designed in accordance with fire protection engineering standards and installed to control or extinguish fires. The system includes an adequate and reliable water supply, and a network of specially sized piping and sprinklers which are interconnected. The system also includes a control valve and a device for actuating an alarm when the system is in operation.

(ll) "Standpipe systems:"

(i) "Class I standpipe system," means a two and one-half-inch (6.3 cm) hose connection for use by fire departments and those trained in handling heavy fire streams.

(ii) "Class II standpipe system," means a one and one-half-inch (3.8 cm) hose system which provides a means for the control or extinguishment of incipient stage fires.

(iii) "Class III standpipe system," means a combined system of hose which is for the use of employees trained in the use of hose operations and which is capable of furnishing effective water discharge during the more advanced stages of fire (beyond the incipient stage) in the interior of workplaces. Hose outlets are available for both one and one-half-inch (3.8 cm) and two and one-half-inch (6.3 cm) hose.

(iv) "Small hose system," means a system of hose ranging in diameter from five-eighths-inch (1.6 cm) up to one and one-half-inch (3.8 cm) which is for the use of employees and which provides a means for the control and extinguishment of incipient stage fires.

(mm) "Total flooding system," means a fixed suppression system which is arranged to automatically discharge a predetermined concentration of agent into an enclosed space for the purpose of fire extinguishment or control.

(nn) "Training," means the process of making proficient through instruction and hands-on practice in the operation of equipment, including respiratory protection equipment, that is expected to be used in the performance of assigned duties.

(oo) "Vapor barrier," means that material used to prevent or substantially inhibit the transfer of water, corrosive liquids and steam or other hot vapors from the outside of a garment to the wearer's body.

[Statutory Authority: RCW 49.17.040, 99-05-080, § 296-24-58503, filed 2/17/99, effective 6/1/99. Statutory Authority: RCW 49.17.010, [49.17].050 and [49.17].060, 95-22-015, § 296-24-58503, filed 10/20/95, effective 1/16/96. Statutory Authority: Chapter 49.17 RCW, 94-06-068 (Order 93-17), § 296-24-58503, filed 3/2/94, effective 3/1/95; 88-23-054 (Order 88-25), § 296-24-58503, filed 11/14/88; 87-24-051 (Order 87-24), § 296-24-58503, filed 11/30/87. Statutory Authority: RCW 49.17.040 and 49.17.050, 82-02-003 (Order 81-32), § 296-24-58503, filed 12/24/81.]

PART G-3 FIRE SUPPRESSION EQUIPMENT

WAC 296-24-592 Portable fire extinguishers. All sections of this chapter which include WAC 296-24-592 in the section number apply to portable fire extinguishers.

[Statutory Authority: RCW 49.17.040 and 49.17.050, 82-02-003 (Order 81-32), § 296-24-592, filed 12/24/81.]

WAC 296-24-59201 Scope and application. The requirements of this section apply to the hydrostatic testing of portable fire extinguishers provided for the use of employees.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050, 01-11-038, § 296-24-59201, filed 5/9/01, effective 9/1/01. Statutory Authority: RCW 49.17.040 and 49.17.050, 82-02-003 (Order 81-32), § 296-24-59201, filed 12/24/81.]

WAC 296-24-59212 Hydrostatic testing. (1) In addition to an external visual examination, the employer shall assure that an internal examination of cylinders and shells to be tested is made prior to the hydrostatic tests.

(2) The employer shall assure that portable fire extinguishers are hydrostatically tested whenever they show new evidence of corrosion or mechanical injury.

(3) The employer shall assure that hydrostatic tests are performed on extinguisher hose assemblies which are equipped with a shut-off nozzle at the discharge end of the hose. The test interval shall be the same as specified for the extinguisher on which the hose is installed.

(4) The employer shall assure that carbon dioxide hose assemblies with a shut-off nozzle are hydrostatically tested at 1,250 psi (8,620 kPa).

(5) The employer shall assure that dry chemical and dry powder hose assemblies with a shut-off nozzle are hydrostatically tested at 300 psi (2,070 kPa).

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(6) Hose assemblies passing a hydrostatic test do not require any type of recording or stamping.

(7) The employer shall assure that hose assemblies for carbon dioxide extinguishers that require a hydrostatic test are tested within a protective cage device.

(8) The employer shall assure that carbon dioxide extinguishers and nitrogen or carbon dioxide cylinders used with wheeled extinguishers are tested every five years at 5/3 of the service pressure as stamped into the cylinder. Nitrogen cylinders which comply with 29 CFR 173.34 (e)(15) may be hydrostatically tested every ten years.

(9) The employer shall assure that all stored pressure and Halon 1211 types of extinguishers are hydrostatically tested at the factory test pressure not to exceed two times the service pressure.

(10) The employer shall assure that acceptable self-generating type soda acid and foam extinguishers are tested at 350 psi (2,410 kPa).

(11) Air or gas pressure may not be used for hydrostatic testing.

(12) Extinguisher shells, cylinders, or cartridges which fail a hydrostatic pressure test, or which are not fit for testing shall be removed from service and from the workplace.

(13)(a) The equipment for testing compressed gas type cylinders shall be of the water-jacket type. The equipment shall be provided with an expansion indicator which operates with an accuracy within one percent of the total expansion or 0.1 cc (.1 mL) of liquid.

(b) The equipment for testing noncompressed gas type cylinders shall consist of the following:

(i) A hydrostatic test pump, hand or power operated, capable of producing not less than one hundred fifty percent of the test pressure, which shall include appropriate check valves and fittings;

(ii) A flexible connection for attachment to fittings to test through the extinguisher nozzle, test bonnet, or hose outlet, as is applicable; and

(iii) A protective cage or barrier for personal protection of the tester, designed to provide visual observation of the extinguisher under test.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050, 01-11-038, § 296-24-59212, filed 5/9/01, effective 9/1/01.]

WAC 296-24-59215 Appendix A—Portable fire extinguishers. (1) Scope and application. The scope and application of this section is written to apply to three basic types of workplaces. First, there are those workplaces where the employer has chosen to evacuate all employees from the workplace at the time of a fire emergency. Second, there are those workplaces where the employer has chosen to permit certain employees to fight fires and to evacuate all other non-essential employees at the time of a fire emergency. Third, there are those workplaces where the employer has chosen to permit all employees in the workplace to use portable fire extinguishers to fight fires.

The section also addresses two kinds of work areas. The entire workplace can be divided into outside (exterior) work areas and inside (interior) work areas. This division of the workplace into two areas is done in recognition of the different types of hazards employees may be exposed to during fire fighting operations. Fires in interior workplaces, pose a

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greater hazard to employees; they can produce greater exposure to quantities of smoke, toxic gases, and heat because of the capability of a building or structure to contain or entrap these products of combustion until the building can be ventilated. Exterior work areas, normally open to the environment, are somewhat less hazardous, because the products of combustion are generally carried away by the thermal column of the fire. Employees also have a greater selection of evacuation routes if it is necessary to abandon fire fighting efforts.

In recognition of the degree of hazard present in the two types of work areas, the standards for exterior work areas are somewhat less restrictive in regards to extinguisher distribution. WAC 296-800-300 explains this by specifying which sections apply.

(2) Portable fire extinguisher exemptions. In recognition of the three options given to employers in regard to the amount of employee evacuation to be carried out, the standards permit certain exemptions based on the number of employees expected to use fire extinguishers.

Where the employer has chosen to totally evacuate the workplace at the time of a fire emergency and when fire extinguishers are not provided, the requirements of this section do not apply to that workplace.

Where the employer has chosen to partially evacuate the workplace or the effected area at the time of a fire emergency and has permitted certain designated employees to remain behind to operate critical plant operations or to fight fires with extinguishers, then the employer is exempt from the distribution requirements of this section. Employees who will be remaining behind to perform incipient fire fighting or members of a fire brigade must be trained in their duties. The training must result in the employees becoming familiar with the locations of fire extinguishers. Therefore, the employer must locate the extinguishers in convenient locations where the employees know they can be found. For example, they could be mounted in the fire truck or cart that the fire brigade uses when it responds to a fire emergency. They can also be distributed as set forth in the National Fire Protection Association's Standard No. 10, "Portable Fire Extinguishers."

Where the employer has decided to permit all employees in the workplace to use fire extinguishers, then the entire WISHA standard applies.

(3) Portable fire extinguisher mounting. Previous standards for mounting fire extinguishers have been criticized for requiring specific mounting locations. In recognition of this criticism, the standard has been rewritten to permit as much flexibility in extinguisher mounting as is acceptable to assure that fire extinguishers are available when needed and that employees are not subjected to injury hazards when they try to obtain an extinguisher.

It is the intent of WISHA to permit the mounting of extinguishers in any location that is accessible to employees without the use of portable devices such as a ladder. This limitation is necessary because portable devices can be moved or taken from the place where they are needed and, therefore, might not be available at the time of an emergency.

Employers are given as much flexibility as possible to assure that employees can obtain extinguishers as fast as possible. For example, an acceptable method of mounting extinguishers in areas where fork lift trucks or tow-motors are used is to mount the units on retractable board which, by

means of counterweighting, can be raised above the level where they could be struck by vehicular traffic. When needed, they can be lowered quickly for use. This method of mounting can also reduce vandalism and unauthorized use of extinguishers. The extinguishers may also be mounted as outlined in the National Fire Protection Association's Standard No. 10, "Portable Fire Extinguishers."

(4) Selection and distribution. The employer is responsible for the proper selection and distribution of fire extinguishers and the determination of the necessary degree of protection. The selection and distribution of fire extinguishers must reflect the type and class of fire hazards associated with a particular workplace.

Extinguishers for protecting Class A hazards may be selected from the following types: Water, foam, loaded stream, or multipurpose dry chemical. Extinguishers for protecting Class B hazards may be selected from the following types: Halon 1301, Halon 1211, carbon dioxide, dry chemicals, foam, or loaded stream. Extinguishers for Class C hazards may be selected from the following types: Halon 1301, Halon 1211, carbon dioxide, or dry chemical.

Combustible metal (Class D hazards) fires pose a different type of fire problem in the workplace. Extinguishers using water, gas, or certain dry chemicals cannot extinguish or control this type of fire. Therefore, certain metals have specific dry powder extinguishing agents which can extinguish or control this type of fire. Those agents which have been specifically approved for use on certain metal fires provide the best protection; however, there are also some "universal" type agents which can be used effectively on a variety of combustible metal fires if necessary. The "universal" type agents include: Foundry flux, Lith-X powder, TMB liquid, pyromet powder, TEC powder, dry talc, dry graphite powder, dry sand, dry sodium chloride, dry soda ash, lithium chloride, zirconium silicate, and dry dolomite.

Water is not generally accepted as an effective extinguishing agent for metal fires. When applied to hot burning metal, water will break down into its basic atoms of oxygen and hydrogen. This chemical breakdown contributes to the combustion of the metal. However, water is also a good universal coolant and can be used on some combustible metals, but only under proper conditions and application, to reduce the temperature of the burning metal below the ignition point. For example, automatic deluge systems in magnesium plants can discharge such large quantities of water on burning magnesium that the fire will be extinguished. The National Fire Protection Association has specific standards for this type of automatic sprinkler system. Further information on the control of metal fires with water can be found in the National Fire Protection Association's *Fire Protection Handbook*.

An excellent source of selection and distribution criteria is found in the National Fire Protection Association's Standard No. 10. Other sources of information include the National Safety Council and the employer's fire insurance carrier.

(5) Substitution of standpipe systems for portable fire extinguishers. The employer is permitted to substitute acceptable standpipe systems for portable fire extinguishers under certain circumstances. It is necessary to assure that any substitution will provide the same coverage that portable units provide. This means that fire hoses, because of their limited

portability, must be spaced throughout the protected area so that they can reach around obstructions such as columns, machinery, etc., and so that they can reach into closets and other enclosed areas.

(6) Inspection, maintenance and testing. The ultimate responsibility for the inspection, maintenance and testing of portable fire extinguishers lies with the employer. The actual inspection, maintenance, and testing may, however, be conducted by outside contractors with whom the employer has arranged to do the work. When contracting for such work, the employer should assure that the contractor is capable of performing the work that is needed to comply with this standard.

If the employer should elect to perform the inspection, maintenance, and testing requirements of this section in-house, then the employer must make sure that those persons doing the work have been trained to do the work and to recognize problem areas which could cause an extinguisher to be inoperable. The National Fire Protection Association provides excellent guidelines in its standard for portable fire extinguishers. The employer may also check with the manufacturer of the unit that has been purchased and obtain guidelines on inspection, maintenance, and testing. Hydrostatic testing is a process that should be left to contractors or individuals using suitable facilities and having the training necessary to perform the work.

Any time the employer has removed an extinguisher from service to be checked or repaired, alternate equivalent protection must be provided. Alternate equivalent protection could include replacing the extinguisher with one or more units having equivalent or equal ratings, posting a fire watch, restricting the unprotected area from employee exposure, or providing a hose system ready to operate.

(7) Hydrostatic testing. As stated before, the employer may contract for hydrostatic testing. However, if the employer wishes to provide the testing service, certain equipment and facilities must be available. Employees should be made aware of the hazards associated with hydrostatic testing and the importance of using proper guards and water pressures. Severe injury can result if extinguisher shells fail violently under hydrostatic pressure.

Employers are encouraged to use contractors who can perform adequate and reliable service. Firms which have been certified by the Materials Transportation Board (MTB) of the United States Department of Transportation (DOT), or state licensed extinguisher servicing firms, or recognized by the National Association of Fire Equipment Distributors in Chicago, Illinois, are generally acceptable for performing this service.

(8) Training and education. This part of the standard is of the utmost importance to employers and employees if the risk of injury or death due to extinguisher use is to be reduced. If an employer is going to permit an employee to fight a workplace fire of any size, the employer must make sure that the employee knows everything necessary to assure the employee's safety.

Training and education can be obtained through many channels. Often, local fire departments in larger cities have fire prevention bureaus or similar organizations which can provide basic fire prevention training programs. Fire insurance companies will have data and information available. The National Fire Protection Association and the National

Safety Council will provide, at a small cost, publications that can be used in a fire prevention program.

Actual fire fighting training can be obtained from various sources in the country. The Texas A and M University, the University of Maryland's Fire and Rescue Institute, West Virginia University's Fire Service Extension, Iowa State University's Fire Service Extension and other state training schools and land grant colleges have fire fighting programs directed to industrial applications. Some manufacturers of extinguishers, such as the Ansul Company and Safety First, conduct fire schools for customers in the proper use of extinguishers. Several large corporations have taken time to develop their own on-site training programs which expose employees to the actual "feeling" of fire fighting. Simulated fires for training of employees in the proper use of extinguishers are also an acceptable part of a training program.

In meeting the requirements of this section, the employer may also provide educational materials, without classroom instruction, through the use of employee notice campaigns using instruction sheets or flyers or similar types of informal programs. The employer must make sure that employees are trained and educated to recognize not only what type of fire is being fought and how to fight it, but also when it is time to get away from it and leave fire suppression to more experienced fire fighters.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 01-11-038, § 296-24-59215, filed 5/9/01, effective 9/1/01. Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-24-59215, filed 7/20/94, effective 9/20/94. Statutory Authority: RCW 49.17.040 and 49.17.050. 82-02-003 (Order 81-32), § 296-24-59215, filed 12/24/81.]

WAC 296-24-602 Standpipe and hose systems. This section establishes design and installation criteria for standpipe systems.

[Statutory Authority: RCW 49.17.040 and 49.17.050. 82-02-003 (Order 81-32), § 296-24-602, filed 12/24/81.]

WAC 296-24-60201 Scope and application. (1) Scope. This section applies to all small hose, Class II and Class III standpipe systems installed to meet the requirements of a particular WISHA standard.

(2) Exception. This section does not apply to Class I standpipe systems.

[Statutory Authority: RCW 49.17.040 and 49.17.050. 82-02-003 (Order 81-32), § 296-24-60201, filed 12/24/81.]

WAC 296-24-60203 Protection of standpipes. The employer shall assure that standpipes are located or otherwise protected against mechanical damage. Damaged standpipes shall be repaired promptly.

[Statutory Authority: RCW 49.17.040 and 49.17.050. 82-02-003 (Order 81-32), § 296-24-60203, filed 12/24/81.]

WAC 296-24-60205 Equipment. (1) Reels and cabinets. Where reels or cabinets are provided to contain fire hose, the employer shall assure that they are designed to facilitate prompt use of the hose valves, the hose, and other equipment at the time of a fire or other emergency. The employer shall assure that the reels and cabinets are conspicuously identified and used only for fire equipment.

(2) Hose outlets and connections.

(a) The employer shall assure that hose outlets and connections are located high enough above the floor to avoid being obstructed and to be accessible to employees.

(b) The employer shall standardize screw threads or provide appropriate adapters throughout the system and assure that the hose connections are compatible with those used on the supporting fire equipment.

(3) Hose.

(a) The employer shall assure that every one and one-half inch (3.8 cm) or smaller hose outlet used to meet this standard is equipped with hose connected and ready for use. In extremely cold climates where such installation may result in damaged equipment, the hose may be stored in another location provided it is readily available and can be connected when needed.

(b) Standpipe systems installed after July 1, 1982, for use by employees, shall be equipped with lined hose. Unlined hose may remain in use on existing systems. However, after the effective date of this standard, unlined hose which becomes unserviceable shall be replaced with lined hose.

(c) Employers must provide hose of sufficient length so that friction, resulting from water flowing through the hose, does not decrease the pressure at the nozzle below 30 psi (210 kPa). The dynamic pressure at the nozzle must be within the range of 30 psi (210 kPa) to 125 psi (860 kPa).

(4) Nozzles. Employers must make sure that standpipe hoses are equipped with shut-off type nozzles.

[Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050. 02-12-098, § 296-24-60205, filed 6/5/02, effective 8/1/02. Statutory Authority: RCW 49.17.040 and 49.17.050. 82-02-003 (Order 81-32), § 296-24-60205, filed 12/24/81.]

WAC 296-24-60207 Water supply. The minimum water supply for standpipe and hose systems, which are provided for the use of employees, shall be sufficient to provide 100 gallons per minute (6.3 l/s) for a period of at least thirty minutes.

[Statutory Authority: RCW 49.17.040 and 49.17.050. 82-02-003 (Order 81-32), § 296-24-60207, filed 12/24/81.]

WAC 296-24-60209 Tests and maintenance. (1) Acceptance tests.

(a) The employer shall assure that the piping of Class II and Class III systems installed after July 1, 1982, including yard piping, is hydrostatically tested for a period of at least two hours at not less than 200 psi (1,380 kPa), or at least 50 psi (340 kPa) in excess of normal pressure when such pressure is greater than 150 psi (1,030 kPa).

(b) The employer shall assure that hose on all standpipe systems installed after July 1, 1982, is hydrostatically tested with couplings in place, at a pressure of not less than 200 psi (1,380 kPa), before it is placed in service. This pressure shall be maintained for at least fifteen seconds and not more than one minute during which time the hose shall not leak nor shall any jacket thread break during the test.

(2) Maintenance.

(a) The employer shall assure that water supply tanks are kept filled to the proper level except during repairs. When pressure tanks are used, the employer shall assure that proper pressure is maintained at all times except during repairs.

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(b) The employer shall assure that valves in the main piping connections to the automatic sources of water supply are kept fully open at all times except during repair.

(c) The employer shall assure that hose systems are inspected at least annually and after each use to assure that all of the equipment and hose are in place, available for use, and in serviceable condition.

(d) When the system or any portion thereof is found not to be serviceable, the employer shall remove it from service immediately and replace it with equivalent protection such as extinguishers and fire watches.

(e) The employer shall assure that hemp or linen hose on existing systems is unracked, physically inspected for deterioration, and reracked using a different fold pattern at least annually. The employer shall assure that defective hose is replaced in accordance with WAC 296-24-60205 (3)(b).

(f) The employer shall designate trained persons to conduct all inspections required under this section.

[Statutory Authority: RCW 49.17.040 and 49.17.050. 82-02-003 (Order 81-32), § 296-24-60209, filed 12/24/81.]

WAC 296-24-60299 Appendix A—Standpipe and hose systems. (1) Scope and application. This section has been written to provide adequate coverage of those standpipe and hose systems that an employer may install in the workplace to meet the requirements of a particular WISHA standard. For example, WISHA permits the substitution of hose systems for portable fire extinguishers in WAC 296-24-592. If an employer chooses to provide hose systems instead of portable Class A fire extinguishers, then those hose systems used for substitution would have to meet the applicable requirements of WAC 296-24-592. All other standpipe and hose systems not used as a substitute would be exempt from these requirements.

The section specifically exempts Class I large hose systems. By large hose systems, WISHA means those two and one-half inch hose lines that are usually associated with fire departments of the size that provide their own water supply through fire apparatus. When the fire gets to the size that outside protection of that degree is necessary, WISHA believes that in most industries employees will have been evacuated from the fire area and the "professional" fire fighters will take control.

(2) Protection of standpipes. Employers must make sure that standpipes are protected so that they can be relied upon during a fire emergency. This means protecting the pipes from mechanical and physical damage. There are various means for protecting the equipment such as, but not limited to, enclosing the supply piping in the construction of the building, locating the standpipe in an area which is inaccessible to vehicles, or locating the standpipe in a stairwell.

(3) Hose covers and cabinets. The employer should keep fire protection hose equipment in cabinets or inside protective covers which will protect it from the weather elements, dirt or other damaging sources. The use of protective covers must be easily removed or opened to assure that hose and nozzle are accessible. When the employer places hose in a cabinet, the employer must make sure that the hose and nozzle are accessible to employees without subjecting them to injury. In order to make sure that the equipment is readily accessible, the employer must also make sure that the cabi-

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nets used to store equipment are kept free of obstructions and other equipment which may interfere with the fast distribution of the fire hose stored in the cabinet.

(4) Hose outlets and connections. The employer must assure that employees who use standpipe and hose systems can reach the hose rack and hose valve without the use of portable equipment such as ladders. Hose reels are encouraged for use because one employee can retrieve the hose, charge it, and place it into service without much difficulty.

(5) Hose. When the employer elects to provide small hose in lieu of portable fire extinguishers, those hose stations being used for the substitution must have hose attached and ready for service. However, if more than the necessary amount of small hose outlets are provided, hose does not have to be attached to those outlets that would provide redundant coverage. Further, where the installation of hose on outlets may expose the hose to extremely cold climates, the employer may store the hose in houses or similar protective areas and connect it to the outlet when needed.

There is approved lined hose available that can be used to replace unlined hose which is stored on racks in cabinets. The lined hose is constructed so that it can be folded and placed in cabinets in the same manner as unlined hose.

Hose is considered to be unserviceable when it deteriorates to the extent that it can no longer carry water at the required pressure and flow rates. Dry rotted linen or hemp hose, cross threaded couplings, and punctured hose are examples of unserviceable hose.

(6) Nozzles. Variable stream nozzles can provide useful variations in water flow and spray patterns during fire fighting operations and they are recommended for employee use. It is recommended that 100 psi nozzle pressure be used to provide good flow patterns for variable stream nozzles. The most desirable attribute for nozzles is the ability of the nozzle person to shut off the water flow at the nozzle when it is necessary. This can be accomplished in many ways. For example, a shut-off nozzle with a lever or rotation of the nozzle to stop flow would be effective, but in other cases a simple globe valve placed between a straight stream nozzle and the hose could serve the same purpose. For straight stream nozzles, 50 psi nozzle pressure is recommended. The intent of the standard is to protect the employee from "run-away" hoses if it becomes necessary to drop a pressurized hose line and retreat from the fire front and other related hazards.

(7) Design and installation. Standpipe and hose systems designed and installed in accordance with NFPA Standard No. 14-1976, "Standpipe and Hose Systems," are considered to be in compliance with this standard.

[Statutory Authority: RCW 49.17.040 and 49.17.050. 82-02-003 (Order 81-32), § 296-24-60299, filed 12/24/81.]

WAC 296-24-607 Automatic sprinkler systems. The design and installation criteria for automatic sprinkler systems is contained in this section.

[Statutory Authority: RCW 49.17.040 and 49.17.050. 82-02-003 (Order 81-32), § 296-24-607, filed 12/24/81.]

WAC 296-24-60701 Scope and application. (1) The requirements of this section apply to all automatic sprinkler systems installed to meet a particular WISHA standard.

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(2) For automatic sprinkler systems used to meet WISHA requirements and installed prior to the effective date of this standard, compliance with the National Fire Protection Association (NFPA) or the National Board of Fire Underwriters (NBFU) standard in effect at the time of the system's installation will be acceptable as compliance with this section.

[Statutory Authority: RCW 49.17.040 and 49.17.050. 82-02-003 (Order 81-32), § 296-24-60701, filed 12/24/81.]

WAC 296-24-60703 Exemptions. Automatic sprinkler systems installed in workplaces, but not required by WISHA are exempt from the requirements of this section.

[Statutory Authority: RCW 49.17.040 and 49.17.050. 82-02-003 (Order 81-32), § 296-24-60703, filed 12/24/81.]

WAC 296-24-60705 General requirements. (1) Design.

(a) All automatic sprinkler designs used to comply with this standard shall provide the necessary discharge patterns, densities, and water flow characteristics for complete coverage in a particular workplace or zoned subdivision of the workplace.

(b) The employer shall assure that only approved equipment and devices are used in the design and installation of automatic sprinkler systems used to comply with this standard.

(2) Maintenance. The employer shall properly maintain an automatic sprinkler system installed to comply with this section. The employer shall assure that a main drain flow test is performed on each system annually. The inspector's test valve shall be opened at least every two years to assure that the sprinkler system operates properly.

(3) Acceptance tests. The employer shall conduct proper acceptance tests on sprinkler systems installed for employee protection after July 1, 1982, and record the dates of such tests. Proper acceptance tests include the following:

- (a) Flushing of underground connections;
- (b) Hydrostatic tests of piping in system;
- (c) Air tests in dry-pipe systems;
- (d) Dry-pipe valve operation; and
- (e) Test of drainage facilities.

(4) Water supplies. The employer shall assure that every automatic sprinkler system is provided with at least one automatic water supply capable of providing design water flow for at least thirty minutes. An auxiliary water supply or equivalent protection shall be provided when the automatic water supply is out of service, except for systems of twenty or fewer sprinklers.

(5) Hose connections for fire fighting use. The employer may attach hose connections for fire fighting use to wet pipe sprinkler systems provided that the water supply satisfies the combined design demand for sprinklers and standpipes.

(6) Protection of piping. The employer shall assure that automatic sprinkler system piping is protected against freezing and exterior surface corruptions.

(7) Drainage. The employer shall assure that all dry sprinkler pipes and fittings are installed so that the systems may be totally drained.

(8) Sprinklers.

(a) The employer shall assure that only approved sprinklers are used on systems.

(b) The employer may not use older style sprinklers to replace standard sprinklers without a complete engineering review of the altered part of the system.

(c) The employer shall assure that sprinklers are protected from mechanical damage.

(9) Sprinkler alarms. On all sprinkler systems having more than twenty sprinklers, the employer shall assure that a local water-flow alarm is provided which sounds an audible signal on the premises upon water flow through the system equal to the flow from a single sprinkler.

(10) Sprinkler spacing. The employer shall assure that sprinklers are spaced to provide a maximum protection area per sprinkler, a minimum of interference to the discharge pattern by building or structural members or building contents and suitable sensitivity to possible fire hazards. The minimum vertical clearance between sprinklers and material below shall be eighteen inches.

(11) Hydraulically designed systems. The employer shall assure that hydraulically designed automatic sprinkler systems or portions thereof are identified and that the location, number of sprinklers in the hydraulically designed section, and the basis of the design is indicated. Central records may be used in lieu of signs at sprinkler valves provided the records are available for inspection and copying by the director.

[Statutory Authority: RCW 49.17.040 and 49.17.050. 82-02-003 (Order 81-32), § 296-24-60705, filed 12/24/81.]

WAC 296-24-60799 Appendix A—Automatic sprinkler systems. (1) Scope and application. This section contains the minimum requirements for design, installation and maintenance of sprinkler systems that are needed for employee safety. The occupational safety and health administration is aware of the fact that the National Board of Fire Underwriters is no longer an active organization, however, sprinkler systems still exist that were designed and installed in accordance with that organization's standards. Therefore, WISHA will recognize sprinkler systems designed to, and maintained in accordance with, NBFU and earlier NFPA standards.

(2) Exemptions. In an effort to assure that employers will continue to use automatic sprinkler systems as the primary fire protection system in workplaces, WISHA is exempting from coverage those systems not required by a particular WISHA standard and which have been installed in workplaces solely for the purpose of protecting property. Many of these types of systems are installed in areas or buildings with little or no employee exposure. An example is those warehouses where employees may enter occasionally to take inventory or move stock. Some employers may choose to shut down those systems which are not specifically required by WISHA rather than upgrade them to comply with the standards. WISHA does not intend to regulate such systems. WISHA only intends to regulate those systems which are installed to comply with a particular WISHA standard.

(3) Design. There are two basic types of sprinkler system design. Pipe schedule designed systems are based on pipe schedule tables developed to protect hazards with standard

sized pipe, number of sprinklers, and pipe lengths. Hydraulic designed systems are based on an engineered design of pipe size which will produce a given water density or flow rate at any particular point in the system. Either design can be used to comply with this standard.

The National Fire Protection Association's Standard No. 13, "Automatic Sprinkler Systems," contains the tables needed to design and install either type of system. Minimum water supplies, densities, and pipe sizes are given for all types of occupancies.

The employer may check with a reputable fire protection engineering consultant or sprinkler design company when evaluating existing systems or designing a new installation.

With the advent of new construction materials for the manufacture of sprinkler pipe, materials, other than steel, have been approved for use as sprinkler pipe. Selection of pipe material should be made on the basis of the type of installation and the acceptability of the material to local fire and building officials where such systems may serve more than one purpose.

Before new sprinkler systems are placed into service, an acceptance test is to be conducted. The employer should invite the installer, designer, insurance representative, and a local fire official to witness the test. Problems found during the test are to be corrected before the system is placed into service.

(4) Maintenance. It is important that any sprinkler system maintenance be done only when there is minimal employee exposure to the fire hazard. For example, if repairs or changes to the system are to be made, they should be made during those hours when employees are not working or are not occupying that portion of the workplace protected by the portion of the system which has been shut down.

The procedures for performing a flow test via a main drain test or by the use of an inspector's test valve can be obtained from the employer's fire insurance company or from the National Fire Protection Association's Standard No. 13A, "Sprinkler System, Maintenance."

(5) Water supplies. The water supply to a sprinkler system is one of the most important factors an employer should consider when evaluating a system. Obviously, if there is no water supply, the system is useless. Water supplies can be lost for various reasons such as improperly closed valves, excessive demand, broken water mains, and broken fire pumps. The employer must be able to determine if or when this type of condition exists either by performing a main drain test or visual inspection. Another problem may be an inadequate water supply. For example, a light hazard occupancy may, through rehabilitation or change in tenants, become an ordinary or high hazard occupancy. In such cases, the exiting water supply may not be able to provide the pressure or duration necessary for proper protection. Employers must assure that proper design and tests have been made to assure an adequate water supply. These tests can be arranged through the employer's fire insurance carrier or through a local sprinkler maintenance company or through the local fire prevention organization.

Any time the employer must shut down the primary water supply for a sprinkler system, the standard requires that equivalent protection be provided. Equivalent protection may include a fire watch with extinguishers or hose lines in place

and manned, or a secondary water supply such as a tank truck and pump, or a tank or fire pond with fire pumps, to protect the areas where the primary water supply is limited or shut down. The employer may also require evacuation of the workplace and have an emergency action plan which specifies such action.

(6) Protection of piping. Piping which is exposed to corrosive atmospheres, either chemical or natural, can become defective to the extent that it is useless. Employers must assure that piping is protected from corrosion by its material of construction, e.g., stainless steel, or by a protective coating, e.g., paint.

(7) Sprinklers. When an employer finds it necessary to replace sprinkler system components or otherwise change a sprinkler's design, employer should make a complete fire protection engineering survey of that part of the system being changed. This review should assure that the changes to the system will not alter the effectiveness of the system as it is presently designed. Water supplies, densities and flow characteristics should be maintained.

(8) Protection of sprinklers. All components of the system must be protected from mechanical impact damage. This can be achieved with the use of mechanical guards or screens or by locating components in areas where physical contact is impossible or limited.

(9) Sprinkler alarms. The most recognized sprinkler alarm is the water-motor gong or bell that sounds when water begins to flow through the system. This is not however, the only type of acceptable water flow alarm. Any alarm that gives an indication that water is flowing through the system is acceptable. For example, a siren, a whistle, a flashing light, or similar alerting device which can transmit a signal to the necessary persons would be acceptable. The purpose of the alarm is to alert persons that the system is operating, and that some type of planned action is necessary.

(10) Sprinkler spacing. For a sprinkler system to be effective there must be an adequate discharge of water spray from the sprinkler head. Any obstructions which hinder the designed density or spray pattern of the water may create unprotected areas which can cause fire to spread. There are some sprinklers that, because of the system's design, are deflected to specific areas. This type of obstruction is acceptable if the system's design takes it into consideration in providing adequate coverage.

[Statutory Authority: RCW 49.17.040 and 49.17.050. 82-02-003 (Order 81-32), § 296-24-60799, filed 12/24/81.]

WAC 296-24-617 Fixed extinguishing systems, general. This section applies to criteria required for fixed extinguisher systems and all sections of this chapter having number WAC 296-24-617 in the section number shall apply.

[Statutory Authority: RCW 49.17.040 and 49.17.050. 82-02-003 (Order 81-32), § 296-24-617, filed 12/24/81.]

WAC 296-24-61701 Scope and application. (1) This section applies to all fixed extinguishing systems installed to meet a particular WISHA standard except for automatic sprinkler systems which are covered by WAC 296-24-607.

(2) This section also applies to fixed systems not installed to meet a particular WISHA standard, but which, by means of their operation, may expose employees to possible

injury, death, or adverse health consequences caused by the extinguishing agent. Such systems are only subject to the requirements of WAC 296-24-61703 (4) through (7) and 296-24-61705.

(3) Systems otherwise covered in subsection (2) of this section which are installed in areas with no employee exposure are exempted from the requirements of this section.

[Statutory Authority: RCW 49.17.040 and 49.17.050. 82-02-003 (Order 81-32), § 296-24-61701, filed 12/24/81.]

WAC 296-24-61703 General requirements. (1) Fixed extinguishing system components and agents shall be designed and approved for use on the specific fire hazards they are expected to control or extinguish.

(2) If for any reason a fixed extinguishing system becomes inoperable, the employer shall notify employees and take the necessary temporary precautions to assure their safety until the system is restored to operating order. Any defects or impairments shall be properly corrected by trained personnel.

(3) The employer shall provide a distinctive alarm or signaling system which complies with WAC 296-800-310, and is capable of being perceived above ambient noise or light levels, on all extinguishing systems in those portions of the workplace covered by the extinguishing system to indicate when the extinguishing system is discharging. Discharge alarms are not required on systems where discharge is immediately recognizable.

(4) The employer shall provide effective safeguards to warn employees against entry into discharge areas where the atmosphere remains hazardous to employee safety or health.

(5) The employer shall post hazard warning or caution signs at the entrance to, and inside of, areas protected by fixed extinguishing systems which use agents in concentrations known to be hazardous to employee safety and health.

(6) The employer shall assure that fixed systems are inspected annually by a person knowledgeable in the design and function of the system to assure that the system is maintained in good operating condition.

(7) The employer shall assure that the weight and pressure of refillable containers is checked at least semiannually. If the container shows a loss in net content or weight of more than five percent, or a loss in pressure of more than ten percent, it shall be subjected to maintenance.

(8) The employer shall assure that factory charged non-refillable containers which have no means of pressure indication are weighed at least semiannually. If a container shows a loss in net weight of more than five percent it shall be replaced.

(9) The employer shall assure that inspection and maintenance dates are recorded on the container, on a tag attached to the container, or in a central location. A record of the last semiannual check shall be maintained until the container is checked again or for the life of the container, whichever is less.

(10) The employer shall train employees designated to inspect, maintain, operate, or repair fixed extinguishing systems and annually review their training to keep them up-to-date in the functions they are to perform.

(11) The employer shall not use chlorobromomethane or carbon tetrachloride as an extinguishing agent where employees may be exposed.

(12) The employer shall assure that systems installed in the presence of corrosive atmospheres are constructed of noncorrosive material or otherwise protected against corrosion.

(13) Automatic detection equipment shall be approved, installed and maintained in accordance with WAC 296-24-629.

(14) The employer shall assure that all systems designed for and installed in areas with climatic extremes shall operate effectively at the expected extreme temperatures.

(15) The employer shall assure that at least one manual station is provided for discharge activation of each fixed extinguishing system.

(16) The employer shall assure that manual operating devices are identified as to the hazard against which they will provide protection.

(17) The employer shall provide and assure the use of the personal protective equipment needed for immediate rescue of employees trapped in hazardous atmospheres created by an agent discharge.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060. 04-07-161, § 296-24-61703, filed 3/23/04, effective 6/1/04. Statutory Authority: RCW 49.17.040 and 49.17.050. 82-02-003 (Order 81-32), § 296-24-61703, filed 12/24/81.]

WAC 296-24-61705 Total flooding systems with potential health and safety hazards to employees. (1) The employer shall provide an emergency action plan in accordance with WAC 296-24-567 for each area within a workplace that is protected by a total flooding system which provides agent concentrations exceeding the maximum safe levels.

(2) Systems installed in areas where employees cannot enter during or after the system's operation are exempt from the requirements of this section.

(3) On all total flooding systems the employer must provide a predischARGE employee alarm which will give employees time to safely exit from the discharge area prior to system discharge.

Your predischARGE employee alarm systems must:

- Provide enough warning to allow employees to safely escape from the workplace or the immediate work area or both;
- Be capable of being perceived above ambient noise or light levels by all employees in the affected portions of the workplace before system discharge;
- Be distinctive and recognizable as a signal to evacuate the work area;
- Be kept in operating condition except when undergoing repairs or maintenance.

You must explain to each employee how to report emergencies in your workplace. Methods of reporting emergencies include manual pull box alarms, public address systems, radio, or telephones. Post emergency telephone numbers near telephones, or employee notice boards, or other conspicuous locations if you use telephones to report emergencies.

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If you use a communication system that also serves as an employee alarm system, all emergency messages must have priority over all nonemergency messages.

(4) The employer shall provide automatic actuation of total flooding systems by means of an approved fire detection device installed and interconnected with a predischARGE employee alarm system to give employees time to safely exit from the discharge area prior to system discharge.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 01-11-038, § 296-24-61705, filed 5/9/01, effective 9/1/01. Statutory Authority: RCW 49.17.040 and 49.17.050. 82-02-003 (Order 81-32), § 296-24-61705, filed 12/24/81.]

WAC 296-24-61799 Appendix A—Fixed extinguishing systems, general. (1) Scope and application. This section contains the general requirements that are applicable to all fixed extinguishing systems installed to meet WISHA standards. It also applies to those fixed extinguishing systems, generally total flooding, which are not required by WISHA, but which, because of the agent's discharge, may expose employees to hazardous concentrations of extinguishing agents or combustion by-products. Employees who work around fixed extinguishing systems must be warned of the possible hazards associated with the system and its agent. For example, fixed dry chemical extinguishing systems may generate a large enough cloud of dry chemical particles that employees may become visually disoriented. Certain gaseous agents can expose employees to hazardous by-products of combustion when the agent comes into contact with hot metal or other hot surface. Some gaseous agents may be present in hazardous concentrations when the system has totally discharged because an extra rich concentration is necessary to extinguish deep-seated fires. Certain local application systems may be designed to discharge onto the flaming surface of a liquid, and it is possible that the liquid can splatter when hit with the discharging agent. All of these hazards must be determined before the system is placed into operation, and must be discussed with employees.

Based on the known toxicological effects of agents such as carbon tetrachloride and chlorobromomethane, WISHA is not permitting the use of these agents in areas where employees can be exposed to the agent or its side effects. However, chlorobromomethane has been accepted and may be used as an explosion suppression agent in unoccupied spaces. WISHA is permitting the use of this agent only in areas where employees will not be exposed.

(2) Distinctive alarm signals. A distinctive alarm signal is required to indicate that a fixed system is discharging. Such a signal is necessary on those systems where it is not immediately apparent that the system is discharging. For example, certain gaseous agents make a loud noise when they discharge. In this case, no alarm signal is necessary. However, where systems are located in remote locations or away from the general work area and where it is possible that a system could discharge without anyone knowing that it is doing so, then a distinctive alarm is necessary to warn employees of the hazards that may exist. The alarm can be a bell, gong, whistle, horn, flashing light, or any combination of signals as long as it is identifiable as a discharge alarm.

(3) Maintenance. The employer is responsible for the maintenance of all fixed systems, but this responsibility does

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not preclude the use of outside contractors to do such work. New systems should be subjected to an acceptance test before placed in service. The employer should invite the installer, designer, insurance representative and others to witness the test. Problems found during the test need to be corrected before the system is considered operational.

(4) Manual discharge stations. There are instances, such as for mechanical reasons and others, where the standards call for a manual backup activation device. While the location of this device is not specified in the standard, the employer should assume that the device should be located where employees can easily reach it. It could, for example, be located along the main means of egress from the protected area so that employees could activate the system as they evacuate the work area.

(5) Personal protective equipment. The employer is required to provide the necessary personal protective equipment to rescue employees who may be trapped in a totally flooded environment which may be hazardous to their health. The equipment would normally include a positive-pressure self-contained breathing apparatus and any necessary first-aid equipment. In cases where the employer can assure the prompt arrival of the local fire department or plant emergency personnel which can provide the equipment, this can be considered as complying with the standards.

[Statutory Authority: RCW 49.17.040 and 49.17.050. 82-02-003 (Order 81-32), § 296-24-61799, filed 12/24/81.]

WAC 296-24-622 Fixed extinguishing systems, dry chemical. The design and installation requirements specifically applicable to fixed extinguishing systems, using dry chemical as the extinguishing agent, are contained in this section.

[Statutory Authority: RCW 49.17.040 and 49.17.050. 82-02-003 (Order 81-32), § 296-24-622, filed 12/24/81.]

WAC 296-24-62201 Scope and application. This section applies to all fixed extinguishing systems using dry chemical as the extinguishing agent, installed to meet a particular WISHA standard. These systems shall also comply with WAC 296-24-617.

[Statutory Authority: RCW 49.17.040 and 49.17.050. 82-02-003 (Order 81-32), § 296-24-62201, filed 12/24/81.]

WAC 296-24-62203 Specific requirements. (1) The employer shall assure that dry chemical agents are compatible with any foams or wetting agents with which they are used.

(2) The employer may not mix together dry chemical extinguishing agents of different compositions. The employer shall assure that dry chemical systems are refilled with the chemical stated on the approval nameplate or an equivalent compatible material.

(3) When dry chemical discharge may obscure vision, the employer must provide a predischARGE employee alarm which will give employees time to safely exit from the discharge area prior to system discharge.

Your predischARGE employee alarm systems must:

- Provide enough warning to allow employees to safely escape from the workplace or the immediate work area or both.

- Be capable of being perceived above ambient noise or light levels by all employees in the affected portions of the workplace before system discharge.

- Be distinctive and recognizable as a signal to evacuate the work area.

- Be kept in operating condition except when undergoing repairs or maintenance.

You must explain to each employee how to report emergencies in your workplace. Methods of reporting emergencies include manual pull box alarms, public address systems, radio, or telephones. Post emergency telephone numbers near telephones, or employee notice boards, or other conspicuous locations if you use telephones to report emergencies.

If you use a communication system that also serves as an employee alarm system, all emergency messages must have priority over all nonemergency messages.

(4) The employer shall sample the dry chemical supply of all but stored pressure systems at least annually to assure that the dry chemical supply is free of moisture which may cause the supply to cake or form lumps.

(5) The employer shall assure that the rate of application of dry chemicals is such that the designed concentration of the system will be reached within thirty seconds of initial discharge.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 01-11-038, § 296-24-62203, filed 5/9/01, effective 9/1/01. Statutory Authority: RCW 49.17.040 and 49.17.050. 82-02-003 (Order 81-32), § 296-24-62203, filed 12/24/81.]

WAC 296-24-62299 Appendix A—Fixed extinguishing systems, dry chemical. (1) Scope and application. The requirements of this section apply only to dry chemical systems. These requirements are to be used in conjunction with the requirements of WAC 296-24-617.

(2) Maintenance. The employer is responsible for assuring that dry chemical systems will operate effectively. To do this, periodic maintenance is necessary. One test that must be conducted during the maintenance check is one which will determine if the agent has remained free of moisture. If an agent absorbs any moisture, it may tend to cake and thereby clog the system. An easy test for acceptable moisture content is to take a lump of dry chemical from the container and drop it from a height of four inches. If the lump crumbles into fine particles, the agent is acceptable.

[Statutory Authority: RCW 49.17.040 and 49.17.050. 82-02-003 (Order 81-32), § 296-24-62299, filed 12/24/81.]

WAC 296-24-623 Fixed extinguishing systems, gaseous agent. This section contains the design and installation requirements for fixed extinguishing systems using gaseous agents.

[Statutory Authority: RCW 49.17.040 and 49.17.050. 82-02-003 (Order 81-32), § 296-24-623, filed 12/24/81.]

WAC 296-24-62301 Scope and application. (1) Scope. This section applies to all fixed extinguishing systems, using a gas as the extinguishing agent, installed to meet a particular WISHA standard. These systems shall also comply with

WAC 296-24-617. In some cases, the gas may be in a liquid state during storage.

(2) Application. The requirements of WAC 296-24-61703 (2) and (4) through (7) shall apply only to total flooding systems.

[Statutory Authority: RCW 49.17.040 and 49.17.050. 82-02-003 (Order 81-32), § 296-24-62301, filed 12/24/81.]

WAC 296-24-62303 Specific requirements. (1)

Agents used for initial supply and replenishment shall be of the type approved for the system's application. Carbon dioxide obtained by dry ice conversion to liquid is not acceptable unless it is processed to remove excess water and oil.

(2) Except during overhaul, the employer shall assure that the designed concentration of gaseous agents is maintained until the fire has been extinguished or is under control.

(3) The employer shall assure that employees are not exposed to toxic levels of gaseous agent or its decomposition products.

(4) The employer shall assure that the designed extinguishing concentration is reached within thirty seconds of initial discharge except for Halon systems which must achieve design concentration within ten seconds.

(5) The employer shall provide a distinctive predischarge employee alarm capable of being perceived above ambient light or noise levels when agent design concentrations exceed the maximum safe level for employee exposure. A predischarge employee alarm for alerting employees before system discharge shall be provided on Halon 1211 and carbon dioxide systems with a design concentration of four percent or greater, and for Halon 1301 systems with a design concentration of ten percent or greater. The predischarge employee alarm shall provide employees time to safely exit the discharge area prior to system discharge.

(6)(a) Where egress from an area cannot be accomplished within one minute, the employer shall not use Halon 1301 in concentrations greater than seven percent.

(b) Where egress takes greater than thirty seconds but less than one minute, the employer shall not use Halon 1301 in a concentration greater than ten percent.

(c) Halon 1301 concentrations greater than ten percent are only permitted in areas not normally occupied by employees provided that any employee in the area can escape within thirty seconds. The employer shall assure that no unprotected employees enter the area during agent discharge.

[Statutory Authority: RCW 49.17.040 and 49.17.050. 82-02-003 (Order 81-32), § 296-24-62303, filed 12/24/81.]

WAC 296-24-62399 Appendix A—Fixed extinguishing systems, gaseous agent. (1) Scope and application. This section applies only to those systems which use gaseous agents. The requirements of WAC 296-24-617 also apply to the gaseous agent systems covered in this section.

(2) Design concentrations. Total flooding gaseous systems are based on the volume of gas which must be discharged in order to produce a certain designed concentration of gas in an enclosed area. The concentration needed to extinguish a fire depends on several factors including the type of fire hazard and the amount of gas expected to leak away from the area during discharge. At times it is necessary to "super-saturate" a work area to provide for expected leakage from

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the enclosed area. In such cases, employers must assure that the flooded area has been ventilated before employees are permitted to reenter the work area without protective clothing and respirators.

(3) Toxic decomposition. Certain halogenated hydrocarbons will break down or decompose when they are combined with high temperatures found in the fire environment. The products of the decomposition can include toxic elements or compounds. For example, when Halon 1211 is placed into contact with hot metal it will break down and form bromide or fluoride fumes. The employer must find out which toxic products may result from decomposition of a particular agent from the manufacturer, and take the necessary precautions to prevent employee exposure to the hazard.

[Statutory Authority: RCW 49.17.040 and 49.17.050. 82-02-003 (Order 81-32), § 296-24-62399, filed 12/24/81.]

WAC 296-24-627 Fixed extinguishing systems, water spray and foam. This section contains the design and installation requirements for extinguishing systems using water or foam solution as the extinguishing agent.

[Statutory Authority: RCW 49.17.040 and 49.17.050. 82-02-003 (Order 81-32), § 296-24-627, filed 12/24/81.]

WAC 296-24-62701 Scope and application. This section applies to all fixed extinguishing systems, using water or foam solution as the extinguishing agent, installed to meet a particular WISHA standard. These systems shall also comply with WAC 296-24-617. This section does not apply to automatic sprinkler systems which are covered under WAC 296-24-607.

[Statutory Authority: RCW 49.17.040 and 49.17.050. 82-02-003 (Order 81-32), § 296-24-62701, filed 12/24/81.]

WAC 296-24-62703 Specific requirements. (1) The employer shall assure that foam and water spray systems are designed to be effective in at least controlling fire in the protected area or on protected equipment.

(2) The employer shall assure that drainage of water spray systems is directed away from areas where employees are working and that no emergency egress is permitted through the drainage path.

[Statutory Authority: RCW 49.17.040 and 49.17.050. 82-02-003 (Order 81-32), § 296-24-62703, filed 12/24/81.]

WAC 296-24-62799 Appendix A—Fixed extinguishing systems, water spray and foam. (1) Scope and application. This section applies to those systems that use water spray or foam. The requirements of WAC 296-24-617 also apply to this type of system.

(2) Characteristics of foams. When selecting the type of foam for a specific hazard, the employer should consider the following limitations of some foams.

(a) Some foams are not acceptable for use on fires involving flammable gases and liquefied gases with boiling points below ambient workplace temperatures. Other foams are not effective when used on fires involving polar solvent liquids.

(b) Any agent using water as part of the mixture should not be used on fire involving combustible metals unless it is

applied under proper conditions to reduce the temperature of burning metal below the ignition temperature. The employer should use only those foams that have been tested and accepted for this application by a recognized independent testing laboratory.

(c) Certain types of foams may be incompatible and break down when they are mixed together.

(d) For fires involving water miscible solvents, employers should use only those foams tested and approved for such use. Regular protein foams may not be effective on such solvents.

Whenever employers provide a foam or water spray system, drainage facilities must be provided to carry contaminated water or foam overflow away from the employee work area and egress routes. This drainage system should drain to a central impounding area where it can be collected and disposed of properly. Other government agencies may have regulations concerning environmental considerations.

[Statutory Authority: RCW 49.17.040 and 49.17.050. 82-02-003 (Order 81-32), § 296-24-62799, filed 12/24/81.]

WAC 296-24-629 Fire detection systems. The requirements for installation, restoration, maintenance, testing and protection of fire detection systems and the criteria for response time can be found in this section.

[Statutory Authority: RCW 49.17.040 and 49.17.050. 82-02-003 (Order 81-32), § 296-24-629, filed 12/24/81.]

WAC 296-24-62901 Scope and application. This section applies to all automatic fire detection systems installed to meet the requirements of a particular WISHA standard.

[Statutory Authority: RCW 49.17.040 and 49.17.050. 82-02-003 (Order 81-32), § 296-24-62901, filed 12/24/81.]

WAC 296-24-62903 Installation and restoration. (1) The employer shall assure that all devices and equipment constructed and installed to comply with this standard are approved for the purpose for which they are intended.

(2) The employer shall restore all fire detection systems and components to normal operating condition as promptly as possible after each test or alarm. Spare detection devices and components which are normally destroyed in the process of detecting fires shall be available on the premises or from a local supplier in sufficient quantities and locations for prompt restoration of the system.

[Statutory Authority: RCW 49.17.040 and 49.17.050. 82-02-003 (Order 81-32), § 296-24-62903, filed 12/24/81.]

WAC 296-24-62905 Maintenance and testing. (1) The employer shall maintain all systems in an operable condition except during repairs or maintenance.

(2) The employer shall assure that fire detectors and fire detection systems are tested and adjusted as often as needed to maintain proper reliability and operating condition except that factory calibrated detectors need not be adjusted after installation.

(3) The employer shall assure that pneumatic and hydraulic operated detection systems installed after July 1, 1982, are equipped with supervised systems.

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(4) The employer shall assure that the servicing, maintenance and testing of fire detection systems, including cleaning and necessary sensitivity adjustments are performed by a trained person knowledgeable in the operations and functions of the system.

(5) The employer shall also assure that fire detectors that need to be cleaned of dirt, dust, or other particulates in order to be fully operational are cleaned at regular periodic intervals.

[Statutory Authority: RCW 49.17.040 and 49.17.050. 82-02-003 (Order 81-32), § 296-24-62905, filed 12/24/81.]

WAC 296-24-62907 Protection of fire detectors. (1) The employer shall assure that fire detection equipment installed outdoors or in the presence of corrosive atmospheres be protected from corrosion. The employer shall provide a canopy, hood, or other suitable protection for detection equipment requiring protection from the weather.

(2) The employer shall locate or otherwise protect detection equipment so that it is protected from mechanical or physical impact which might render it inoperable.

(3) The employer shall assure that detectors are supported independently of their attachment to wires or tubing.

[Statutory Authority: RCW 49.17.040 and 49.17.050. 82-02-003 (Order 81-32), § 296-24-62907, filed 12/24/81.]

WAC 296-24-62909 Response time. (1) The employer shall assure that fire detection systems installed for the purpose of actuating fire extinguishment or suppression systems shall be designed to operate in time to control or extinguish a fire.

(2) The employer shall assure that fire detection systems installed for the purpose of employee alarm and evacuation be designed and installed to provide a warning for emergency action and safe escape of employees.

(3) The employer shall not delay alarms or devices initiated by fire detector actuation for more than thirty seconds unless such delay is necessary for the immediate safety of employees. When such delay is necessary, it shall be addressed in an emergency action plan meeting the requirements of WAC 296-24-567.

[Statutory Authority: RCW 49.17.040 and 49.17.050. 82-02-003 (Order 81-32), § 296-24-62909, filed 12/24/81.]

WAC 296-24-62911 Number, location and spacing of detecting devices. The employer shall assure that the number, spacing and location of fire detectors is based upon design data obtained from field experience, or tests, engineering surveys, the manufacturer's recommendations, or a recognized testing laboratory listing.

[Statutory Authority: RCW 49.17.040 and 49.17.050. 82-02-003 (Order 81-32), § 296-24-62911, filed 12/24/81.]

WAC 296-24-62999 Appendix A—Fire detection systems. (1) Installation and restoration. Fire detection systems must be designed by knowledgeable engineers or other professionals, with expertise in fire detection systems and when the systems are installed, there should be an acceptance test performed on the system to insure it operates properly. The manufacturer's recommendations for system design should

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be consulted. While entire systems may not be approved, each component used in the system is required to be approved. Custom fire detection systems should be designed by knowledgeable fire protection or electrical engineers who are familiar with the workplace hazards and conditions. Some systems may only have one or two individual detectors for a small workplace, but good design and installation is still important. An acceptance test should be performed on all systems, including these smaller systems.

WISHA has a requirement that spare components used to replace those which may be destroyed during an alarm situation be available in sufficient quantities and locations for prompt restoration of the system. This does not mean that the parts or components have to be stored at the workplace. If the employer can assure that the supply of parts is available in the local community or the general metropolitan area of the workplace, then the requirements for storage and availability have been met. The intent is to make sure that the alarm system is fully operational when employees are occupying the workplace, and that when the system operates it can be returned to full service the next day or sooner.

(2) Supervision. Fire detection systems should be supervised. The object of supervision is detection of any failure of the circuitry, and the employer should use any method that will assure that the system's circuits are operational. Electrically operated sensors for air pressure, fluid pressure, or electrical circuits, can provide effective monitoring and are the typical types of supervision.

(3) Protection of fire detectors. Fire detectors must be protected from corrosion either by protective coating, by being manufactured from noncorrosive materials or by location. Detectors must also be protected from mechanical impact damage, either by suitable cages or metal guards where such hazards are present, or by locating them above or out of contact with materials or equipment which may cause damage.

(4) Number, location, and spacing of detectors. This information can be obtained from the approval listing for detectors or NFPA standards. It can also be obtained from fire protection engineers or consultants or manufacturers of equipment who have access to approval listing and design methods.

[Statutory Authority: RCW 49.17.040 and 49.17.050. 82-02-003 (Order 81-32), § 296-24-62999, filed 12/24/81.]

WAC 296-24-63299 Appendix B—National consensus standards. The following table contains a cross-reference listing of those current national consensus standards which contains information and guidelines that would be considered acceptable in complying with requirements in the specific sections.

Section	National Consensus Standard
WAC 296-24-58505 . .	ANSI/NFPA No. 1972, Structural Fire Fighter's Helmets. ANSI Z88.5 American National Standard, Practice for Respirator Protection for the Fire Service. ANSI/NFPA No. 1971, Protective Clothing for Structural Fire Fighters. NFPA No. 1041, Fire Service Instructor Professional Qualifications.

Section	National Consensus Standard
WAC 296-24-592 . .	ANSI/NFPA No. 10, Portable Fire Extinguishers.
WAC 296-24-602 . .	ANSI/NFPA No. 18, Wetting Agents. ANSI/NFPA No. 20, Centrifugal Fire Pumps. NFPA No. 21, Steam Fire Pumps. ANSI/NFPA No. 22, Water Tanks. NFPA No. 24, Outside Protection. NFPA No. 26, Supervision of Valves. NFPA No. 13E, Fire Department Operations in Properties Protected by Sprinkler, Standpipe Systems. ANSI/NFPA No. 194, Fire Hose Connections. NFPA No. 197, Initial Fire Attack, Training for. NFPA No. 1231, Water Supplies for Suburban and Rural Fire Fighting.
WAC 296-24-607 . .	ANSI/NFPA No. 13, Sprinkler Systems. NFPA No. 13A, Sprinkler Systems, Maintenance. ANSI/NFPA No. 18, Wetting Agents. ANSI/NFPA No. 20, Centrifugal Fire Pumps. ANSI/NFPA No. 22, Water Tanks. NFPA No. 24, Outside Protection. NFPA No. 26, Supervision of Valves. ANSI/NFPA No. 72B, Auxiliary Signaling Systems. NFPA No. 1231, Water Supplies for Suburban and Rural Fire Fighting.
WAC 296-24-617 . .	ANSI/NFPA No. 11, Foam Systems. ANSI/NFPA No. 11A, High Expansion Foam Extinguishing Systems. ANSI/NFPA No. 11B, Synthetic Foam and Combined Agent Systems. ANSI/NFPA No. 12, Carbon Dioxide Systems. ANSI/NFPA No. 12A, Halon 1301 Systems. ANSI/NFPA No. 12B, Halon 1211 Systems. ANSI/NFPA No. 15, Water Spray Systems. ANSI/NFPA No. 16, Foam-Water Spray Systems. ANSI/NFPA No. 17, Dry Chemical Systems. ANSI/NFPA No. 69, Explosion Suppression Systems.
WAC 296-24-622 . .	ANSI/NFPA No. 11B, Synthetic Foam and Combined Agent Systems. ANSI/NFPA No. 17, Dry Chemical Systems.
WAC 296-24-623 . .	ANSI/NFPA No. 12, Carbon Dioxide Systems. ANSI/NFPA No. 12A, Halon 1211 Systems. ANSI/NFPA No. 12B, Halon 1301 Systems. ANSI/NFPA No. 69, Explosion Suppression Systems.
WAC 296-24-627 . .	ANSI/NFPA No. 11, Foam Extinguishing Systems. ANSI/NFPA No. 11A, High Expansion Foam Extinguishing Systems. ANSI/NFPA No. 11B, Synthetic Foam and Combined Agent Systems. ANSI/NFPA No. 15, Water Spray Fixed Systems. ANSI/NFPA No. 16, Foam-Water Spray Systems. ANSI/NFPA No. 18, Wetting Agents. NFPA No. 26, Supervision of Valves.
WAC 296-24-629 . .	ANSI/NFPA No. 71, Central Station Signaling Systems. ANSI/NFPA No. 72A, Local Protective Signaling Systems. ANSI/NFPA No. 72B, Auxiliary Signaling Systems. ANSI/NFPA No. 72D, Proprietary Protective Signaling Systems. ANSI/NFPA No. 72E, Automatic Fire Detectors. ANSI/NFPA No. 101, Life Safety Code.

Section	National Consensus Standard
WAC 296-24-631 . .	ANSI/NFPA No. 71, Central Station Signaling Systems. ANSI/NFPA No. 72A, Local Protective Signaling Systems. ANSI/NFPA No. 72B, Auxiliary Protective Signaling Systems. ANSI/NFPA No. 72C, Remote Station Protective Signaling Systems. ANSI/NFPA No. 72D, Proprietary Protective Signaling Systems. ANSI/NFPA No. 101, Life Safety Code.
Metric Conversion . .	ANSI/ASTM NSo. E380, American National Standard for Metric Practice.

NFPA standards are available from the National Fire Protection Association; Batterymarch Park, Quincy, MA 02269-9101.

ANSI Standards are available from the American National Standards Institute; 11 West 42nd Street; New York, NY 10036.

[Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-24-63299, filed 7/20/94, effective 9/20/94. Statutory Authority: RCW 49.17.040 and 49.17.050. 82-02-003 (Order 81-32), § 296-24-63299, filed 12/24/81.]

WAC 296-24-63399 Appendix C—Fire protection references for further information. (1) Appendix general references. The following references provide information which can be helpful in understanding the requirements contained in all of the sections of Part G:

(a) Fire Protection Handbook, National Fire Protection Association, Batterymarch Park, Quincy, MA 02269-9101.

(b) Accident Prevention Manual for Industrial Operations, National Safety Council, 444 North Michigan Avenue, Chicago, IL 60611.

(c) Various associations also publish information which may be useful in understanding these standards. Examples of these associations are: Fire Equipment Manufacturers Association (FEMA) of Cleveland, OH 44115-2851, and the National Association of Fire Equipment Distributors (NAFED) of Chicago, IL 60611-4267.

(2) Appendix references applicable to individual sections. The following references are grouped according to individual sections contained in Part G. These references provide information which may be helpful in understanding and implementing the standards of each section of Part G.

(a) WAC 296-24-58505 - Fire brigades:

(i) Private Fire Brigades, NFPA 27; National Fire Protection Association, Batterymarch Park, Quincy, MA 02269-9101.

(ii) Initial Fire Attack, Training Standard On, NFPA 197; National Fire Protection Association, Batterymarch Park, Quincy, MA 02269-9101.

(iii) Fire Fighter Professional Qualifications, NFPA 1001; National Fire Protection Association, Batterymarch Park, Quincy, MA 02269-9101.

(iv) Organization for Fire Services, NFPA 1201; National Fire Protection Association, Batterymarch Park, Quincy, MA 02269-9101.

(v) Organization of a Fire Department, NFPA 1202; National Fire Protection Association, Batterymarch Park, Quincy, MA 02269-9101.

(vi) Protective Clothing for Structural Fire Fighting, ANSI/NFPA 1971; National Fire Protection Association, Batterymarch Park, Quincy, MA 02269-9101.

(vii) American National Standards Institute for Men's Safety-Toe Footwear, ANSI Z41.1; American National Standards Institute, New York, NY 10036.

(viii) American National Standards Institute for Occupational and Educational Eye and Face Protection, ANSI Z87.1; American National Standards Institute, New York, NY 10036.

(ix) American National Standards Institute, Safety Requirements for Industrial Head Protection, ANSI Z89.1; American National Standards Institute, New York, NY 10036.

(x) Specifications for Protective Headgear for Vehicular Users, ANSI Z90.1; American National Standards Institute, New York, NY 10036.

(xi) Testing Physical Fitness; Davis and Santa Maria, Fire Command, April 1975.

(xii) Development of a Job-Related Physical Performance Examination for Fire Fighters; Dotson and Others. A summary report for the National Fire Prevention and Control Administration, Washington, D.C., March 1977.

(xiii) Proposed Sample Standards for Fire Fighters' Protective Clothing and Equipment; International Association of Fire Fighters, Washington, D.C. 20006-5395.

(xiv) A Study of Facepiece Leakage of Self-Contained Breathing Apparatus by DOP Man Tests; Los Alamos National Laboratory, Los Alamos, N.M.

(xv) The Development of Criteria for Fire Fighters' Gloves; Vol. II: Glove Criteria and Test Methods; National Institute for Occupational Safety and Health, Cincinnati, Ohio, 1976.

(xvi) Model Performance Criteria for Structural Fire Fighters' Helmets; National Fire Prevention and Control Administration, Washington, D.C., 1977.

(xvii) Fire Fighters; Job Safety and Health Magazine, Occupational Safety and Health Administration, Washington, D.C., June 1978.

(xviii) Eating Smoke—The Dispensable Diet; Utech, H.P. The Fire Independent, 1975.

(xix) Project Monoxide—A Medical Study of an Occupational Hazard of Fire Fighters; International Association of Fire Fighters, Washington, D.C. 20006-5395.

(xx) Occupational Exposures to Carbon Monoxide in Baltimore Fire Fighters; Radford Baltimore, MD. Journal of Occupational Medicine, September, 1976.

(xxi) Fire Brigades; National Safety Council, Chicago, IL 60611, 1966.

(xxii) American National Standards Institute, Practice for Respiratory Protection for the Fire Service, ANSI Z88.5; American National Standards Institute, New York, NY 10036.

(xxiii) Respirator Studies for the Nuclear Regulatory Commission; October 1, 1977—September 30, 1978. Evaluation and Performance of Open-Circuit Breathing Apparatus. NUREG/CR-1235. Los Alamos National Laboratory; Los Alamos, NM 87545, January, 1980.

(b) WAC 296-24-592 - Portable fire extinguishers:

(i) Standard for Portable Fire Extinguishers, ANSI/NFPA 10; National Fire Protection Association, Batterymarch Park, Quincy, MA 02269.

(ii) Methods for Hydrostatic Testing of Compressed-Gas Cylinders, C-1; Compressed Gas Association, 1725 Jefferson Davis Highway, Arlington, VA 22202-4100.

(iii) Recommendations for the Disposition of Unserviceable Compressed-Gas Cylinders, C-2; Compressed Gas Association, 1725 Jefferson Davis Highway, Arlington, VA 22202-4100.

(iv) Standard for Visual Inspection of Compressed-Gas Cylinders, C-6; Compressed Gas Association, 1725 Jefferson Davis Highway, Arlington, VA 22202-4100.

(v) Portable Fire Extinguisher Selection Guide, National Association of Fire Equipment Distributors, 401 North Michigan Avenue Chicago, IL 60611-4267.

(c) WAC 296-24-602 - Standpipe and hose systems:

(i) Standard for the Installation of Sprinkler Systems, ANSI/NFPA 13; National Fire Protection Association, Batterymarch Park, Quincy, MA 02269-9101.

(ii) Standard of the Installation of Standpipe and Hose Systems, ANSI/NFPA 14; National Fire Protection Association, Batterymarch Park, Quincy, MA 02269-9101.

(iii) Standard for the Installation of Centrifugal Fire Pumps, ANSI/NFPA 20; National Fire Protection Association, Batterymarch Park, Quincy, MA 02269-9101.

(iv) Standard for Water Tanks for Private Fire Protection, ANSI/NFPA 22; National Fire Protection Association, Batterymarch Park, Quincy, MA 02269-9101.

(v) Standard for Screw Threads and Gaskets for Fire Hose Connections, ANSI/NFPA 194; National Fire Protection Association, Batterymarch Park, Quincy, MA 02269-9101.

(vi) Standard for Fire Hose, NFPA 196; National Fire Protection Association, Batterymarch Park, Quincy, MA 02269-9101.

(vii) Standard for the Care of Fire Hose, NFPA 198; National Fire Protection Association, Batterymarch Park, Quincy, MA 02269-9101.

(d) WAC 296-24-607 - Automatic sprinkler systems:

(i) Standard of the Installation of Sprinkler Systems, ANSI/NFPA 13; National Fire Protection Association, Batterymarch Park, Quincy, MA 02269-9101.

(ii) Standard for the Care and Maintenance of Sprinkler Systems, ANSI/NFPA 13A; National Fire Protection Association, Batterymarch Park, Quincy, MA 02269-9101.

(iii) Standard for the Installation of Standpipe and Hose Systems, ANSI/NFPA 14; National Fire Protection Association, Batterymarch Park, Quincy, MA 02269-9101.

(iv) Standard for the Installation of Centrifugal Fire Pumps, ANSI/NFPA 20; National Fire Protection Association, Batterymarch Park, Quincy, MA 02269-9101.

(v) Standard for Water Tanks for Private Fire Protection, ANSI/NFPA 22; National Fire Protection Association, Batterymarch Park, Quincy, MA 02269-9101.

(vi) Standard for Indoor General Storage, ANSI/NFPA 231; National Fire Protection Association, Batterymarch Park, Quincy, MA 02269-9101.

(vii) Standard for Rack Storage of Materials, ANSI/NFPA 231C; National Fire Protection Association, Batterymarch Park, Quincy, MA 02269-9101.

(e) WAC 296-24-617 - Fixed extinguishing systems, general information:

(i) Standard for Foam Extinguishing Systems, ANSI/NFPA 11; National Fire Protection Association, Batterymarch Park, Quincy, MA 02269-9101.

(ii) Standard for Hi-Expansion Foam Systems, ANSI/NFPA 11A; National Fire Protection Association, Batterymarch Park, Quincy, MA 02269-9101.

(iii) Standard on Synthetic Foam and Combined Agent Systems, ANSI/NFPA 11B; National Fire Protection Association, Batterymarch Park, Quincy, MA 02269-9101.

(iv) Standard on Carbon Dioxide Extinguishing Systems, ANSI/NFPA 12; National Fire Protection Association, Batterymarch Park, Quincy, MA 02269-9101.

(v) Standard on Halon 1301, ANSI/NFPA 12A; National Fire Protection Association, Batterymarch Park, Quincy, MA 02269-9101.

(vi) Standard on Halon 1211, ANSI/NFPA 12B; National Fire Protection Association, Batterymarch Park, Quincy, MA 02269-9101.

(vii) Standard for Water Spray Systems, ANSI/NFPA 15; National Fire Protection Association, Batterymarch Park, Quincy, MA 02269-9101.

(viii) Standard for Foam-Water Sprinkler Systems and Foam-Water Spray Systems, ANSI/NFPA 16; National Fire Protection Association, Batterymarch Park, Quincy, MA 02269-9101.

(ix) Standard for Dry Chemical Extinguishing Systems, ANSI/NFPA 17; National Fire Protection Association, Batterymarch Park, Quincy, MA 02269-9101.

(f) WAC 296-24-622 - Fixed extinguishing systems, dry chemical:

(i) Standard for Dry Chemical Extinguishing Systems, ANSI/NFPA 17; National Fire Protection Association, Batterymarch Park, Quincy, MA 02269-9101.

(ii) National Electrical Code, ANSI/NFPA 70; National Fire Protection Association, Batterymarch Park, Quincy, MA 02269-9101.

(iii) Standard for the Installation of Equipment for the Removal of Smoke and Grease-Laden Vapor from Commercial Cooling Equipment, NFPA 96; National Fire Protection Association, Batterymarch Park, Quincy, MA 02269-9101.

(g) WAC 296-24-623 - Fixed extinguishing systems, gaseous agents:

(i) Standard on Carbon Dioxide Extinguishing Systems, ANSI/NFPA 12; National Fire Protection Association, Batterymarch Park, Quincy, MA 02269-9101.

(ii) Standard on Halon 1301, ANSI/NFPA 12B; National Fire Protection Association, Batterymarch Park, Quincy, MA 02269-9101.

(iii) Standard on Halon 1211, ANSI/NFPA 12B; National Fire Protection Association, Batterymarch Park, Quincy, MA 02269-9101.

(iv) Standard on Explosion Prevention Systems, ANSI/NFPA 69; National Fire Protection Association, Batterymarch Park, Quincy, MA 02269-9101.

(v) National Electrical Code, ANSI/NFPA 70; National Fire Protection Association, Batterymarch Park, Quincy, MA 02269-9101.

(vi) Standard on Automatic Fire Detectors, ANSI/NFPA 72E; National Fire Protection Association, Batterymarch Park, Quincy, MA 02269-9101.

(vii) Determination of Halon 1301/1211 Threshold Extinguishing Concentrations Using the Cup Burner Method, Riley and Olson, Ansul Report AL-530-A.

(h) WAC 296-24-627 - Fixed extinguishing systems, water spray and foam agents:

(i) Standard for Foam Extinguisher Systems, ANSI/NFPA 11; National Fire Protection Association, Batterymarch Park, Quincy, MA 02269-9101.

(ii) Standard for High-Expansion Foam Systems, ANSI/NFPA 11A; National Fire Protection Association, Batterymarch Park, Quincy, MA 02269-9101.

(iii) Standard for Water Spray Fixed Systems for Fire Protection, ANSI/NFPA 15; National Fire Protection Association, Batterymarch Park, Quincy, MA 02269-9101.

(iv) Standard for the Installation of Foam-Water Sprinkler Systems and Foam-Water Spray Systems, ANSI/NFPA 16; National Fire Protection Association, Batterymarch Park, Quincy, MA 02269-9101.

(i) WAC 296-24-629 - Fire detection systems:

(i) National Electrical Code, ANSI/NFPA 70; National Fire Protection Association, Batterymarch Park, Quincy, MA 02269-9101.

(ii) Standard for Central Station Signaling Systems, ANSI/NFPA 71; National Fire Protection Association, Batterymarch Park, Quincy, MA 02269-9101.

(iii) Standard on Automatic Fire Detectors, ANSI/NFPA 72E; National Fire Protection Association, Batterymarch Park, Quincy, MA 02269-9101.

(j) WAC 296-800-310 - Employee alarm systems:

(i) National Electrical Code, ANSI/NFPA 70; National Fire Protection Association, Batterymarch Park, Quincy, MA 02269-9101.

(ii) Standard for Central Station Signaling Systems, ANSI/NFPA 71; National Fire Protection Association, Batterymarch Park, Quincy, MA 02269-9101.

(iii) Standard for Local Protective Signaling Systems, ANSI/NFPA 72A; National Fire Protection Association, Batterymarch Park, Quincy, MA 02269-9101.

(iv) Standard for Auxiliary Protective Signaling Systems, ANSI/NFPA 72B; National Fire Protection Association, Batterymarch Park, Quincy, MA 02269-9101.

(v) Standard for Remote Station Protective Signaling Systems, ANSI/NFPA 72C; National Fire Protection Association, Batterymarch Park, Quincy, MA 02269-9101.

(vi) Standard for Proprietary Protective Signaling Systems, ANSI/NFPA 72D; National Fire Protection Association, Batterymarch Park, Quincy, MA 02269-9101.

(vii) Vocal Emergency Alarms in Hospitals and Nursing Facilities: Practice and Potential, National Institute of Standards and Technology, Quince Orchard and Clopper Roads, Gaithersburg, MD 20899-0011, July, 1977.

(viii) Fire Alarm and Communication Systems, National Institute of Standards and Technology, Quince Orchard and Clopper Roads, Gaithersburg, MD 20899-0011, April, 1976.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060. 04-07-161, § 296-24-63399, filed 3/23/04, effective 6/1/04. Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-24-63399, filed 7/20/94, effective 9/20/94; 92-23-017 (Order 92-13), § 296-24-63399,

filed 11/10/92, effective 12/18/92; 88-14-108 (Order 88-11), § 296-24-63399, filed 7/6/88; 87-24-051 (Order 87-24), § 296-24-63399, filed 11/30/87. Statutory Authority: RCW 49.17.040 and 49.17.050. 82-02-003 (Order 81-32), § 296-24-63399, filed 12/24/81.]

WAC 296-24-63499 Appendix D—Availability of publications incorporated by references in WAC 296-24-58505—Fire brigades. The final standard for fire brigades, WAC 296-24-585, contains provisions which incorporate certain publications by reference. The publications provide criteria and test methods for protective clothing worn by those fire brigade members who are expected to perform interior structural fire fighting. The standard references the publications as the chief sources of information for determining if the protective clothing affords the required level of protection.

It is appropriate to note that the final standard does not require employers to purchase a copy of the referenced publications. Instead, employers can specify (in purchase orders to the manufacturers) that the protective clothing meet the criteria and test methods contained in the referenced publications and can rely on the manufacturers assurances of compliance. Employers, however, may desire to obtain a copy of the referenced publications for their own information.

The section designation of the standard where the referenced publications appear, the title of the publications, and the availability of the publications are as follows:

Section Designation	Referenced Publication	Available From
WAC 296-24-58513 (3)(b)	"Protective Clothing for Structural Fire Fighting." NFPA	National Fire Protection Association, Batterymarch Park, Quincy, MA 02269-9101.
WAC 296-24-58513 (4)(a)	"Development of Criteria for Fire Fighter's Gloves; Vol. II, Part II: Test Methods"(1976)	U.S. Government Printing Office, Washington, D.C. 20401. Stock No. for Vol. II is: 071-033-021-1.
WAC 296-24-58513 (5)(a)	"Model Performance Criteria for Structural Fire fighter's Helmets" (1977)	U.S. Fire Administration, National Fire Safety and Research Office, 16825 South Seton Avenue, Emmitsburg, Maryland 21727.

The referenced publications (or a microfiche of the publications) are available for review at many universities and public libraries throughout the country. These publications may also be examined at the OSHA Technical Data Center, Room N2439-Rear, United States Department of Labor, 200 Constitution Avenue Northwest, Washington, D.C. 20210 (202-219-7500), or at any OSHA Regional Office (see telephone directories under United States Government-Labor Department).

[Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050. 02-12-098, § 296-24-63499, filed 6/5/02, effective 8/1/02. Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-24-63499, filed 7/20/94, effective 9/20/94. Statutory Authority: RCW 49.17.040 and 49.17.050. 82-02-003 (Order 81-32), § 296-24-63499, filed 12/24/81.]

WAC 296-24-63599 Appendix E—Test methods for protective clothing. This appendix contains test methods which must be used to determine if protective clothing

affords the required level of protection as specified in WAC 296-24-58505 - fire brigades.

(1) Puncture resistance test method for foot protection.

(a) Apparatus. The puncture resistance test shall be performed on a testing machine having a movable platform adjusted to travel at one-quarter-inch per minute (0.1 cm/sec). Two blocks of hardwood, metal, or plastic shall be prepared as follows: The blocks shall be of such size and thickness as to insure a suitable rigid test ensemble and allow for at least one-inch of the pointed end of an 8D nail to be exposed for the penetration. One block shall have a hole drilled to hold an 8D common nail firmly at an angle of 98°. The second block shall have a maximum one-half inch (1.3 cm) diameter hole drilled through it so that the hole will allow free passage of the nail after it penetrates the insole during the test.

(b) Procedure. The test ensemble consisting of the sample unit, the two prepared blocks, a piece of leather outsole ten to eleven irons thick and a new 8D nail, shall be placed as follows: The 8D nail in the hole, the sample of outsole stock superimposed above the nail, the area of the sole plate to be tested placed on the outsole, and the second block with hole so placed as to allow for free passage of the nail after it passes through the outsole stock and sole plate in that order. The machine shall be started and the pressure, in pounds required for the nail to completely penetrate the outsole and sole plate, recorded to the nearest five pounds. Two determinations shall be made on each sole plate and the results averaged. A new nail shall be used for each determination.

(c) Source. These test requirements are contained in "Military Specification For Fireman's Boots," MIL-B-2885D (1973 and amendment dated 1975) and are reproduced for your convenience.

(2) Test method for determining the strength of cloth by tearing: Trapezoid method.

(a) Test specimen. The specimen shall be a rectangle of cloth three-inches by six-inches (7.6 cm by 15.2 cm). The long dimension shall be parallel to the warp for warp tests and parallel to the filling for filling tests. No two specimens for warp tests shall contain the same warp yarns, nor shall any two specimens for filling tests contain the same filling yarns. The specimen shall be taken no nearer the selvage than 1/10 the width of the cloth. An isosceles trapezoid having an altitude of three inches (7.6 cm) and bases of one inch (2.5 cm) and four inches (10.2 cm) in length, respectively, shall be marked on each specimen, preferably with the aid of a template. A cut approximately three-eighths inch (1 cm) in length shall then be made in the center of a perpendicular to the one inch (2.5 cm) edge.

(b) Apparatus.

(i) Six-ounce (.17 kg) weight tension clamps shall be used so designed that the six ounces (.17 kg) of weight are distributed evenly across the complete width of the sample.

(ii) The machine shall consist of three main parts: Straining mechanism, clamps for holding specimen, and load and elongation recording mechanisms.

(iii) A machine wherein the specimen is held between two clamps and strained by a uniform movement of the pulling clamp shall be used.

(iv) The machine shall be adjusted so that the pulling clamp shall have a uniform speed of 12 ± 10.5 inches per minute ($0.5 \pm .02$ cm/sec).

(v) The machine shall have two clamps with two jaws on each clamp. The design of the two clamps shall be such that one gripping surface or jaw may be an integral part of the rigid frame of the clamp or be fastened to allow a slight vertical movement, while the other gripping surface or jaw shall be completely moveable. The dimension of the immovable jaw of each clamp parallel to the application of the load shall measure one inch, and the dimension of the jaw perpendicular to this direction shall measure three inches or more. The face of the moveable jaw of each clamp shall measure one inch by three inches.

Each jaw face shall have a flat, smooth, gripping surface. All edges which might cause a cutting action shall be rounded to a radius of not over 1/64 inch (.04 cm). In cases where a cloth tends to slip when being tested, the jaws may be faced with rubber or other material to prevent slippage. The distance between the jaws (gage length) shall be one inch at the start of the test.

(vi) Calibrated dial; scale or chart shall be used to indicate applied load and elongation. The machine shall be adjusted or set, so that the maximum load required to break the specimen will remain indicated on the calibrated dial or scale after the test specimen has ruptured.

(vii) The machine shall be of such capacity that the maximum load required to break the specimen shall be not greater than eighty-five percent or less than fifteen percent of the rated capacity.

(viii) The error of the machine shall not exceed two percent up to and including a fifty-pound load (22.6 kg) and one percent over a fifty-pound load (22.6 kg) at any reading within its loading range.

(ix) All machine attachments for determining maximum loads shall be disengaged during this test.

(c) Procedure.

(i) The specimen shall be clamped in the machine along the nonparallel sides of the trapezoid so that these sides lie along the lower edge of the upper clamp and the upper edge of the lower clamp with the cut halfway between the clamps. The short trapezoid base shall be held taut and the long trapezoid base shall lie in the folds.

(ii) The machine shall be started and the force necessary to tear the cloth shall be observed by means of an autographic recording device. The speed of the pulling clamp shall be 12 inches \pm 0.5-inch per minute ($0.5 \pm .02$ cm/sec).

(iii) If a specimen slips between the jaws, breaks in or at the edges of the jaws, or if for any reason attributable to faulty technique, an individual measurement falls markedly below the average test results for the sample unit, such result shall be discarded and another specimen shall be tested.

(iv) The tearing strength of the specimen shall be the average of the five highest peak loads of resistance registered for three inches (7.6 cm) of separation of the tear.

(d) Report.

(i) Five specimens in each of the warp and filling direction shall be tested from each sample unit.

(ii) The tearing strength of the sample unit shall be the average of the result obtained from the specimens tested in

each of the warp and filling directions and shall be reported separately to the nearest 0.1 pound (.05 kg).

(e) Source. These test requirements are contained in "Federal Test Method Standard 191, Method 5136," and are reproduced for your convenience.

(3) Test method for determining flame resistance of cloth; vertical.

(a) Test specimen. The specimen shall be a rectangle of cloth two and three-quarter inches (7.0 cm) by twelve inches (30.5 cm) with the long dimension parallel to either the warp or filling direction of the cloth. No two warp specimens shall contain the same warp yarns, and no two filling specimens shall contain the same filling yarn.

(b) Number of determinations. Five specimens from each of the warp and filling directions shall be tested from each sample unit.

(c) Apparatus.

(i) Cabinet. A cabinet and accessories shall be fabricated in accordance with the requirements specified in Figures L-1, L-2, and L-3. Galvanized sheet metal or other suitable metal shall be used. The entire inside back wall of the cabinet shall be painted black to facilitate the viewing of the test specimen and pilot flame.

(ii) Burner. The burner shall be equipped with a variable orifice to adjust the flame height, a barrel having a three-eighth inch (9.5 mm) inside diameter and a pilot light.

(A) The burner may be constructed by combining a three-eighth inch (1 cm) inside diameter barrel $3 \pm 1/4$ -inches ($7.6 \pm .6$ cm) long from a fixed orifice burner with a base from a variable orifice burner.

(B) The pilot light tube shall have a diameter of approximately one-sixteenth inch (.2 cm) and shall be spaced one-eighth inch (.3 cm) away from the burner edge with a pilot flame one-eighth inch (.3 cm) long.

(C) The necessary gas connections and the applicable plumbing shall be as specified in Figure L-4 except that a solenoid valve may be used in lieu of the stopcock valve to which the burner is attached. The stopcock valve or solenoid valve, whichever is used, shall be capable of being fully opened or fully closed in 0.1 second.

(D) On the side of the barrel of the burner, opposite the pilot light there shall be a metal rod of approximately one-eighth inch (.3 cm) diameter spaced one-half inch (1.3 cm) from the barrel and extending above the burner. The rod shall have two five-sixteenth inch (.8 cm) prongs marking the distances of three-quarters inch (1.9 cm), and one and one-half inches (3.8 cm) above the top of the burner.

(E) The burner shall be fixed in a position so that the center of the barrel of the burner is directly below the center of the specimen.

(iii) There shall be a control valve system with a delivery rate designed to furnish gas to the burner under a pressure of $2-1/2 \pm 1/4$ (psi) (17.5 ± 1.8 kPa) at the burner inlet. The manufacturer's recommended delivery rate for the valve system shall be included in the required pressure.

(iv) A synthetic gas mixture shall be of the following composition within the following limits (analyzed at standard conditions): 55 ± 3 percent hydrogen, 24 ± 1 percent methane, 3 ± 1 percent ethane, and 18 ± 1 percent carbon monoxide which will give a specific gravity of 0.365 ± 0.018 (air =

1) and a B.T.U. content of 540 ± 20 per cubic foot (20.1 ± 3.7 kJL) (dry basis) at 69.8 F (21 C).

(v) There shall be metal hooks and weights to produce a series of total loads to determine length of char. The metal hooks shall consist of No. 19 gage steel wire or equivalent and shall be made from three inch (7.6 cm) lengths of wire and bent one-half inch (1.3 cm) from one end to a 45-degree hook. One end of the hook shall be fastened around the neck of the weight to be used.

(vi) There shall be a stop watch or other device to measure the burning time 0.2 second.

(vii) There shall be a scale, graduated in 0.1 inch (.3 cm) to measure the length of char.

(d) Procedure.

(i) The material undergoing test shall be evaluated for the characteristics of after-flame time and char length on each specimen.

(ii) All specimens to be tested shall be at moisture equilibrium under standard atmospheric conditions in accordance with subsection (3)(c) of this appendix. Each specimen to be tested shall be exposed to the test flame within twenty seconds after removal from the standard atmosphere. In case of dispute, all testing will be conducted under standard atmospheric conditions in accordance with subsection (3)(c) of this appendix.

(iii) The specimen in its holder shall be suspended vertically in the cabinet in such a manner that the entire length of the specimen is exposed and the lower end is three-quarters inch (1.9 cm) above the top of the gas burner. The apparatus shall be set up in a draft-free area.

(iv) Prior to inserting the specimen, the pilot flame shall be adjusted to approximately one-eighth inch (.3 cm) in height measured from its lowest point to the tip.

The burner flame shall be adjusted by means of the needle valve in the base of the burner to give a flame height of one and one-half inches (3.8 cm) with the stopcock fully open and the air supply to burner shut off and taped. The one and one-half inch (3.8 cm) flame height is obtained by adjusting the valve so that the uppermost portion (tip) of the flame is level with the tip of the metal prong (see Fig. L-2) specified for adjustment of flame height. It is an important aspect of the evaluation that the flame height to be adjusted with the tip of the flame level with the tip of the metal prong. After inserting the specimen, the stopcock shall be fully opened, and the burner flame applied vertically at the middle of the lower edge of the specimen for twelve seconds and the burner turned off. The cabinet door shall remain shut during testing.

(v) The after-flame shall be the time the specimen continues to flame after the burner flame is shut off.

(vi) After each specimen is removed, the test cabinet shall be cleared of fumes and smoke prior to testing the next specimen.

(vii) After both flaming and glowing have ceased, the char length shall be measured. The char length shall be the distance from the end of the specimen, which was exposed to the flame, to the end of a tear (made lengthwise) of the specimen through the center of the charred area as follows: The specimen shall be folded lengthwise and creased by hand along a line through the highest peak of the charred area. The hook shall be inserted in the specimen (or a hole, one-quarter inch (.6 cm) diameter or less, punched out for the hook) at

one side of the charred area one-quarter inch (.6 cm) from the adjacent outside edge and one-quarter inch (.6 cm) in from the lower end. A weight of sufficient size such that the weight and hook together shall equal the total tearing load required in Table L-2 of this section shall be attached to the hook.

(viii) A tearing force shall be applied gently to the specimen by grasping the corner of the cloth at the opposite edge of the char from the load and raising the specimen and weight clear of the supporting surface. The end of the tear shall be marked off on the edge and the char length measurement made along the undamaged edge.

Loads for determining char length applicable to the weight of the test cloth shall be as shown in Table L-2.

TABLE L-2

Specified weight per square yard of cloth before any fire retardant treatment or coating - ounces	Total learning weight for determining the charred length - pound
2.0 to 6.0	0.25
Over 6.0 to 15.0	0.50
Over 15.0 to 23.0	0.75
Over 23.0	1.0

To change into S.I. (System International) units, 1 ounce = 28.35 grams, 1 pound = 453 grams, 1 yard = .91 metre.

(ix) The after-flame time of the specimen shall be recorded to the nearest 0.2 second and the char length to the nearest 0.1 inch (.3 cm).

(e) Report.

(i) The after-flame time and char length of the sample unit shall be the average of the results obtained from the individual specimens tested. All values obtained from the individual specimens shall be recorded.

(ii) The after-flame time shall be reported in the nearest 0.2 second and the char length to the nearest 0.1 inch (.3 cm).

(f) Source. These test requirements are contained in "Federal Test Method Standard 191, Method 5903 (1971)," and are reproduced for your convenience.

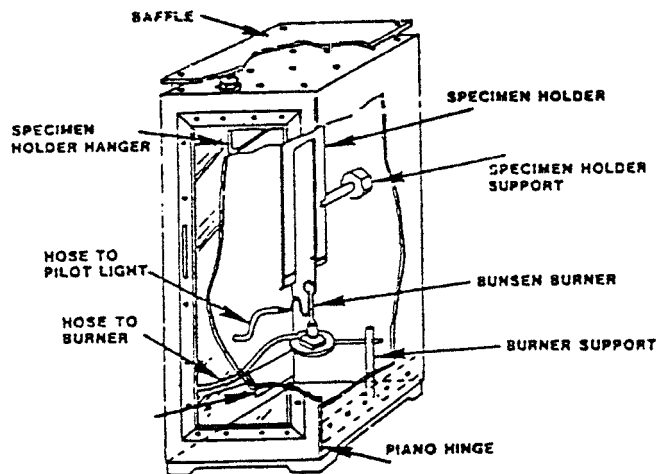


Figure L-1 - Vertical flame resistance textile apparatus. All given dimensions are in inches. System International (S.I.) unit: 1 inch = 2.54 cm.

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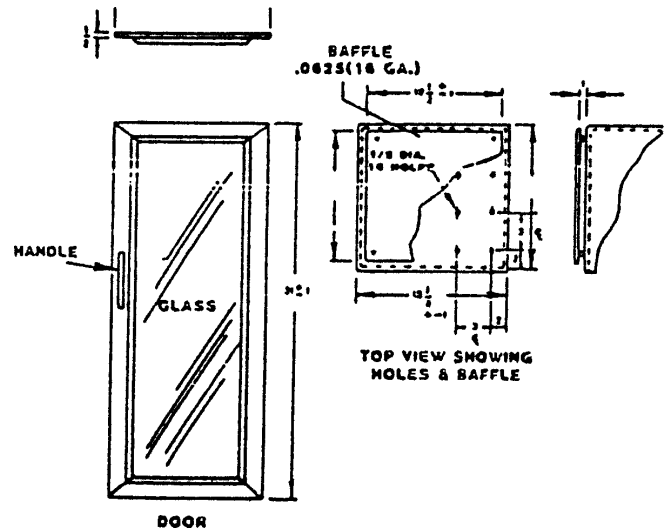


Figure L-2 - Vertical flame resistance textile apparatus, door and top view w/baffle. All given dimensions are in inches. System International (S.I.) unit: 1 inch = 2.54 cm.

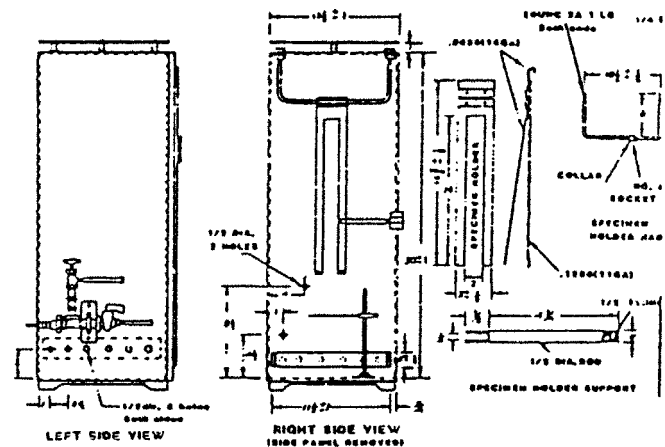


Figure L-3 - Vertical flame resistance textile apparatus, views and details. All given dimensions are in inches. System International (S.I.) unit: 1 inch = 2.54 cm.

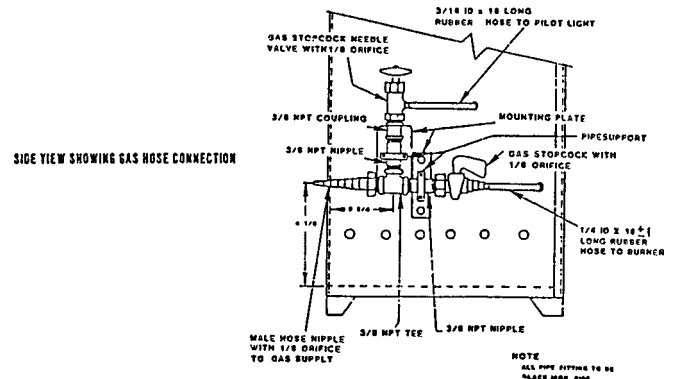


Figure L-4 - Vertical flame resistance textile apparatus. All given dimensions are in inches. System International (S.I.) unit: 1 inch = 2.54 cm.

[Title 296 WAC—p. 793]

[Statutory Authority: Chapter 49.17 RCW. 92-23-017 (Order 92-13), § 296-24-63599, filed 11/10/92, effective 12/18/92; 87-24-051 (Order 87-24), § 296-24-63599, filed 11/30/87. Statutory Authority: RCW 49.17.040 and 49.17.050. 82-02-003 (Order 81-32), § 296-24-63599, filed 12/24/81.]

PART H-2

SAFE PRACTICES AND VENTILATION OF ABRASIVE BLASTING OPERATIONS

Note: Safe practices and ventilation of abrasive blasting operations have been moved to chapter 296-818 WAC.

PART I

WELDING, CUTTING AND BRAZING

WAC 296-24-680 Welding, cutting, and brazing. You are required to protect employees from exposure to hexavalent chromium during the stainless steel welding process. See WAC 296-62-08003, Hexavalent chromium for specific criteria.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. 06-16-106, § 296-24-680, filed 8/1/06, effective 9/1/06; Order 73-5, § 296-24-680, filed 5/9/73 and Order 73-4, § 296-24-680, filed 5/7/73.]

WAC 296-24-68001 Definitions. (1) "Welder" and "welding operator" mean any operator of electric or gas welding and cutting equipment.

(2) "Approved" means listed or approved by a nationally recognized testing laboratory. Refer to WAC 296-24-58501(19) for definitions of listed and approved, and federal regulation 29 CFR 1910.7 for nationally recognized testing laboratory.

(3) All other welding terms are used in accordance with American Welding Society-Terms and Definitions-A3.0-1969.

[Statutory Authority: Chapter 49.17 RCW. 88-23-054 (Order 88-25), § 296-24-68001, filed 11/14/88; Order 73-5, § 296-24-68001, filed 5/9/73 and Order 73-4, § 296-24-68001, filed 5/7/73.]

WAC 296-24-682 Installation and operation of oxygen fuel gas systems for welding and cutting.

[Order 73-5, § 296-24-682, filed 5/9/73 and Order 73-4, § 296-24-682, filed 5/7/73.]

WAC 296-24-68201 General requirements. (1) Flammable mixture. Mixtures of fuel gases and air or oxygen may be explosive and shall be guarded against. No device or attachment facilitating or permitting mixtures of air or oxygen with flammable gases prior to consumption, except at the burner or in a standard torch, shall be allowed unless approved for the purpose.

(2) Maximum pressure. Under no condition shall acetylene be generated, piped (except in approved cylinder manifolds) or utilized at a pressure in excess of 15 p.s.i. gage pressure or 30 p.s.i. absolute pressure. (The 30 p.s.i. absolute pressure limit is intended to prevent unsafe use of acetylene in pressurized chambers such as caissons, underground excavations or tunnel construction.) This requirement does not apply to storage of acetylene dissolved in a suitable solvent in cylinders manufactured and maintained according to U.S. Department of Transportation requirements, or to acetylene

for chemical use. The use of liquid acetylene shall be prohibited.

(3) Apparatus. Only approved apparatus such as torches, regulators or pressure-reducing valves, acetylene generators, and manifolds shall be used. Use of replacement tips will not nullify the "approved apparatus" status of a torch, if such replacement tips are made to the same specifications as the original tip of the torch at the time of approval by the nationally recognized testing laboratory, or if the use of such tips in conjunction with convertor/adaptors results in the same specifications as the original tip at the time of approval by the nationally recognized testing laboratory.

(4) Personnel. Workers in charge of the oxygen or fuel-gas supply equipment, including generators, and oxygen or fuel-gas distribution piping systems shall be instructed and judged competent by their employers for this important work before being left in charge. Rules and instructions covering the operation and maintenance of oxygen or fuel-gas supply equipment including generators, and oxygen or fuel-gas distribution piping systems shall be readily available.

[Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-24-68201, filed 7/20/94, effective 9/20/94; 89-11-035 (Order 89-03), § 296-24-68201, filed 5/15/89, effective 6/30/89; Order 73-5, § 296-24-68201, filed 5/9/73 and Order 73-4, § 296-24-68201, filed 5/7/73.]

WAC 296-24-68203 Cylinders and containers. (1) Approval and marking. All portable cylinders used for the storage and shipment of compressed gases shall be constructed and maintained in accordance with the regulations of the United States Department of Transportation, 49 CFR Parts 171-179.

(a) Compressed gas cylinders shall be legibly marked, for the purpose of identifying the gas content, with either the chemical or the trade name of the gas. Such marking shall be by means of stenciling, stamping, or labeling, and shall not be readily removable. Whenever practical, the marking shall be located on the shoulder of the cylinder.

Note: This method conforms to the American National Standard Method for Marking Portable Compressed Gas Containers to Identify the Material Contained, ANSI Z 48.1-1954.

(b) Compressed gas cylinders shall be equipped with connections complying with the American National Standard Compressed Gas Cylinder Valve Outlet and Inlet Connections, ANSI B 57.1-1965.

(c) All cylinders with a water weight capacity of over thirty pounds shall be equipped with means of connecting a valve protection cap or with a collar or recess to protect the valve.

(2) Storage of cylinders - general.

(a) Cylinders shall be kept away from radiators and other sources of heat.

(b) Inside of buildings, cylinders shall be stored in a well-protected, well-ventilated, dry location, at least twenty feet from highly combustible materials such as oil or excelsior. Cylinders should be stored in definitely assigned places away from elevators, stairs, or gangways. Assigned storage spaces shall be located where cylinders will not be knocked over or damaged by passing or falling objects, or subject to tampering by unauthorized persons. Cylinders shall not be kept in unventilated enclosures such as lockers and cupboards.

(c) Empty cylinders shall have their valves closed.

(d) Valve protection caps, where cylinder is designed to accept a cap, shall always be in place, hand-tight, except when cylinders are in use or connected for use.

(3) Fuel-gas cylinder storage. Inside a building, cylinders, except those in actual use or attached ready for use, shall be limited to a total gas capacity of two thousand cubic feet or three hundred pounds of liquefied petroleum gas.

(a) For storage in excess of two thousand cubic feet total gas capacity of cylinders or three hundred pounds of liquefied petroleum gas, a separate room or compartment conforming to the requirements specified in WAC 296-24-68211 (6)(h) and (i) shall be provided, or cylinders shall be kept outside or in a special building. Special buildings, rooms or compartments shall have no open flame for heating or lighting and shall be well ventilated. They may also be used for storage of calcium carbide in quantities not to exceed six hundred pounds, when contained in metal containers complying with WAC 296-24-68213 (1)(a) and (b). Signs should be conspicuously posted in such rooms reading, "Danger—No smoking, matches or open lights," or other equivalent wording.

(b) Acetylene cylinders shall be stored valve end up.

(4) Oxygen storage.

(a) Oxygen cylinders shall not be stored near highly combustible material, especially oil and grease; or near reserve stocks of carbide and acetylene or other fuel-gas cylinders, or near any other substance likely to cause or accelerate fire; or in an acetylene generator compartment.

(b) Oxygen cylinders stored in outside generator houses shall be separated from the generator or carbide storage rooms by a noncombustible partition having a fire-resistance rating of at least one hour. This partition shall be without openings and shall be gastight.

(c) Oxygen cylinders in storage shall be separated from fuel-gas cylinders or combustible materials (especially oil or grease), a minimum distance of twenty feet or by a noncombustible barrier at least five feet high having a fire-resistance rating of at least one-half hour. (Cylinders "in-use," secured to a hand truck or structural member, with regulators, hoses, and torch temporarily removed for security purposes overnight or weekends, are not considered "in-storage.")

(d) Where a liquid oxygen system is to be used to supply gaseous oxygen for welding or cutting and the system has a storage capacity of more than thirteen thousand cubic feet of oxygen (measured at 14.7 psi(a) and 70°F), connected in service or ready for service, or more than twenty-five thousand cubic feet of oxygen (measured at 14.7 psi(a) and 70°F), including unconnected reserves on hand at the site, it shall comply with the provisions of the Standard for Bulk Oxygen Systems at Consumer Sites, NFPA No. 566-1965.

(5) Operating procedures.

(a) Cylinders, cylinder valves, couplings, regulators, hose, and apparatus shall be kept free from oily or greasy substances. Oxygen cylinders or apparatus shall not be handled with oily hands or gloves. A jet of oxygen must never be permitted to strike an oily surface, greasy clothes, or enter a fuel oil or other storage tank.

(b) When transporting cylinders by a crane or derrick, a cradle, boat, or suitable platform shall be used. Slings or electric magnets shall not be used for this purpose. Valve-protec-

tion caps, where cylinder is designed to accept a cap, shall always be in place.

(c) Cylinders shall not be dropped or struck or permitted to strike each other violently.

(d) Valve-protection caps shall not be used for lifting cylinders from one vertical position to another. Bars shall not be used under valves or valve-protection caps to pry cylinders loose when frozen to the ground or otherwise fixed; the use of warm (not boiling) water is recommended. Valve-protection caps are designed to protect cylinder valves from damage.

(e) Unless cylinders are secured on a special truck, regulators shall be removed and valve-protection caps, when provided for, shall be put in place before cylinders are moved.

(f) Cylinders not having fixed hand wheels shall have keys, handles, or nonadjustable wrenches on valve stems while these cylinders are in service. In multiple cylinder installations only one key or handle is required for each manifold.

(g) Cylinder valves shall be closed before moving cylinders.

(h) Cylinder valves shall be closed when work is finished.

(i) Valves of empty cylinders shall be closed.

(j) Cylinders shall be kept far enough away from the actual welding or cutting operation so that sparks, hot slag, or flame will not reach them, or fire-resistant shields shall be provided.

(k) Cylinders shall not be placed where they might become part of an electric circuit. Contacts with third rails, trolley wires, etc., shall be avoided. Cylinders shall be kept away from radiators, piping systems, layout tables, etc., that may be used for grounding electric circuits such as for arc welding machines. Any practice such as the tapping of an electrode against a cylinder to strike an arc shall be prohibited.

(l) Cylinders shall never be used as rollers or supports, whether full or empty.

(m) The numbers and markings stamped into cylinders shall not be tampered with.

(n) No person, other than the gas supplier, shall attempt to mix gases in a cylinder. No one, except the owner of the cylinder or the person authorized by the owner, shall refill a cylinder.

(o) No one shall tamper with safety devices in cylinders or valves.

(p) Cylinders shall not be dropped or otherwise roughly handled.

(q) Unless connected to a manifold, oxygen from a cylinder shall not be used without first attaching an oxygen regulator to the cylinder valve. Before connecting the regulator to the cylinder valve, the valve shall be opened slightly for an instant and then closed. (Always stand to one side of the outlet when opening the cylinder valve.)

(r) A hammer or wrench shall not be used to open cylinder valves. If valves cannot be opened by hand, the supplier shall be notified.

(s) Cylinder valves shall not be tampered with nor should any attempt be made to repair them. If trouble is experienced, the supplier should be sent a report promptly indicating the

character of the trouble and the cylinder's serial number. Supplier's instructions as to its disposition shall be followed.

(t) Complete removal of the stem from a diaphragm-type cylinder valve shall be avoided.

(u) Fuel-gas cylinders shall be placed with valve end up whenever they are in use. Liquefied gases shall be stored and shipped with the valve end up.

(v) Cylinders shall be handled carefully. Cylinders shall not be subjected to rough handling, knocks, or falls which are liable to damage the cylinder, valve or safety devices and cause leakage.

(w) Before connecting a regulator to a cylinder valve, the valve shall be opened slightly and closed immediately. The valve shall be opened while standing to one side of the outlet; never in front of it. Fuel-gas cylinder valves shall not be cracked near other welding work or near sparks, flame, or other possible sources of ignition.

(x) Before a regulator is removed from a cylinder valve, the cylinder valve shall be closed and the gas released from the regulator.

(y) Nothing shall be placed on top of an acetylene cylinder when in use which may damage the safety device or interfere with the quick closing of the valve.

(z) If cylinders are found to have leaky valves or fittings which cannot be stopped by closing of the valve, the cylinders shall be taken outdoors away from sources of ignition and slowly emptied.

(aa) A warning should be placed near cylinders having leaking fuse plugs or other leaking safety devices not to approach them with a lighted cigarette or other source of ignition. Such cylinders should be plainly tagged; the supplier should be promptly notified and instructions provided by the supplier shall be followed as to their return.

(bb) Safety devices shall not be tampered with.

(cc) Fuel-gas shall not be used from cylinders through torches or other devices equipped with shutoff valves without reducing the pressure through a suitable regulator attached to the cylinder valve or manifold.

(dd) The cylinder valve shall always be opened slowly.

(ee) An acetylene cylinder valve shall not be opened more than one and one-half turns of the spindle, and preferably no more than three-fourths of a turn.

(ff) Where a special wrench is required it shall be left in position on the stem of the valve while the cylinder is in use so that the fuel-gas flow can be quickly turned off in case of emergency. In the case of manifolded or coupled cylinders at least one such wrench shall always be available for immediate use.

(gg) When cylinders are transported by powered vehicle they shall be secured in a vertical position.

(hh) A suitable cylinder truck, chain, or other steadying device shall be used to prevent cylinders from being knocked over while in use.

[Statutory Authority: Chapter 49.17 RCW. 91-03-044 (Order 90-18), § 296-24-68203, filed 1/10/91, effective 2/12/91; 88-11-021 (Order 88-04), § 296-24-68203, filed 5/11/88; Order 73-5, § 296-24-68203, filed 5/9/73 and Order 73-4, § 296-24-68203, filed 5/7/73.]

WAC 296-24-68205 Manifolding of cylinders. (1)
Fuel-gas manifolds.

[Title 296 WAC—p. 796]

(a) Manifolds shall be approved either separately for each component part or as an assembled unit.

(b) Except as provided in (1)(c) of this section fuel-gas cylinders connected to one manifold inside a building shall be limited to a total capacity not exceeding 300 pounds of liquefied petroleum gas or 3,000 cubic feet of other fuel-gas. More than one such manifold with connected cylinders may be located in the same room provided the manifolds are at least 50 feet apart or separated by a noncombustible barrier at least 5 feet high having a fire-resistance rating of at least one-half hour.

(c) Fuel-gas cylinders connected to one manifold having an aggregate capacity exceeding 300 pounds of liquefied petroleum gas or 3,000 cubic feet of other fuel-gas shall be located outdoors, or in a separate building or room constructed in accordance with WAC 296-24-68211 (6)(h) and (i).

(d) Separate manifold buildings or rooms may also be used for the storage of drums of calcium carbide and cylinders containing fuel gases as provided in WAC 296-24-68203(3). Such buildings or rooms shall have no open flames for heating or lighting and shall be well-ventilated.

(e) High-pressure fuel-gas manifolds shall be provided with approved pressure regulating devices.

(2) High-pressure oxygen manifolds (for use with cylinders having a department of transportation service pressure above 200 p.s.i.g.).

(a) Manifolds shall be approved either separately for each component or as an assembled unit.

(b) Oxygen manifolds shall not be located in an acetylene generator room. Oxygen manifolds shall be separated from fuel-gas cylinders or combustible materials (especially oil or grease), a minimum distance of 20 feet or by a noncombustible barrier at least 5 feet high having a fire-resistance rating of at least one-half hour.

(c) Except as provided in WAC 296-24-68205 (2)(d) oxygen cylinders connected to one manifold shall be limited to a total gas capacity of 6,000 cubic feet. More than one such manifold with connected cylinders may be located in the same room provided the manifolds are at least 50 feet apart or separated by a noncombustible barrier at least 5 feet high having a fire-resistance rating of at least one-half hour.

(d) An oxygen manifold, to which cylinders having an aggregate capacity of more than 6,000 cubic feet of oxygen are connected, should be located outdoors or in a separate noncombustible building. Such a manifold, if located inside a building having other occupancy, shall be located in a separate room of noncombustible construction having a fire-resistance rating of at least one-half hour or in an area with no combustible material within 20 feet of the manifold.

(e) An oxygen manifold or oxygen bulk supply system which has storage capacity of more than 13,000 cubic feet of oxygen (measured at 14.7 p.s.i.a. and 70°F), connected in service or ready for service, or more than 25,000 cubic feet of oxygen (measured at 14.7 p.s.i.a. and 70 °F), including unconnected reserves on hand at the site, shall comply with the provisions of the Standard for Bulk Oxygen Systems at Consumer Sites, NFPA No. 566-1965.

(f) High-pressure oxygen manifolds shall be provided with approved pressure-regulating devices.

(2007 Ed.)

(3) Low-pressure oxygen manifolds (for use with cylinders having a department of transportation service pressure not exceeding 200 p.s.i.g.).

(a) Manifolds shall be of substantial construction suitable for use with oxygen at a pressure of 250 p.s.i.g. They shall have a minimum bursting pressure of 1,000 p.s.i.g. and shall be protected by a safety relief device which will relieve at a maximum pressure of 500 p.s.i.g.

Note: DOT-4L200 cylinders have safety devices which relieve at a maximum pressure of 250 p.s.i.g. (or 235 p.s.i.g. if vacuum insulation is used).

(b) Hose and hose connections subject to cylinder pressure shall comply with WAC 296-24-68209(5). Hose shall have a minimum bursting pressure of 1,000 p.s.i.g.

(c) The assembled manifold including leads shall be tested and proven gas-tight at a pressure of 300 p.s.i.g. The fluid used for testing oxygen manifolds shall be oil-free and not combustible.

(d) The location of manifolds shall comply with WAC 296-24-68205 (2)(b), (c), (d) and (e).

(e) The following sign shall be conspicuously posted at each manifold:

Low-Pressure Manifold
Do Not Connect High-Pressure Cylinders
Maximum Pressure—250 P.S.I.G.

(4) Portable outlet headers.

(a) Portable outlet headers shall not be used indoors except for temporary service where the conditions preclude a direct supply from outlets located on the service piping system.

(b) Each outlet on the service piping from which oxygen or fuel-gas is withdrawn to supply a portable outlet header shall be equipped with a readily accessible shutoff valve.

(c) Hose and hose connections used for connecting the portable outlet header to the service piping shall comply with WAC 296-24-68209(5).

(d) Master shutoff valves for both oxygen and fuel-gas shall be provided at the entry end of the portable outlet header.

(e) Portable outlet headers for fuel-gas service shall be provided with an approved hydraulic back-pressure valve installed at the inlet and preceding the service outlets, unless an approved pressure-reducing regulator, an approved back-flow check valve, or an approved hydraulic back-pressure valve is installed at each outlet. Outlets provided on headers for oxygen service may be fitted for use with pressure-reducing regulators or for direct hose connection.

(f) Each service outlet on portable outlet headers shall be provided with a valve assembly that includes a detachable outlet seal cap, chained or otherwise attached to the body of the valve.

(g) Materials and fabrication procedures for portable outlet headers shall comply with WAC 296-24-68207 (1), (2) and (5).

(h) Portable outlet headers shall be provided with frames which will support the equipment securely in the correct operating position and protect them from damage during handling and operation.

(5) Manifold operating procedures.

(a) Cylinder manifolds shall be installed under the supervision of someone familiar with the proper practices with reference to their construction and use.

(b) All component parts used in the methods of manifolding described in (1)(a) through (e) of this section shall be approved as to materials, design and construction either separately or as an assembled unit.

(c) All manifolds and parts used in methods of manifolding shall be used only for the gas or gases for which they are approved.

(d) When acetylene cylinders are coupled, approved flash arresters shall be installed between each cylinder and the coupler block. For outdoor use only, and when the number of cylinders coupled does not exceed three, one flash arrester installed between the coupler block and regulator is acceptable.

(e) Each fuel-gas cylinder lead should be provided with a backflow check valve.

(f) The aggregate capacity of fuel-gas cylinders connected to a portable manifold inside a building shall not exceed 3,000 cubic feet of gas.

(g) Acetylene and liquefied fuel-gas cylinders shall be manifolded in a vertical position.

(h) The pressure in the gas cylinders connected to and discharged simultaneously through a common manifold shall be approximately equal.

[Order 73-5, § 296-24-68205, filed 5/9/73 and Order 73-4, § 296-24-68205, filed 5/7/73.]

WAC 296-24-68207 Service piping systems. (1) Materials and design. (a) Piping and fittings shall comply with Section 2, Industrial Gas and Air Piping Systems, of the American National Standard Code for Pressure Piping, ANSI B 31.1-1967, insofar as it does not conflict with WAC 296-24-68207 (1)(b) and (c).

(b) Pipe shall be at least Schedule 40 and fittings shall be at least standard weight in sizes up to and including 6-inch nominal.

(c) Copper tubing shall be Types K or L in accordance with the Standard Specification for Seamless Copper Water Tube, ASTM B88-66a.

(d) Piping shall be steel, wrought iron, brass or copper pipe, or seamless copper, brass or stainless steel tubing, except as provided in WAC 296-24-68207 (1)(e), (f), (g), (h) and (i).

(e) Oxygen piping and fittings at pressures in excess of 700 p.s.i.g., shall be stainless steel or copper alloys.

(f) Hose connections and hose complying with WAC 296-24-68209(5) may be used to connect the outlet of a manifold pressure regulator to piping providing the working pressure of the piping is 250 p.s.i.g. or less and the length of the hose does not exceed 5 feet. Hose shall have a minimum bursting pressure of 1,000 p.s.i.g.

(g) When oxygen is supplied to a service piping system from a low-pressure oxygen manifold without an intervening pressure regulating device, the piping system shall have a minimum design pressure of 250 p.s.i.g. A pressure regulating device shall be used at each station outlet when the connected equipment is for use at pressures less than 250 p.s.i.g.

(h) Piping for acetylene or acetylenic compounds shall be steel or wrought iron.

(i) Unalloyed copper shall not be used for acetylene or acetylenic compounds except in listed equipment.

(2) Piping joints.

(a) Joints in steel or wrought iron piping shall be welded, threaded or flanged. Fittings, such as ells, tees, couplings, and unions, may be rolled, forged or cast steel, malleable iron or nodular iron. Gray or white cast iron fittings are prohibited.

(b) Joints in brass or copper pipe shall be welded, brazed, threaded, or flanged. If of the socket type, they shall be brazed with silver-brazing alloy or similar high melting point (not less than 800°F) filler metal.

(c) Joints in seamless copper, brass, or stainless steel tubing shall be approved gas tubing fittings or the joints shall be brazed. If of the socket type, they shall be brazed with silver-brazing alloy or similar high melting point (not less than 800°F) filler metal.

(3) Installation.

(a) Distribution lines shall be installed and maintained in a safe operating condition.

(b) Piping located inside or outside of buildings may be placed above or below ground. All piping shall be run as directly as practicable, protected against physical damage, proper allowance being made for expansion and contraction, jarring and vibration. Pipe laid underground in earth shall be located below the frost line and protected against corrosion. After assembly, piping shall be thoroughly blown out with air or nitrogen to remove foreign materials. For oxygen piping, only oil-free air, oil-free nitrogen, or oil-free carbon dioxide shall be used.

(c) Only piping which has been welded or brazed shall be installed in tunnels, trenches or ducts. Shutoff valves shall be located outside such conduits. Oxygen piping may be placed in the same tunnel, trench or duct with fuel-gas pipelines, provided there is good natural or forced ventilation.

(d) Low points in piping carrying moist gas shall be drained into drip pots constructed so as to permit pumping or draining out the condensate at necessary intervals. Drain valves shall be installed for this purpose having outlets normally closed with screw caps or plugs. No open end valves or petcocks shall be used, except that in drips located out of doors, underground, and not readily accessible, valves may be used at such points if they are equipped with means to secure them in the closed position. Pipes leading to the surface of the ground shall be cased or jacketed where necessary to prevent loosening or breaking.

(e) Gas cocks or valves shall be provided for all buildings at points where they will be readily accessible for shutting off the gas supply to these buildings in any emergency. Underground valve boxes or manholes should be avoided wherever possible. There shall also be provided a shutoff valve in the discharge line from the generator, gas holder, manifold or other source of supply.

(f) Shutoff valves shall not be installed in safety relief lines in such a manner that the safety relief device can be rendered ineffective.

(g) Fittings and lengths of pipe shall be examined internally before assembly and, if necessary, freed from scale or dirt. Oxygen piping and fittings shall be washed out with a

suitable solution which will effectively remove grease and dirt but will not react with oxygen.

Note: Hot water solutions of caustic soda or trisodium phosphate are effective cleaning agents for this purpose.

(h) Piping shall be thoroughly blown out after assembly to remove foreign materials. For oxygen piping, oil-free air, oil-free nitrogen, or oil-free carbon dioxide shall be used. For other piping, air or inert gas may be used.

(i) When flammable gas lines or other parts of equipment are being purged of air or gas, open lights or other sources of ignition shall not be permitted near uncapped openings.

(j) No welding or cutting shall be performed on an acetylene or oxygen pipeline, including the attachment of hangers or supports, until the line has been purged. Only oil-free air, oil-free nitrogen, or oil-free carbon dioxide shall be used to purge oxygen lines.

(4) Painting and signs.

(a) Underground pipe and tubing and outdoor ferrous pipe and tubing shall be covered or painted with a suitable material for protection against corrosion.

(b) Aboveground piping systems shall be marked in accordance with the American National Standard Scheme for the Identification of Piping Systems, ANSI A 13.1-1956.

(c) Station outlets shall be marked to indicate the name of the gas.

(5) Testing.

(a) Piping systems shall be tested and proved gastight at 1 1/2 times the maximum operating pressure, and shall be thoroughly purged of air before being placed in service. The material used for testing oxygen lines shall be oil free and noncombustible. Flames shall not be used to detect leaks.

(b) When flammable gas lines or other parts of equipment are being purged of air or gas, sources of ignition shall not be permitted near uncapped openings.

[Order 73-5, § 296-24-68207, filed 5/9/73 and Order 73-4, § 296-24-68207, filed 5/7/73.]

WAC 296-24-68209 Protective equipment, hose, and regulators. (1) General. Equipment shall be installed and used only in the service for which it is approved and as recommended by the manufacturer.

(2) Pressure relief devices. Service piping systems shall be protected by pressure relief devices set to function at not more than the design pressure of the systems and discharging upwards to a safe location.

(3) Piping protective equipment.

(a) The fuel-gas and oxygen piping systems, including portable outlet headers shall incorporate the protective equipment shown in Figures Q-1, Q-2, and Q-3.

When only a portion of a fuel-gas system is to be used with oxygen, only that portion need comply with (3)(a) of this section.

(b) Approved protective equipment (designated P_F in Figs. Q-1, Q-2, and Q-3) shall be installed in fuel-gas piping to prevent:

- (i) Backflow of oxygen into the fuel-gas supply system;
- (ii) Passage of a flash back into the fuel-gas supply system; and
- (iii) Excessive back pressure of oxygen in the fuel-gas supply system. The three functions of the protective equip-

ment may be combined in one device or may be provided by separate devices.

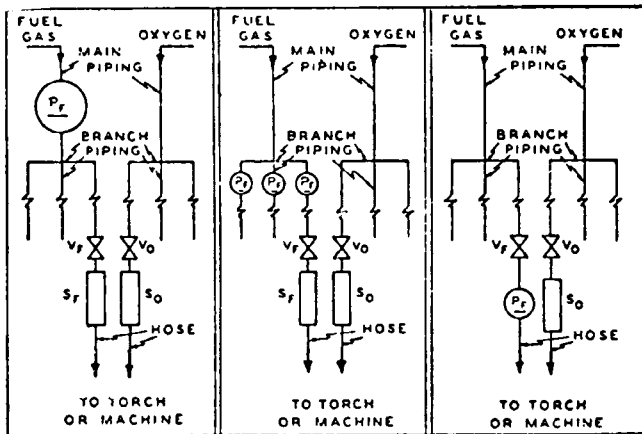


Fig. Q-1

Fig. Q-2

Fig. Q-3

LEGEND

- P_F—Protective equipment in fuel gas piping
- V_F—Fuel gas station outlet valve
- V_O—Oxygen station outlet valve
- S_F—Backflow prevention device(s) at fuel gas station outlet
- S_O—Backflow prevention device(s) at oxygen station outlet

(c) The protective equipment shall be located in the main supply line, as in Figure Q-1 or at the head of each branch line, as in Figure Q-2 or at each location where fuel-gas is withdrawn, as in Figure Q-3. Where branch lines are of 2-inch pipe size or larger or of substantial length, protective equipment (designated as P_F) shall be located as shown in either Q-2 and Q-3.

(d) Backflow protection shall be provided by an approved device that will prevent oxygen from flowing into the fuel-gas system or fuel from flowing into the oxygen system (see S_F, Figs. Q-1 and Q-2).

(e) Flash-back protection shall be provided by an approved device that will prevent flame from passing into the fuel-gas system.

(f) Back-pressure protection shall be provided by an approved pressure-relief device set at a pressure not greater than the pressure rating of the backflow or the flashback protection device, whichever is lower. The pressure-relief device shall be located on the downstream side of the backflow and flashback protection devices. The vent from the pressure-relief device shall be at least as large as the relief device inlet and shall be installed without low points that may collect moisture. If low points are unavoidable, drip pots with drains closed with screw plugs or caps shall be installed at the low points. The vent terminus shall not endanger personnel or property through gas discharge; shall be located away from ignition sources; and shall terminate in a hood or bend.

(g) If pipeline protective equipment incorporates a liquid, the liquid level shall be maintained, and a suitable anti-freeze may be used to prevent freezing.

(h) Fuel gas for use with equipment not requiring oxygen shall be withdrawn upstream of the piping protective devices.

(4) Station outlet protective equipment.

(a) A check valve pressure regulator, hydraulic seal, or combination of these devices shall be provided at each station

outlet, including those on portable headers, to prevent back-flow, as shown in Figures Q-1, Q-2, and Q-3 and designated as S_F and S_O.

(b) When approved pipeline protective equipment (designated P_F) is located at the station outlet as in Figure Q-3, no additional check valve, pressure regulator, or hydraulic seal is required.

(c) A shutoff valve (designated V_F and V_O) shall be installed at each station outlet and shall be located on the upstream side of other station outlet equipment.

(d) If the station outlet is equipped with a detachable regulator, the outlet shall terminate in a union connection that complies with the Regulator Connection Standards, 1958, Compressed Gas Association.

(e) If the station outlet is connected directly to a hose, the outlet shall terminate in a union connection complying with the Standard Hose Connection Specifications, 1957, Compressed Gas Association.

(f) Station outlets may terminate in pipe threads to which permanent connections are to be made, such as to a machine.

(g) Station outlets shall be equipped with a detachable outlet seal cap secured in place. This cap shall be used to seal the outlet except when a hose, a regulator, or piping is attached.

(h) Where station outlets are equipped with approved backflow and flashback protective devices, as many as four torches may be supplied from one station outlet through rigid piping, provided each outlet from such piping, is equipped with a shutoff valve and provided the fuel-gas capacity of any one torch does not exceed 15 cubic feet per hour. This rule does not apply to machines.

(5) Hose and hose connections.

(a) Hose for oxy-fuel gas service shall comply with the Specification for Rubber Welding Hose, 1958, Compressed Gas Association and Rubber Manufacturers Association.

(b) The generally recognized colors are red for acetylene and other fuel-gas hose, green for oxygen hose, and black for inert-gas and air hose.

(c) When parallel lengths of oxygen and acetylene hose are taped together for convenience and to prevent tangling, not more than 4 inches out of 12 inches shall be covered by tape.

(d) Hose connections shall comply with the Standard Hose Connection Specifications, 1957, Compressed Gas Association.

(e) Hose connections shall be clamped or otherwise securely fastened in a manner that will withstand, without leakage, twice the pressure to which they are normally subjected in service, but in no case less than a pressure of 300 p.s.i. Oil-free air or an oil-free inert gas shall be used for the test.

(f) Hose showing leaks, burns, worn places, or other defects rendering it unfit for service shall be repaired or replaced.

(6) Pressure-reducing regulators.

(a) Pressure-reducing regulators shall be used only for the gas and pressures for which they are intended. The regulator inlet connections shall comply with Regulator Connection Standards, 1958, Compressed Gas Association.

(b) When regulators or parts of regulators, including gages, need repair, the work shall be performed by skilled mechanics who have been properly instructed.

(c) Gages on oxygen regulators shall be marked "USE NO OIL."

(d) Union nuts and connections on regulators shall be inspected before use to detect faulty seats which may cause leakage of gas when the regulators are attached to the cylinder valves. Damaged nuts or connections shall be destroyed.

[Order 73-5, § 296-24-68209, filed 5/9/73 and Order 73-4, § 296-24-68209, filed 5/7/73.]

WAC 296-24-68211 Acetylene generators. (1)
Approval and marking.

(a) Generators shall be of approved construction and shall be plainly marked with the maximum rate of acetylene in cubic feet per hour for which they are designed; the weight and size of carbide necessary for a single charge; the manufacturer's name and address; and the name or number of the type of generator.

(b) Carbide shall be of the size marked on the generator nameplate.

(2) Rating and pressure limitations.

(a) The total hourly output of a generator shall not exceed the rate for which it is approved and marked. Unless specifically approved for higher ratings, carbide-feed generators shall be rated at 1 cubic foot per hour per pound of carbide required for a single complete charge.

(b) Relief valves shall be regularly operated to insure proper functioning. Relief valves for generating chambers shall be set to open at a pressure not in excess of 15 p.s.i.g. Relief valves for hydraulic back pressure valves shall be set to open at a pressure not in excess of 20 p.s.i.g.

(c) Nonautomatic generators shall not be used for generating acetylene at pressures exceeding 1 p.s.i.g., and all water overflows shall be visible.

(3) Location. The space around the generator shall be ample for free, unobstructed operation and maintenance and shall permit ready adjustment and charging.

(4) Stationary acetylene generators (automatic and non-automatic).

(a) The foundation shall be so arranged that the generator will be level and so that no excessive strain will be placed on the generator or its connections. Acetylene generators shall be grounded.

(b) Generators shall be placed where water will not freeze. The use of common salt (sodium chloride) or other corrosive chemicals for protection against freezing is not permitted. (For heating systems see WAC 296-24-68211 (6)(k).)

(c) Except when generators are prepared in accordance with WAC 296-24-68211 (7)(i), sources of ignition shall be prohibited in outside generator houses or inside generator rooms.

(d) Water shall not be supplied through a continuous connection to the generator except when the generator is provided with an adequate open overflow or automatic water shutoff which will effectively prevent overfilling of the generator. Where a noncontinuous connection is used, the supply line shall terminate at a point not less than 2 inches above the regularly provided opening for filling so that the water can be observed as it enters the generator.

(e) Unless otherwise specifically approved, generators shall not be fitted with continuous drain connections leading to sewers, but shall discharge through an open connection into a suitably vented outdoor receptacle or residue pit which may have such connections. An open connection for the sludge drawoff is desirable to enable the generator operator to observe leakage of generating water from the drain valve or sludge cock.

(f) Each generator shall be provided with a vent pipe of Schedule 40 galvanized iron or steel, except that outside of buildings, vent pipes larger than 4 inches in diameter may be not less than 14 gage galvanized tubing or sheet steel.

(g) The escape or relief pipe shall be rigidly installed without traps and so that any condensation will drain back to the generator.

(h) The escape or relief pipe shall be carried full size to a suitable point outside the building. It shall terminate in a hood or bend located at least 12 feet above the ground, preferably above the roof, and as far away as practicable from windows or other openings into buildings and as far away as practicable from sources of ignition such as flues or chimneys and tracks used by locomotives. Generating chamber relief pipes shall not be inter-connected but shall be separately led to the outside air. The hood or bend shall be so constructed that it will not be obstructed by rain, snow, ice, insects, or birds. The outlet shall be at least 3 feet from combustible construction.

(i) Gas holders shall be constructed on the gasometer principle, the bell being suitably guided. The gas bell shall move freely without tendency to bind and shall have a clearance of at least 2 inches from the shell.

(j) The gas holder may be located in the generator room, in a separate room or out of doors. In order to prevent collapse of the gas bell or infiltration of air due to a vacuum caused by the compressor or booster pump or cooling of the gas, a compressor or booster cutoff shall be provided at a point 12 inches or more above the landing point of the bell. When the gas holder is located indoors, the room shall be ventilated in accordance with WAC 296-24-68211 (6)(j) and heated and lighted in accordance with WAC 296-24-68211 (6)(k) and (1).

(k) When the gas holder is not located within a heated building, gas holder seals shall be protected against freezing.

(l) Means shall be provided to stop the generator-feeding mechanism before the gas holder reaches the upper limit of its travel.

(m) When the gas holder is connected to only one generator, the gas capacity of the holder shall be not less than one-third of the hourly rating of the generator.

(n) If acetylene is used from the gas holder without increase in pressure at some points but with increase in pressure by a compressor or booster pump at other points, approved piping protective devices shall be installed in each supply line. The low-pressure protective device shall be located between the gas holder and the shop piping, and the medium-pressure protective device shall be located between the compressor or booster pump and the shop piping (see Figure Q-4). Approved protective equipment (designated P_P) is used to prevent: Backflow of oxygen into the fuel-gas supply system; passage of a flashback into the fuel-gas supply system; and excessive back pressure of oxygen in the fuel-gas

supply system. The three functions of the protective equipment may be combined in one device or may be provided by separate devices.

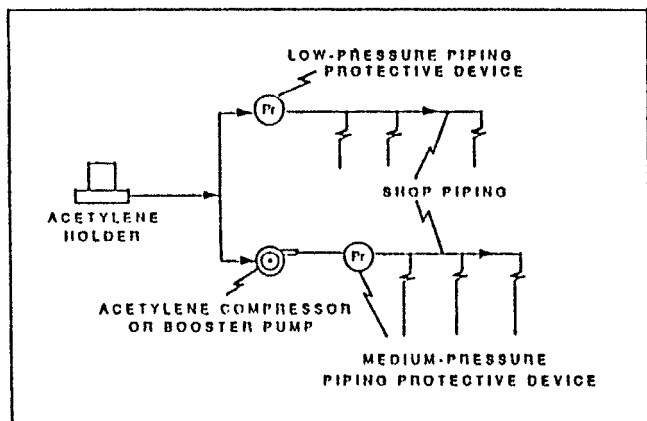


Figure Q-4

(o) The compressor or booster system shall be of an approved type.

(p) Wiring and electrical equipment in compressor or booster pump rooms or enclosures shall conform to the provisions of chapter 296-24 WAC Part L for Class I, Division 2 locations.

(q) Compressors and booster pump equipment shall be located in well-ventilated areas away from open flames, electrical or mechanical sparks, or other ignition sources.

(r) Compressor or booster pumps shall be provided with pressure relief valves which will relieve pressure exceeding 15 p.s.i.g. to a safe outdoor location as provided in WAC 296-24-68211 (2)(b), or by returning the gas to the inlet side or to the gas supply source.

(s) Compressor or booster pump discharge outlets shall be provided with approved protective equipment. (See WAC 296-24-68211 (4)(e).)

(5) Portable acetylene generators.

(a) All portable generators shall be of a type approved for portable use.

(b) Portable generators shall not be used within 10 feet of combustible material other than the floor.

(c) Portable generators shall not be used in rooms of total volume less than 35 times the total gas-generating capacity per charge of all generators in the room. Generators shall not be used in rooms having a ceiling height of less than 10 feet. (To obtain the gas-generating capacity in cubic feet per charge, multiply the pounds of carbide per charge by 4.5.)

(d) Portable generators shall be protected against freezing. The use of salt or other corrosive chemical to prevent freezing is prohibited.

(e) Portable generators shall be cleaned and recharged and the air mixture blown off outside buildings.

(f) When charged with carbide, portable generators shall not be moved by crane or derrick.

(g) When not in use, portable generators shall not be stored in rooms in which open flames are used unless the generators contain no carbide and have been thoroughly purged of acetylene. Storage rooms shall be well ventilated.

(h) When portable acetylene generators are to be transported and operated on vehicles, they shall be securely

anchored to the vehicles. If transported by truck, the motor shall be turned off during charging, cleaning, and generating periods.

(i) Portable generators shall be located at a safe distance from the welding position so that they will not be exposed to sparks, slag, or misdirection of the torch flame or overheating from hot materials or processes.

(6) Outside generator houses and inside generator rooms for stationary acetylene generators.

(a) No opening in any outside generator house shall be located within 5 feet of any opening in another building.

(b) Walls, floors and roofs of outside generator houses shall be of noncombustible construction.

(c) When a part of the generator house is to be used for the storage or manifolding of oxygen cylinders, the space to be so occupied shall be separated from the generator carbide storage section by partition walls continuous from floor to roof or ceiling, of the type of construction stated in WAC 296-24-68211 (6)(h). Such separation walls shall be without openings and shall be joined to the floor, other walls and ceiling or roof in a manner to effect a permanent gas-tight joint.

(d) Exit doors shall be located so as to be readily accessible in case of emergency.

(e) Explosion venting for outside generator houses and inside generator rooms shall be provided in exterior walls or roofs. The venting areas shall be equal to not less than 1 square foot per 50 cubic feet of room volume and may consist of any one or any combination of the following: Walls of light, noncombustible material preferably single-thickness, single-strength glass; lightly fastened hatch covers; lightly fastened swinging doors in exterior walls opening outward; lightly fastened walls or roof designed to relieve at a maximum pressure of 25 pounds per square foot.

(f) The installation of acetylene generators within buildings shall be restricted to buildings not exceeding one story in height: Provided, however, That this will not be construed as prohibiting such installations on the roof or top floor of a building exceeding such height.

(g) Generators installed inside buildings shall be enclosed in a separate room of ample size.

(h) The walls, partitions, floors, and ceilings of inside generator rooms shall be of noncombustible construction having a fire-resistance rating of at least 1 hour. The walls or partitions shall be continuous from floor to ceiling and shall be securely anchored. At least one wall of the room shall be an exterior wall.

(i) Openings from an inside generator room to other parts of the building shall be protected by a swinging type, self-closing fire door for a Class B opening and having a rating of at least 1 hour. Windows in partitions shall be wired glass and approved metal frames with fixed sash. Installation shall be in accordance with the Standard for the Installation of Fire Doors and Windows, NFPA 80-1970.

(j) Inside generator rooms or outside generator houses shall be well ventilated with vents located at floor and ceiling levels.

(k) Heating shall be by steam, hot water, enclosed electrically heated elements or other indirect means. Heating by flames or fires shall be prohibited in outside generator houses or inside generator rooms, or in any enclosure communicating with them.

(l) Generator houses or rooms shall have natural light during daylight hours. Where artificial lighting is necessary it shall be restricted to electric lamps installed in a fixed position. Unless specifically approved for use in atmospheres containing acetylene, such lamps shall be provided with enclosures of glass or other noncombustible material so designed and constructed as to prevent gas vapors from reaching the lamp or socket and to resist breakage. Rigid conduit with threaded connections shall be used.

(m) Lamps installed outside of wired-glass panels set in gas-tight frames in the exterior walls or roof of the generator house or room are acceptable.

(n) Electric switches, telephones, and all other electrical apparatus which may cause a spark, unless specifically approved for use inside acetylene generator rooms, shall be located outside the generator house or in a room or space separated from the generator room by a gas-tight partition, except that where the generator system is designed so that no carbide fill opening or other part of the generator is open to the generator house or room during the operation of the generator, and so that residue is carried in closed piping from the residue discharge valve to a point outside the generator house or room, electrical equipment in the generator house or room shall conform to the provisions of the chapter 296-24 WAC Part L for Class I, Division 2 locations.

(7) Maintenance and operation.

(a) Unauthorized persons shall not be permitted in outside generator houses or inside generator rooms.

(b) Operating instructions shall be posted in a conspicuous place near the generator or kept in a suitable place available for ready reference.

(c) When recharging generators the order of operations specified in the instructions supplied by the manufacturer shall be followed.

(d) In the case of batch-type generators, when the charge of carbide is exhausted and before additional carbide is added, the generating chamber shall always be flushed out with water, renewing the water supply in accordance with the instruction card furnished by the manufacturer.

(e) The water-carbide residue mixture drained from the generator shall not be discharged into sewer pipes or stored in areas near open flames. Clear water from residue settling pits may be discharged into sewer pipes.

(f) The carbide added each time the generator is recharged shall be sufficient to refill the space provided for carbide without ramming the charge. Steel or other ferrous tools shall not be used in distributing the charge.

(g) Generator water chambers shall be kept filled to proper level at all times except while draining during the recharging operation.

(h) Whenever repairs are to be made or the generator is to be charged or carbide is to be removed, the water chamber shall be filled to the proper level.

(i) Previous to making repairs involving welding, soldering, or other hot work or other operations which produce a source of ignition, the carbide charge and feed mechanism shall be completely removed. All acetylene shall be expelled by completely flooding the generator shell with water and the generator shall be disconnected from the piping system. The generator shall be kept filled with water, if possible, or positioned to hold as much water as possible.

(j) Hot repairs shall not be made in a room where there are other generators unless all the generators and piping have been purged of acetylene. Hot repairs should preferably be made out of doors.

[Statutory Authority: Chapter 49.17 RCW. 91-24-017 (Order 91-07), § 296-24-68211, filed 11/22/91, effective 12/24/91; Order 73-5, § 296-24-68211, filed 5/9/73 and Order 73-4, § 296-24-68211, filed 5/7/73.]

WAC 296-24-68213 Calcium carbide storage. (1) Packaging.

(a) Calcium carbide shall be contained in metal packages of sufficient strength to prevent rupture. The packages shall be provided with a screw top or equivalent. These packages shall be constructed water- and air-tight. Solder shall not be used in such a manner that the package will fail if exposed to fire.

(b) Packages containing calcium carbide shall be conspicuously marked "calcium carbide-dangerous if not kept dry" or with equivalent warning.

(c) Caution: Metal tools, even the so-called spark resistant type may cause ignition of an acetylene and air mixture when opening carbide containers.

(d) Sprinkler systems shall not be installed in carbide storage rooms.

(2) Storage indoors.

(a) Calcium carbide in quantities not to exceed 600 pounds may be stored indoors in dry, waterproof, and well-ventilated locations.

(b) Calcium carbide not exceeding 600 pounds may be stored indoors in the same room with fuel-gas cylinders.

(c) Packages of calcium carbide, except for one of each size, shall be kept sealed. The seals shall not be broken when there is carbide in excess of 1 pound in any other unsealed package of the same size of carbide in the room.

(d) Calcium carbide exceeding 600 pounds but not exceeding 5,000 pounds shall be stored:

(i) In accordance with (2)(e) of this section.

(ii) In an inside generator room or outside generator house; or

(iii) In a separate room in a one-story building which may contain other occupancies, but without cellar or basement beneath the carbide storage section. Such rooms shall be constructed in accordance with WAC 296-24-68211 (6)(h) and (i) and ventilated in accordance with WAC 296-24-68211 (6)(j). These rooms shall be used for no other purpose.

(e) Calcium carbide in excess of 5,000 pounds shall be stored in one-story buildings without cellar or basement and used for no other purpose, or in outside generator houses. The location of such storage buildings shall be away from congested mercantile and manufacturing districts. If the storage building is of noncombustible construction, it may adjoin other one-story buildings if separated therefrom by unpierced firewalls; if it is detached less than 10 feet from such building or buildings, there shall be no opening in any of the mutually exposing sides of such buildings within 10 feet. If the storage building is of combustible construction, it shall be at least 20 feet from any other one- or two-story building, and at least 30 feet from any other building exceeding two stories.

(3) Storage outdoors.

(a) Calcium carbide in unopened metal containers may be stored outdoors.

(b) Carbide containers to be stored outdoors shall be examined to make sure that they are airtight and watertight. Periodic reexaminations shall be made for rusting or other damage to a container that might affect its water or air tightness.

(c) The bottom tier of each row shall be placed on wooden planking or equivalent so that the containers will not come in contact with the ground or ground water.

(d) Storage areas shall be at least 10 feet from lines of adjoining property that may be built upon.

(e) Containers of carbide which have been in storage the longest shall be used first.

[Order 73-5, § 296-24-68213, filed 5/9/73 and Order 73-4, § 296-24-68213, filed 5/7/73.]

WAC 296-24-68215 Public exhibitions and demonstrations. (1) Installation requirements. Installation and operation of welding, cutting, and related equipment shall be done by, or under the supervision of, a competent operator to insure the personal protection of viewers and demonstrators as well as the protection from fire, of materials in and around the site and the building itself.

(2) Procedures.

(a) Cylinders containing compressed gases for use at the site shall not be charged in excess of one-half their maximum permissible content. (Cylinders of nonliquefied gases and acetylene shall be charged to not more than one-half their maximum permissible charged pressure in p.s.i.g. Cylinders of liquefied gases shall be charged to not more than one-half the maximum permissible capacity in pounds.)

(b) Cylinders located at the site shall be connected for use except that enough additional cylinders may be stored at the site to furnish approximately 1 day's consumption of each gas used. Other cylinders shall be stored, in an approved storage area, preferably outdoors, but this storage area shall not be located near a building exit.

(c) Cylinders in excess of 40 pounds total weight being transported to or from the site shall be carried on a hand or motorized truck.

(d) The site shall be constructed, equipped, and operated in such a manner that the demonstration will be carried out so as to minimize the possibility of injury to viewers.

(e) Sites involving the use of compressed gases shall be located so as not to interfere with the egress of people during an emergency.

(f) The fire department shall be notified in advance of such use of the site.

(g) Each site shall be provided with a portable fire extinguisher of appropriate size and type and with a pail of water.

Note: For additional requirements relating to portable fire extinguishers see WAC 296-800-300.

(h) The public and combustible materials at the site shall be protected from flames, sparks, and molten metal.

(i) Hoses shall be located and protected so that they will not be physically damaged.

(j) Cylinder valves shall be closed when equipment is unattended.

(k) Where caps are provided for valve protection, such caps shall be in place except when the cylinders are in service or connected ready for service.

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(l) Cylinders shall be located or secured so that they cannot be knocked over.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 01-17-033, § 296-24-68215, filed 8/8/01, effective 9/1/01; Order 73-5, § 296-24-68215, filed 5/9/73 and Order 73-4, § 296-24-68215, filed 5/7/73.]

WAC 296-24-685 Application, installation, and operation of arc welding and cutting equipment.

[Order 73-5, § 296-24-685, filed 5/9/73 and Order 73-4, § 296-24-685, filed 5/7/73.]

WAC 296-24-68501 General. (1) Equipment selection. Welding equipment shall be chosen for safe application to the work to be done as specified in WAC 296-24-68503.

(2) Installation. Welding equipment shall be installed safely as specified by WAC 296-24-68505.

(3) Instruction. Workers designated to operate arc welding equipment shall have been properly instructed and qualified to operate such equipment as specified in WAC 296-24-68507.

[Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-24-68501, filed 7/20/94, effective 9/20/94; Order 73-5, § 296-24-68501, filed 5/9/73 and Order 73-4, § 296-24-68501, filed 5/7/73.]

WAC 296-24-68503 Application of arc welding equipment.

Note: Assurance of consideration of safety in design is obtainable by choosing apparatus complying with the Requirements for Electric Arc-Welding Apparatus, NEMA EW-1-1962, National Electrical Manufacturers Association or the Safety Standard for Transformer-Type Arc-Welding Machines, ANSI C33.2-1956, Underwriters' Laboratories.

(1) Environmental conditions.

(a) Standard machines for arc welding service shall be designed and constructed to carry their rated load with rated temperature rises where the temperature of the cooling air does not exceed 40°C (104°F) and where the altitude does not exceed 3,300 feet, and shall be suitable for operation in atmospheres containing gases, dust, and light rays produced by the welding arc.

(b) Unusual service conditions may exist, and in such circumstances machines shall be especially designed to safely meet the requirements of the service. Chief among these conditions are exposure to:

- (i) Unusually corrosive fumes.
- (ii) Steam or excessive humidity.
- (iii) Excessive oil vapor.
- (iv) Flammable gases.
- (v) Abnormal vibration or shock.
- (vi) Excessive dust.
- (vii) Weather.
- (viii) Unusual seacoast or shipboard conditions.

(2) Voltage. Open circuit (no load) voltages of arc welding and cutting machines should be as low as possible consistent with satisfactory welding or cutting being done. The following limits shall not be exceeded:

- (a) Alternating-current machines.
 - (i) Manual arc welding and cutting—80 volts.
 - (ii) Automatic (machine or mechanized) arc welding and cutting—100 volts.
- (b) Direct-current machines.

(i) Manual arc welding and cutting—100 volts.

(ii) Automatic (machine or mechanized) arc welding and cutting—100 volts.

(c) When special welding and cutting processes require values of open circuit voltages higher than the above, means shall be provided to prevent the operator from making accidental contact with the high voltage by adequate insulation or other means.

Note: For a.c. welding under wet conditions or warm surroundings where perspiration is a factor, the use of reliable automatic controls for reducing no load voltage is recommended to reduce the shock hazard.

(3) Design.

(a) A controller integrally mounted in an electric motor driven welder shall have capacity for carrying rated motor current, shall be capable of making and interrupting stalled rotor current of the motor, and may serve as the running over-current device if provided with the number of over-current units as specified by chapter 296-24 WAC Part L, and WAC 296-800-280. Starters with magnetic undervoltage release should be used with machines installed more than one to a circuit to prevent circuit overload caused by simultaneously starting of several motors upon return of voltage.

(b) On all types of arc welding machines, control apparatus shall be enclosed except for the operating wheels, levers, or handles.

Note: Control handles and wheels should be large enough to be easily grasped by a gloved hand.

(c) Input power terminals, tap change devices and live metal parts connected to input circuits shall be completely enclosed and accessible only by means of tools.

(d) Terminals for welding leads should be protected from accidental electrical contact by employees or by metal objects i.e., vehicles, crane hooks, etc. Protection may be obtained by use of: Dead-front receptacles for plug connections; recessed openings with nonremovable hinged covers; heavy insulating sleeving or taping or other equivalent electrical and mechanical protection. If a welding lead terminal which is intended to be used exclusively for connection to the work is connected to the grounded enclosure, it must be done by a conductor at least two AWG sizes smaller than the grounding conductor and the terminal shall be marked to indicate that it is grounded.

(e) No connections for portable control devices such as push buttons to be carried by the operator shall be connected to an a.c. circuit of higher than 120 volts. Exposed metal parts of portable control devices operating on circuits above 50 volts shall be grounded by a grounding conductor in the control cable.

(f) Auto transformers or a.c. reactors shall not be used to draw welding current directly from any a.c. power source having a voltage exceeding 80 volts.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 01-11-038, § 296-24-68503, filed 5/9/01, effective 9/1/01. Statutory Authority: Chapter 49.17 RCW. 91-24-017 (Order 91-07), § 296-24-68503, filed 11/22/91, effective 12/24/91; Order 73-5, § 296-24-68503, filed 5/9/73 and Order 73-4, § 296-24-68503, filed 5/7/73.]

WAC 296-24-68505 Installation of arc welding equipment. (1) General. Installation including power supply

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shall be according to the requirements of chapter 296-24 WAC Part L, and WAC 296-800-280.

(2) Grounding.

(a) The frame or case of the welding machine (except engine-driven machines) shall be grounded under the conditions and according to the methods prescribed in chapter 296-24 WAC Part L, and WAC 296-800-280.

(b) Conduits containing electrical conductors shall not be used for completing a work-lead circuit. Pipelines shall not be used as a permanent part of a work-lead circuit, but may be used during construction, extension or repair providing current is not carried through threaded joints, flanged bolted joints, or caulked joints and that special precautions are used to avoid sparking at connection of the work-lead cable.

(c) Chains, wire ropes, cranes, hoists, and elevators shall not be used to carry welding current.

(d) Where a structure, conveyor, or fixture is regularly employed as a welding current return circuit, joints shall be bonded or provided with adequate current collecting devices and appropriate periodic inspection should be conducted to ascertain that no condition of electrolysis or shock, or fire hazard exists by virtue of such use.

(e) All ground connections shall be checked to determine that they are mechanically strong and electrically adequate for the required current.

(3) Supply connections and conductors.

(a) A disconnecting switch or controller shall be provided at or near each welding machine which is not equipped with such a switch or controller mounted as an integral part of the machine. The switch shall be according to chapter 296-24 WAC Part L, and WAC 296-800-280. Overcurrent protection shall be provided as specified in chapter 296-24 WAC Part L, and WAC 296-800-280. A disconnect switch with overload protection or equivalent disconnect and protection means, permitted by chapter 296-24 WAC Part L, and WAC 296-800-280, shall be provided for each outlet intended for connection to a portable welding machine.

(b) For individual welding machines, the rated current-carrying capacity of the supply conductors shall be not less than the rated primary current of the welding machines.

(c) For groups of welding machines, the rated current-carrying capacity of conductors may be less than the sum of the rated primary currents of the welding machines supplied. The conductor rating shall be determined in each case according to the machine loading based on the use to be made of each welding machine and the allowance permissible in the event that all the welding machines supplied by the conductors will not be in use at the same time.

(d) In operations involving several welders on one structure, d.c. welding process requirements may require the use of both polarities; or supply circuit limitations for a.c. welding may require distribution of machines among the phases of the supply circuit. In such cases no load voltages between electrode holders will be 2 times normal in d.c. or 1, 1.4, 1.73, or 2 times normal on a.c. machines. Similar voltage differences will exist if both a.c. and d.c. welding are done on the same structure.

(i) All d.c. machines shall be connected with the same polarity.

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(ii) All a.c. machines shall be connected to the same phase of the supply circuit and with the same instantaneous polarity.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 01-11-038, § 296-24-68505, filed 5/9/01, effective 9/1/01. Statutory Authority: Chapter 49.17 RCW. 91-24-017 (Order 91-07), § 296-24-68505, filed 11/22/91, effective 12/24/91; Order 73-5, § 296-24-68505, filed 5/9/73 and Order 73-4, § 296-24-68505, filed 5/7/73.]

WAC 296-24-68507 Operation and maintenance. (1)

General. Workers assigned to operate or maintain arc welding equipment shall be acquainted with the requirements of WAC 296-24-68501 through 296-24-68505, 296-24-69501 through 296-24-69507, 296-24-70001 through 296-24-70007 and 296-24-71501 through 296-24-71525; if doing gas-shielded arc welding, also Recommended Safe Practices for Gas-Shielded Arc Welding, A6.1-1966, American Welding Society.

(2) Machine hook up. Before starting operations all connections to the machine shall be checked to make certain they are properly made. The work lead shall be firmly attached to the work; magnetic work clamps shall be freed from adherent metal particles of spatter on contact surfaces. Coiled welding cable shall be spread out before use to avoid serious overheating and damage to insulation.

(3) Grounding. Grounding of the welding machine frame shall be checked. Special attention shall be given to safety ground connections of portable machines.

(4) Leaks. There shall be no leaks of cooling water, shielding gas or engine fuel.

(5) Switches. It shall be determined that proper switching equipment for shutting down the machine is provided.

(6) Manufacturers' instructions. Printed rules and instructions covering operation of equipment supplied by the manufacturers shall be strictly followed.

(7) Electrode holders. Electrode holders when not in use shall be so placed that they cannot make electrical contact with persons, conducting objects, fuel or compressed gas tanks.

(8) Electric shock. Cables with splices within 10 feet of the holder shall not be used. The welder should not coil or loop welding electrode cable around parts of the body.

(9) Maintenance.

(a) The operator should report any equipment defect or safety hazard to the supervisor and the use of the equipment shall be discontinued until its safety has been assured. Repairs shall be made only by qualified personnel.

(b) Machines which have become wet shall be thoroughly dried and tested before being used.

(c) Work and electrode lead cables should be frequently inspected for wear and damage. Cables with damaged insulation or exposed bare conductors shall be replaced. Joining lengths of work and electrode cables shall be done by the use of connecting means specifically intended for the purpose. The connecting means shall have insulation adequate for the service conditions.

[Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-24-68507, filed 7/20/94, effective 9/20/94; Order 73-5, § 296-24-68507, filed 5/9/73 and Order 73-4, § 296-24-68507, filed 5/7/73.]

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WAC 296-24-690 Installation and operation of resistance welding equipment.

[Order 73-5, § 296-24-690, filed 5/9/73 and Order 73-4, § 296-24-690, filed 5/7/73.]

WAC 296-24-69001 General. (1) Installation. All equipment shall be installed by a qualified electrician in conformance with chapter 296-24 WAC Part L, and WAC 296-800-280. There shall be a safety-type disconnecting switch or a circuit breaker or circuit interrupter to open each power circuit to the machine, conveniently located at or near the machine, so that the power can be shut off when the machine or its controls are to be serviced.

(2) Thermal protection. Ignitron tubes used in resistance welding equipment shall be equipped with a thermal protection switch.

(3) Personnel. Workers designated to operate resistance welding equipment shall have been properly instructed and judged competent to operate such equipment.

(4) Guarding. Controls of all automatic or air and hydraulic clamps shall be arranged or guarded to prevent the operator from accidentally activating them.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 01-11-038, § 296-24-69001, filed 5/9/01, effective 9/1/01. Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-24-69001, filed 7/20/94, effective 9/20/94; 91-24-017 (Order 91-07), § 296-24-69001, filed 11/22/91, effective 12/24/91; Order 73-5, § 296-24-69001, filed 5/9/73 and Order 73-4, § 296-24-69001, filed 5/7/73.]

WAC 296-24-69003 Spot and seam welding machines (nonportable). (1) Voltage. All external weld initiating control circuits shall operate on low voltage, not over 120 volts.

(2) Capacitor welding. Stored energy or capacitor discharge type of resistance welding equipment and control panels involving high voltage (over 550 volts) shall be suitably insulated and protected by complete enclosures, all doors of which shall be provided with suitable interlocks and contacts wired into the control circuit (similar to elevator interlocks). Such interlocks or contacts shall be so designed as to effectively interrupt power and short circuit all capacitors when the door or panel is open. A manually operated switch or suitable positive device shall be installed, in addition to the mechanical interlocks or contacts, as an added safety measure assuring absolute discharge of all capacitors.

(3) Interlocks. All doors and access panels of all resistance welding machines and control panels shall be kept locked and interlocked to prevent access, by unauthorized persons, to live portions of the equipment.

(4) Guarding. All press welding machine operations, where there is a possibility of the operator's fingers being under the point of operation, shall be effectively safeguarded according to the machine safety requirements in WAC 296-806-20044 through 296-806-20054. All chains, gears, operating bus linkage, and belts shall be protected by adequate guards, in accordance with the machine safety requirements in WAC 296-806-20042.

(5) Shields. The hazard of flying sparks shall be, wherever practical, eliminated by installing a shield guard of safety glass or suitable fire-resistant plastic at the point of operation. Additional shields or curtains shall be installed as

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necessary to protect passing persons from flying sparks. (See WAC 296-24-70003 (1)(c).)

(6) Foot switches. All foot switches shall be guarded to prevent accidental operation of the machine.

(7) Stop buttons. Two or more safety emergency stop buttons shall be provided on all special multispot welding machines, including 2-post and 4-post weld presses.

(8) Safety pins. On large machines, four safety pins with plugs and receptacles (one in each corner) shall be provided so that when safety pins are removed and inserted in the ram or platen, the press becomes inoperative.

(9) Grounding. Where technically practical, the secondary of all welding transformers used in multispot, protection and seam welding machines shall be grounded. This may be done by permanently grounding one side of the welding secondary current circuit. Where not technically practical, a center tapped grounding reactor connected across the secondary or the use of a safety disconnect switch in conjunction with the welding control are acceptable alternates. Safety disconnect shall be arranged to open both sides of the line when welding current is not present.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060. 04-14-028, § 296-24-69003, filed 6/29/04, effective 1/1/05; Order 73-5, § 296-24-69003, filed 5/9/73 and Order 73-4, § 296-24-69003, filed 5/7/73.]

WAC 296-24-69005 Portable welding machines. (1)

Counter-balance. All portable welding guns shall have suitable counter-balanced devices for supporting the guns, including cables, unless the design of the gun or fixture makes counterbalancing impractical or unnecessary.

(2) Safety chains. All portable welding guns, transformers and related equipment that is suspended from overhead structures, eye beams, trolleys, etc., shall be equipped with safety chains or cables. Safety chains or cables shall be capable of supporting the total shock load in the event of failure of any component of the supporting system.

(3) Clevis. When trolleys are used to support portable welding equipment, they shall be equipped with suitable forged steel clevis for the attachment of safety chains. Each clevis shall be capable of supporting the total shock load of the suspended equipment in the event of trolley failure.

(4) Switch guards. All initiating switches, including retraction and dual schedule switches, located on the portable welding gun shall be equipped with suitable guards capable of preventing accidental initiation through contact with fixturing, operator's clothing, etc. Initiating switch voltage shall not exceed 24 volts.

(5) Moving holder. The movable holder, where it enters the gun frame, shall have sufficient clearance to prevent the shearing of fingers carelessly placed on the operating movable holder.

(6) Grounding. The secondary and case of all portable welding transformers shall be grounded. Secondary grounding may be by center tapped secondary or by a center tapped grounding reactor connected across the secondary.

[Order 73-5, § 296-24-69005, filed 5/9/73 and Order 73-4, § 296-24-69005, filed 5/7/73.]

WAC 296-24-69007 Flash welding equipment. (1)

Ventilation and flash guard. Flash welding machines shall be

equipped with a hood to control flying flash. In cases of high production, where materials may contain a film of oil and where toxic elements and metal fumes are given off, ventilation shall be provided in accordance with WAC 296-24-71501 through 296-24-71525.

(2) Fire curtains. For the protection of the operators of nearby equipment, fire-resistant curtains or suitable shields shall be set up around the machine and in such a manner that the operator's movements are not hampered.

(3) If the welding process cannot be isolated, all persons who may be exposed to the hazard of arc flash shall be properly protected.

[Order 74-27, § 296-24-69007, filed 5/7/74; Order 73-5, § 296-24-69007, filed 5/9/73 and Order 73-4, § 296-24-69007, filed 5/7/73.]

WAC 296-24-69009 Hazards and precautions. A job hazard analysis shall be made, by qualified personnel, of the operations to be performed on each welding machine to determine the safeguards and personal protective equipment that shall be used for each job.

[Order 73-5, § 296-24-69009, filed 5/9/73 and Order 73-4, § 296-24-69009, filed 5/7/73.]

WAC 296-24-69011 Maintenance. Periodic inspection shall be made by qualified maintenance personnel, and records of the same maintained. The operator shall be instructed to report any equipment defects to the supervisor and the use of the equipment shall be discontinued until safety repairs have been completed.

[Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-24-69011, filed 7/20/94, effective 9/20/94; Order 73-5, § 296-24-69011, filed 5/9/73 and Order 73-4, § 296-24-69011, filed 5/7/73.]

WAC 296-24-695 Fire prevention and protection.

[Order 73-5, § 296-24-695, filed 5/9/73 and Order 73-4, § 296-24-695, filed 5/7/73.]

WAC 296-24-69501 Basic precautions. For elaboration of these basic precautions and of the special precautions of WAC 296-24-69503 as well as a delineation of the fire protection and prevention responsibilities of welders and cutters, their supervisors (including outside contractors) and those in management on whose property cutting and welding is to be performed, see, Standard for Fire Prevention in Use of Cutting and Welding Processes, NFPA Standard 51B, 1962. The basic precautions for fire prevention in welding or cutting work are:

(1) Fire hazards. If the object to be welded or cut cannot readily be moved, all movable fire hazards in the vicinity shall be taken to a safe place.

(2) Guards. If the object to be welded or cut cannot be moved and if all the fire hazards cannot be removed, then guards shall be used to confine the heat, sparks, and slag, and to protect the immovable fire hazards.

(3) Restrictions. If the requirements stated in WAC 296-24-69501 (1) and (2) cannot be followed then welding and cutting shall not be performed.

[Order 73-5, § 296-24-69501, filed 5/9/73 and Order 73-4, § 296-24-69501, filed 5/7/73.]

WAC 296-24-69503 Special precautions. When the nature of the work to be performed falls within the scope of WAC 296-24-69501(2) certain additional precautions may be necessary:

(1) Combustible material. Wherever there are floor openings or cracks in the flooring that cannot be closed, precautions shall be taken so that no readily combustible materials on the floor below will be exposed to sparks which might drop through the floor. The same precautions shall be observed with regard to cracks or holes in walls, open doorways and open or broken windows.

(2) Fire extinguishers. Suitable fire extinguishing equipment shall be maintained in a state of readiness for instant use. Such equipment may consist of pails of water, buckets of sand, hose or portable extinguishers depending upon the nature and quantity of the combustible material exposed.

(3) Fire watch.

(a) Fire watchers shall be required whenever welding or cutting is performed in locations where other than a minor fire might develop, or any of the following conditions exist:

(i) Appreciable combustible material, in building construction or contents, closer than 35 feet to the point of operation.

(ii) Appreciable combustibles are more than 35 feet away but are easily ignited by sparks.

(iii) Wall or floor openings within a 35-foot radius expose combustible material in adjacent areas including concealed spaces in walls or floors.

(iv) Combustible materials are adjacent to the opposite side of metal partitions, walls, ceilings, or roofs and are likely to be ignited by conduction or radiation.

(b) Fire watchers shall have fire extinguishing equipment readily available and be trained in its use. They shall be familiar with facilities for sounding an alarm in the event of a fire. They shall watch for fires in all exposed areas, try to extinguish them only when obviously within the capacity of the equipment available, or otherwise sound the alarm. A fire watch shall be maintained for at least a half hour after completion of welding or cutting operations to detect and extinguish possible smoldering fires.

(4) Authorization. Before cutting or welding is permitted, the area shall be inspected by the individual responsible for authorizing cutting and welding operations. The responsible individual shall designate precautions to be followed in granting authorization to proceed, preferably in the form of a written permit.

(5) Floors. Where combustible materials such as paper clippings, wood shavings, or textile fibers are on the floor, the floor shall be swept clean for a radius of 35 feet. Combustible floors shall be kept wet, covered with damp sand, or protected by fire-resistant shields. Where floors have been wet down, personnel operating arc welding or cutting equipment shall be protected from possible shock.

(6) Prohibited areas. Cutting or welding shall not be permitted in the following situations:

(a) In areas not authorized by management.

(b) In sprinklered buildings while such protection is impaired.

(c) In the presence of explosive atmospheres (mixtures of flammable gases, vapors, liquids, or dusts with air), or explosive atmospheres that may develop inside uncleaned or

improperly prepared tanks or equipment which have previously contained such materials, or that may develop in areas with an accumulation of combustible dusts.

(d) In areas near the storage of large quantities of exposed, readily ignitable materials such as bulk sulphur, baled paper, or cotton.

(7) Relocation of combustibles. Where practicable, all combustibles shall be relocated at least 35 feet from the work site. Where relocation is impracticable, combustibles shall be protected with flameproofed covers or otherwise shielded with metal or asbestos guards or curtains. Edges of covers at the floor should be tight to prevent sparks from going under them. This precaution is also important at overlaps where several covers are used to protect a large pile.

(8) Ducts. Ducts and conveyor systems that might carry sparks to distant combustibles shall be suitably protected or shut down.

(9) Combustible walls. Where cutting or welding is done near walls, partitions, ceiling or roof of combustible construction, fire-resistant shields or guards shall be provided to prevent ignition.

(10) Noncombustible walls. If welding is to be done on a metal wall, partition, ceiling or roof, precautions shall be taken to prevent ignition of combustibles on the other side, due to conduction or radiation, preferably by relocating combustibles. Where combustibles are not relocated, a fire watch on the opposite side from the work shall be provided.

(11) Combustible cover. Welding shall not be attempted on a metal partition, wall, ceiling or roof having a combustible covering nor on walls or partitions of combustible sandwich-type panel construction.

(12) Pipes. Cutting or welding on pipes or other metal in contact with combustible walls, partitions, ceilings or roofs shall not be undertaken if the work is close enough to cause ignition by conduction.

(13) Management. Management shall recognize its responsibility for the safe usage of cutting and welding equipment on its property and:

(a) Based on fire potentials of plant facilities, establish areas for cutting and welding, and establish procedures for cutting and welding, in other areas.

(b) Designate an individual responsible for authorizing cutting and welding operations in areas not specifically designed for such processes.

(c) Insist that cutters or welders and their supervisors are suitably trained in the safe operation of their equipment and the safe use of the process.

(d) Advise all contractors about flammable materials or hazardous conditions of which they may not be aware.

(14) Supervisor. The supervisor:

(a) Shall be responsible for the safe handling of the cutting or welding equipment and the safe use of the cutting or welding process.

(b) Shall determine the combustible materials and hazardous areas present or likely to be present in the work location.

(c) Shall protect combustibles from ignition by the following:

(i) Have the work moved to a location free from dangerous combustibles.

(ii) If the work cannot be moved, have the combustibles moved to a safe distance from the work or have the combustibles properly shielded against ignition.

(iii) See that cutting and welding are so scheduled that plant operations that might expose combustibles to ignition are not started during cutting or welding.

(d) Shall secure authorization for the cutting or welding operations from the designated management representative.

(i) Shall determine that the cutter or welder secures their approval that conditions are safe before going ahead.

(ii) Shall determine that fire protection and extinguishing equipment are properly located at the site.

(iii) Shall ensure fire watches are available at the site when required.

(15) Fire prevention precautions. Cutting or welding shall be permitted only in areas that are or have been made fire safe. Within the confines of an operating plant or building, cutting and welding should preferably be done in a specific area designed for such work, such as a maintenance shop or a detached outside location. Such areas should be of noncombustible or fire-resistive construction, essentially free of combustible and flammable contents, and suitably segregated from adjacent areas. When work cannot be moved practically, as in most construction work, the area shall be made safe by removing combustibles or protecting combustibles from ignition sources.

[Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-24-69503, filed 7/20/94, effective 9/20/94; Order 73-5, § 296-24-69503, filed 5/9/73 and Order 73-4, § 296-24-69503, filed 5/7/73.]

WAC 296-24-69505 Welding or cutting containers.

(1) Used containers. No welding, cutting, or other hot work shall be performed on used drums, barrels, tanks or other containers until they have been cleaned so thoroughly as to make absolutely certain that there are no flammable materials present or any substances such as greases, tars, acids, or other materials which when subjected to heat, might produce flammable or toxic vapors. Any pipe lines or connections to the drum or vessel shall be disconnected or blanked.

(2) Venting and purging. All hollow spaces, cavities or containers shall be vented to permit the escape of air or gases before preheating, cutting or welding. Purging with inert gas is recommended.

[Order 73-5, § 296-24-69505, filed 5/9/73 and Order 73-4, § 296-24-69505, filed 5/7/73.]

WAC 296-24-69507 Confined spaces. (1) Accidental contact. When arc welding is to be suspended for any substantial period of time such as during lunch or overnight, all electrodes shall be removed from the holders and the holders carefully located so that accidental contact cannot occur and the machine be disconnected from the power source.

(2) Torch valve. In order to eliminate the possibility of gas escaping through leaks or improperly closed valves, when gas welding or cutting, the torch valves shall be closed and the gas supply to the torch positively shut off at some point outside the confined area whenever the torch is not to be used for a substantial period of time, such as during lunch hour or overnight. Where practicable, the torch and hose shall also be removed from the confined space.

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[Order 73-5, § 296-24-69507, filed 5/9/73 and Order 73-4, § 296-24-69507, filed 5/7/73.]

WAC 296-24-700 Protection of employees.

[Order 73-5, § 296-24-700, filed 5/9/73 and Order 73-4, § 296-24-700, filed 5/7/73.]

WAC 296-24-70001 General. (1) Railing. A welder or helper working on platforms, scaffolds, or runways shall be protected against falling. This may be accomplished by the use of railings, safety belts, life lines, or some other equally effective safeguards.

(2) Welding cable. Welders shall place welding cable and other equipment so that it is clear of passageways, ladders, and stairways.

[Order 73-5, § 296-24-70001, filed 5/9/73 and Order 73-4, § 296-24-70001, filed 5/7/73.]

WAC 296-24-70003 Eye protection. (1) Selection.

(a) Helmets or hand shields shall be used during all arc welding or arc cutting operations, excluding submerged arc welding.

Goggles should also be worn during arc welding or cutting operations to provide protection from injurious rays from adjacent work, and from flying objects. The goggles may have either clear or colored glass, depending upon the amount of exposure to adjacent welding operations. Helpers or attendants shall be provided with proper eye protection.

(b) Goggles or other suitable eye protection shall be used during all gas welding or oxygen cutting operations. Spectacles without side shields, with suitable filter lenses are permitted for use during gas welding operations on light work, for torch brazing or for inspection.

(c) All operators and attendants of resistance welding or resistance brazing equipment shall use transparent face shields or goggles, depending on the particular job, to protect their faces or eyes, as required.

(d) Eye protection in the form of suitable goggles shall be provided where needed for brazing operations not covered in (1)(a), (b) and (c) of this section.

(2) Specifications for protectors.

(a) Helmets and hand shields shall be made of a material which is an insulator for heat and electricity. Helmets, shields and goggles shall be not readily flammable and shall be capable of understanding sterilization.

(b) Helmets and hand shields shall be arranged to protect the face, neck and ears from direct radiant energy from the arc.

(c) Helmets shall be provided with filter plates and cover plates designed for easy removal.

(d) All parts shall be constructed of a material which will not readily corrode or discolor the skin.

(e) Goggles shall be ventilated to prevent fogging of the lenses as much as practicable.

(f) Cover lenses or plates should be provided to protect each helmet, hand shield or goggle filter lens or plate.

(g) All glass for lenses shall be tempered, substantially free from striae, air bubbles, waves and other flaws. Except when a lens is ground to provide proper optical correction for defective vision, the front and rear surfaces of lenses and windows shall be smooth and parallel.

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(h) Lenses shall bear some permanent distinctive marking by which the source and shade may be readily identified.

(i) The following is a guide for the selection of the proper shade numbers. These recommendations may be varied to suit the individual's needs.

Filter Lenses for Protection against Radiant Energy

Welding operation	Electrode Size 1/32 (inches)	Minimum protective arc current	Shade number
Shielded metal arc welding	Less than 3	Less than 60	10
	3-5	60-160	10
	5-8	160-250	12
	More than 8	250-550	14
Gas shielded arc welding (non-ferrous)	2, 3, 4, 5		11
Gas shielded arc welding (ferrous)	2, 3, 4, 5		12
Gas metal arc welding		Less than 60	7
		60-160	10
		160-250	10
		250-500	10
Flux cored arc welding		Less than 60	7
		60-160	10
		160-250	10
		250-500	10
Gas tungsten arc welding		Less than 50	8
		50-150	8
		150-500	10
Air carbon—light		Less than 500	10
Arc cutting—heavy		500-1000	11
Carbon arc welding			14
Plasma arc welding		Less than 20	6
		20-100	8
		100-400	10
		400-800	11
Plasma arc cutting		Less than 300 (light)	8
		300-400 (medium)	9

Welding operation	Electrode Size 1/32 (inches)	Minimum protective arc current	Shade number
		400-800 (heavy)	10
Atomic hydrogen welding			10-14
Torch soldering			2
Torch brazing			3 or 4
Gas welding			
Light	Under 1/8	Under 3.2	3 or 4

Note: In gas welding or oxygen cutting where the torch produces a high yellow light, it is desirable to use a filter or lens that absorbs the yellow or sodium line in the visible light of the operation.

(j) All filter lenses and plates shall meet the test for transmission of radiant energy prescribed in ANSI Z 87.1-1968—American National Standard Practice for Occupational and Educational Eye and Face Protection.

(3) Protection from arc welding rays. Where the work permits, the welder should be enclosed in an individual booth painted with a finish of low-reflectivity such as zinc oxide (an important factor for absorbing ultraviolet radiations) and lamp black; or shall be enclosed with noncombustible screens similarly painted. Booths and screens shall permit circulation of air at floor level. Workers or other persons adjacent to the welding areas shall be protected from the rays by noncombustible or flameproof screens or shields or shall be required to wear appropriate goggles.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 01-11-038, § 296-24-70003, filed 5/9/01, effective 9/1/01; Order 73-5, § 296-24-70003, filed 5/9/73 and Order 73-4, § 296-24-70003, filed 5/7/73.]

WAC 296-24-70005 Protective clothing. (1) General requirements. Employees exposed to the hazards created by welding, cutting, or brazing operations shall be protected by personal protective equipment in accordance with the requirements of chapter 296-24 WAC, Part I, and WAC 296-800-160. Appropriate protective clothing required for any welding operation will vary with the size, nature and location of the work to be performed.

(2) Specified protective clothing. Protective means which may be employed are as follows:

(a) Except when engaged in light work, all welders should wear flameproof gauntlet gloves.

(b) Flameproof aprons made of leather, asbestos, or other suitable material may also be desirable as protection against radiated heat and sparks.

(c) Woolen clothing preferable to cotton because it is not so readily ignited and helps protect the welder from changes in temperature. Cotton clothing, if used, should be chemically treated to reduce its combustibility. All outer clothing such as jumpers or overalls should be reasonably free from oil or grease.

(d) Sparks may lodge in rolled-up sleeves or pockets of clothing, or cuffs of overalls or trousers. It is therefore recommended that sleeves and collars be kept buttoned and pockets

be eliminated from the front of overalls and aprons. Trousers or overalls should not be turned up on the outside.

Note: For heavy work, fire-resistant leggings, high boots, or other equivalent means should be used.

(e) In production work a sheet metal screen in front of the worker's legs can provide further protection against sparks and molten metal in cutting operations.

(f) Capes or shoulder covers made of leather or other suitable materials should be worn during overhead welding or cutting operations. Leather skull caps may be worn under helmets to prevent head burns.

(g) For overhead welding and cutting, or welding and cutting in extremely confined spaces, ear protection is sometimes desirable.

(h) Where there is exposure to sharp or heavy falling objects, or a hazard of bumping in confined spaces, hard hats or head protectors shall be used.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 01-11-038, § 296-24-70005, filed 5/9/01, effective 9/1/01. Statutory Authority: Chapter 49.17 RCW. 94-20-057 (Order 94-16), § 296-24-70005, filed 9/30/94, effective 11/20/94; Order 73-5, § 296-24-70005, filed 5/9/73 and Order 73-4, § 296-24-70005, filed 5/7/73.]

WAC 296-24-70007 Work in confined spaces. (1)

General. As used herein confined space is intended to mean a relatively small or restricted space such as a tank, boiler, pressure vessel, or small compartment of a ship.

(2) Ventilation. Ventilation is a prerequisite to work in confined spaces. For ventilation requirements see WAC 296-24-71501 through 296-24-71525.

(3) Securing cylinders and machinery. When welding or cutting is being performed in any confined spaces the gas cylinders and welding machines shall be left on the outside. Before operations are started, heavy portable equipment mounted on wheels shall be securely blocked to prevent accidental movement.

(4) Lifelines. Where a welder must enter a confined space through a manhole or other small opening, means shall be provided for quickly removing the welder in case of emergency. When safety belts and lifelines are used for this purpose they shall be so attached in a manner so that the welder's body cannot be jammed in a small exit opening. An attendant with a preplanned rescue procedure shall be stationed outside to observe the welder at all times and be capable of putting rescue operations into effect.

(5) Electrode removal. When arc welding is to be suspended for any substantial period of time, such as during lunch or overnight, all electrodes shall be removed from the holders and the holders carefully located so that accidental contact cannot occur and the machine disconnected from the power source.

(6) Gas cylinder shutoff. In order to eliminate the possibility of gas escaping through leaks or improperly closed valves, when gas welding or cutting, the torch valves shall be closed and the fuel-gas and oxygen supply to the torch positively shut off at some point outside the confined area whenever the torch is not to be used for a substantial period of time, such as during lunch hour or overnight. Where practicable the torch and hose shall also be removed from the confined space.

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(7) Warning sign. After welding operations are completed, the welder shall mark the hot metal or provide some other means of warning other workers.

[Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-24-70007, filed 7/20/94, effective 9/20/94; Order 73-5, § 296-24-70007, filed 5/9/73 and Order 73-4, § 296-24-70007, filed 5/7/73.]

WAC 296-24-715 Health protection and ventilation.

[Order 73-5, § 296-24-715, filed 5/9/73 and Order 73-4, § 296-24-715, filed 5/7/73.]

WAC 296-24-71501 General. (1) Contamination. The requirements in this section have been established on the basis of the following three factors in arc and gas welding which govern the amount of contamination to which welders may be exposed:

(a) Dimensions of space in which welding is to be done (with special regard to height of ceiling).

(b) Number of welders.

(c) Possible evolution of hazardous fumes, gases, or dust according to the metals involved.

(2) Ventilation. It is recognized that in individual instances other factors may be involved in which case ventilation or respiratory protective devices should be provided as needed to meet the equivalent requirements of this section. Such factors would include:

(a) Atmospheric conditions.

(b) Heat generated.

(c) Presence of volatile solvents.

(3) Screens. When welding must be performed in a space entirely screened on all sides, the screens shall be so arranged that no serious restriction of ventilation exists. It is desirable to have the screens so mounted that they are about 2 feet above the floor unless the work is performed at so low a level that the screen must be extended nearer to the floor to protect nearby workers from the glare of welding.

(4) Maximum allowable concentration. Local exhaust or general ventilating systems shall be provided and arranged to keep the amount of toxic fumes, gases, or dusts below the maximum allowable concentration as specified in chapter 296-62 WAC.

Note: A number of potentially hazardous materials are employed in fluxes, coatings, coverings, and filler metals used in welding and cutting or are released to the atmosphere during welding and cutting. These include but are not limited to the materials itemized in WAC 296-24-71509 through 296-24-71523.

(5) Precautionary labels. The employer shall ascertain the potentially hazardous materials, associated with welding, cutting, etc., and inform the employee of same wither [whether] through signs, labels or other appropriate means.

(a) All filler metals and fusible granular materials shall carry the following notice, as a minimum, on tags, boxes, or other containers:

CAUTION

Welding may produce fumes and gases hazardous to health. Avoid breathing these fumes and gases. Use adequate ventilation. See ANSI Z 49.1-1967 Safety in Welding and Cutting published by the American Welding Society.

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(b) Brazing (welding) filler metals containing cadmium in significant amounts shall carry the following notice on tags, boxes, or other containers:

WARNING

CONTAINS CADMIUM—POISONOUS FUMES MAY BE FORMED
ON HEATING

Do not breathe fumes. Use only with adequate ventilation such as fume collectors, exhaust ventilators, or air-supplied respirators. See ANSI Z 49.1-1967.

If chest pain, cough, or fever develops after use call physician immediately.

Keep children away when using.

(c) Brazing and gas welding fluxes containing fluorine compounds shall have a cautionary wording to indicate that they contain fluorine compounds. One such cautionary wording recommended by the American Welding Society for brazing and gas welding fluxes reads as follows:

CAUTION

CONTAINS FLUORIDES

This flux when heated gives off fumes that may irritate eyes, nose and throat.

- (i) Avoid fumes-use only in well-ventilated spaces.
- (ii) Avoid contact of flux with eyes or skin.
- (iii) Do not take internally.

[Order 73-5, § 296-24-71501, filed 5/9/73 and Order 73-4, § 296-24-71501, filed 5/7/73.]

WAC 296-24-71503 Ventilation for general welding and cutting. (1) General. Mechanical ventilation shall be provided when welding or cutting is done on metals not covered in WAC 296-24-71509 through 296-24-71523. (For specific material, see the ventilation requirements of WAC 296-24-71509 through 296-24-71523.)

(a) In a space of less than 10,000 cubic feet per welder.

(b) In a room having a ceiling height of less than 16 feet.

(c) In confined spaces or where the welding space contains partitions, balconies, or other structural barriers to the extent that they significantly obstruct cross ventilation.

(2) Minimum rate. Such ventilation shall be at the minimum rate of 2,000 cubic feet per minute per welder, except where local exhaust hoods and booths as per WAC 296-24-71505, or airline respirators approved by the Mine Safety and Health Administration (MSHA) and the National Institute for Occupational Safety and Health (NIOSH) for such purposes are provided. Natural ventilation is considered sufficient for welding or cutting operations where the restrictions in WAC 296-24-71503(1) are not present.

[Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-24-71503, filed 7/20/94, effective 9/20/94; Order 73-5, § 296-24-71503, filed 5/9/73 and Order 73-4, § 296-24-71503, filed 5/7/73.]

WAC 296-24-71505 Local exhaust hoods and booths. Mechanical local exhaust ventilation may be by means of either of the following:

(1) Hoods. Freely movable hoods intended to be placed by the welder as near as practicable to the work being welded and provided with a rate of airflow sufficient to maintain a velocity in the direction of the hood of 100 linear feet per

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minute in the zone of welding when the hood is at its most remote distance from the point of welding. The rates of ventilation required to accomplish this control velocity using a 3-inch wide flanged suction opening are shown in the following table:

Welding zone	Minimum air flow ¹ cubic feet/minutes	Duct diameter inches ²
4 to 6 inches from arc or torch—	150	3
6 to 8 inches from arc or torch—	275	3 1/2
8 to 10 inches from arc or torch—	425	4 1/2
10 to 12 inches from arc or torch—	600	5 1/2

¹When brazing with cadmium bearing materials or when cutting on such materials increased rates of ventilation may be required.

²Nearest half-inch duct diameter based on 4,000 feet per minute velocity in pipe.

(2) Fixed enclosure. A fixed enclosure with a top and not less than two sides which surround the welding or cutting operations and with a rate of airflow sufficient to maintain a velocity away from the welder of not less than 100 linear feet per minute.

[Order 73-5, § 296-24-71505, filed 5/9/73 and Order 73-4, § 296-24-71505, filed 5/7/73.]

WAC 296-24-71507 Ventilation in confined spaces.

(1) Air replacement. All welding and cutting operations carried on in confined spaces shall be adequately ventilated to prevent the accumulation of toxic materials or possible oxygen deficiency. This applies not only to the welder but also to helpers and other personnel in the immediate vicinity. All air replacing that withdrawn shall be clean and respirable.

(2) Airline respirators. In such circumstances where it is impossible to provide such ventilation, airline respirators or hose masks approved for this purpose by the National Institute for Occupational Safety and Health (NIOSH) under 42 CFR part 84 must be used.

(3) Self-contained units. In areas immediately hazardous to life, a full-facepiece, pressure-demand, self-contained breathing apparatus or a combination full-facepiece, pressure-demand supplied-air respirator with an auxiliary, self-contained air supply certified by NIOSH under 42 CFR part 84 must be used.

(4) Outside helper. Where welding operations are carried on in confined spaces and where welders and helpers are provided with hose masks, hose masks with blowers or self-contained breathing equipment approved by the Mine Safety and Health Administration (MSHA) and the National Institute for Occupational Safety and Health (NIOSH), a worker shall be stationed on the outside of such confined spaces to insure the safety of those working within.

(5) Oxygen for ventilation. Oxygen shall not be used for ventilation.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-24-71507, filed 5/4/99, effective 9/1/99. Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-24-71507, filed 7/20/94, effective 9/20/94; Order 73-5, § 296-24-71507, filed 5/9/73 and Order 73-4, § 296-24-71507, filed 5/7/73.]

WAC 296-24-71509 Fluorine compounds. (1) General. In confined spaces, welding or cutting involving fluxes, coverings, or other materials which contain fluorine compounds shall be done in accordance with WAC 296-24-71507

(1) through (5). A fluorine compound is one that contains fluorine, as an element in chemical combination, not as a free gas.

Note: Maximum allowable concentration. The need for local exhaust ventilation or airline respirators for welding or cutting in other than confined spaces will depend upon the individual circumstances. However, experience has shown such protection to be desirable for fixed-location production welding and for all production welding on stainless steels. Where air samples taken at the welding location indicate that the fluorides liberated are below the maximum allowable concentration, such protection is not necessary.

[Order 73-5, § 296-24-71509, filed 5/9/73 and Order 73-4, § 296-24-71509, filed 5/7/73.]

WAC 296-24-71511 Zinc. (1) Confined spaces. In confined spaces welding or cutting involving zinc-bearing base or filler metals or metals coated with zinc-bearing materials shall be done in accordance with WAC 296-24-71507 (1) through (5).

(2) Indoors. Indoors, welding or cutting involving zinc-bearing base or filler metals coated with zinc-bearing materials shall be done in accordance with WAC 296-24-71505 (1) and (2).

[Order 73-5, § 296-24-71511, filed 5/9/73 and Order 73-4, § 296-24-71511, filed 5/7/73.]

WAC 296-24-71513 Lead. (1) Confined spaces. In confined spaces, welding involving lead-base metals (erroneously called lead-burning) shall be done in accordance with WAC 296-24-71507 (1) through (5).

(2) Indoors. Indoors, welding involving lead-base metals shall be done in accordance with WAC 296-24-71505 (1) and (2).

(3) Local ventilation. In confined spaces or indoors, welding or cutting operations involving metals containing lead, other than as an impurity, or involving metals coated with lead-bearing materials, including paint must be done using local exhaust ventilation or airline respirators. Such operations, when done outdoors, must be done using respirators, certified for this purpose by NIOSH under 42 CFR part 84. In all cases, workers in the immediate vicinity of the cutting operation must be protected as necessary by local exhaust ventilation or airline respirators.

Note: See chapter 296-62 WAC for additional requirements on lead.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-24-71513, filed 5/4/99, effective 9/1/99. Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-24-71513, filed 7/20/94, effective 9/20/94; Order 73-5, § 296-24-71513, filed 5/9/73 and Order 73-4, § 296-24-71513, filed 5/7/73.]

WAC 296-24-71515 Beryllium. Welding or cutting indoors, outdoors, or in confined spaces involving beryllium-containing base or filler metals shall be done using local exhaust ventilation and airline respirators unless atmospheric tests under the most adverse conditions have established that the workers' exposure is within the acceptable concentrations defined by chapter 296-841 WAC. In all cases, workers in the immediate vicinity of the welding or cutting operations shall be protected as necessary by local exhaust ventilation or airline respirators.

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[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. 05-03-093, § 296-24-71515, filed 1/18/05, effective 3/1/05; Order 73-5, § 296-24-71515, filed 5/9/73 and Order 73-4, § 296-24-71515, filed 5/7/73.]

WAC 296-24-71517 Cadmium. (1) General. In confined spaces or indoors, welding or cutting operations involving cadmium-bearing or cadmium-coated base metals must be done using local exhaust ventilation or airline respirators unless atmospheric tests under the most adverse conditions show that employee exposure is within the acceptable concentrations specified by chapter 296-62 WAC. Such operations, when done outdoors, must be done using respirators, such as fume respirators, certified for this purpose by NIOSH under 42 CFR part 84.

(2) Confined space. Welding (brazing) involving cadmium-bearing filler metals shall be done using ventilation as prescribed in WAC 296-24-71505 or 296-24-71507 if the work is to be done in a confined space.

Note: See chapter 296-62 WAC for additional requirements on cadmium.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-24-71517, filed 5/4/99, effective 9/1/99. Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-24-71517, filed 7/20/94, effective 9/20/94; Order 73-5, § 296-24-71517, filed 5/9/73 and Order 73-4, § 296-24-71517, filed 5/7/73.]

WAC 296-24-71519 Mercury. In confined spaces or indoors, welding or cutting operations involving metals coated with mercury-bearing materials, including paint, must be done using local exhaust ventilation or airline respirators unless atmospheric tests under the most adverse conditions show that employee exposure is within the acceptable concentrations specified by chapter 296-841 WAC. Such operations, when done outdoors, must be done using respirators certified for this purpose by NIOSH under 24 CFR part 84.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. 05-03-093, § 296-24-71519, filed 1/18/05, effective 3/1/05. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-24-71519, filed 5/4/99, effective 9/1/99. Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-24-71519, filed 7/20/94, effective 9/20/94; Order 73-5, § 296-24-71519, filed 5/9/73 and Order 73-4, § 296-24-71519, filed 5/7/73.]

WAC 296-24-71521 Cleaning compounds. (1) Manufacturer's instructions. In the use of cleaning materials, because of their possible toxicity of flammability, appropriate precautions such as manufacturer's instructions shall be followed.

(2) Degreasing. Degreasing or other cleaning operations involving chlorinated hydrocarbons shall be so located that no vapors from these operations will reach or be drawn into the atmosphere surrounding any welding operation. In addition, trichloroethylene and perchlorethylene should be kept out of atmospheres penetrated by the ultraviolet radiation of gas-shielded welding operations.

[Order 73-5, § 296-24-71521, filed 5/9/73 and Order 73-4, § 296-24-71521, filed 5/7/73.]

WAC 296-24-71523 Cutting of stainless steels. Oxygen cutting, using either a chemical flux or iron powder or gas-shielded arc cutting of stainless steel, shall be done using mechanical ventilation adequate to remove the fumes generated.

[Order 73-5, § 296-24-71523, filed 5/9/73 and Order 73-4, § 296-24-71523, filed 5/7/73.]

WAC 296-24-71525 First-aid equipment. First-aid equipment shall be available at all times. On every shift of welding operations there should be present employees trained to render first aid. All injuries shall be reported as soon as possible for medical attention. First aid shall be rendered until medical attention can be provided.

[Order 73-5, § 296-24-71525, filed 5/9/73 and Order 73-4, § 296-24-71525, filed 5/7/73.]

WAC 296-24-720 Industrial applications.

[Order 73-5, § 296-24-720, filed 5/9/73 and Order 73-4, § 296-24-720, filed 5/7/73.]

WAC 296-24-72001 Transmission pipeline. (1) General. The requirements of WAC 296-24-68501 through 296-24-68507, 296-24-70001 through 296-24-70007, and 296-24-71501 through 296-24-71525, shall be observed.

(2) Field shop operations. Where field shop operations are involved for fabrication of fittings, river crossings, road crossings, and pumping and compressor stations the requirements of WAC 296-24-68001, 296-24-68501 through 296-24-68507, 296-24-69501 through 296-24-69507, 296-24-70001 through 296-24-70007 and 296-24-71501 through 296-24-71525 shall be observed.

(3) Electric shock. When arc welding is performed in wet conditions, or under conditions of high humidity, special protection against electric shock shall be supplied.

(4) Pressure testing. In pressure testing of pipelines, the workers and the public shall be protected against injury by the blowing out of closures or other pressures restraining devices. Also, protection shall be provided against expulsion of loose dirt that may have become trapped in the pipe.

(5) Construction standards. The welded construction of transmission pipelines shall be conducted in accordance with the Standard for Welding Pipe Lines and Related Facilities, API Std. 1104-1968.

(6) Flammable substance lines. The connection, by welding, of branches to pipelines carrying flammable substances shall be performed in accordance with Welding or Hot Tapping on Equipment Containing Flammables, API Std. PSD No. 2201-1963.

(7) X-ray inspection. The use of X rays and radioactive isotopes for the inspection of welded pipeline joints shall be carried out in conformance with the American National Standard Safety Standard for Nonmedical X-ray and Sealed Gamma-Ray Sources, ANSI Z 54.1-1963.

[Order 73-5, § 296-24-72001, filed 5/9/73 and Order 73-4, § 296-24-72001, filed 5/7/73.]

WAC 296-24-72003 Mechanical piping systems. (1) General. The requirements of WAC 296-24-68001, 296-24-68501 through 296-24-68507, 296-24-69501 through 296-24-69507, 296-24-70001 through 296-24-70007 and 296-24-71501 through 296-24-71525 shall be observed.

(2) X-ray inspection. The use of X rays and radioactive isotopes for the inspection of welded piping joints shall be in conformance with the American National Standard Safety

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Standard for Nonmedical X ray and Sealed Gamma-Ray Sources, ANSI Z 54.1-1963.

[Order 73-5, § 296-24-72003, filed 5/9/73 and Order 73-4, § 296-24-72003, filed 5/7/73.]

WAC 296-24-722 Welding, cutting, and heating in way of preservative coatings. (1) Before welding, cutting, or heating is commenced on any surface covered by a preservative coating whose flammability is not known, a test shall be made by a competent person to determine its flammability. Preservative coatings shall be considered to be highly flammable when scrapings burn with extreme rapidity.

(2) Precautions shall be taken to prevent ignition of highly flammable hardened preservative coatings. When coatings are determined to be highly flammable, they shall be stripped from the area to be heated to prevent ignition.

(3) Protection against toxic preservative coatings:

(a) In enclosed spaces, all surfaces covered with toxic preservatives shall be stripped of all toxic coatings for a distance of at least 4 inches from the area of heat application, or the employees shall be protected by air line respirators, meeting the requirements specified in these rules for this type of work.

(b) In the open air, employees shall be protected by a respirator, suitable for the type of work being done.

(4) The preservative coatings shall be removed a sufficient distance from the area to be heated to ensure that the temperature of the unstripped metal will not be appreciably raised. Artificial cooling of the metal surrounding the heating area may be used to limit the size of the area required to be cleaned.

[Order 73-5, § 296-24-722, filed 5/9/73 and Order 73-4, § 296-24-722, filed 5/7/73.]

PART J-1

WORKING SURFACES, GUARDING FLOORS AND WALL OPENINGS

Note: Requirements relating to portable ladders and fixed ladders have been moved to chapter 296-876 WAC, Ladders, portable and fixed.

WAC 296-24-735 Walking-working surfaces.

[Order 73-5, § 296-24-735, filed 5/9/73 and Order 73-4, § 296-24-735, filed 5/7/73.]

WAC 296-24-73501 General requirements. This section applies to all permanent places of employment, except where domestic, mining, or agricultural work only is performed. Construction work is not to be deemed as a permanent place of employment. Measures for the control of toxic materials are considered to be outside the scope of this section.

[Statutory Authority: RCW 49.17.010, [49.17].050 and [49.17].060. 95-22-015, § 296-24-73501, filed 10/20/95, effective 1/16/96. Statutory Authority: Chapter 49.17 RCW. 94-06-068 (Order 93-17), § 296-24-73501, filed 3/2/94, effective 3/1/95; Order 73-5, § 296-24-73501, filed 5/9/73 and Order 73-4, § 296-24-73501, filed 5/7/73.]

WAC 296-24-73505 Aisles and passageways. (1) Where mechanical handling equipment is used, sufficient safe clearances shall be allowed for aisles, at loading docks,

[Title 296 WAC—p. 813]

through doorways and wherever turns or passage must be made. Aisles and passageways shall be kept clear and in good repairs, with no obstruction across or in aisles that could create a hazard.

(2) Permanent aisles and passageways shall be appropriately marked. "Appropriate" does not limit the marking to printed lines on the floor only. Other appropriate methods may be marked pillars, powder stripping, flags, traffic cones, or barrels, provided they are maintained in good repair and the recognition of such markings are included in the training programs for vehicle operators and employees.

(3) All trestles in connection with industrial plants on which cars run, which are also used as walkways for workers, shall be equipped with a walkway on the outer edge, so located as to give safe minimum clearance of three feet to cars. Such walkways shall be equipped with standard rails. Where a trestle crosses a driveway or passageway the trestle over such points shall be solidly boarded over.

[Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-24-73505, filed 7/20/94, effective 9/20/94; 89-11-035 (Order 89-03), § 296-24-73505, filed 5/15/89, effective 6/30/89; Order 73-5, § 296-24-73505, filed 5/9/73 and Order 73-4, § 296-24-73505, filed 5/7/73.]

WAC 296-24-73507 Covers and guardrails. (1) All open vats and tanks into which workers may fall shall be guarded with railings or screen guards.

(2) All open vats and tanks where workers are employed shall have a platform or walkway 36 to 42 inches below the top of vat or tank or where walkway is flush with top of vat or tank, a standard safeguard of 36 to 42 inches high shall be constructed.

(3) Every tank over 5 feet deep, excepting where agitators are used or where products may be damaged by ladders, shall have a ladder fixed on the inside so placed as to connect with means of access from the outside. Rungs shall have a clearance of at least 6 inches measured between the rung and the side of the tank.

[Statutory Authority: RCW 49.17.040, 49.17.150, and 49.17.240. 79-08-115 (Order 79-9), § 296-24-73507, filed 7/31/79; Order 74-27, § 296-24-73507, filed 5/7/74; Order 73-5, § 296-24-73507, filed 5/9/73 and Order 73-4, § 296-24-73507, filed 5/7/73.]

WAC 296-24-73511 Steam pipes. (1) All steam pipes or pipes heated by any other means to a sufficient temperature to burn a person (other than coil pipes, radiators, for heating rooms or buildings, or pipes on portable steam engines and boilers) and which are within seven feet of a floor or platform, if exposed to contact, shall be guarded with a standard safeguard.

(2) Protection from hot pipes. All exposed hot pipes within seven feet of the floor or working platform, or within 15 inches measured horizontally from stairways, ramps or fixed ladders, shall be covered with an insulating material or be guarded in such a manner as to prevent contact.

[Order 74-27, § 296-24-73511, filed 5/7/74.]

WAC 296-24-750 Guarding floor and wall openings and holes.

[Order 73-5, § 296-24-750, filed 5/9/73 and Order 73-4, § 296-24-750, filed 5/7/73.]

[Title 296 WAC—p. 814]

WAC 296-24-75001 Terms. The following terms shall have the meaning ascribed in this section, when referred to in WAC 296-24-75003 through 296-24-75011, unless the context requires otherwise.

(1) Floor hole. An opening measuring less than 12 inches but more than 1 inch in its least dimension, in any floor, platform, pavement, or yard, through which materials but not persons may fall; such as a belt hole, pipe opening, or slot opening.

(2) Floor opening. An opening measuring 12 inches or more in its least dimension, in any floor, platform, pavement, or yard, through which persons may fall; such as a hatchway, stair or ladder opening, pit, or large manhole. Floor openings occupied by elevators, dumb waiters, conveyors, machinery, or containers are excluded from this part.

(3) Handrail. A single bar or pipe supported on brackets from a wall or partition, as on a stairway or ramp, to furnish persons with a handhold in case of tripping.

(4) Platform. A working space for persons, elevated above the surrounding floor or ground; such as a balcony or platform for the operation of machinery and equipment.

(5) Runway. A passageway for persons, elevated above the surrounding floor or ground level, such as a footwalk along shafting or a walkway between buildings.

(6) Standard railing. A vertical barrier erected along exposed edges of a floor opening, wall opening, ramp, platform, or runway to prevent falls of person.

(7) Standard strength and construction. Any construction of railings, covers, or other guards that meets the requirements of WAC 296-24-750 through 296-24-75011.

(8) Stair railing. A vertical barrier erected along exposed sides of a stairway to prevent falls of persons.

(9) Toeboard. A vertical barrier at floor level erected along exposed edges of a floor opening, wall opening, platform, runway, or ramp to prevent falls of materials.

(10) Wall hole. An opening less than 30 inches but more than 1 inch high, of unrestricted width, in any wall or partition; such as a ventilation hole or drainage scupper.

(11) Wall opening. An opening at least 30 inches high and 18 inches wide, in any wall or partition, through which persons may fall; such as a yard-arm doorway or chute opening.

[Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-24-75001, filed 7/20/94, effective 9/20/94; Order 73-5, § 296-24-75001, filed 5/9/73 and Order 73-4, § 296-24-75001, filed 5/7/73.]

WAC 296-24-75003 Protection for floor openings. (1) Every ladderway floor opening or platform shall be guarded by a standard railing with standard toeboard on all exposed sides (except at entrance to opening), with the passage through the railing either provided with a swinging gate or so offset that a person cannot walk directly into the opening.

(2) Every hatchway and chute floor opening shall be guarded by one of the following:

(a) Hinged floor opening cover of standard strength and construction equipped with standard railings or permanently attached thereto so as to leave only one exposed side. When the opening is not in use, the cover shall be closed or the exposed side shall be guarded at both top and intermediate positions by removable standard railings.

(b) A removable railing with toeboard on not more than two sides of the opening and fixed standard railings with toeboards on all other exposed sides. The removable railings shall be kept in place when the opening is not in use and should preferably be hinged or otherwise mounted so as to be conveniently replaceable.

Where operating conditions necessitate the feeding of material into any hatchway or chute opening, protection shall be provided to prevent a person from falling through the opening.

(c) The area under floor openings shall, where practical, be fenced off. When this is not practical, the areas shall be plainly marked with yellow lines and telltales shall be installed to hang within five and one-half feet of ground or floor level.

(d) Where floor openings are used to drop materials from one level to another, audible warning systems shall be installed and used to indicate to employees on the lower level that material is to be dropped.

(3) Every skylight opening and hole shall be guarded by a standard skylight screen or a fixed standard railing on all exposed sides.

(4) Every pit and trapdoor floor opening, infrequently used, shall be guarded by a floor opening cover of standard strength and construction which should be hinged in place. While the cover is not in place, the pit or trap opening shall be constantly attended by someone or shall be protected on all exposed sides by removable standard railings.

(5) Every manhole floor opening shall be guarded by a standard manhole cover which need not be hinged in place. While the cover is not in place, the manhole opening shall be constantly attended by someone or shall be protected by removable standard railings.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 01-17-033, § 296-24-75003, filed 8/8/01, effective 9/1/01; Order 74-27, § 296-24-75003, filed 5/7/74; Order 73-5, § 296-24-75003, filed 5/9/73 and Order 73-4, § 296-24-75003, filed 5/7/73.]

WAC 296-24-75005 Protection for wall openings and holes. (1) Every wall opening from which there is a drop of more than 4 feet shall be guarded by one of the following:

(a) Rail, roller, picket fence, half door, or equivalent barrier.

The guard may be removable but should preferably be hinged or otherwise mounted so as to be conveniently replaceable. Where there is exposure below to falling materials, a removable toeboard or the equivalent shall also be provided. When the opening is not in use for handling materials, the guard shall be kept in position regardless of a door on the opening. In addition, a grab handle shall be provided on each side of the opening with its center approximately 4 feet above floor level and of standard strength and mounting.

(b) Extension platform onto which materials can be hoisted for handling, and which shall have side rails or equivalent guards of standard specifications.

(2) Every chute wall opening from which there is a drop of more than 4 feet shall be guarded by one or more of the barriers specified in WAC 296-24-75005 (1)(a) and (b), or as required by the conditions.

(3) Every window wall opening at a stairway landing, floor, platform, or balcony, from which there is a drop of

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more than 4 feet, and where the bottom of the opening is less than 3 feet above the platform or landing, shall be guarded by standard slats, standard grill work (as specified in WAC 296-24-75011(11)), or standard railing.

Where the window opening is below the landing, or platform, a standard toeboard shall be provided.

(4) Every temporary wall opening shall have adequate guards but these need not be of standard construction.

(5) Where there is a hazard of materials falling through a wall hole, and the lower edge of the near side of the hole is less than 4 inches above the floor, and the far side of the hole more than 5 feet above the next lower level, the hole shall be protected by a standard toeboard, or an enclosing screen either of solid construction, or as specified in WAC 296-24-75011(11).

[Order 73-5, § 296-24-75005, filed 5/9/73 and Order 73-4, § 296-24-75005, filed 5/7/73.]

WAC 296-24-75007 Protection of open-sided runways. (1) Railings must be provided with a toeboard wherever, beneath the open sides:

(a) Person can pass;

(b) There is moving machinery; or

(c) There is equipment with which falling materials could create a hazard.

(2) Every runway shall be guarded by a standard railing (or the equivalent as specified in WAC 296-24-75011(3)) on all open sides 4 feet or more above floor or ground level. Wherever tools, machine parts, or materials are likely to be used on the runway, a toeboard shall also be provided on each exposed side.

Runways used exclusively for special purposes (such as oiling, shafting, or filling tank cars) may have the railing on one side omitted where operating conditions necessitate such omission, providing the falling hazard is minimized by using a runway of not less than 18 inches wide. Where persons entering upon runways become thereby exposed to machinery, electrical equipment, or other danger not a falling hazard, additional guarding than is here specified may be essential for protection.

(3) Regardless of height, runways above or adjacent to dangerous equipment, pickling or galvanizing tanks, degreasing units, and similar hazards shall be guarded with a standard railing and toeboard.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 01-17-033, § 296-24-75007, filed 8/8/01, effective 9/1/01; Order 76-6, § 296-24-75007, filed 3/1/76; Order 73-5, § 296-24-75007, filed 5/9/73 and Order 73-4, § 296-24-75007, filed 5/7/73.]

WAC 296-24-75011 Railing, toeboards, and cover specifications. (1) A standard railing shall consist of top rail, intermediate rail, and posts, and shall have a vertical height of forty-two inches, plus or minus three inches, from upper surface of top rail to floor, platform, runway, or ramp level and:

(a) The top rail shall be smooth-surfaced throughout the length of the railing.

(b) The intermediate rail shall be approximately halfway between the top rail and the floor, platform, runway, or ramp.

(c) The ends of the rails shall not overhang the terminal posts except where such overhang does not constitute a projection hazard.

(d) Guardrails with heights greater than 42 inches are permissible provided the extra height does not create a dangerous situation for employees and that additional mid-rails were installed so that openings beneath the top rail would not permit the passage of a 19-inch or larger spherical object.

(2) A stair railing shall be of construction similar to a standard railing but the vertical height shall be not more than thirty-four inches nor less than thirty inches from upper surface of top rail to surface of tread in line with face of riser at forward edge of tread.

(3) Minimum requirements for standard railings under various types of construction are specified in this subsection. Dimensions specified are based on the U.S. Department of Agriculture Wood Handbook, No. 72, 1955 (No. 1 (S4S) Southern Yellow Pine (Modulus of Rupture 7,400 p.s.i.)) for wood; ANSI G 41.5-1970, American National Standard Specifications for Structural Steel, for structural steel; and ANSI B 125.1-1970, American National Standard Specifications for Welded and Steamless Steel Pipe, for pipe.

(a) For wood railings, the posts shall be of at least two-inch by four-inch nominal stock spaced not to exceed six feet; the top and intermediate rails shall be of at least two-inch by four-inch nominal stock. If top rail is made of two right-angle pieces of one-inch by four-inch stock, posts may be spaced on eight-foot centers, with two-inch by four-inch intermediate rail.

(b) For pipe railings, posts and top and intermediate railings shall be at least one and one-half inches nominal diameter (outside diameter) with posts spaced not more than eight feet on centers.

(c) For structural steel railings, posts and top and intermediate rails shall be of two-inch by two-inch by three-eighths-inch angles or other metal shapes of equivalent bending strength with posts spaced not more than eight feet on centers.

(d) The anchoring of posts and framing of members for railings of all types shall be of such construction that the completed structure shall be capable of withstanding a load of at least two hundred pounds applied in any direction at any point on the top rail.

(e) Other types, sizes, and arrangements of railing construction are acceptable provided they meet the following conditions:

(i) A smooth-surfaced top rail at a height above floor, platform, runway, or ramp level of from thirty-six to forty-two inches nominal;

(ii) A strength to withstand at least the minimum requirement of two hundred pounds top rail pressure;

(iii) Protection between top rail and floor, platform, runway, ramp, or stair treads, equivalent at least to that afforded by a standard intermediate rail;

(iv) Elimination of overhang of rail ends unless such overhang does not constitute a hazard; such as, baluster railings, scrollwork railings, paneled railings.

(4) A standard toeboard shall be a minimum of four inches nominal in vertical height from its top edge to the level of the floor, platform, runway, or ramp. It shall be securely fastened in place and with not more than one-quarter-inch clearance above floor level. It may be made of any substantial material either solid or with openings not over one inch in greatest dimension.

Where material is piled to such height that a standard toeboard does not provide protection, paneling from floor to intermediate rail, or to top rail shall be provided.

(5) A handrail shall consist of a lengthwise member mounted directly on a wall or partition by means of brackets attached to the lower side of the handrail so as to offer no obstruction to a smooth surface along the top and both sides of the handrail. The handrail shall be of rounded or other section that will furnish an adequate handhold for anyone grasping it to avoid falling. The ends of the handrail should be turned in to the supporting wall or otherwise arranged so as not to constitute a projection hazard.

(a) The height of handrails shall be not more than thirty-four inches nor less than thirty inches from upper surface of handrail to surface of tread in line with face of riser or to surface of ramp.

(b) The size of handrails shall be: When of hardwood, at least two inches in diameter; when of metal pipe, at least one and one-half inches in diameter. The length of brackets shall be such as will give a clearance between handrail and wall or any projection thereon of at least one and one-half inches. The spacing of brackets shall not exceed eight feet.

(c) The mounting of handrails shall be such that the completed structure is capable of withstanding a load of at least two hundred pounds applied in any direction at any point on the rail.

(6) All handrails and railings shall be provided with a clearance of not less than one and one-half inches between the handrail or railing and any other object.

(7) Floor opening covers may be of any material that meets the following strength requirements:

(a) Trench or conduit covers and their supports, when located in plant roadways, shall be designed to carry a truck rear-axle load of at least twenty thousand pounds.

(b) Manhole covers and their supports, when located in plant roadways, shall comply with local standard highway requirements if any; otherwise, they shall be designed to carry a truck rear-axle of at least twenty thousand pounds.

(c) The construction of floor opening covers may be of any material that meets the strength requirements. Covers projecting not more than one inch above the floor level may be used providing all edges are chamfered to an angle with the horizontal of not over thirty degrees. All hinges, handles, bolts, or other parts shall set flush with the floor or cover surface.

(8) Skylight screens shall be of such construction and mounting that they are capable of withstanding a load of at least two hundred pounds applied perpendicularly at any one area on the screen. They shall also be of such construction and mounting that under ordinary loads or impacts, they will not deflect downward sufficiently to break the glass below them. The construction shall be of grillwork with openings not more than four inches long or of slatwork with openings not more than two inches wide with length unrestricted.

(9) Wall opening barriers (rails, rollers, picket fences, and half doors) shall be of such construction and mounting that, when in place at the opening, the barrier is capable of withstanding a load of at least two hundred pounds applied in any direction (except upward) at any point on the top rail or corresponding member.

(10) Wall opening grab handles shall be not less than twelve inches in length and shall be so mounted as to give one and one-half inches clearance from the side framing of the wall opening. The size, material, and anchoring of the grab handle shall be such that the completed structure is capable of withstanding a load of at least two hundred pounds applied in any direction at any point of the handle.

(11) Wall opening screens shall be of such construction and mounting that they are capable of withstanding a load of at least two hundred pounds applied horizontally at any point on the near side of the screen. They may be of solid construction, of grillwork with openings not more than eight inches long, or of slatwork with openings not more than four inches wide with length unrestricted.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060. 04-07-161, § 296-24-75011, filed 3/23/04, effective 6/1/04. Statutory Authority: Chapter 49.17 RCW. 91-03-044 (Order 90-18), § 296-24-75011, filed 1/10/91, effective 2/12/91; 89-11-035 (Order 89-03), § 296-24-75011, filed 5/15/89, effective 6/30/89. Statutory Authority: RCW 49.17.040, 49.17.150, and 49.17.240. 79-08-115 (Order 79-9), § 296-24-75011, filed 7/31/79; Order 73-5, § 296-24-75011, filed 5/9/73 and Order 73-4, § 296-24-75011, filed 5/7/73.]

WAC 296-24-765 Fixed industrial stairs.

[Order 73-5, § 296-24-765, filed 5/9/73 and Order 73-4, § 296-24-765, filed 5/7/73.]

WAC 296-24-76501 Terms. The following terms shall have the meaning ascribed in this section when referred to in WAC 296-24-76503 through 296-24-76523 unless the context requires otherwise.

(1) Handrail. A single bar or pipe supported on brackets from a wall or partition to provide a continuous handhold for persons using a stair.

(2) Nose, nosing. That portion of a tread projecting beyond the face of the riser immediately below.

(3) Open riser. The air space between the treads of stairways without upright members (risers).

(4) Platform. An extended step or landing breaking a continuous run of stairs.

(5) Railing. A vertical barrier erected along exposed sides of stairways and platforms to prevent falls of persons. The top member of railing usually serves as a handrail.

(6) Rise. The vertical distance from the top of a tread to the top of the next higher tread.

(7) Riser. The upright member of a step situated at the back of a lower tread and near the leading edge of the next higher tread.

(8) Stairs, stairway. A series of steps leading from one level or floor to another, or leading to platforms, pits, boiler rooms, crossovers, or around machinery, tanks, and other equipment that are used more or less continuously or routinely by employees, or only occasionally by specific individuals. A series of steps and landings having three or more risers constitutes stairs or stairway.

(9) Tread. The horizontal member of a step.

(10) Tread run. The horizontal distance from the leading edge of a tread to the leading edge of an adjacent tread.

(11) Tread width. The horizontal distance from front to back of tread including nosing when used.

[Order 73-5, § 296-24-76501, filed 5/9/73 and Order 73-4, § 296-24-76501, filed 5/7/73.]

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WAC 296-24-76503 Application of requirements.

This section contains specifications for the safe design and construction of fixed general industrial stairs. This classification includes interior and exterior stairs around machinery, tanks, and other equipment, and stairs leading to or from floors, platforms, or pits. This section does not apply to stairs used for fire exit purposes, to construction operations, to private buildings or residences, or to articulated stairs, such as may be installed on floating roof tanks or on dock facilities, the angle of which changes with the rise and fall of the base support.

When stairs of public and private buildings are located at loading or receiving docks, in maintenance areas, etc., or are used exclusively by employees, the term "fixed industrial steps" will apply and be evaluated accordingly.

[Statutory Authority: Chapter 49.17 RCW. 90-03-029 (Order 89-20), § 296-24-76503, filed 1/11/90, effective 2/26/90; Order 73-5, § 296-24-76503, filed 5/9/73 and Order 73-4, § 296-24-76503, filed 5/7/73.]

WAC 296-24-76507 Stair strength. Fixed stairways shall be designed and constructed to carry a load of five times the normal live load anticipated but never of less strength than to carry safely a moving concentrated load of 1,000 pounds.

[Order 73-5, § 296-24-76507, filed 5/9/73 and Order 73-4, § 296-24-76507, filed 5/7/73.]

WAC 296-24-76509 Stair width. Fixed stairways shall have a minimum width of 22 inches.

[Order 73-5, § 296-24-76509, filed 5/9/73 and Order 73-4, § 296-24-76509, filed 5/7/73.]

WAC 296-24-76511 Angle of stairway rise. (1) Fixed stairs shall be installed at angles to the horizontal of between thirty degrees and fifty degrees. Any uniform combination of rise/tread dimensions may be used that will result in a stairway at any angle to the horizontal within the permissible range. Table D-1 gives rise/tread dimensions which will produce a stairway within the permissible range, stating the angle to the horizontal produced by each combination. However, the rise/tread combinations are not limited to those given in Table D-1.

(2) Because of space limitations a permanent stairway sometimes has to be installed at an angle above the fifty degree critical angle. Such installations are commonly called inclined ladders or ship's ladders, which shall have handrails on both sides and open risers. They shall be capable of sustaining a live load of one hundred pounds per square foot with a safety factor of four. The following preferred and critical angles from the horizontal shall be considered for inclined ladders and ship's ladders:

(a) Thirty-five to sixty degrees - Preferred angle from horizontal.

(b) Sixty to seventy degrees - Critical angle from horizontal.

[Statutory Authority: Chapter 49.17 RCW. 89-11-035 (Order 89-03), § 296-24-76511, filed 5/15/89, effective 6/30/89; Order 73-5, § 296-24-76511, filed 5/9/73 and Order 73-4, § 296-24-76511, filed 5/7/73.]

WAC 296-24-76513 Stair treads. Each tread and the top landing of a stairway, where risers are used, should have

a nose which extends one-half inch to 1 inch beyond the face of the lower riser. Noses should have an even leading edge. All treads shall be reasonably slip-resistant and the nosings shall be of nonslip finish. Welded bar grating treads without nosings are acceptable providing the leading edge can be readily identified by personnel descending the stairway and provided the tread is serrated or is of definite nonslip design. Rise height and tread width shall be uniform throughout any flight of stairs including any foundation structure used as one or more treads of the stairs.

TABLE D-1

Angle to horizontal	Rise (in inches)	Tread run (in inches)
30°35'	6 1/2	11
32°08'	6 3/4	10 3/4
33°41'	7	10 1/2
35°16'	7 1/4	10 1/4
36°52'	7 1/2	10
38°29'	7 3/4	9 3/4
40°08'	8	9 1/2
41°44'	8 1/4	9 1/4
43°22'	8 1/2	9
45°00'	8 3/4	8 3/4
46°38'	9	8 1/2
48°16'	9 1/4	8 1/4
49°54'	9 1/2	8

[Order 73-5, § 296-24-76513, filed 5/9/73 and Order 73-4, § 296-24-76513, filed 5/7/73.]

WAC 296-24-76515 Length of stairways. Long flights of stairs, unbroken by landings or intermediate platforms, should be avoided. Consideration should be given to providing intermediate platforms where practical and where such stairways are in frequent use. Stairway platforms shall be no less than the width of a stairway and a minimum of 30 inches in length measured in the direction of travel.

[Order 73-5, § 296-24-76515, filed 5/9/73 and Order 73-4, § 296-24-76515, filed 5/7/73.]

WAC 296-24-76519 Vertical clearance. Vertical clearance above any stair tread to an overhead obstruction shall be at least 7 feet measured from the leading edge of the tread.

[Order 73-5, § 296-24-76519, filed 5/9/73 and Order 73-4, § 296-24-76519, filed 5/7/73.]

WAC 296-24-76521 Open risers. Stairs having treads of less than 9-inch width should have open risers.

[Order 73-5, § 296-24-76521, filed 5/9/73 and Order 73-4, § 296-24-76521, filed 5/7/73.]

WAC 296-24-76523 General. Open grating type treads are desirable for outside stairs.

[Order 73-5, § 296-24-76523, filed 5/9/73 and Order 73-4, § 296-24-76523, filed 5/7/73.]

WAC 296-24-76555 Alternating tread-type stairs. Alternating tread-type stairs have a series of steps between 50 and 70 degrees from horizontal, attached to a center support rail in an alternating manner so that a user of the stairs never has both feet at the same level at the same time. (See Figure D-12.)

(1) Alternating tread-type stairs shall be designed, installed, used, and maintained in accordance with approved manufacturer's specifications, and shall have the following:

- (a) Stair rails on all open sides;
- (b) Handrails on both sides of enclosed stairs;
- (c) Stair rails and handrails of such configuration as to provide an adequate handhold for a user grasping it to avoid a fall;
- (d) A minimum of 17 inches between handrails;
- (e) A minimum width of 22 inches overall;
- (f) A minimum tread depth of 8 inches;
- (g) A minimum tread width of 7 inches; and
- (h) A maximum rise of 9 1/2 inches to the tread surface of the next alternating tread.

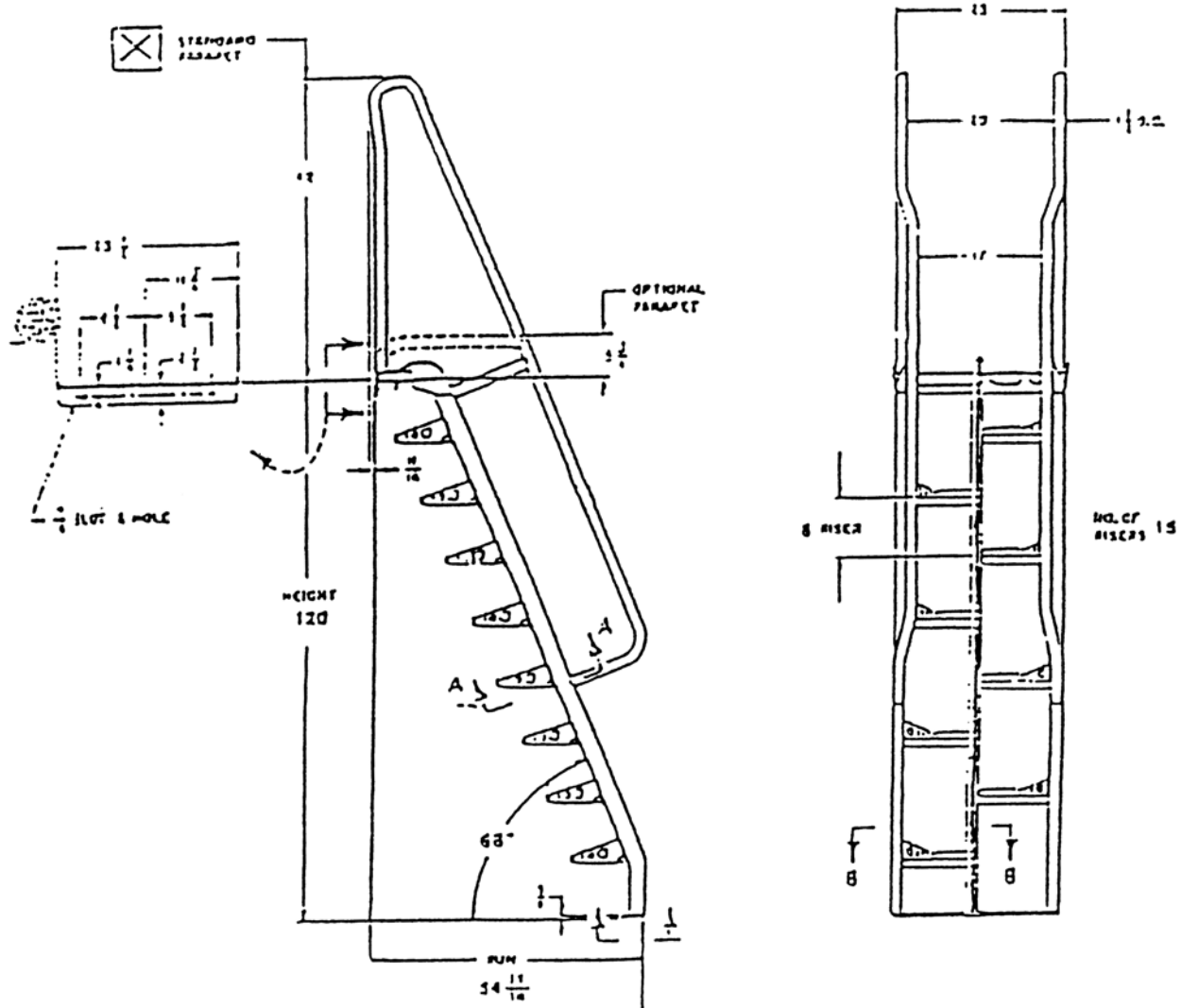
(2) Alternating tread-type stairs shall not have more than a 20-foot continuous rise. Where more than a 20-foot rise is necessary to reach the top of a required stair, one or more intermediate platforms shall be provided in accordance with WAC 296-24-76515.

(3) Stairs and platforms shall be installed so the top landing of the alternating tread stair is flush with the top of the landing platform.

(4) Stair design and construction shall sustain a load of not less than five times the normal live load, but never less strength than to carry safely a moving concentrated load of 1,000 pounds.

(5) Treads shall be equipped with slip-resistant surfaces.

(6) Where a platform or landing is used, the width shall not be less than the width of the stair nor less than 30-inch depth in the direction of travel. Stairs shall be flush with the top of the landing platform.



[Statutory Authority: Chapter 49.17 RCW. 92-17-022 (Order 92-06), § 296-24-76555, filed 8/10/92, effective 9/10/92; 91-03-044 (Order 90-18), § 296-24-76555, filed 1/10/91, effective 2/12/91.]

WAC 296-24-855 Other working surfaces.

[Order 73-5, § 296-24-855, filed 5/9/73 and Order 73-4, § 296-24-855, filed 5/7/73.]

WAC 296-24-85501 Dockboards (bridge plates). (1)

Portable and powered dockboards shall be strong enough to carry the load imposed on them.

(2) Portable dockboards shall be secured in position, either by being anchored or equipped with devices which will prevent their slipping.

(3) Powered dockboards shall be designed and constructed in accordance with Commercial Standard CS202-56 (1961) "Industrial Lifts and Hinged Loading Ramps" published by the U.S. Department of Commerce.

(4) Handholds, or other effective means, shall be provided on portable dockboards to permit safe handling.

(5) Positive protection shall be provided to prevent railroad cars from being moved while dockboards or bridge plates are in position.

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[Order 73-5, § 296-24-85501, filed 5/9/73 and Order 73-4, § 296-24-85501, filed 5/7/73.]

WAC 296-24-85503 Forging machine area. (1)

Machines shall be so located as to give (a) enough clearance between machines so that the movement of one operator will not interfere with the work of another, (b) ample room for cleaning machines and handling the work, including material and scrap. The arrangement of machines shall be such that operators will not stand in aisles.

(2) Aisles shall be provided of sufficient width to permit the free movement of employees bringing and removing material. This aisle space is to be independent of working and storage space and should be defined by marking.

(3) Wood platforms used on the floor in front of machines shall be substantially constructed with nonslip surfaces.

[Statutory Authority: RCW 49.17.040, 49.17.150, and 49.17.240. 79-08-115 (Order 79-9), § 296-24-85503, filed 7/31/79; Order 73-5, § 296-24-85503, filed 5/9/73 and Order 73-4, § 296-24-85503, filed 5/7/73.]

[Title 296 WAC—p. 819]

WAC 296-24-85505 Veneer machinery. (1) Sides of steam vats shall extend to a height of not less than 36 inches above the floor, working platform, or ground.

(2) Large steam vats divided into sections shall be provided with substantial walkways between sections. Each walkway shall be provided with a standard handrail on each exposed side. These handrails may be removable, if necessary.

(3) Covers shall be removed only from that portion of steaming vats on which people are working and a portable railing shall be placed at this point to protect the operators.

(4) Workers shall not ride or step on logs in steam vats.

[Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-24-85505, filed 7/20/94, effective 9/20/94; Order 73-5, § 296-24-85505, filed 5/9/73 and Order 73-4, § 296-24-85505, filed 5/7/73.]

PART J-2 SCAFFOLDS

WAC 296-24-862 Nonmandatory appendices. Nonmandatory Appendix A to Part J-2, Scaffold Specifications.

This Appendix provides nonmandatory guidelines to assist employers in complying with the requirements of Part J-2 of this chapter. An employer may use these guidelines and tables as a starting point for designing scaffold systems. However, the guidelines do not provide all the information necessary to build a complete system, and the employer is still responsible for designing and assembling these components in such a way that the completed system will meet the requirements of WAC 296-24-86010(1). Scaffold components which are not selected and loaded in accordance with this Appendix, and components for which no specific guidelines or tables are given in this Appendix (e.g., joints, ties, components for wood pole scaffolds more than 60 feet in height, components for heavy-duty horse scaffolds, components made with other materials, and components with other dimensions, etc.) must be designed and constructed in accordance with the capacity requirements of WAC 296-24-86010(1), and loaded in accordance with WAC 296-24-86010 (4)(a).

Index to Appendix A for Part J-2

1. General guidelines and tables.
2. Specific guidelines and tables.
 - (a) Pole scaffolds:
 - Single-pole wood pole scaffolds.
 - Independent wood pole scaffolds.
 - (b) Tube and coupler scaffolds.
 - (c) Fabricated frame scaffolds.
 - (d) Plasterers', decorators' and large area scaffolds.
 - (e) Bricklayers' square scaffolds.
 - (f) Horse scaffolds.
 - (g) Form scaffolds and carpenters' bracket scaffolds.
 - (h) Roof bracket scaffolds.
 - (i) Outrigger scaffolds (one level).
 - (j) Pump jack scaffolds.
 - (k) Ladder jack scaffolds.
 - (l) Window jack scaffolds.
 - (m) Crawling boards (chicken ladders).
 - (n) Step, platform and trestle ladder scaffolds.
 - (o) Single-point adjustable suspension scaffolds.

- (p) Two-point adjustable suspension scaffolds.
- (q)(1) Stonesetters' multipoint adjustable suspension scaffolds.
- (q)(2) Masons' multipoint adjustable suspension scaffolds.
- (r) Catenary scaffolds.
- (s) Float (ship) scaffolds.
- (t) Interior hung scaffolds.
- (u) Needle beam scaffolds.
- (v) Multilevel suspension scaffolds.
- (w) Mobile scaffolds.
- (x) Repair bracket scaffolds.
- (y) Stilts.
- (z) Tank builders' scaffolds.

1. General guidelines and tables.

(a) The following tables, and the tables in Part 2—Specific guidelines and tables, assume that all load-carrying timber members (except planks) of the scaffold are a minimum of 1,500 lb-ft/in(2) (stress grade) construction grade lumber. All dimensions are nominal sizes as provided in the American Softwood Lumber Standards, dated January 1970, except that, where rough sizes are noted, only rough or undressed lumber of the size specified will satisfy minimum requirements.

(b) Solid sawn wood used as scaffold planks must be selected for such use following the grading rules established by a recognized lumber grading association or by an independent lumber grading inspection agency. Such planks must be identified by the grade stamp of such association or agency. The association or agency and the grading rules under which the wood is graded must be certified by the Board of Review, American Lumber Standard Committee, as set forth in the American Softwood Lumber Standard of the U.S. Department of Commerce.

(i) Allowable spans must be determined in compliance with the National Design Specification for Wood Construction published by the National Forest Products Association; paragraph 5 of ANSI A10.8-1988 Scaffolding-Safety Requirements published by the American National Standards Institute; or for 2 x 10 inch (nominal) or 2 x 9 inch (rough) solid sawn wood planks, as shown in the following table:

Maximum intended nominal load (lb/ft ²)	Maximum permissible span using full thickness undressed lumber (ft)	Maximum permissible span using nominal thickness lumber (ft)
25	10	8
50	8	6
75	6	

(ii) The maximum permissible span for 1 1/4 x 9-inch or wider wood plank of full thickness with a maximum intended load of 50 lb/ft.(2) must be 4 feet.

(c) Fabricated planks and platforms may be used in lieu of solid sawn wood planks. Maximum spans for such units must be as recommended by the manufacturer based on the maximum intended load being calculated as follows:

Rated load capacity	Intended load
Light-duty	*25 pounds per square foot applied uniformly over the entire span area.

Rated load capacity	Intended load
Medium-duty	*50 pounds per square foot applied uniformly over the entire span area.
Heavy-duty	*75 pounds per square foot applied uniformly over the entire span area.
One-person	*250 pounds placed at the center of the span (total 250 pounds).
Two-person	*250 pounds placed 18 inches to the left and right of the center of the span (total 500 pounds).
Three-person	*250 pounds placed at the center of the span and 250 pounds placed 18 inches to the left and right of the center of the span (total 750 pounds).

Note: Platform units used to make scaffold platforms intended for light-duty use must be capable of supporting at least 25 pounds per square foot applied uniformly over the entire unit-span area, or a 250-pound point load placed on the unit at the center of the span, whichever load produces the greater shear force.

(d) Guardrails must be as follows:

(i) Toprails must be equivalent in strength to 2 inch by 4 inch lumber; or

1 1/4 inch x 1/8 inch structural angle iron; or

1 inch x .070 inch wall steel tubing; or 1.990 inch x .058 inch wall aluminum tubing.

(ii) Midrails must be equivalent in strength to 1 inch by 6 inch lumber; or

1 1/4 inch x 1 1/4 inch x 1/8 inch structural angle iron; or

1 inch x .070 inch wall steel tubing; or

1.990 inch x .058 inch wall aluminum tubing.

(iii) Toeboards must be equivalent in strength to 1 inch by 4 inch lumber; or

1 1/4 inch x 1 1/4 inch structural angle iron; or

1 inch x .070 inch wall steel tubing; or

1.990 inch x .058 inch wall aluminum tubing.

(iv) Posts must be equivalent in strength to 2 inch by 4 inch lumber; or

1 1/4 inch x 1 1/4 inch x 1/8 structural angle iron; or

1 inch x .070 inch wall steel tubing; or

1.990 inch x .058 inch wall aluminum tubing.

(v) Distance between posts must not exceed 8 feet.

(e) Overhead protection must consist of 2 inch nominal planking laid tight, or 3/4-inch plywood.

(f) Screen installed between toeboards and midrails or top rails must consist of No. 18 gauge U.S. Standard wire one inch mesh.

2. Specific guidelines and tables.

(a) Pole Scaffolds.

Single Pole Wood Pole Scaffolds				
	Light duty up to 20 feet high	Light duty up to 60 feet high	Medium duty up to 60 feet high	Heavy duty up to 60 feet high
Maximum intended load (lbs/ft ²)	25	25	50	75
Poles or uprights	2 x 4 in.	4 x 4 in.	4 x 4 in.	4 x 6 in.
Maximum pole spacing (longi- tudinal)	6 feet	10 feet	8 feet	6 feet

Single Pole Wood Pole Scaffolds				
Maximum pole spacing (trans- verse)	5 feet	5 feet	5 feet	5 feet
Runners	1 x 4 in.	1 1/4 x 9 in.	2 x 10 in.	2 x 10 in.
Bearers and maximum spac- ing of bearers: 3 feet	2 x 4 in.	2 x 4 in.	2 x 10 in. or 3 x 4 in.	2 x 10 in. or 3 x 5 in.
5 feet	2 x 6 in. or 3 x 4 in.	2 x 6 in. or 3 x 4 in. (rough)	2 x 10 in. or 3 x 4 in.	2 x 10 in. or 3 x 5 in.
6 feet	—	—	2 x 10 in. or 3 x 4 in.	2 x 10 in. or 3 x 5 in.
8 feet	—	—	2 x 10 in. or 3 x 4 in.	
Planking	1 1/4 x 9 in.	2 x 10 in.	2 x 10 in.	2 x 10 in.
Maximum ver- tical spacing of horizontal members	7 feet	9 feet	7 feet	6 ft. 6 in.
Bracing horizontal	1 x 4 in.	1 x 4 in.	1 x 6 in. or 1 1/4 x 4 in.	2 x 4 in.
Bracing diago- nal	1 x 4 in.	1 x 4 in.	1 x 4 in.	2 x 4 in.
Tie-ins	1 x 4 in.	1 x 4 in.	1 x 4 in.	1 x 4 in.

Note: All members except planking are used on edge. All wood bearers must be reinforced with 3/16 x 2 inch steel strip, or the equivalent, secured to the lower edges for the entire length of the bearer.

Independent Wood Pole Scaffolds				
	Light duty up to 20 feet high	Light duty up to 60 feet high	Medium duty up to 60 feet high	Heavy duty up to 60 feet high
Maximum intended load	25 lbs/ft ²	25 lbs/ft ²	50 lbs/ft ²	75 lbs/ft ²
Poles or uprights	2 x 4 in.	4 x 4 in.	4 x 4 in.	4 x 4 in.
Maximum pole spacing (longi- tudinal)	6 feet	10 feet	8 feet	6 feet
Maximum (transverse)	6 feet	10 feet	8 feet	8 feet
Runners	1 1/4 x 4 in.	1 1/4 x 9 in.	2 x 10 in.	2 x 10 in.
Bearers and maximum spacing of bearers: 3 feet	2 x 4 in.	2 x 4 in.	2 x 10 in. (rough)	2 x 10 in.
6 feet	2 x 6 in. or 3 x 4 in.	2 x 6 in. (rough) or 3 x 8 in.	2 x 10 in.	2 x 10 in. (rough)
8 feet	2 x 6 in. or 3 x 4 in.	2 x 10 in. (rough) or 3 x 8 in.	2 x 10 in.	
10 feet	3 x 4 in.	2 x 6 in. (rough) or 3 x 3 in.	2 x 10 in.	
Planking	1 1/4 x 9 in.	2 x 10 in.	2 x 10 in.	2 x 10 in.
Maximum ver- tical spacing of horizontal members	7 feet	7 feet	6 feet	6 feet
Bracing horizontal	1 x 4 in.	1 x 4 in.	1 x 6 in. or 1 1/4 x 4 in.	2 x 4 in.

Independent Wood Pole Scaffolds				
Bracing diagonal	1 x 4 in.	1 x 4 in.	1 x 4 in.	2 x 4 in.
Tie-ins	1 x 4 in.	1 x 4 in.	1 x 4 in.	1 x 4 in.

Note: All members except planking are used on edge. All wood bearers must be reinforced with 3/16 x 2 inch steel strip, or the equivalent, secured to the lower edges for the entire length of the bearer.

(b) Tube and coupler scaffolds.

Minimum Size of Members			
	Light duty	Medium duty	Heavy duty
Maximum intended load	25 lbs/ft ²	50 lbs/ft ²	75 lbs/ft ²
Posts, runners and braces	Nominal 2 in. (1.90 inches) OD steel tube or pipe.	Nominal 2 in. (1.90 inches) OD steel tube or pipe.	Nominal 2 in. (1.90 inches) OD steel tube or pipe.
Bearers	Nominal 2 in. (1.90 inches) OD steel tube or pipe and a maximum post spacing of 4 ft. x 10 ft.	Nominal 2 in. (1.90 inches) OD steel tube or pipe and a maximum post spacing of 4 ft. x 7 ft. or Nominal 2 1/2 in. (2.375 in.) OD steel tube or pipe and a maximum post spacing of 6 ft. x 8 ft. (*).	Nominal 2 1/2 in. (2.375 in.) OD steel tube or pipe and a maximum post spacing of 6 ft. x 6 ft.
Maximum runner spacing vertically	6 ft. 6 in.	6 ft. 6 in.	6 ft. 6 in.

(*) Bearers must be installed in the direction of the shorter dimension.

Note: Longitudinal diagonal bracing must be installed at an angle of 45 deg. (+/- 5 deg.).

Maximum Number of Planked Levels

Maximum number of additional planked levels

	Light duty	Medium duty	Heavy duty	Maximum height of scaffold (in feet)
Duty Number of Working Levels:				
1	16	11	6	125
2	11	1	0	125
3	6	0	0	125
4	1	0	0	125

(c) "Fabricated frame scaffolds." Because of their pre-fabricated nature, no additional guidelines or tables for these scaffolds are being adopted in this Appendix.

(d) "Plasterers', decorators', and large area scaffolds." The guidelines for pole scaffolds or tube and coupler scaffolds (Appendix A (a) and (b)) may be applied.

(e) "Bricklayers' square scaffolds."

Maximum intended load: 50 lb/ft.(2)(*)

Footnote(*): The squares must be set not more than 8 feet apart for light duty scaffolds and not more than 5 feet apart for medium duty scaffolds.

Maximum width: 5 ft.

Maximum height: 5 ft.

Gussets: 1 x 6 in.

Braces: 1 x 8 in.

Legs: 2 x 6 in.

Bearers (horizontal members): 2 x 6 in.

(f) Horse scaffolds.

Maximum intended load (light duty): 25 lb/ft.(2)(**)

Footnote(**): Horses must be spaced not more than 8 feet apart for light duty loads, and not more than 5 feet apart for medium duty loads.

Maximum intended load (medium duty): 50 lb/ft.(2)(**)

Footnote(**): Horses must be spaced not more than 8 feet apart for light duty loads, and not more than 5 feet apart for medium duty loads.

Horizontal members or bearers:

Light duty: 2 x 4 in.

Medium duty: 3 x 4 in.

Legs: 2 x 4 in.

Longitudinal brace between legs: 1 x 6 in.

Gusset brace at top of legs: 1 x 8 in.

Half diagonal braces: 2 x 4 in.

(g) "Form scaffolds and carpenters' bracket scaffolds."

(1) Brackets must consist of a triangular-shaped frame made of wood with a cross-section not less than 2 inches by 3 inches, or of 1 1/4 inch x 1 1/4 inch x 1/8 inch structural angle iron.

(2) Bolts used to attach brackets to structures must not be less than 5/8 inches in diameter.

(3) Maximum bracket spacing must be 8 feet on centers.

(4) No more than two employees must occupy any given 8 feet of a bracket or form scaffold at any one time. Tools and materials must not exceed 75 pounds in addition to the occupancy.

(5) Wooden figure-four scaffolds:

Maximum intended load: 25 lb/ft.(2)

Uprights: 2 x 4 in. or 2 x 6 in.

Bearers (two): 1 x 6 in.

Braces: 1 x 6 in.

Maximum length of bearers (unsupported): 3 ft. 6 in.

(i) Outrigger bearers must consist of two pieces of 1 x 6 inch lumber nailed on opposite sides of the vertical support.

(ii) Bearers for wood figure-four brackets must project not more than 3 feet 6 inches from the outside of the form support, and must be braced and secured to prevent tipping or turning. The knee or angle brace must intersect the bearer at least 3 feet from the form at an angle of approximately 45 degrees, and the lower end must be nailed to a vertical support.

(6) Metal bracket scaffolds:

Maximum intended load: 25 lb/ft.(2)

Uprights: 2 x 4 inch

Bearers: As designed.

Braces: As designed.

(7) Wood bracket scaffolds:

Maximum intended load: 25 lb/ft.(2)

Uprights: 2 x 4 in. or 2 x 6 in.

Bearers: 2 x 6 in.

Maximum scaffold width: 3 ft. 6 in.

Braces: 1 x 6 in.

(h) "Roof bracket scaffolds." No specific guidelines or tables are given.

(i) "Outrigger scaffolds (single level)." No specific guidelines or tables are given.

(j) "Pump jack scaffolds." Wood poles must not exceed 30 feet in height. Maximum intended load — 500 lbs

between poles; applied at the center of the span. Not more than two employees must be on a pump jack scaffold at one time between any two supports. When 2 x 4's are spliced together to make a 4 x 4 inch wood pole, they must be spliced with "10 penny" common nails no more than 12 inches center to center, staggered uniformly from the opposite outside edges.

(k) "Ladder jack scaffolds." Maximum intended load — 25 lb/ft(2). However, not more than two employees must occupy any platform at any one time. Maximum span between supports must be 8 feet.

(l) "Window jack scaffolds." Not more than one employee must occupy a window jack scaffold at any one time.

(m) "Crawling boards (chicken ladders)." Crawling boards must be not less than 10 inches wide and 1 inch thick, with cleats having a minimum 1 x 1 1/2 inch cross-sectional area. The cleats must be equal in length to the width of the board and spaced at equal intervals not to exceed 24 inches.

(n) "Step, platform, and trestle ladder scaffolds." No additional guidelines or tables are given.

(o) "Single-point adjustable suspension scaffolds." Maximum intended load — 250 lbs. Wood seats for boatswains' chairs must be not less than 1 inch thick if made of nonlaminated wood, or 5/8 inches thick if made of marine quality plywood.

(p) "Two-point adjustable suspension scaffolds."

(1) In addition to direct connections to buildings (except window cleaners' anchors) acceptable ways to prevent scaffold sway include angulated roping and static lines. Angulated roping is a system of platform suspension in which the upper wire rope sheaves or suspension points are closer to the plane of the building face than the corresponding attachment points on the platform, thus causing the platform to press against the face of the building. Static lines are separate ropes secured at their top and bottom ends closer to the plane of the building face than the outermost edge of the platform. By drawing the static line taut, the platform is drawn against the face of the building.

(2) On suspension scaffolds designed for a working load of 500 pounds, no more than two employees must be permitted on the scaffold at one time. On suspension scaffolds with a working load of 750 pounds, no more than three employees must be permitted on the scaffold at one time.

(3) Ladder-type platforms. The side stringer must be of clear straight-grained spruce. The rungs must be of straight-grained oak, ash, or hickory, at least 1 1/8 inches in diameter, with 7/8 inch tenons mortised into the side stringers at least 7/8 inch. The stringers must be tied together with tie rods not less than 1/4 inch in diameter, passing through the stringers and riveted up tight against washers on both ends. The flooring strips must be spaced not more than 5/8 inch apart, except at the side rails where the space may be 1 inch. Ladder-type platforms must be constructed in accordance with the following table:

Schedule for Ladder-Type Platforms

Length of Platform	12 feet	14 & 16 feet	18 & 20 feet
Side stringers, minimum cross section (finished sizes):			
At ends	1 3/4 x 2 3/4 in.	1 3/4 x 2 3/4 in.	1 3/4 x 3 in.
At middle	1 3/4 x 3 3/4 in.	1 3/4 x 3 3/4 in.	1 3/4 x 4

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Length of Platform	12 feet	14 & 16 feet	18 & 20 feet
Reinforcing strip (minimum)	A 1/8 x 7/8 inch steel reinforcing strip must be attached to the side or underside, full length.		
Rungs	Rungs must be 1 1/8 inch minimum diameter with at least 7/8 inch in diameter tenons, and the maximum spacing must be 12 inches to center.		
Tie rods: Number (minimum)	3	4	4
Diameter (minimum)	1/4 inch	1/4 inch	1/4 inch
Flooring, minimum finished size	1/2 x 2 3/4 in.	1/2 x 2 3/4 in.	1/2 x 2 3/4 in.
Length of Platform	22 & 24 ft.	28 & 30 ft.	
Side stringers, minimum cross section (finished sizes):			
At ends	1 3/4 x 3 in.	1 3/4 x 3 1/2 in.	
At middle	1 3/4 x 4 1/4 in.	1 3/4 x 5 in.	
Reinforcing strip (minimum)	A 1/8 x 7/8 inch steel reinforcing strip must be attached to the side or underside, full length.		
Rungs	Rungs must be 1 1/8 inch minimum diameter with at least 7/8 inch in diameter with at least 7/8 inch in diameter tenons, and the maximum spacing must be 12 inches to center.		
Tie rods: Number (minimum)	5	6	
Diameter (minimum)	1/4 in.	1/4 in.	
Flooring, minimum finished size	1/2 x 2 3/4 in.	1/2 x 2 3/4 in.	

(4) Plank-Type Platforms. Plank-type platforms must be composed of not less than nominal 2 x 8 inch unspliced planks, connected together on the underside with cleats at intervals not exceeding 4 feet, starting 6 inches from each end. A bar or other effective means must be securely fastened to the platform at each end to prevent the platform from slipping off the hanger. The span between hangers for plank-type platforms must not exceed 10 feet.

(5) Beam-Type Platforms. Beam platforms must have side stringers of lumber not less than 2 x 6 inches set on edge. The span between hangers must not exceed 12 feet when beam platforms are used. The flooring must be supported on 2 x 6 inch cross beams, laid flat and set into the upper edge of the stringers with a snug fit, at intervals of not more than 4 feet, securely nailed to the cross beams. Floor-boards must not be spaced more than 1/2 inch apart.

(q)(1) "Multipoint adjustable suspension scaffolds and stonesetters' multipoint adjustable suspension scaffolds." No specific guidelines or tables are given for these scaffolds.

(q)(2) "Masons' multipoint adjustable suspension scaffolds." Maximum intended load — 50 lb/ft(2). Each outrigger beam must be at least a standard 7 inch, 15.3 pound steel I-beam, at least 15 feet long. Such beams must not project more than 6 feet 6 inches beyond the bearing point. Where the overhang exceeds 6 feet 6 inches, outrigger beams must be composed of stronger beams or multiple beams.

(r) "Catenary scaffolds."

(1) Maximum intended load — 500 lbs.

(2) Not more than two employees must be permitted on the scaffold at one time.

(3) Maximum capacity of come-along must be 2,000 lbs.

(4) Vertical pickups must be spaced not more than 50 feet apart.

(5) Ropes must be equivalent in strength to at least 1/2 inch (1.3 cm) diameter improved plow steel wire rope.

(s) "Float (ship) scaffolds."

(1) Maximum intended load — 750 lbs.

(2) Platforms must be made of 3/4 inch plywood, equivalent in rating to American Plywood Association Grade B-B, Group I, Exterior.

(3) Bearers must be made from 2 x 4 inch, or 1 x 10 inch rough lumber. They must be free of knots and other flaws.

(4) Ropes must be equivalent in strength to at least 1 inch (2.5 cm) diameter first grade manila rope.

(t) "Interior hung scaffolds."

Bearers (use on edge): 2 x 10 in.

Maximum intended load: Maximum span

25 lb/ft.(2): 10 ft.

50 lb/ft.(2): 10 ft.

75 lb/ft.(2): 7 ft.

(u) "Needle beam scaffolds."

Maximum intended load: 25 lb/ft.(2)

Beams: 4 x 6 in.

Maximum platform span: 8 ft.

Maximum beam span: 10 ft.

(1) Ropes must be attached to the needle beams by a scaffold hitch or an eye splice. The loose end of the rope must be tied by a bowline knot or by a round turn and a half hitch.

(2) Ropes must be equivalent in strength to at least 1 inch (2.5 cm) diameter first grade manila rope.

(v) "Multilevel suspension scaffolds." No additional guidelines or tables are being given for these scaffolds.

(w) "Mobile scaffolds." Stability test as described in the ANSI A92 series documents, as appropriate for the type of scaffold, can be used to establish stability for the purpose of WAC 296-24-86015 (23)(f)(ii).

(x) "Repair bracket scaffolds." No additional guidelines or tables are being given for these scaffolds.

(y) "Stilts." No specific guidelines or tables are given.

(z) "Tank builder's scaffold."

(1) The maximum distance between brackets to which scaffolding and guardrail supports are attached must be no more than 10 feet 6 inches.

(2) Not more than three employees must occupy a 10 feet 6 inch span of scaffold planking at any time.

(3) A taut wire or synthetic rope supported on the scaffold brackets must be installed at the scaffold plank level between the innermost edge of the scaffold platform and the curved plate structure of the tank shell to serve as a safety line in lieu of an inner guardrail assembly where the space between the scaffold platform and the tank exceeds 12 inches (30.48 cm). In the event the open space on either side of the rope exceeds 12 inches (30.48 cm), a second wire or synthetic rope appropriately placed, or guardrails in accordance with WAC 296-24-86010 (7)(d), must be installed in order to reduce that open space to less than 12 inches (30.48 cm).

(4) Scaffold planks of rough full-dimensioned 2-inch (5.1 cm) x 12-inch (30.5 cm) Douglas Fir or Southern Yellow Pine of Select Structural Grade must be used. Douglas Fir planks must have a fiber stress of at least 1900 lb/in(2) (130,929 n/cm(2)) and a modulus of elasticity of at least 1,900,000 lb/in(2) (130,929,000 n/cm(2)), while Yellow Pine

planks must have a fiber stress of at least 2500 lb/in(2) (172,275 n/cm(2)) and a modulus of elasticity of at least 2,000,000 lb/in(2) (137,820,000 n/cm(2)).

(5) Guardrails must be constructed of a taut wire or synthetic rope, and must be supported by angle irons attached to brackets welded to the steel plates. These guardrails must comply with WAC 296-24-86010 (7)(d) guardrail supports must be located at no greater than 10 feet 6 inch intervals.

Nonmandatory Appendix C to Part J-2, List of National Consensus Standards.

ANSI/SIA A92.2-1990 Vehicle-Mounted Elevating and Rotating Aerial Devices

ANSI/SIA A92.3-1990 Manually Propelled Elevating Aerial Platforms

ANSI/SIA A92.5-1990 Boom Supported Elevating Work Platforms

ANSI/SIA A92.6-1990 Self-Propelled Elevating Work Platforms

ANSI/SIA A92.7-1990 Airline Ground Support Vehicle-Mounted Vertical Lift Devices

ANSI/SIA A92.8-1993 Vehicle-Mounted Bridge Inspection and Maintenance Devices

ANSI/SIA A92.9-1993 Mast-Climbing Work Platforms

Nonmandatory Appendix D to Part J-2, List of Training Topics for Scaffold Erectors and Dismantlers.

This Appendix D is provided to serve as a guide to assist employers when evaluating the training needs of employees erecting or dismantling supported scaffolds.

The Agency believes that employees erecting or dismantling scaffolds should be trained in the following topics:

- *General Overview of Scaffolding
- *regulations and standards
- *erection/dismantling planning
- *PPE and proper procedures
- *fall protection
- *materials handling
- *access
- *working platforms
- *foundations
- *guys, ties and braces
- *Tubular Welded Frame Scaffolds
- *specific regulations and standards
- *components
- *parts inspection
- *erection/dismantling planning
- *guys, ties and braces
- *fall protection
- *general safety
- *access and platforms
- *erection/dismantling procedures
- *rolling scaffold assembly
- *putlogs
- *Tube and Clamp Scaffolds
- *specific regulations and standards
- *components
- *parts inspection
- *erection/dismantling planning
- *guys, ties and braces
- *fall protection
- *general safety
- *access and platforms

- *erection/dismantling procedures
- *buttresses, cantilevers, & bridges
- *System Scaffolds
- *specific regulations and standards
- *components
- *parts inspection
- *erection/dismantling planning
- *guys, ties and braces
- *fall protection
- *general safety
- *access and platforms
- *erection/dismantling procedures

- *buttresses, cantilevers, & bridges

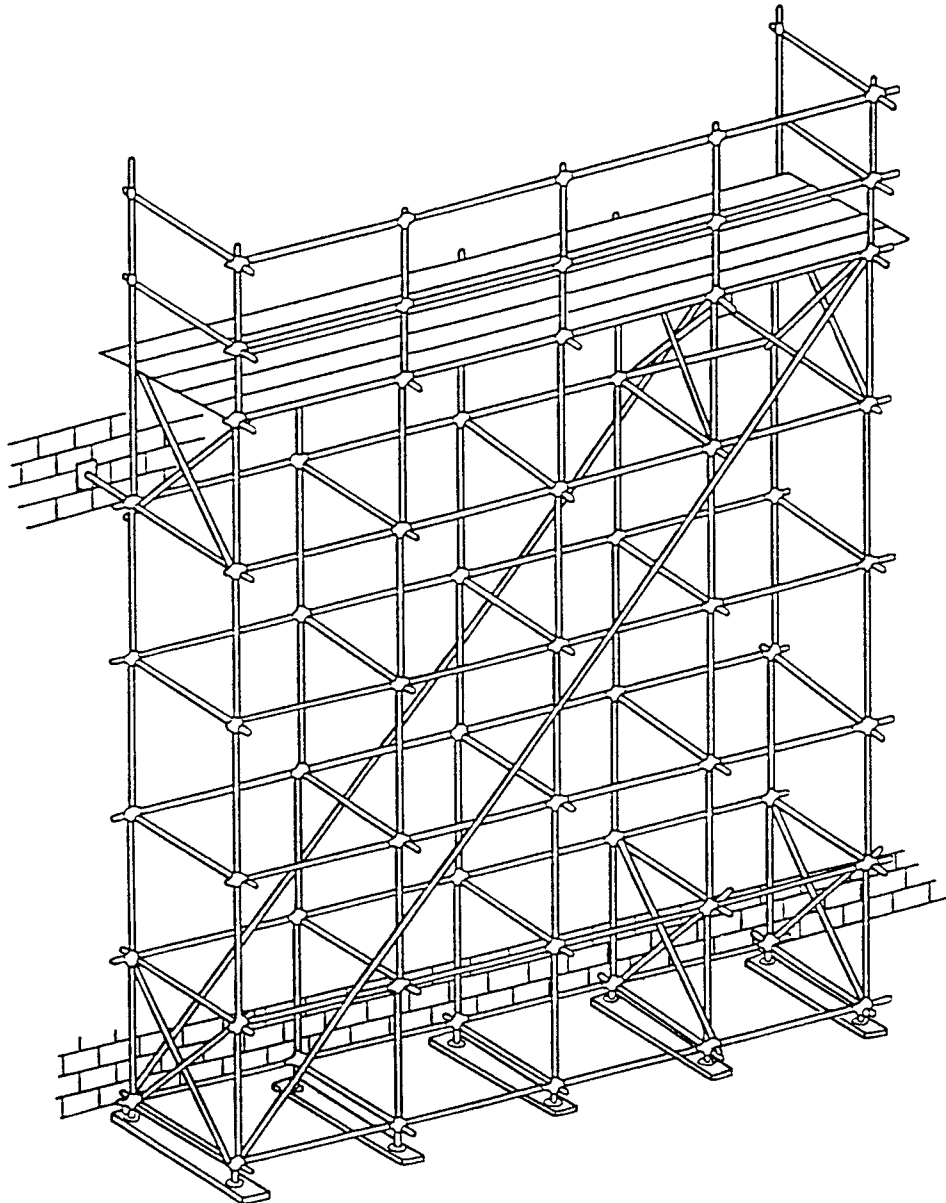
Scaffold erectors and dismantlers should all receive the general overview, and, in addition, specific training for the type of supported scaffold being erected or dismantled.

Nonmandatory Appendix E to Part J-2, Drawings and Illustrations.

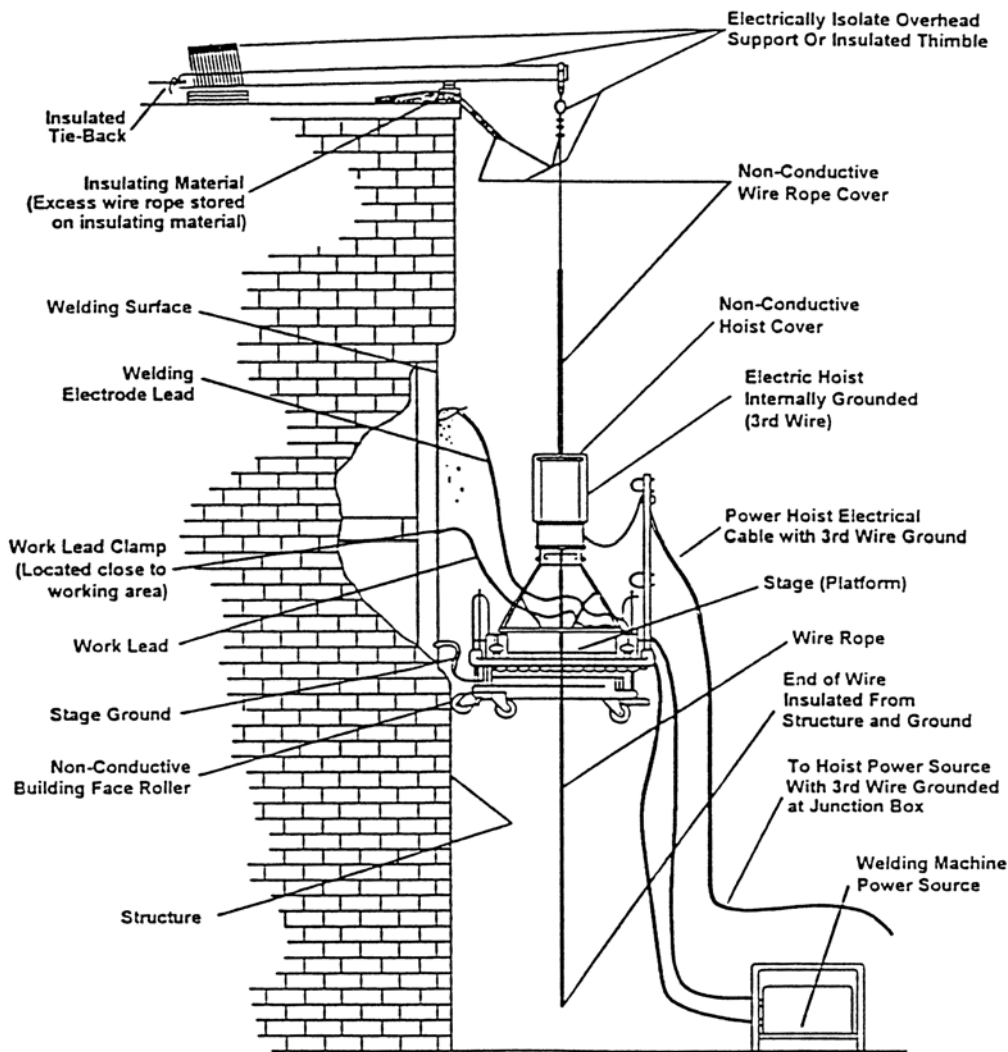
This Appendix provides drawings of particular types of scaffolds and scaffold components, and graphic illustrations of bracing patterns and tie spacing patterns.

This Appendix is intended to provide visual guidance to assist the user in complying with the requirements of Part J-2, chapter 296-24 WAC.

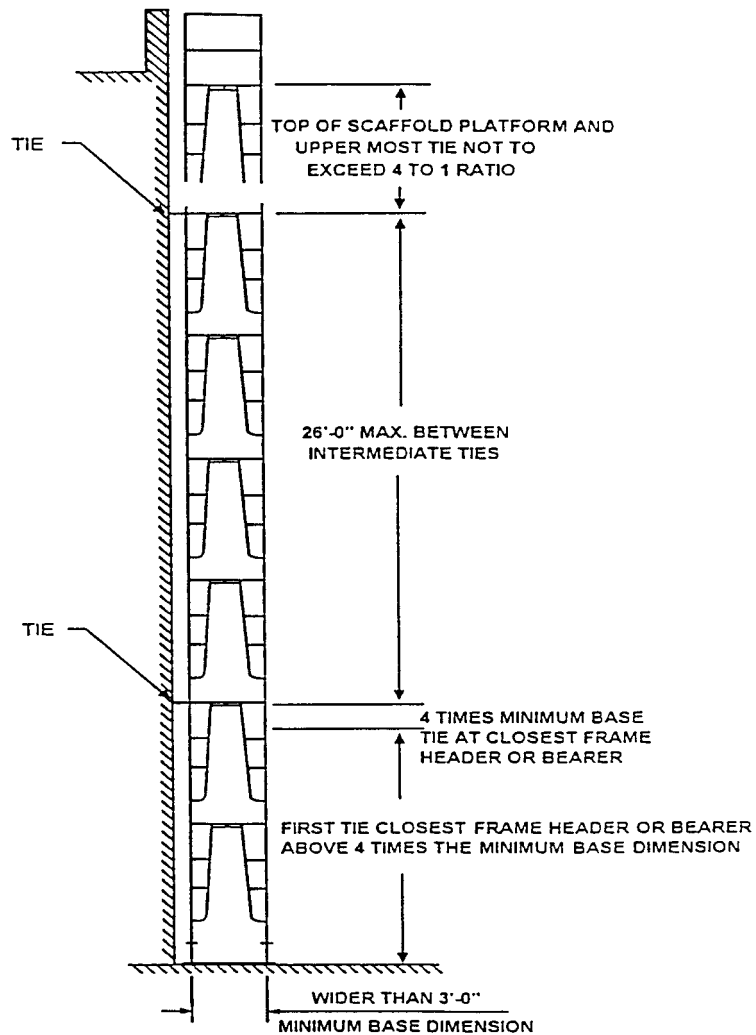
BRACING-TUBE & COUPLER SCAFFOLDS



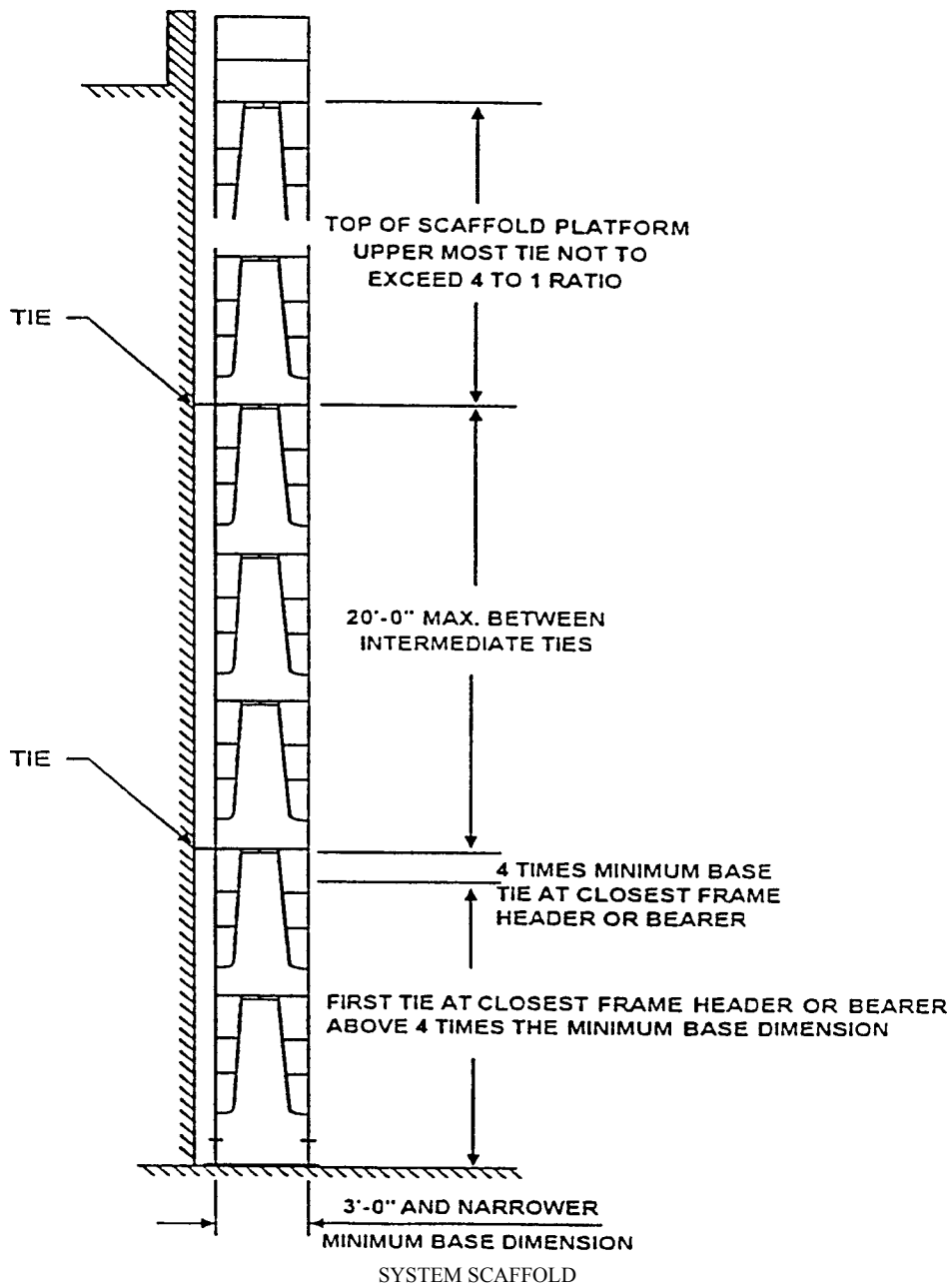
SUSPENDED SCAFFOLD PLATFORM WELDING PRECAUTIONS

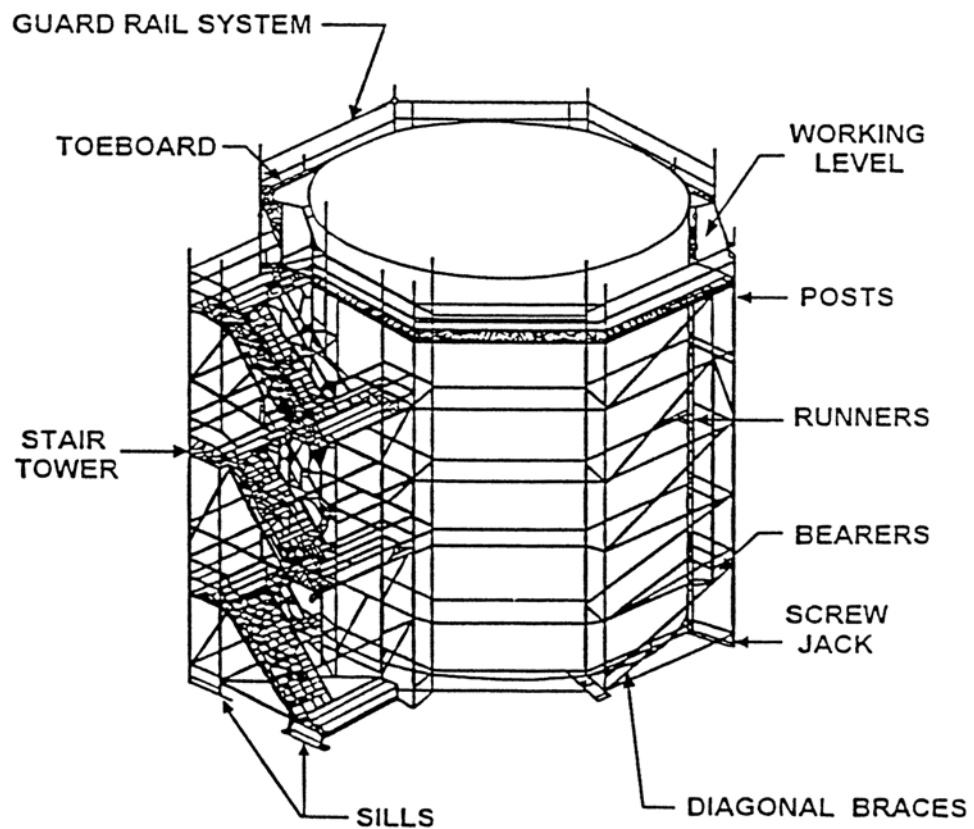
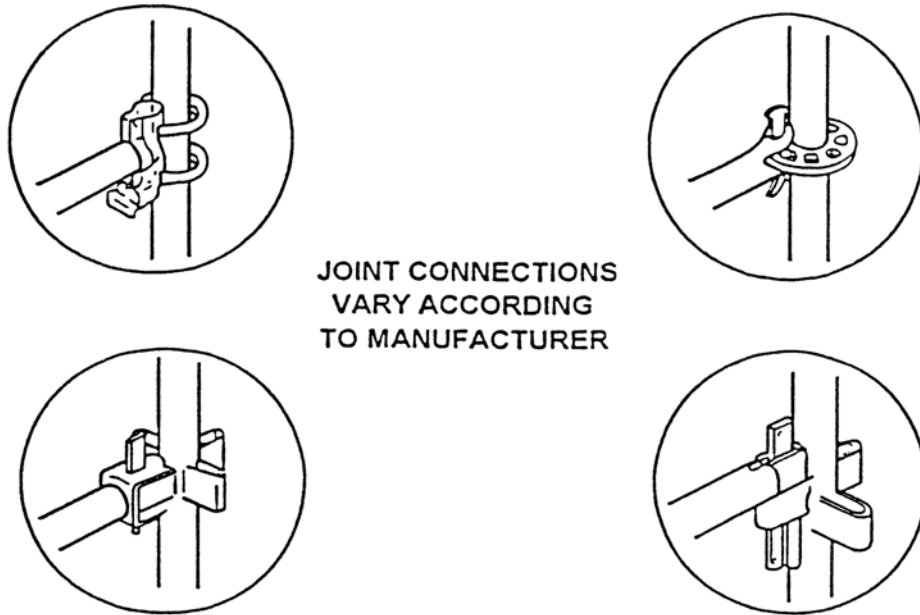


MAXIMUM VERTICAL TIE SPACING WIDER THAN 3'-0" BASES



MAXIMUM VERTICAL TIE SPACING 3'-0" AND NARROWER BASES





SPID-ONS IND 65
K019 S-DRY (7)
SCAFFOLD PLANK

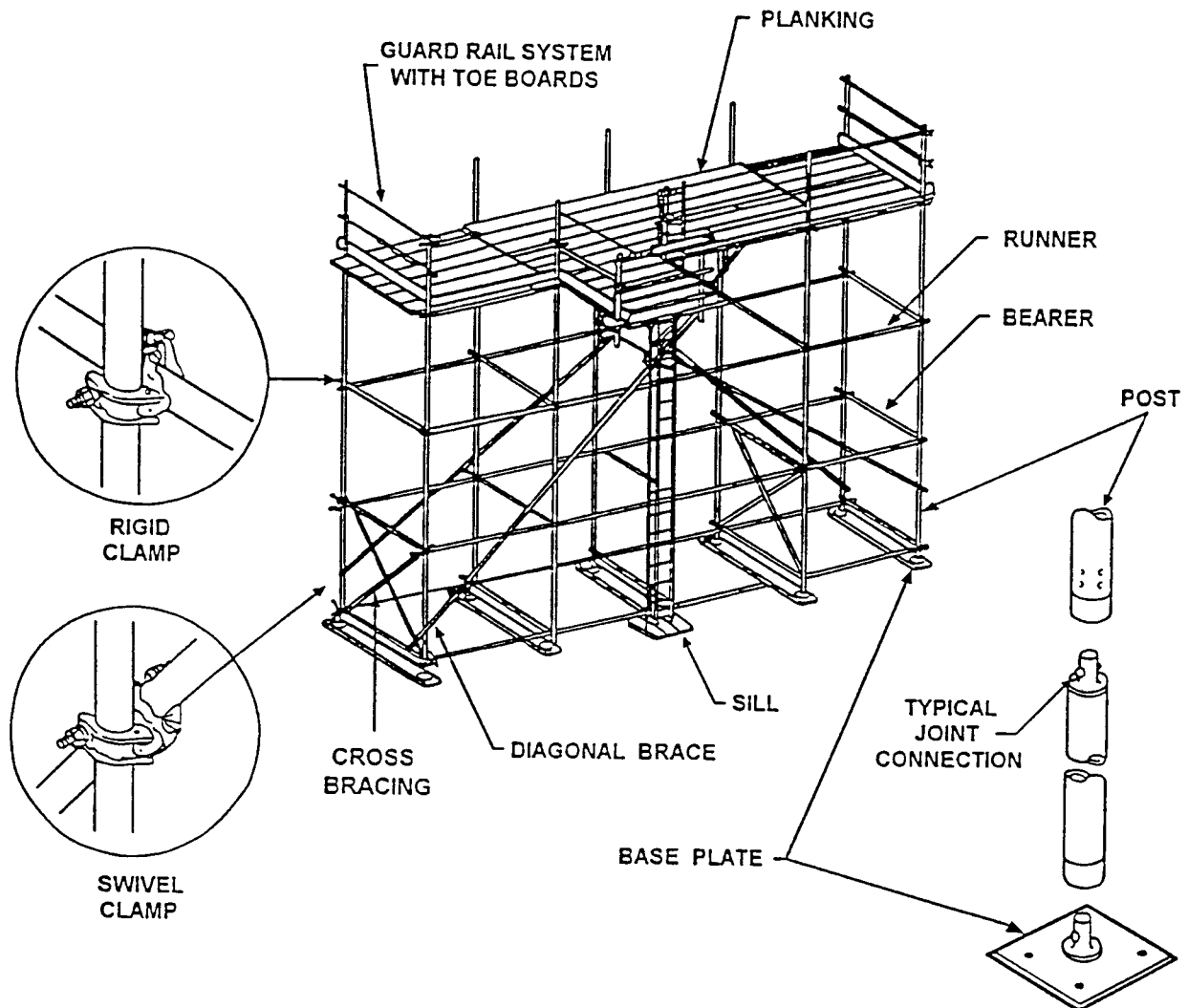
Grade stamp courtesy of Southern Pine Inspection Bureau



MILL 10
SEL STR
SCAF PLK
D. FIR S. DRY

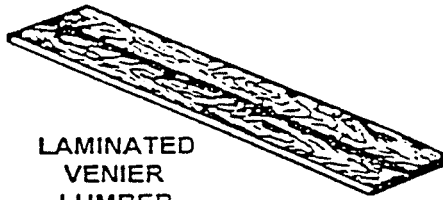
Grade stamp courtesy of West Coast Lumber Inspection Bureau

TUBE AND COUPLER SCAFFOLD



NOTE: ALL TIES SHOULD BE LOCATED
AT CLAMP LOCATIONS.

SCAFFOLDING WORK SURFACES

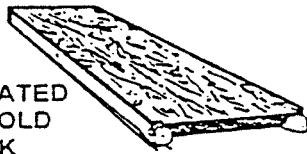


LAMINATED
VENIER
LUMBER
(LVL)

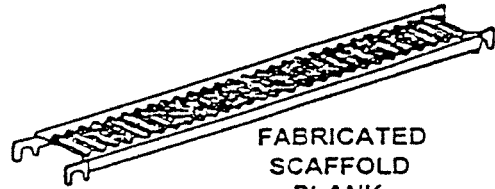


SOLID
SAWN
LUMBER

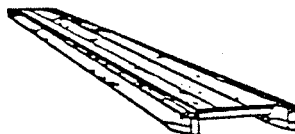
SCAFFOLD PLANKS



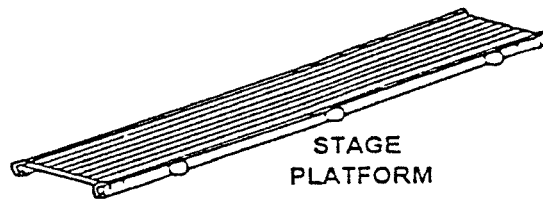
FABRICATED
SCAFFOLD
DECK



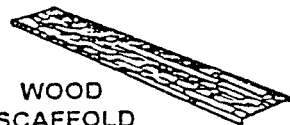
FABRICATED
SCAFFOLD
PLANK



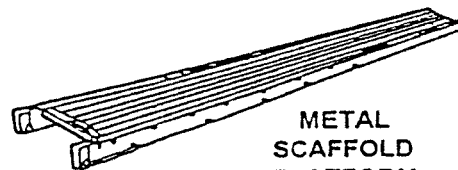
DECORATOR PLANK



STAGE
PLATFORM

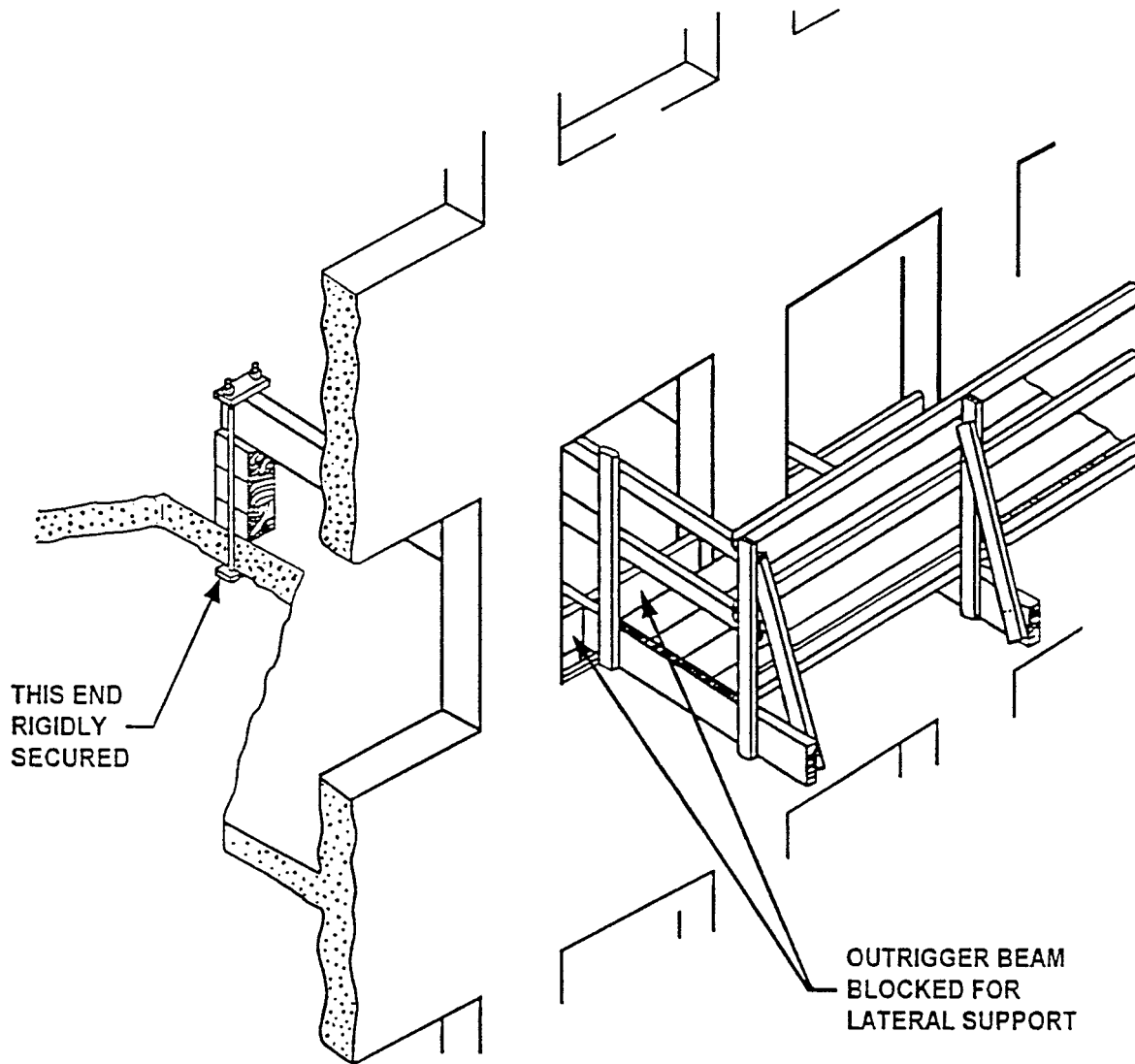


WOOD
SCAFFOLD
PLATFORM



METAL
SCAFFOLD
PLATFORM

OUTRIGGER SCAFFOLD



[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 00-08-078, § 296-24-862, filed 4/4/00, effective 7/1/00.]

PART J-3 POWERED PLATFORMS

Note: Powered platforms have been moved to chapters 296-869 and 296-870 WAC.

WAC 296-24-88050 Appendix C—Personal fall arrest system (Part I—Mandatory; Parts II and III—Nonmandatory). (1) Use of the Appendix.

Part I of Appendix C sets out the mandatory criteria for personal fall arrest systems used by all employees using powered platforms. Part II sets out nonmandatory test procedures which may be used to determine compliance with applicable requirements contained in Part I of this Appendix. Part III provides nonmandatory guidelines which are intended to assist employers in complying with these provisions.

[Title 296 WAC—p. 832]

PART I

Personal fall arrest systems (mandatory)—(1) Scope and application. This section establishes the application of and performance criteria for personal fall arrest systems which are required for use by all employees using powered platforms under WAC 296-24-88035.

(2) Definitions.

Anchorage means a secure point of attachment for life-lines, lanyards, or deceleration devices which is capable of withstanding the forces specified in the applicable sections of chapter 296-24 WAC, and independent of the means of supporting or suspending the employee.

Buckle means any device for holding the body harness closed around the employee's body.

Competent person means an individual knowledgeable of fall protection equipment, including the manufacturers recommendations and instructions for the proper use, inspection,

(2007 Ed.)

tion, and maintenance; and who is capable of identifying existing and potential fall hazards; and who has the authority to take prompt corrective action to eliminate those hazards; and who is knowledgeable of the rules contained in this section regarding the erection, use, inspection, and maintenance of fall protection equipment and systems.

Connector means a device which is used to couple (connect) parts of the personal fall arrest system and positioning device systems together. It may be an independent component of the system, such as a carabiner, or it may be an integral component of part of the system (such as a buckle or deering sewn into a body belt or body harness, or a snap-hook spliced or sewn to a lanyard or self-retracting lanyard).

Deceleration device means any mechanism, such as a rope grab, ripstitch lanyard, specially woven lanyard, tearing or deforming lanyards, automatic self retracting-lifeline/lanyard, etc., which serves to dissipate a substantial amount of energy during a fall arrest, or otherwise limit the energy imposed on an employee during fall arrest.

Deceleration distance means the additional vertical distance a falling employee travels, excluding lifeline elongation and free fall distance, before stopping, from the point at which the deceleration device begins to operate. It is measured as the distance between the location of an employee's full body harness attachment point at the moment of activation (at the onset of fall arrest forces) of the deceleration device during a fall, and the location of that attachment point after the employee comes to a full stop.

Equivalent means alternative designs, materials or methods to protect against a hazard which the employer can demonstrate will provide an equal or greater degree of safety for employees than the methods, materials or designs specified in the standard.

Free fall means the act of falling before a personal fall arrest system begins to apply force to arrest the fall.

Free fall distance means the vertical displacement of the fall arrest attachment point on the employee's body harness between onset of the fall and just before the system begins to apply force to arrest the fall. This distance excludes deceleration distance, and lifeline lanyard elongation, but includes any deceleration device slide distance or self-retracting lifeline/lanyard extension before they operate and fall arrest forces occur.

Full body harness means a configuration of connected straps to distribute a fall arresting force over at least the thighs, shoulders and pelvis, with provisions for attaching a lanyard, lifeline, or deceleration device.

Lanyard means a flexible line of webbing, rope, or cable used to secure a body belt or harness to a lifeline or an anchorage point usually 2, 4, or 6 feet long.

Lifeline means a vertical line from a fixed anchorage or between two horizontal anchorages, independent of walking or working surfaces, to which a lanyard or device is secured. Lifeline as referred to in this text is one which is part of a fall protection system used as back-up safety for an elevated worker.

Personal fall arrest system means a system used to arrest an employee in a fall from a working level. It consists of an anchorage, connectors, body harness and may include a lanyard, deceleration device, lifeline, or suitable combinations of these.

Qualified means one who, by possession of a recognized degree, certificate, or professional standing, or who by extensive knowledge, training, and experience, has successfully demonstrated his/her ability to solve or resolve problems related to the subject matter, the work, or the project.

Rope grab means a fall arrester that is designed to move up or down a lifeline suspended from a fixed overhead or horizontal anchorage point, or lifeline, to which the belt or harness is attached. In the event of a fall, the rope grab locks onto the lifeline rope through compression to arrest the fall. The use of a rope grab device is restricted for all restraint applications.

Self-retracting lifeline/lanyard means a deceleration device which contains a drum-wound line which may be slowly extracted from, or retracted onto, the drum under slight tension during normal employee movement, and which after onset of a fall, automatically locks the drum and arrests the fall.

Snap-hook means a self-closing connecting device with a gatekeeper latch or similar arrangement that will remain closed until manually opened. This includes single action snap hooks that open when the gatekeeper is depressed and double action snap hooks that require a second action on a gatekeeper before the gate can be opened.

Tie-off means the act of an employee, wearing personal fall protection equipment, connecting directly or indirectly to an anchorage. It also means the condition of an employee being connected to an anchorage.

(3) Design for system components.

(a) Connectors must be drop forged, pressed or formed steel, or made of equivalent materials.

(b) Connectors must have a corrosion-resistant finish, and all surfaces and edges must be smooth to prevent damage to interfacing parts of the system.

(c) Lanyards and vertical lifelines which tie-off one employee must have a minimum breaking strength of 5,000 pounds (22.2 kN).

(d) Self-retracting lifelines and lanyards which automatically limit free fall distance to 2 feet (0.61 m) or less must have components capable of sustaining a minimum static tensile load of 3,000 pounds (13.3 kN) applied to the device with the lifeline or lanyard in the fully extended position.

(e) Self-retracting lifelines and lanyards which do not limit free fall distance to 2 feet (0.61 m) or less, ripstitch lanyards, and tearing and deforming lanyards must be capable of sustaining a minimum tensile load of 5,400 pounds (23.9 kN) applied to the device with the lifeline or lanyard in the fully extended position.

(f) Dee-rings and snap-hooks must be capable of sustaining a minimum tensile load of 5000 pounds (22.2 N).

(g) Dee-rings and snap-hooks must be 100 percent proof-tested to a minimum tensile load of 3600 pounds (16 kN) without cracking, breaking, or taking permanent deformation.

(h) Snap-hooks must be sized to be compatible with the member to which they are connected so as to prevent unintentional disengagement of the snap-hook by depression of the snap-hook keeper by the connected member, or must be a locking type snap-hook designed and used to prevent disengagement of the snap-hook by the contact of the snap-hook keeper by the connected member.

(i) Horizontal lifelines, where used, must be designed, and installed as part of a complete personal fall arrest system, which maintains a safety factor of at least 2, under the supervision of a qualified person.

(j) Anchorages to which personal fall arrest equipment is attached must be capable of supporting at least 5,000 pounds (22.2 kN) per employee attached, or must be designed, installed, and used as part of a complete personal fall arrest system which maintains a safety factor of at least two, under the supervision of a qualified person.

(k) Ropes and straps (webbing) used in lanyards, lifelines, and strength components of body harnesses, must be made from synthetic fibers or wire rope.

(4) System performance criteria.

(a) Personal fall arrest systems must, when stopping a fall:

(i) Limit maximum arresting force on an employee to 1,800 pounds (8 kN) when used with a body harness;

(ii) Bring an employee to a complete stop and limit maximum deceleration distance an employee travels to 3.5 feet (1.07 m); and

(iii) Must have sufficient strength to withstand twice the potential impact energy of an employee free falling a distance of 6 feet (1.8 m), or the free fall distance permitted by the system, whichever is less.

(b)(i) When used by employees having a combined person and tool weight of less than 310 pounds (140 kg), personal fall arrest systems which meet the criteria and protocols contained in subsections (2), (3), and (4) in Part II of this Appendix must be considered as complying with the provisions of (a) of this subsection.

(ii) When used by employees having a combined tool and body weight of 310 pounds (140 kg) or more, personal fall arrest systems which meet the criteria and protocols contained in subsections (2), (3), and (4) of Part II may be considered as complying with the provisions of (a) of this subsection provided that the criteria and protocols are modified appropriately to provide proper protection for such heavier weights.

(5) Care and use.

(a) Snap-hooks, unless of a locking type designed and used to prevent disengagement from the following connections, must not be engaged:

(i) Directly to webbing, rope or wire rope;

(ii) To each other;

(iii) To a dee-ring to which another snap-hook or other connector is attached;

(iv) To a horizontal lifeline; or

(v) To any object which is incompatibly shaped or dimensioned in relation to the snap-hook such that the connected object could depress the snap-hook keeper a sufficient amount to release itself.

(b) Devices used to connect to a horizontal lifeline which may become a vertical lifeline must be capable of locking in either direction on the lifeline.

(c) Personal fall arrest systems must be rigged such that an employee can neither free fall more than 6 feet (1.8 m), nor contact any lower level.

(d) The attachment point of the body harness must be located in the center of the wearer's back near shoulder level, or above the wearer's head.

(e) When vertical lifelines are used, each employee must be provided with a separate lifeline.

(f) Personal fall arrest systems or components must be used only for employee fall protection.

(g) Personal fall arrest systems or components subjected to impact loading must be immediately removed from service and must not be used again for employee protection unless inspected and determined by a competent person to be undamaged and suitable for reuse.

(h) The employer must provide for prompt rescue of employees in the event of a fall or must assure the self-rescue capability of employees.

(i) Before using a personal fall arrest system, and after any component or system is changed, employees must be trained in accordance with the requirements of WAC 296-24-88030(1), in the safe use of the system.

(6) Inspections. Personal fall arrest systems must be inspected prior to each use for mildew, wear, damage and other deterioration, and defective components must be removed from service if their strength or function may be adversely affected.

PART II

Test methods for personal fall arrest systems (nonmandatory)

(1) General. Subsections (2), (3), (4) and (5) of this Part II set forth test procedures which may be used to determine compliance with the requirements in subsection (4) of Part I of this Appendix.

(2) General conditions for all tests in Part II.

(a) Lifelines, lanyards and deceleration devices should be attached to an anchorage and connected to the body harness in the same manner as they would be when used to protect employees.

(b) The anchorage should be rigid, and should not have a deflection greater than .04 inches (1 mm) when a force of 2,250 pounds (10 kN) is applied.

(c) The frequency response of the load measuring instrumentation should be 120 Hz.

(d) The test weight used in the strength and force tests should be a rigid, metal, cylindrical or torso-shaped object with a girth of 38 inches plus or minus 4 inches (96 cm plus or minus 10 cm).

(e) The lanyard or lifeline used to create the free fall distance should be supplied with the system, or in its absence, the least elastic lanyard or lifeline available to be used with the system.

(f) The test weight for each test should be hoisted to the required level and should be quickly released without having any appreciable motion imparted to it.

(g) The system's performance should be evaluated taking into account the range of environmental conditions for which it is designed to be used.

(h) Following the test, the system need not be capable of further operation.

(3) Strength test.

(a) During the testing of all systems, a test weight of 300 pounds plus or minus 5 pounds (135 kg plus or minus 2.5 kg) should be used. (See subsection (2)(d) of this part.)

(b) The test consists of dropping the test weight once. A new unused system should be used for each test.

(c) For lanyard systems, the lanyard length should be 6 feet plus or minus 2 inches (1.83 m plus or minus 5 cm) as measured from the fixed anchorage to the attachment on the body belt or body harness.

(d) For rope-grab-type deceleration systems, the length of the lifeline above the centerline of the grabbing mechanism to the lifeline's anchorage point should not exceed 2 feet (0.61 m).

(e) For lanyard systems, for systems with deceleration devices which do not automatically limit free fall distance to 2 feet (0.61 m) or less, and for systems with deceleration devices which have a connection distance in excess of one foot (0.3 m) (measured between the centerline of the lifeline and the attachment point to the body harness), the test weight should be rigged to free fall a distance of 7.5 feet (2.3 m) from a point that is 1.5 feet (46 cm) above the anchorage point, to its hanging location (6 feet below the anchorage). The test weight should fall without interference, obstruction, or hitting the floor or ground during the test. In some cases a nonelastic wire lanyard of sufficient length may need to be added to the system (for test purposes) to create the necessary free fall distance.

(f) For deceleration device systems with integral lifelines or lanyards which automatically limit free fall distance to 2 feet (0.61 m) or less, the test weight should be rigged to free fall a distance of 4 feet (1.22 m).

(g) Any weight which detaches from the harness should constitute failure for the strength test.

(4) Force test.

(a) General. The test consists of dropping the respective test weight specified in (b)(i) or (c)(i) of this subsection once. A new, unused system should be used for each test.

(b) For lanyard systems.

(i) A test weight of 220 pounds plus or minus three pounds (100 kg plus or minus 1.6 kg) should be used. (See subsection (2)(d) above.)

(ii) Lanyard length should be 6 feet plus or minus 2 inches (1.83 m plus or minus 5 cm) as measured from the fixed anchorage to the attachment on the body harness.

(iii) The test weight should fall free from the anchorage level to its hanging location (a total of 6 feet (1.83 m) free fall distance) without interference, obstruction, or hitting the floor or ground during the test.

(c) For all other systems.

(i) A test weight of 220 pounds plus or minus 3 pounds (100 kg plus or minus 1.6 kg) should be used. (See subsection (2)(d) above.)

(ii) The free fall distance to be used in the test should be the maximum fall distance physically permitted by the system during normal use conditions, up to a maximum free fall distance for the test weight of 6 feet (1.83 m), except as follows:

(A) For deceleration systems which have a connection link or lanyard, the test weight should free fall a distance equal to the connection distance (measured between the centerline of the lifeline and the attachment point to the body harness).

(B) For deceleration device systems with integral lifelines or lanyards which automatically limit free fall distance

to 2 feet (0.61 m) or less, the test weight should free fall a distance equal to that permitted by the system in normal use. (For example, to test a system with a self-retracting lifeline or lanyard, the test weight should be supported and the system allowed to retract the lifeline or lanyard as it would in normal use. The test weight would then be released and the force and deceleration distance measured).

(d) A system fails the force test if the recorded maximum arresting force exceeds 2,520 pounds (11.2 kN) when using a body harness.

(e) The maximum elongation and deceleration distance should be recorded during the force test.

(5) Deceleration device tests.

(a) General. The device should be evaluated or tested under the environmental conditions, (such as rain, ice, grease, dirt, type of lifeline, etc.), for which the device is designed.

(b) Rope-grab-type deceleration devices.

(i) Devices should be moved on a lifeline 1,000 times over the same length of line a distance of not less than one foot (30.5 cm), and the mechanism should lock each time.

(ii) Unless the device is permanently marked to indicate the type(s) of lifeline which must be used, several types (different diameters and different materials), of lifelines should be used to test the device.

(c) Other self-activating-type deceleration devices. The locking mechanisms of other self-activating-type deceleration devices designed for more than one arrest should lock each of 1,000 times as they would in normal service.

PART III

Additional nonmandatory guidelines for personal fall arrest systems. The following information constitutes additional guidelines for use in complying with requirements for a personal fall arrest system.

(1) Selection and use considerations. The kind of personal fall arrest system selected should match the particular work situation, and any possible free fall distance should be kept to a minimum. Consideration should be given to the particular work environment. For example, the presence of acids, dirt, moisture, oil, grease, etc., and their effect on the system, should be evaluated. Hot or cold environments may also have an adverse affect on the system. Wire rope should not be used where an electrical hazard is anticipated. As required by the standard, the employer must plan to have means available to promptly rescue an employee should a fall occur, since the suspended employee may not be able to reach a work level independently.

Where lanyards, connectors, and lifelines are subject to damage by work operations such as welding, chemical cleaning, and sandblasting, the component should be protected, or other securing systems should be used. The employer should fully evaluate the work conditions and environment (including seasonal weather changes) before selecting the appropriate personal fall protection system. Once in use, the system's effectiveness should be monitored. In some cases, a program for cleaning and maintenance of the system may be necessary.

(2) Testing considerations. Before purchasing or putting into use a personal fall arrest system, an employer should obtain from the supplier information about the system based

on its performance during testing so that the employer can know if the system meets this standard. Testing should be done using recognized test methods. Part II of this Appendix C contains test methods recognized for evaluating the performance of fall arrest systems. Not all systems may need to be individually tested; the performance of some systems may be based on data and calculations derived from testing of similar systems, provided that enough information is available to demonstrate similarity of function and design.

(3) Component compatibility considerations. Ideally, a personal fall arrest system is designed, tested, and supplied as a complete system. However, it is common practice for lanyards, connectors, lifelines, deceleration devices, and body harnesses to be interchanged since some components wear out before others. The employer and employee should realize that not all components are interchangeable. For instance, a lanyard should not be connected between a body harness and a deceleration device of the self-retracting type since this can result in additional free fall for which the system was not designed. Any substitution or change to a personal fall arrest system should be fully evaluated or tested by a competent person to determine that it meets the standard, before the modified system is put in use.

(4) Employee training considerations. Thorough employee training in the selection and use of personal fall arrest systems is imperative. As stated in the standard, before the equipment is used, employees must be trained in the safe use of the system. This should include the following: Application limits; proper anchoring and tie-off techniques; estimation of free fall distance, including determination of deceleration distance, and total fall distance to prevent striking a lower level; methods of use; and inspection and storage of the system. Careless or improper use of the equipment can result in serious injury or death. Employers and employees should become familiar with the material in this Appendix, as well as manufacturer's recommendations, before a system is used. Of uppermost importance is the reduction in strength caused by certain tie-offs (such as using knots, tying around sharp edges, etc.) and maximum permitted free fall distance. Also, to be stressed are the importance of inspections prior to use, the limitations of the equipment, and unique conditions at the worksite which may be important in determining the type of system to use.

(5) Instruction considerations. Employers should obtain comprehensive instructions from the supplier as to the system's proper use and application, including, where applicable:

- (a) The force measured during the sample force test;
 - (b) The maximum elongation measured for lanyards during the force test;
 - (c) The deceleration distance measured for deceleration devices during the force test;
 - (d) Caution statements on critical use limitations;
 - (e) Application limits;
 - (f) Proper hook-up, anchoring and tie-off techniques, including the proper dee-ring or other attachment point to use on the body harness for fall arrest;
 - (g) Proper climbing techniques;
 - (h) Methods of inspection, use, cleaning, and storage;
- and

(i) Specific lifelines which may be used. This information should be provided to employees during training.

(6) Inspection considerations. As stated in WAC 296-24-88050(6), personal fall arrest systems must be regularly inspected. Any component with any significant defect, such as cuts, tears, abrasions, mold, or undue stretching; alterations or additions which might affect its efficiency; damage due to deterioration; contact with fire, acids, or other corrosives; distorted hooks or faulty hook springs; tongues unfitted to the shoulder of buckles; loose or damaged mountings; non-functioning parts; or wearing or internal deterioration in the ropes must be withdrawn from service immediately, and should be tagged or marked as unusable, or destroyed.

(7) Rescue considerations. As required by WAC 296-24-88050 (5)(h) when personal fall arrest systems are used, the employer must assure that employees can be promptly rescued or can rescue themselves should a fall occur. The availability of rescue personnel, ladders or other rescue equipment should be evaluated. In some situations, equipment which allows employees to rescue themselves after the fall has been arrested may be desirable, such as devices which have descent capability.

(8) Tie-off considerations.

(a) One of the most important aspects of personal fall protection systems is fully planning the system before it is put into use. Probably the most overlooked component is planning for suitable anchorage points. Such planning should ideally be done before the structure or building is constructed so that anchorage points can be incorporated during construction for use later for window cleaning or other building maintenance. If properly planned, these anchorage points may be used during construction, as well as afterwards.

(b) Employers and employees should at all times be aware that the strength of a personal fall arrest system is based on its being attached to an anchoring system which does not significantly reduce the strength of the system (such as a properly dimensioned eye-bolt/snap-hook anchorage). Therefore, if a means of attachment is used that will reduce the strength of the system, that component should be replaced by a stronger one, but one that will also maintain the appropriate maximum arrest force characteristics.

(c) Tie-off using a knot in a rope lanyard or lifeline (at any location) can reduce the lifeline or lanyard strength by 50 percent or more. Therefore, a stronger lanyard or lifeline should be used to compensate for the weakening effect of the knot, or the lanyard length should be reduced (or the tie-off location raised) to minimize free fall distance, or the lanyard or lifeline should be replaced by one which has an appropriately incorporated connector to eliminate the need for a knot.

(d) Tie-off of a rope lanyard or lifeline around an "H" or "I" beam or similar support can reduce its strength as much as 70 percent due to the cutting action of the beam edges. Therefore, use should be made of a webbing lanyard or wire core lifeline around the beam; or the lanyard or lifeline should be protected from the edge; or free fall distance should be greatly minimized.

(e) Tie-off where the line passes over or around rough or sharp surfaces reduces strength drastically. Such a tie-off should be avoided or an alternative tie-off rigging should be used. Such alternatives may include use of a snap-hook/dee-ring connection, wire rope tie-off, an effective padding of the

surfaces, or an abrasion-resistance strap around or over the problem surface.

(f) Horizontal lifelines may, depending on their geometry and angle of sag, be subjected to greater loads than the impact load imposed by an attached component. When the angle of horizontal lifeline sag is less than 30 degrees, the impact force imparted to the lifeline by an attached lanyard is greatly amplified. For example, with a sag angle of 15 degrees, the force amplification is about 2:1 and at 5 degrees sag, it is about 6:1. Depending on the angle of sag, and the line's elasticity, the strength of the horizontal lifeline and the anchorages to which it is attached should be increased a number of times over that of the lanyard. Extreme care should be taken in considering a horizontal lifeline for multiple tie-offs. The reason for this is that in multiple tie-offs to a horizontal lifeline, if one employee falls, the movement of the falling employee and the horizontal lifeline during arrest of the fall may cause other employees to also fall. Horizontal lifeline and anchorage strength should be increased for each additional employee to be tied-off. For these and other reasons, the design of systems using horizontal lifelines must only be done by qualified persons. Testing of installed lifelines and anchors prior to use is recommended.

(g) The strength of an eye-bolt is rated along the axis of the bolt and its strength is greatly reduced if the force is applied at an angle to this axis (in the direction of shear). Also, care should be exercised in selecting the proper diameter of the eye to avoid accidental disengagement of snap-hooks not designed to be compatible for the connection.

(h) Due to the significant reduction in the strength of the lifeline/lanyard (in some cases, as much as a 70 percent reduction), the sliding hitch knot should not be used for lifeline/lanyard connections except in emergency situations where no other available system is practical. The "one-and-one" sliding hitch knot should never be used because it is unreliable in stopping a fall. The "two-and-two," or "three-and-three" knot (preferable), may be used in emergency situations; however, care should be taken to limit free fall distance to a minimum because of reduced lifeline/lanyard strength.

(9) Vertical lifeline considerations. As required by the standard, each employee must have a separate lifeline when the lifeline is vertical. The reason for this is that in multiple tie-offs to a single lifeline, if one employee falls, the movement of the lifeline during the arrest of the fall may pull other employees' lanyards, causing them to fall as well.

(10) Snap-hook considerations.

(a) Required by this standard for all connections, locking snap-hooks incorporate a positive locking mechanism in addition to the spring loaded keeper, which will not allow the keeper to open under moderate pressure without someone first releasing the mechanism. Such a feature, properly designed, effectively prevents roll-out from occurring.

(b) As required by the standard WAC 296-24-88050 (5)(a) the following connections must be avoided (unless properly designed locking snap-hooks are used) because they are conditions which can result in roll-out when a nonlocking snap-hook is used:

- Direct connection of a snap-hook to a horizontal lifeline.
- Two (or more) snap-hooks connected to one dee-ring.

- Two snap-hooks connected to each other.
- A snap-hook connected back on its integral lanyard.
- A snap-hook connected to a webbing loop or webbing lanyard.
- Improper dimensions of the dee-ring, rebar, or other connection point in relation to the snap-hook dimensions which would allow the snap-hook keeper to be depressed by a turning motion of the snap-hook.

(11) Free fall considerations. The employer and employee should at all times be aware that a system's maximum arresting force is evaluated under normal use conditions established by the manufacturer, and in no case using a free fall distance in excess of 6 feet (1.8 m). A few extra feet of free fall can significantly increase the arresting force on the employee, possibly to the point of causing injury. Because of this, the free fall distance should be kept at a minimum, and, as required by the standard, in no case greater than 6 feet (1.8 m). To help assure this, the tie-off attachment point to the lifeline or anchor should be located at or above the connection point of the fall arrest equipment to harness. (Since otherwise additional free fall distance is added to the length of the connecting means (i.e. lanyard).) Attaching to the working surface will often result in a free fall greater than 6 feet (1.8 m). For instance, if a 6 foot (1.8 m) lanyard is used, the total free fall distance will be the distance from the working level to the body harness attachment point plus the 6 feet (1.8 m) of lanyard length. Another important consideration is that the arresting force which the fall system must withstand also goes up with greater distances of free fall, possibly exceeding the strength of the system.

(12) Elongation and deceleration distance considerations. Other factors involved in a proper tie-off are elongation and deceleration distance. During the arresting of a fall, a lanyard will experience a length of stretching or elongation, whereas activation of a deceleration device will result in a certain stopping distance. These distances should be available with the lanyard or device's instructions and must be added to the free fall distance to arrive at the total fall distance before an employee is fully stopped. The additional stopping distance may be very significant if the lanyard or deceleration device is attached near or at the end of a long lifeline, which may itself add considerable distance due to its own elongation. As required by the standard, sufficient distance to allow for all of these factors must also be maintained between the employee and obstructions below, to prevent an injury due to impact before the system fully arrests the fall. In addition, a minimum of 12 feet (3.7 m) of lifeline should be allowed below the securing point of a rope grab type deceleration device, and the end terminated to prevent the device from sliding off the lifeline. Alternatively, the lifeline should extend to the ground or the next working level below. These measures are suggested to prevent the worker from inadvertently moving past the end of the lifeline and having the rope grab become disengaged from the lifeline.

(13) Obstruction considerations. The location of the tie-off should also consider the hazard of obstructions in the potential fall path of the employee. Tie-offs which minimize the possibilities of exaggerated swinging should be considered.

(14) Other considerations. Because of the design of some personal fall arrest systems, additional considerations may be

required for proper tie-off. For example, heavy deceleration devices of the self-retracting type should be secured overhead in order to avoid the weight of the device having to be supported by the employee. Also, if self-retracting equipment is connected to a horizontal lifeline, the sag in the lifeline should be minimized to prevent the device from sliding down the lifeline to a position which creates a swing hazard during fall arrest. In all cases, manufacturer's instructions should be followed.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 00-08-078, § 296-24-88050, filed 4/4/00, effective 7/1/00.]

PART K COMPRESSED GAS AND COMPRESSED GAS EQUIPMENT

WAC 296-24-920 Inspection of compressed gas cylinders.

[Order 73-5, § 296-24-920, filed 5/9/73 and Order 73-4, § 296-24-920, filed 5/7/73.]

WAC 296-24-92001 Definitions. (1) High- and low-pressure cylinders. High-pressure cylinders means those cylinders with a marked service pressure of 900 p.s.i. or greater; low-pressure cylinders are those with a marked service pressure less than 900 p.s.i.

(2) Minimum allowable wall thickness. The minimum allowable wall thickness means the minimum wall thickness required by the specification under which the cylinder was manufactured.

(3) Dents. Dents (in cylinders) means deformations caused by the cylinder coming in contact with a blunt object in such a way that the thickness of metal is not materially impaired.

(4) Cuts, gouges, or digs. Cuts, gouges, or digs (in cylinders) means deformations caused by contact with a sharp object in such a way as to cut into or upset the metal of the cylinder, decreasing the wall thickness at that point.

(5) Corrosion or pitting. Means corrosion or pitting in cylinders involving the loss of wall thickness by corrosive media.

Note: There are several kinds of pitting or corrosion to be considered.

(6) Isolated pitting. Means isolated pits of small cross-section which do not effectively weaken the cylinder wall but are indicative of possible complete penetration and leakage.

Note: Since the pitting is isolated the original wall is essentially intact.

(7) Line corrosion. Means pits which are not isolated but are connected or nearly connected to others in a narrow band or line.

Note: This condition is more serious than isolated pitting. Line corrosion frequently occurs in the area of intersection of the footing and bottom of a cylinder. This is sometimes referred to as "crevice corrosion."

(8) General corrosion. Means corrosion which covers considerable surface areas of the cylinder.

Note: It reduces the structural strength. It is often difficult to measure or estimate the depth of general corrosion because

direct comparison with the original wall cannot always be made. General corrosion is often accompanied by pitting.

(9) "DOT" means the U.S. Department of Transportation.

[Order 73-5, § 296-24-92001, filed 5/9/73 and Order 73-4, § 296-24-92001, filed 5/7/73.]

WAC 296-24-92003 General requirements. (1) Application.

(a) Each employer shall determine that compressed gas cylinders under the employers control are in a safe condition to the extent that this can be determined by visual, and other inspection required by WAC 296-24-920 through 296-24-92011.

(b) The requirements contained in these standards are not intended to apply to cylinders manufactured under specification DOT (ICC)-3HT (49 CFR Ch.1). Separate requirements covering service life and standards for visual inspection of these cylinders are contained in Compressed Gas Association Pamphlet C-8, "Standard for Requalification of ICC-3HT Cylinders."

(2) Quality of inspection. Experience in the inspection of cylinders is an important factor in determining the acceptability of a given cylinder for continued service.

Note: Users lacking this experience and having doubtful cylinders should return them to a manufacturer of the same type of cylinders for reinspection.

[Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-24-92003, filed 7/20/94, effective 9/20/94; Order 73-5, § 296-24-92003, filed 5/9/73 and Order 73-4, § 296-24-92003, filed 5/7/73.]

WAC 296-24-92005 Inspection of low-pressure cylinders exempt from the hydrostatic test including acetylene cylinders. (1) Application. This section covers cylinders of the type that are exempt from the hydrostatic retest requirements of the DOT by virtue of their exclusive use in certain noncorrosive gas service. They are not subject to internal corrosion and do not require internal shell inspection.

(2) Preparation for inspection. Rust, scale, caked paint, etc., shall be removed from the exterior surface so that the surface can be adequately observed. Facilities shall be provided for inverting the cylinder to facilitate inspection of the bottom. This is important because experience has shown this area to be the most susceptible to corrosion.

(3) Exterior inspection. Cylinders shall be checked as outlined below for corrosion, general distortion, or any other defect that might indicate a weakness which would render it unfit for service.

(a) To fix corrosion limits for all types, designs, and sizes of cylinders, and include them in this section is not practicable. Cylinders categorized by this section and subsection (1) of this section shall meet the following requirements. Failure to meet any of these requirements is of itself cause for rejection of a cylinder. Rejected cylinders shall be removed from the work place. Rejected cylinders may be returned to the manufacturer for reinspection.

(i) A cylinder shall be rejected when the tare weight is less than ninety-five percent of the original tare weight marked on the cylinder. When determining tare weight, be sure that the cylinder is empty.

(j) A cylinder shall be rejected when the tare weight is less than ninety-five percent of the original tare weight marked on the cylinder. When determining tare weight, be sure that the cylinder is empty.

(ii) A cylinder shall be rejected when the remaining wall in an area having isolated pitting only is less than one-third of the minimum allowable wall thickness as determined under (b) and (d) of this subsection.

(iii) A cylinder shall be rejected when line corrosion on the cylinder is three inches in length or over and the remaining wall is less than three-fourths of the minimum allowable wall thickness or when line corrosion is less than three inches in length and the remaining wall thickness is less than one-half the minimum allowable wall thickness as determined under (b) through (d) of this subsection.

(iv) A cylinder shall be rejected when the remaining wall in an area of general corrosion is less than one-half of the minimum allowable wall thickness as determined under (b) through (d) of this subsection.

(b) To use the criteria in (a) of this subsection, it is necessary to know the original wall thickness of the cylinder or the minimum allowable wall thickness. Table M-1 lists the minimum allowable wall thickness under DOT specifications (49 CFR Ch. 1) for a number of common size low-pressure cylinders.

TABLE M - 1

Cylinder size O.D. x length (inches)	DOT Specification marking	Nominal water capacity (pounds)	Minimum allowable wall thickness (inches)
15 x 46	4B240 ¹	239	0.128
14 13/16 x 47	4E240	239	.140
14 15/16 x 46	4BA240	239	.086
14 11/16 x 28 3/8	4BA240	143	.086
11 29/32 x 32 11/16	4BA240	95	.078
11 29/32 x 18 11/32	4BA240	48	.078

¹ Without longitudinal seam.

(c) When the wall thickness of the cylinder at manufacture is not known, and the actual wall thickness cannot be measured, this cylinder shall be rejected when the inspection reveals that the deepest pit in a general corrosion area exceeds three sixty-fourths inch. This is arrived at by considering that in no case shall the pitting exceed one-half the minimum allowable wall thickness which is 0.064 inch. When a pit measures 0.043 inch (approximately three sixty-fourths inch) in a corrosion area, general corrosion will already have removed 0.021 inch of the original wall and the total pit depth as compared to the initial wall will be 0.064 inch.

(d) When the original wall thickness at manufacture is known, or the actual wall thickness is measured, this thickness less one and one-half times the maximum measured pit depth shall be 0.064 inch or greater. If it is less, the cylinder shall be rejected.

(e) Dents are of concern where the metal deformation is sharp and confined, or where they are near a weld. Where metal deformation is not sharp, dents of larger magnitude can be tolerated.

(f) Where denting occurs so that any part of the deformation includes a weld, the maximum allowable dent depth shall be one-fourth inch.

(g) When denting occurs so that no part of the deformation includes a weld, the cylinder shall be rejected if the depth of the dent is greater than one-tenth of the mean diameter of the dent.

(h) Cuts, gouges, or digs reduce the wall thickness of the cylinder and in addition are considered to be stress raisers. Depth limits are set in these standards; however, cylinders shall be rejected at one-half of the limit set whenever the length of the defect is three inches or more.

(i) When the original wall thickness at manufacture is not known, and the actual wall thickness cannot be measured a cylinder shall be rejected if the cut, gouge, or dig exceeds one-half of the minimum allowable wall thickness as determined under (b) through (d) of this subsection.

(ii) When the original wall thickness at manufacture is known, or the actual wall thickness is measured, a cylinder shall be rejected if the original wall thickness minus the depth of the defect is less than one-half of the minimum allowable wall thickness as determined under (b) through (d) of this subsection.

(i) Leaks can originate from a number of sources, such as defects in a welded or brazed seam, defects at the threaded opening, or from sharp dents, digs, gouges, or pits.

(i) To check for leaks, the cylinder shall be charged and carefully examined. All seams and pressure openings shall be coated with a soap or other suitable solution to detect the escape of gas. Any leakage is cause for rejection.

(ii) Safety relief devices as defined in WAC 296-24-93001(1) shall be tested for leaks before a charged cylinder is shipped from the cylinder filling plant.

(j) After fire damage, cylinders shall be carefully inspected for evidence of exposure to fire.

(i) Common evidences of exposure to fire are:

(A) Charring or burning of the paint or other protective coat.

(B) Burning or sintering of the metal.

(C) Distortion of the cylinder.

(D) Melted out fuse plugs.

(E) Burning or melting of valve.

(ii) The evaluation of fire damage by DOT regulations state that, "a cylinder which has been subjected to the action of fire must not again be placed in service until it has been properly reconditioned," in accordance with 49 CFR 173.34(f). The general intent of this requirement is to remove from service cylinders which have been subject to the action of fire which has changed the metallurgical structure or the strength properties of the steel, or in the case of acetylene cylinders caused breakdown of porous filler. This is normally determined by visual examination as covered above with particular emphasis to the condition of the protective coating. If the protective coating has been burnt off or if the cylinder body is burnt, warped, or distorted, it is assumed that the cylinder has been overheated and 49 CFR 173.34(f) shall be complied with. If, however, the protective coating is only dirtied from smoke or other debris, and is found by examination to be intact underneath, the cylinder shall not be considered affected within the scope of this requirement.

(k) Cylinders are manufactured with a reasonably symmetrical shape. Cylinders which have definite visible bulges shall be removed from service and evaluated. Cylinders shall be rejected when a variation of one percent or more is found in the measured circumferences or in peripheral distances measured from the valve spud to the center seam (of equivalent fixed point).

(l) Cylinder necks shall be examined for serious cracks, folds, and flaws. Neck cracks are normally detected by testing the neck during charging operations with a soap solution.

(m) Cylinder neck threads shall be examined whenever the valve is removed from the cylinder. Cylinders shall be rejected if the required number of effective threads are materially reduced, or if a gas tight seal cannot be obtained by reasonable valving methods. Gages shall be used to measure the number of effective threads.

(n) If the valve is noticeably tilted the cylinder shall be rejected.

(o) The footring and headring of cylinders may become so distorted through service abuse that they no longer perform their functions:

(i) To cause the cylinder to remain stable and upright.

(ii) To protect the valve. Rings shall be examined for distortion; for looseness, and for failure of welds. Appearances may often warrant rejection of the cylinder.

[Statutory Authority: Chapter 49.17 RCW. 89-11-035 (Order 89-03), § 296-24-92005, filed 5/15/89, effective 6/30/89; Order 73-5, § 296-24-92005, filed 5/9/73 and Order 73-4, § 296-24-92005, filed 5/7/73.]

WAC 296-24-92007 Low-pressure cylinders subject to hydrostatic testing. (1) Application. Cylinders covered in this section are low-pressure cylinders other than those covered in WAC 296-24-92005 through 296-24-92005 (3)(o)(ii). They differ essentially from such cylinders in that they require a periodic hydrostatic retest which includes an internal and external examination. Defect limits for the external examination are prescribed in WAC 296-24-92005 through 296-24-92005 (3)(o)(ii), with exceptions for aluminum cylinders shown in WAC 296-24-92007(4).

(2) Preparation for inspection. Flammable gas cylinders shall be purged before being examined with a light. Lamps used for flammable gas cylinder inspection shall be explosion proof.

(3) Internal inspection. Cylinders shall be inspected internally at least every time the cylinder is periodically retested. The examination shall be made with a light of sufficient intensity to clearly illuminate the interior walls.

(4) External inspection of aluminum cylinders. The inspection requirements of WAC 296-24-92005 through 296-24-92005 (3)(o)(ii) shall be met, except as follows:

(a) Aluminum cylinders shall be rejected when impairment to the surface (corrosion or mechanical defect) exceeds a depth where the remaining wall is less than three-fourths of the minimum allowable wall thickness required by the specification under which the cylinder was manufactured.

(b) Aluminum cylinders subjected to the action of fire shall be removed from service.

[Order 73-5, § 296-24-92007, filed 5/9/73 and Order 73-4, § 296-24-92007, filed 5/7/73.]

WAC 296-24-92009 High-pressure cylinders. (1) Application. High-pressure cylinders are those with a marked service pressure of 900 p.s.i. or higher. They are seamless; no welding is permitted. The great bulk of such cylinders are of the 3A or 3AA types under DOT specifications (49 CFR Ch. 1).

(2) Preparation for inspection.

(a) Cylinders shall be cleaned for inspection so that the inside and outside surfaces and all conditions can be observed. This shall include removal of scale and caked paint from the exterior and the thorough removal of internal scale. Cylinders with interior coating shall be examined for defects in the coating. If the coating is defective, it shall be removed.

(b) A good inspection light of sufficient intensity to clearly illuminate the interior wall is mandatory for internal inspection. Flammable gas cylinders shall be purged before being examined with a light. Lamps for flammable gas cylinder inspection shall be explosion proof.

(3) Exterior inspection.

(a) To fix corrosion limits for all types, designs, and sizes of cylinders, and include them in this section, is not practicable. Considerable judgment is required in evaluating cylinders fit for service. Experience is a major factor, aside from strength considerations for high pressure cylinders.

(b) When the original wall thickness of the cylinder is not known, and the actual wall thickness cannot be measured, the cylinder shall be rejected if corrosion exceeds one thirty-second inch in depth. This is arrived at by subtracting from the minimum allowable wall at manufacture (0.221 inch), the limiting wall in service (0.195 inch), to give the maximum allowable corrosion limit of 0.026 inch, the equivalent of one thirty-second inch.

(c) When the wall thickness is known, or the actual wall thickness is measured, the difference between this known wall and the limiting value establishes the maximum corrosion figure. The normal hot forged cylinder of this size will have a measured wall of about 0.250 inch. Comparison of this with the limiting wall thickness shows that defects up to about one-sixteenth inch are allowable provided, of course, that the actual wall is measured or is known.

(d) Cylinders with general corrosion are evaluated by subjecting them to a hydrostatic test. Thus, a cylinder with an elastic expansion of 227 cc. or greater shall be rejected. If areas of pronounced pitting are included within the general corrosion, the depth of such pitting should also be measured (with the high spots of the actual surface as a reference plane) and the criteria established in the first example apply. Thus, the maximum corrosion limit would be one thirty-second inch when the wall was not known.

(e) Any defect of appreciable depth having a sharp bottom is a stress raiser and even though a cylinder may be acceptable from a stress standpoint, it is common practice to remove such defects. After any such repair operation, verification of the cylinder strength and structure shall be made by a hydrostatic test of other suitable means.

(f) Dents can be tolerated when the cylinder wall is not deformed excessively or abruptly. Generally speaking, dents are accepted up to a depth of about one-sixteenth inch when the major diameter of the dent is equal to or greater than 32 times the depth of the dent. Sharper dents than this are considered too abrupt and shall require rejection of the cylinder. On small diameter cylinders these general rules may have to be adjusted. Considerations of appearance play a major factor in the evaluation of dents.

(g) Cylinders with arc or torch burns shall be removed from service. Defects of this nature may be recognized by one of the following conditions:

(i) Removal of metal by scarfing or cratering.

(ii) A sentering or burning of the base metal.

(iii) A hardened heat affected zone. A simple method for verifying the presence of small arc burns is to file the suspected area. The hardened zone will resist filing as compared to the softer base metal.

(h) Cylinders are normally produced with a symmetrical shape. Cylinders with distinct visual bulges shall be removed from service until the nature of the defect is determined. Some cylinders may have small discontinuities related to the manufacturing process - mushroomed bottoms, offset shoulders, etc. These usually can be identified and are not normally cause for concern.

(i) Cylinders shall be carefully inspected for evidences of exposure to fire. (See WAC 296-24-92005 (3)(j).)

(j) Cylinder necks shall be examined for serious cracks, folds, and flaws. (See WAC 296-24-92005 (3)(l) and (m).)

[Order 73-5, § 296-24-92009, filed 5/9/73 and Order 73-4, § 296-24-92009, filed 5/7/73.]

WAC 296-24-92011 Internal inspection. (1) Cylinders shall be inspected internally at least every time the cylinder is periodically retested. This examination shall be made with a light of sufficient intensity to clearly illuminate the interior walls.

(2) A hammer test consists of tapping a cylinder a light blow with a suitably sized hammer. A cylinder, emptied of liquid content, with a clean internal surface, standing free, will have a clear ring. Cylinders with internal corrosion will give a duller ring dependent upon the amount of corrosion and accumulation of foreign material. Such cylinders shall be investigated. The hammer test is very sensitive and is an easy, quick, and convenient test that can be made without removing the valve before each charging. It is an invaluable indicator of internal corrosion.

[Order 73-5, § 296-24-92011, filed 5/9/73 and Order 73-4, § 296-24-92011, filed 5/7/73.]

WAC 296-24-930 Safety relief devices for compressed gas cylinders.

[Order 73-5, § 296-24-930, filed 5/9/73 and Order 73-4, § 296-24-930, filed 5/7/73.]

WAC 296-24-93001 Definitions. (1) Safety relief device. A "safety relief device" is a device intended to prevent rupture of a cylinder under certain conditions of exposures. (The term as used herein shall include the approach channel, the operating parts, and the discharge channel.)

(2) Approach channel. An "approach channel" is the passage or passages through which gas must pass from the cylinder to reach the operating parts of the safety relief device.

(3) Discharge channel. A "discharge channel" is the passage or passages beyond the operating parts through which gas must pass to reach the atmosphere exclusive of any piping attached to the outlet of the device.

(4) Safety relief device channel. A "safety relief device channel" is the channel through which gas released by operation of the device must pass from the cylinder to the atmosphere exclusive of any piping attached to the inlet or outlet of the device.

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(5) Operating part. The "operating part" of a safety relief device is the part of a safety relief device that normally closes the safety discharge channel but when moved from this position as a result of the action of heat or pressure, or a combination of the two, permits escape of gas from the cylinder.

(6) Frangible disc. A "frangible disc" is an operating part in the form of a disc, usually of metal and which is so held as to close the safety relief device channel under normal conditions. The disc is intended to burst at a predetermined pressure to permit the escape of gas.

(7) Pressure opening. A "pressure opening" is the orifice against which the frangible disc functions.

(8) Rated bursting pressure. A "rated bursting pressure" of a frangible disc is the maximum pressure for which the disc is designed to burst when in contact with the pressure opening for which it was designed when tested.

(9) Fusible plug. A "fusible plug" is an operating part in the form of a plug of suitable low melting material, usually a metal alloy, which closes the safety relief device channel under normal conditions and is intended to yield or melt at a predetermined temperature to permit the escape of gas.

(10) Yield temperature. The "yield temperature" of a fusible plug is the temperature at which the fusible metal or alloy will yield when tested.

(11) Reinforced fusible plug. A "reinforced fusible plug" is a fusible plug consisting of a core of suitable material having a comparatively high yield temperature surrounded by a low-melting point fusible metal of the required yield temperature.

(12) Combination frangible disc-fusible plug. A "combination frangible disc-fusible plug" is a frangible disc in combination with a low melting point fusible metal, intended to prevent its bursting at its predetermined bursting pressure unless the temperature also is high enough to cause yielding or melting of the fusible metal.

(13) Safety relief valve. A "safety relief valve" is a safety relief device containing an operating part that is held normally in a position closing the safety relief device channel by spring force and is intended to open and to close at predetermined pressures.

(14) Combination safety relief valve and fusible plug. A "combination safety relief valve and fusible plug" is a safety relief device utilizing a safety relief valve in combination with a fusible plug. This combination device may be an integral unit or separate units and is intended to open and to close at predetermined pressures or to open at a predetermined temperature.

(15) Set pressure. The "set pressure" of a safety relief valve is the pressure marked on the valve and at which it is set to start-to-discharge.

(16) Start-to-discharge pressure. The "start-to-discharge pressure" of a safety relief valve is the pressure at which the first bubble appears through a water seal of not over 4 inches in the outlet of the safety relief valve.

(17) Flow capacity. The "flow capacity" of a safety relief device is the capacity in cubic feet per minute of free air discharged at the required flow rating pressure.

(18) Flow rating pressure. The "flow rating pressure" is the pressure at which a safety relief device is rated for capacity.

(19) Nonliquefied compressed gas. A "nonliquefied compressed gas" is a gas, other than a gas in solution which under the charging pressure, is entirely gaseous at a temperature of 70°F.

(20) Liquefied compressed gas. A "liquefied compressed gas" is a gas which, under the charging pressure, is partially liquid at a temperature of 70°F. A flammable compressed gas which is normally nonliquefied at 70°F but which is partially liquid under the charging pressure and temperature, shall follow the requirements for liquefied compressed gases.

(21) Compressed gas in solution. A "compressed gas in solution" (Acetylene) is a nonliquefied gas which is dissolved in a solvent.

(22) Pressurized liquid compressed gas. A "pressurized liquid compressed gas" is a compressed gas other than a compressed gas in solution, which cannot be liquefied at a temperature of 70°F, and which is maintained in the liquid state at a pressure not less than 40 p.s.i.a. by maintaining the gas at a temperature less than 70°F.

(23) Test pressure of the cylinder. The "test pressure of the cylinder" is the minimum pressure at which a cylinder must be tested as prescribed in DOT specifications for compressed gas cylinders 41 CFR Ch. 1.

(24) Free air or free gas. "Free air" or "free gas" is air or gas measured at a pressure of 14.7 pounds per square inch absolute and a temperature of 60°F.

(25) DOT regulations. As used in these standards "DOT regulations" refers to the U.S. Department of Transportation Regulations for Transportation of Explosives and Other Dangerous Articles by Land and Water in Rail Freight, Express and Baggage Services and by Motor Vehicle (Highway) and Water, including Specifications for Shipping Containers, Code of Federal Regulations, Title 49, Parts 171 to 178.

[Order 73-5, § 296-24-93001, filed 5/9/73 and Order 73-4, § 296-24-93001, filed 5/7/73.]

WAC 296-24-93003 General requirements. (1) Application. Compressed gas cylinder, portable tanks, and cargo tanks shall have pressure relief devices installed and maintained in accordance with Compressed Gas Association Pamphlets S-1.1-1963 and 1965 addenda and S-1.2-1963.

(2) Types of safety relief devices. Types of safety relief devices as covered by this section are designated as follows:

(a) Type CG-1: Frangible disc.

(b) Type CG-2: Fusible plug or reinforced fusible plug utilizing a fusible alloy with yield temperature not over 170°F, nor less than 157°F (165°F nominal).

(c) Type CG-3: Fusible plug or reinforced fusible plug utilizing a fusible alloy with yield temperature not over 220°F, nor less than 208°F (212°F nominal).

(d) Type CG-4: Combination frangible disc-fusible plug, utilizing a fusible alloy with yield temperature not over 170°F, nor less than 157°F (165°F nominal).

(e) Type CG-5: Combination frangible disc-fusible plug, utilizing a fusible alloy with yield temperature not over 220°F, nor less than 208°F (212°F nominal).

(f) Type CG-7: Safety relief valve.

(g) Type CG-8: Combination safety relief valve and fusible plug.

(3) Specifications and tests. All safety relief devices covered by this section shall meet the design, construction, marking and test specification of the "Compressed Gas Association Safety Relief Device Standards Part 1-Cylinders for Compressed Gases: S1.1-1963."

(4) Specific requirements for safety relief devices.

(a) Compressed gas cylinders, which under the regulations of the department of transportation must be equipped with safety relief devices, shall be considered acceptable when equipped with devices of proper construction, location, and discharge capacity under the conditions prescribed in Table 1 of the Compressed Gas Association Standard S-1.1-1963.

(b) Only replacement parts or assemblies provided by the manufacturer shall be used unless the advisability of interchange is proved by adequate tests.

(c) When a frangible disc is used with a compressed gas cylinder, the rated bursting pressure of the disc shall not exceed the minimum required test pressure of the cylinder with which the device is used, except for DOT-3E cylinders (49 CFR Ch. 1) the rated bursting pressure of the device shall not exceed 4,500 pounds per square inch gage (p.s.i.g.).

(d) When a safety relief valve is used on a compressed gas cylinder, the flow rating pressure shall not exceed the minimum required test pressure of the cylinder on which the safety relief valve is installed and the reseating pressure shall not be less than the pressure in a normally charged cylinder at 130°F.

(e) When fittings and piping are used on either the upstream or downstream side or both of a safety relief device or devices, the passages shall be so designed that the flow capacity of the safety relief device will not be reduced below the capacity required for the container on which the safety relief device assembly is installed, nor to the extent that the operation of the device could be impaired. Fittings, piping, and method of attachment shall be designed to withstand normal handling and the pressures developed when the device or devices function.

(f) No shutoff valve shall be installed between the safety relief devices and the cylinder.

(5) Maintenance requirements for safety relief devices.

(a) As a precaution to keep cylinder safety relief devices in reliable operating condition, care shall be taken in the handling or storing of compressed gas cylinders to avoid damage. Care shall also be exercised to avoid plugging by paint or other dirt accumulation of safety relief device channels or other parts which could interfere with the functioning of the device. Only qualified personnel shall be allowed to service safety relief devices.

(b) Each time a compressed gas cylinder is received at a point for refilling, all safety relief devices shall be examined externally for corrosion, damage, plugging of external safety relief device channels, and mechanical defects such as leakage or extrusion of fusible metal. If there is any doubt regarding the suitability of the safety relief device for service the cylinder shall not be filled until it is equipped with a suitable device.

[Order 73-5, § 296-24-93003, filed 5/9/73 and Order 73-4, § 296-24-93003, filed 5/7/73.]

WAC 296-24-935 Safety relief devices for cargo and portable tanks storing compressed gases.

[Order 73-5, § 296-24-935, filed 5/9/73 and Order 73-4, § 296-24-935, filed 5/7/73.]

WAC 296-24-93501 Definitions. (1) Cargo tank. A "cargo tank" means any container designed to be permanently attached to any motor vehicle or other highway vehicle and in which is to be transported any compressed gas. The term "cargo tank" shall not be construed to include any tank used solely for the purpose of supplying fuel for the propulsion of the vehicle or containers fabricated under specifications for cylinders.

(2) Portable tank. A "portable tank" means any container designed primarily to be temporarily attached to a motor vehicle, other vehicle, railroad car other than tank car, or marine vessel, and equipped with skids, mountings, or accessories to facilitate handling of the container by mechanical means, in which is to be transported any compressed gas. The term "portable tank" shall not be construed to include any cargo tank, any tank car tank or any tank of the DOT-106A and DOT-110A-W type.

(3) Safety relief device. A "safety relief device" means a device intended to prevent rupture of a container under certain conditions of exposure.

(4) Safety relief valve. A "safety relief valve" means a safety relief device containing an operating part that is held normally in a position closing the safety relief device channel by spring force and is intended to open and to close at predetermined pressures.

(5) Set pressure. The "set pressure" of a safety relief valve is the pressure marked on the valve and at which the valve is set to start-to-discharge.

(6) Start-to-discharge pressure. The "start-to-discharge pressure" of a safety relief valve is the pressure at which the first bubble appears through a water seal of not over 4 inches on the outlet of the valve.

Note: When the nature of the service requires the use of a metal-to-metal seat safety relief valve, with or without secondary sealing means, the start-to-discharge pressure may be considered the pressure at which an audible discharge occurs.

(7) Resealing pressure. The "resealing pressure" of a safety relief valve is the pressure at which leakage ceases through a water seal of not over 4 inches on the outlet of the valve.

(8) Flow capacity. The "flow capacity" of a safety relief device is the capacity in cubic feet per minute of free air discharged at the required flow rating pressure.

(9) Flow rating pressure. The "flow rating pressure" means the pressure at which a safety relief device is rated for capacity.

(10) Free air or free gas. "Free air" or "free gas" means air or gas measured at a pressure of 14.7 pounds per square inch absolute and a temperature of 60°F.

(11) Frangible disc. A "frangible disc" means a safety relief device in the form of a disc, usually of metal, which is so held as to close the safety relief device channel under normal conditions. The disc is intended to burst at a predetermined pressure to permit the escape of gas.

(12) Fusible plug. A "fusible plug" means a safety relief device in the form of a plug of suitable low-melting material,

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usually a metal alloy, which closes the safety relief device channel under normal conditions and is intended to yield or melt at a predetermined temperature to permit the escape of gas.

(13) DOT design pressure. The "DOT design pressure" is identical to the term "maximum allowable working pressure" as used in the "code" and is the maximum gage pressure at the top of the tank in its operating position. To determine the minimum permissible thickness of physical characteristics of the different parts of the vessel, the static head of the lading shall be added to the DOT design pressure to determine the thickness of any specific part of the vessel. If vacuum insulation is used, the liquid container shall be designed for a pressure of 15 p.s.i. more than DOT design pressure, plus static head of the lading.

EXCEPTION: For containers constructed in accordance with paragraph U-68 or U-69 of section VIII of the ASME Boiler and Pressure Vessel Code, 1949 Edition, the maximum allowable working pressure for the purpose of these standards is considered to be 125 percent of the design pressure as provided in 49 CFR 173.315 of DOT regulations.

(14) Code. "Code" is defined as paragraph U-68, U-69, U-200, or U-201 of section VIII of the Boiler and Pressure Vessel Code of the American Society of Mechanical Engineers, 1949 Edition, or section VIII of the Boiler and Pressure Vessel Code of the American Society of Mechanical Engineers, 1950, 1952, 1956, 1959, and 1962 Editions; or the Code for Unfired Pressure Vessels for Petroleum Liquids and Gases of the American Petroleum Institute and the American Society of Mechanical Engineers (API-ASME), 1951 Edition.

(15) DOT regulations. The "DOT regulations" refers to department of transportation regulations for transportation of explosives and other dangerous articles by land and water in rail freight, express and baggage services and by motor vehicle (highway) and water, including specifications for shipping containers, Code of Federal Regulations, Title 49, Parts 171 to 178.

[Order 73-5, § 296-24-93501, filed 5/9/73 and Order 73-4, § 296-24-93501, filed 5/7/73.]

WAC 296-24-93503 General requirements. (1) Application. See WAC 296-24-93003(1).

(2) Specifications and tests. All safety relief devices covered by these standards shall meet the design, construction, marking, and test specifications of the "Compressed Gas Association Safety Relief Device Standards Part 2-Cargo and Portable Tanks for Compressed Gases: S-1.2-1963."

(3) Specific requirements for safety relief devices.

(a) Each container shall be provided with one or more safety relief devices which, unless otherwise specified, shall be safety relief valves of the spring-loaded type.

(b) Safety relief valves shall be set to start-to-discharge at a pressure not in excess of 110 percent of the DOT design pressure of the container nor less than the DOT design pressure of the container except as follows:

(i) If an oversized container is used, the set pressure of the safety relief valve may be between the minimum required DOT design pressure for the lading and 110 percent of the DOT design pressure of the container used.

(ii) For sulfur dioxide containers, a minimum set pressure of 120 and 110 p.s.i.g. is permitted for the 150 and 125 p.s.i.g. DOT design pressure containers, respectively.

(iii) For carbon dioxide (refrigerated), nitrous oxide (refrigerated), and pressurized liquid argon, nitrogen and oxygen, there shall be no minimum set pressure.

(iv) For butadiene, inhibited, and liquefied petroleum gas containers, a minimum set pressure of 90 percent of the minimum design pressure permitted for these loadings may be used.

(v) For containers constructed in accord with paragraph U-68 or U-69 of the Code 1949 Edition, the set pressure marked on the safety relief valve may be 125 percent of the original DOT design pressure of the container.

(c) Only replacement parts or assemblies provided by the manufacturer of the device shall be used unless the suitability of interchange is proved by adequate tests.

(d) Safety relief valves shall have direct communication with the vapor space of the container.

(e) Any portion of liquid piping or hose which at any time may be closed at each end must be provided with a safety relief device to prevent excessive pressure.

(f) The additional restrictions of this subdivision apply to safety relief devices on containers for carbon dioxide or nitrous oxide which are shipped in refrigerated and insulated containers. The maximum operating pressure in the container may be regulated by the use of one or more pressure controlling devices, which devices shall not be in lieu of the safety relief valve required in WAC 296-24-93503 (3)(a).

(g) All safety relief devices shall be so installed and located that the cooling effect of the contents will not prevent the effective operation of the device.

(h) In addition to the safety relief valves required by WAC 296-24-93503 (3)(a) each container for carbon dioxide may be equipped with one or more frangible disc safety relief devices of suitable design set to function at a pressure not exceeding two times the DOT design pressure of the container.

(i) Subject to conditions of 49 CFR 173.315(a)(1) (DOT regulations) for methyl chloride and sulfur dioxide optional portable tanks of 225 p.s.i.g. minimum DOT design pressure, one or more fusible plugs approved by the Bureau of Explosives, 50 "F" Street Northwest, Washington, D.C. 20001, may be used in lieu of safety relief valves of the spring-loaded type. If the container is over 30 inches long a safety relief device having the total required flow capacity must be at both ends.

(j) When storage containers for liquefied petroleum gas are permitted to be shipped in accordance with 49 CFR 173.315(j) (DOT regulations), they must be equipped with safety relief devices in compliance with the requirements for safety relief devices on above-ground containers as specified in the National Fire Protection Association Pamphlet No. 58-1969 "Standard for the Storage and Handling of Liquefied Petroleum Gases."

(k) When containers are filled by pumping equipment which has a discharge capacity in excess of the capacity of the container safety relief devices, and which is capable of producing pressures in excess of DOT design pressure of the container, precautions should be taken to prevent the development of pressures in the container in excess of 120 percent

of its DOT design pressure. This may be done by providing additional capacity of the safety relief valves on the container, by providing a bypass on the pump discharge, or by any other suitable method.

(l) This additional requirement applies to safety relief devices on containers for liquefied hydrogen and pressurized liquid argon, nitrogen, and oxygen. The liquid container shall be protected by one or more safety relief valves and one or more frangible discs.

(m) Safety relief devices shall be arranged to discharge unobstructed to the open air in such a manner as to prevent any impingement of escaping gas upon the container. Safety relief devices shall be arranged to discharge upward except this is not required for carbon dioxide, nitrous oxide and pressurized liquid argon, nitrogen, and oxygen.

(n) No shutoff valves shall be installed between the safety relief devices and the container except, in cases where two or more safety relief devices are installed on the same container, a shutoff valve may be used where the arrangement of the shutoff valve or valves is such as always to insure full required capacity flow through at least one safety relief device.

(4) Maintenance requirements for safety relief devices.

(a) Care shall be exercised to avoid damage to safety relief devices. Care shall also be exercised to avoid plugging by paint or other dirt accumulation of safety relief device channels or other parts which could interfere with the functioning of the device.

(b) Only qualified personnel shall be allowed to service safety relief devices. Any servicing or repairs which require resetting of safety relief valves shall be done only by or after consultation with the valve manufacturer.

(c) Safety relief devices periodically shall be examined externally for corrosion damage, plugging of external safety relief device channels, and mechanical defects such as leakage or extrusion of fusible metal. Valves equipped with secondary resilient seals shall have the seals inspected periodically. If there is any doubt regarding the suitability of the safety relief device for service the container shall not be filled until it is equipped with a suitable safety relief device.

[Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-24-93503, filed 7/20/94, effective 9/20/94; Order 73-5, § 296-24-93503, filed 5/9/73 and Order 73-4, § 296-24-93503, filed 5/7/73.]

WAC 296-24-940 Air receivers.

[Order 73-5, § 296-24-940, filed 5/9/73 and Order 73-4, § 296-24-940, filed 5/7/73.]

WAC 296-24-94001 General requirements. (1) Application. These standards apply to compressed air receivers, and other equipment used in providing and utilizing compressed air for performing operations such as cleaning, drilling, hoisting, and chipping. On the other hand, however, this section does not deal with the special problems created by using compressed air to convey materials nor the problems created when working in compressed air as in tunnels and caissons. These standards are not intended to apply to compressed air machinery and equipment used on transportation vehicles such as steam railroad cars, electric railway cars, and automotive equipment.

(2) New and existing equipment.

(a) All new air receivers installed after the effective date of these standards shall be constructed in accordance with the 1968 Edition of the A.S.M.E. Boiler and Pressure Vessel Code, section VIII.

(b) All safety valves used shall be constructed, installed, and maintained in accordance with the A.S.M.E. Boiler and Pressure Vessel Code, section VIII edition 1968.

[Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-24-94001, filed 7/20/94, effective 9/20/94; Order 73-5, § 296-24-94001, filed 5/9/73 and Order 73-4, § 296-24-94001, filed 5/7/73.]

WAC 296-24-94003 Installation and equipment requirements. (1) Installation. Air receivers shall be so installed that all drains, handholes, and manholes therein are easily accessible. Air receivers should be supported with sufficient clearance to permit a complete external inspection and to avoid corrosion of external surfaces. Under no circumstances shall an air receiver be buried underground or located in an inaccessible place. The receiver should be located as close to the compressor or after-cooler as is possible in order to keep the discharge pipe short.

(2) Drains and traps. All air receivers having an internal and external operating pressure exceeding 15 psi with no limitation on size, and air receivers having an inside diameter exceeding six inches, with no limitation on pressure, if subject to corrosion, shall be supplied with a drain pipe and valve at the lowest point in the vessel; or a pipe may be used extending inward from any other location to within one-quarter inch of the lowest point. Adequate automatic traps may be installed in addition to drain valves. The drain valve on the air receiver shall be opened and the receiver completely drained frequently and at such intervals as to prevent the accumulation of oil and water in the receiver.

(3) Gages and valves.

(a) Every air receiver shall be equipped with an indicating pressure gage (so located as to be readily visible) and with one or more spring-loaded safety valves. The total relieving capacity of such safety valves shall be such as to prevent pressure in the receiver from exceeding the maximum allowable working pressure of the receiver by more than 10 percent.

(b) No valve of any type shall be placed between the air receiver and its safety valve or valves.

(c) Safety appliances, such as safety valves, indicating devices and controlling devices, shall be constructed, located, and installed so that they cannot be readily rendered inoperative by any means, including the elements.

(d) All safety valves shall be tested frequently and at regular intervals to determine whether they are in good operating condition.

[Statutory Authority: Chapter 49.17 RCW. 89-11-035 (Order 89-03), § 296-24-94003, filed 5/15/89, effective 6/30/89; Order 73-5, § 296-24-94003, filed 5/9/73 and Order 73-4, § 296-24-94003, filed 5/7/73.]

PART L ELECTRICAL

WAC 296-24-956 Electrical. This section addresses electrical safety requirements that are necessary for the practical safeguarding of employees in their workplaces.

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[Statutory Authority: RCW 49.17.040 and 49.17.050. 82-08-026 (Order 82-10), § 296-24-956, filed 3/30/82.]

WAC 296-24-95601 Definitions applicable to WAC 296-24-956 through 296-24-985. Unless the context indicates otherwise, words used in this section shall have the meaning given.

(1) **Acceptable.** An installation or equipment is acceptable to the director of labor and industries, and approved within the meaning of this section:

(a) If it is accepted, or certified, or listed, or labeled, or otherwise determined to be safe by a nationally recognized testing laboratory; or

(b) With respect to an installation or equipment of a kind which no nationally recognized testing laboratory accepts, certifies, lists, labels, or determines to be safe, if it is inspected or tested by another federal agency, or by a state, municipal, or other local authority responsible for enforcing occupational safety provisions of the National Electrical Code, and found in compliance with the provisions of the National Electrical Code as applied in this section; or

(c) With respect to custom-made equipment or related installations which are designed, fabricated for, and intended for use by a particular customer, if it is determined to be safe for its intended use by its manufacturer on the basis of test data which the employer keeps and makes available for inspection to the director and his/her authorized representatives. Refer to federal regulation 29 CFR 1910.7 for definition of nationally recognized testing laboratory.

(2) **Accepted.** An installation is "accepted" if it has been inspected and found by a nationally recognized testing laboratory to conform to specified plans or to procedures of applicable codes.

(3) **Accessible.** (As applied to wiring methods.) Capable of being removed or exposed without damaging the building structure of finish, or not permanently closed in by the structure or finish of the building. (See "concealed" and "exposed.")

(4) **Accessible.** (As applied to equipment.) Admitting close approach; not guarded by locked doors, elevation, or other effective means. (See "readily accessible.")

(5) **Ampacity.** Current-carrying capacity of electric conductors expressed in amperes.

(6) **Appliances.** Utilization equipment, generally other than industrial, normally built in standardized sizes or types, which is installed or connected as a unit to perform one or more functions such as clothes washing, air conditioning, food mixing, deep frying, etc.

(7) **Approved.** Acceptable to the authority enforcing this section. The authority enforcing this section is the director of labor and industries. The definition of "acceptable" indicates what is acceptable to the director and therefore approved within the meaning of this section.

(8) **Approved for the purpose.** Approved for a specific purpose, environment, or application described in a particular standard requirement.

Suitability of equipment or materials for a specific purpose, environment or application may be determined by a nationally recognized testing laboratory, inspection agency or other organization concerned with product evaluation as

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part of its listing and labeling program. (See "labeled" or "listed.")

(9) **Armored cable.** Type AC armored cable is a fabricated assembly of insulated conductors in a flexible metallic enclosure.

(10) **Askarel.** A generic term for a group of nonflammable synthetic chlorinated hydrocarbons used as electrical insulating media. Askarels of various compositional types are used. Under arcing conditions the gases produced, while consisting predominantly of noncombustible hydrogen chloride, can include varying amounts of combustible gases depending upon the askarel type.

(11) **Attachment plug (plug cap) (cap).** A device which, by insertion in a receptacle, establishes connection between the conductors of the attached flexible cord and the conductors connected permanently to the receptacle.

(12) **Automatic.** Self-acting, operating by its own mechanism when actuated by some impersonal influence, as, for example, a change in current strength, pressure, temperature, or mechanical configuration.

(13) **Bare conductor, see "conductor."**

(14) **Bonding.** The permanent joining of metallic parts to form an electrically conductive path which will assure electrical continuity and the capacity to conduct safely any current likely to be imposed.

(15) **Bonding jumper.** A reliable conductor to assure the required electrical conductivity between metal parts required to be electrically connected.

(16) **Branch circuit.** The circuit conductors between the final overcurrent device protecting the circuit and the outlet(s).

(17) **Building.** A structure which stands alone or which is cut off from adjoining structures by fire walls with all openings therein protected by approved fire doors.

(18) **Cabinet.** An enclosure designed either for surface or flush mounting, and provided with a frame, mat, or trim in which a swinging door or doors are or may be hung.

(19) **Cable tray system.** A cable tray system is a unit or assembly of units or sections, and associated fittings, made of metal or other noncombustible materials forming a rigid structural system used to support cables. Cable tray systems include ladders, troughs, channels, solid bottom trays, and other similar structures.

(20) **Cablebus.** Cablebus is an approved assembly of insulated conductors with fittings and conductor terminations in a completely enclosed, ventilated, protective metal housing.

(21) **Center pivot irrigation machine.** A center pivot irrigation machine is a multimotored irrigation machine which revolves around a central pivot and employs alignment switches or similar devices to control individual motors.

(22) **Certified.** Equipment is "certified" if it (a) has been tested and found by a nationally recognized testing laboratory to meet nationally recognized standards or to be safe for use in a specified manner, or (b) is of a kind whose production is periodically inspected by a nationally recognized testing laboratory, and (c) it bears a label, tag, or other record of certification.

(23) **Circuit breaker.**

(a) **(600 volts nominal, or less.)** A device designed to open and close a circuit by nonautomatic means and to open

the circuit automatically on a predetermined overcurrent without injury to itself when properly applied within its rating.

(b) **(Over 600 volts, nominal.)** A switching device capable of making, carrying, and breaking currents under normal circuit conditions, and also making, carrying for a specified time, and breaking currents under specified abnormal circuit conditions, such as those of short circuit.

(24) **Class I locations.** Class I locations are those in which flammable gases or vapors are or may be present in the air in quantities sufficient to produce explosive or ignitable mixtures. Class I locations include the following:

(a) **Class I, Division 1.** A Class I, Division 1 location is a location:

(i) In which hazardous concentrations of flammable gases or vapors may exist under normal operating conditions; or

(ii) In which hazardous concentrations of such gases or vapors may exist frequently because of repair or maintenance operations or because of leakage; or

(iii) In which breakdown or faulty operation of equipment or processes might release hazardous concentrations of flammable gases or vapors, and might also cause simultaneous failure of electric equipment.

Note: This classification usually includes locations where volatile flammable liquids or liquefied flammable gases are transferred from one container to another; interiors of spray booths and areas in the vicinity of spraying and painting operations where volatile flammable solvents are used; locations containing open tanks or vats of volatile flammable liquids; drying rooms or compartments for the evaporation of flammable solvents; locations containing fat and oil extraction equipment using volatile flammable solvents; portions of cleaning and dyeing plants where flammable liquids are used; gas generator rooms and other portions of gas manufacturing plants where flammable gas may escape; inadequately ventilated pump rooms for flammable gas or for volatile flammable liquids; the interiors of refrigerators and freezers in which volatile flammable materials are stored in open, lightly stoppered, or easily ruptured containers; and all other locations where ignitable concentrations of flammable vapors or gases are likely to occur in the course of normal operations.

(b) **Class I, Division 2.** A Class I, Division 2 location is a location:

(i) In which volatile flammable liquids or flammable gases are handled, processed, or used, but in which the hazardous liquids, vapors, or gases will normally be confined within closed containers or closed systems from which they can escape only in case of accidental rupture or breakdown of such containers or systems, or in case of abnormal operation of equipment; or

(ii) In which hazardous concentrations of gases or vapors are normally prevented by positive mechanical ventilation, and which might become hazardous through failure or abnormal operations of the ventilating equipment; or

(iii) That is adjacent to a Class I, Division 1 location, and to which hazardous concentrations of gases or vapors might occasionally be communicated unless such communication is prevented by adequate positive-pressure ventilation from a source of clean air, and effective safeguards against ventilation failure are provided.

Note: This classification usually includes locations where volatile flammable liquids or flammable gases or vapors are used,

but which would become hazardous only in case of an accident or of some unusual operating condition. The quantity of flammable material that might escape in case of accident, the adequacy of ventilating equipment, the total area involved, and the record of the industry or business with respect to explosions or fires are all factors that merit consideration in determining the classification and extent of each location.

Piping without valves, checks, meters, and similar devices would not ordinarily introduce a hazardous condition even though used for flammable liquids or gases. Locations used for the storage of flammable liquids or a liquefied or compressed gases in sealed containers would not normally be considered hazardous unless also subject to other hazardous conditions.

Electrical conduits and their associated enclosures separated from process fluids by a single seal or barrier are classed as a Division 2 location if the outside of the conduit and enclosures is a nonhazardous location.

(25) **Class II locations.** Class II locations are those that are hazardous because of the presence of combustible dust. Class II locations include the following:

(a) **Class II, Division 1.** A Class II, Division 1 location is a location:

(i) In which combustible dust is or may be in suspension in the air under normal operating conditions, in quantities sufficient to produce explosives or ignitable mixtures; or

(ii) Where mechanical failure or abnormal operation of machinery or equipment might cause such explosive or ignitable mixtures to be produced, and might also provide a source of ignition through simultaneous failure of electric equipment, operation of protection devices, or from other causes; or

(iii) In which combustible dusts of an electrically conductive nature may be present.

Note: This classification may include areas of grain handling and processing plants, starch plants, sugar-pulverizing plants, malting plants, hay-grinding plants, coal pulverizing plants, areas where metal dusts and powders are produced or processed, and other similar locations which contain dust producing machinery and equipment (except where the equipment is dust-tight or vented to the outside). These areas would have combustible dust in the air, under normal operating conditions, in quantities sufficient to produce explosive or ignitable mixtures. Combustible dusts which are electrically nonconductive include dusts produced in the handling and processing of grain and grain products, pulverized sugar and cocoa, dried egg and milk powders, pulverized spices, starch and pastes, potato and woodflour, oil meal from beans and seed, dried hay, and other organic materials which may produce combustible dusts when processed or handled. Dusts containing magnesium or aluminum are particularly hazardous and the use of extreme caution is necessary to avoid ignition and explosion.

(b) **Class II, Division 2.** A Class II, Division 2 location is a location in which:

(i) Combustible dust will not normally be in suspension in the air in quantities sufficient to produce explosive or ignitable mixtures; and dust accumulations are normally insufficient to interfere with the normal operation of electrical equipment or other apparatus; or

(ii) Dust may be in suspension in the air as a result of infrequent malfunctioning of handling or processing equipment, and dust accumulations resulting therefrom may be

ignitable by abnormal operation or failure of electrical equipment or other apparatus.

Note: This classification includes locations where dangerous concentrations of suspended dust would not be likely but where dust accumulations might form on or in the vicinity of electric equipment. These areas may contain equipment from which appreciable quantities of dust would escape under abnormal operating conditions or be adjacent to a Class II Division 1 location, as described above, into which an explosive or ignitable concentration of dust may be put into suspension under abnormal operating conditions.

(26) **Class III locations.** Class III locations are those that are hazardous because of the presence of easily ignitable fibers or flyings but in which such fibers or flyings are not likely to be in suspension in the air in quantities sufficient to produce ignitable mixtures. Class III locations include the following:

(a) **Class III, Division 1.** A Class III, Division 1 location is a location in which easily ignitable fibers or materials producing combustible flyings are handled, manufactured, or used.

Note: Such locations usually include some parts of rayon, cotton, and other textile mills; combustible fiber manufacturing and processing plants; cotton gins and cottonseed mills; flax-processing plants; clothing manufacturing plants; woodworking plants, and establishments; and industries involving similar hazardous processes or conditions.

Easily ignitable fibers and flyings include rayon, cotton (including cotton linters and cotton waste), sisal or henequen, istle, jute, hemp, tow, cocoa fiber, oakum, baled waste kapok, Spanish moss, excelsior, and other materials of similar nature.

(b) **Class III, Division 2.** A Class III, Division 2 location is a location in which easily ignitable fibers are stored or handled, except in process of manufacture.

(27) **Collector ring.** A collector ring is an assembly of slip rings for transferring electrical energy from a stationary to a rotating member.

(28) **Concealed.** Rendered inaccessible by the structure or finish of the building. Wires in concealed raceways are considered concealed, even though they may become accessible by withdrawing them. (See "accessible. (As applied to wiring methods.)")

(29) **Conductor.**

(a) **Bare.** A conductor having no covering or electrical insulation whatsoever.

(b) **Covered.** A conductor encased within material of composition or thickness that is not recognized as electrical insulation.

(c) **Insulated.** A conductor encased within material of composition and thickness that is recognized as electrical insulation.

(30) **Conduit body.** A separate portion of a conduit or tubing system that provides access through a removable cover(s) to the interior of the system at a junction of two or more sections of the system or at a terminal point of the system. Boxes such as FS and FD or larger cast or sheet metal boxes are not classified as conduit bodies.

(31) **Controller.** A device or group of devices that serves to govern, in some predetermined manner, the electric power delivered to the apparatus to which it is connected.

(32) **Cooking unit, counter-mounted.** A cooking appliance designed for mounting in or on a counter and consisting of one or more heating elements, internal wiring, and built-in or separately mountable controls. (See "oven, wall-mounted.")

(33) **Covered conductor.** See "conductor."

(34) **Cutout.** (Over 600 volts, nominal.) An assembly of a fuse support with either a fuseholder, fuse carrier, or disconnecting blade. The fuseholder or fuse carrier may include a conducting element (fuse link), or may act as the disconnecting blade by the inclusion of a nonfusible member.

(35) **Cutout box.** An enclosure designed for surface mounting and having swinging doors or covers secured directly to and telescoping with the walls of the box proper. (See "cabinet.")

(36) **Damp location.** See "location."

(37) **Dead front.** Without live parts exposed to a person on the operating side of the equipment.

(38) **Device.** A unit of an electrical system which is intended to carry but not utilize electric energy.

(39) **Dielectric heating.** Dielectric heating is the heating of a nominally insulating material due to its own dielectric losses when the materials is placed in a varying electric field.

(40) **Disconnecting means.** A device, or group of devices, or other means by which the conductors of a circuit can be disconnected from their source of supply.

(41) **Disconnecting (or isolating) switch.** (Over 600 volts, nominal.) A mechanical switching device used for isolating a circuit or equipment from a source of power.

(42) **Dry location.** See "location."

(43) **Electric sign.** A fixed, stationary, or portable self-contained, electrically illuminated utilization equipment with words or symbols designed to convey information or attract attention.

(44) **Enclosed.** Surrounded by a case, housing, fence or walls which will prevent persons from accidentally contacting energized parts.

(45) **Enclosure.** The case or housing of apparatus, or the fence or walls surrounding an installation to prevent personnel from accidentally contacting energized parts, or to protect the equipment from physical damage.

(46) **Equipment.** A general term including material, fittings, devices, appliances, fixtures, apparatus, and the like, used as a part of, or in connection with, an electrical installation.

(47) **Equipment grounding conductor.** See "grounding conductor, equipment."

(48) **Explosion-proof apparatus.** Apparatus enclosed in a case that is capable of withstanding an explosion of a specified gas or vapor which may occur within it and of preventing the ignition of a specified gas or vapor surrounding the enclosure by sparks, flashes, or explosion of the gas or vapor within, and which operates at such an external temperature that it will not ignite a surrounding flammable atmosphere.

(49) **Exposed.** (As applied to live parts.) Capable of being inadvertently touched or approached nearer than a safe distance by a person. It is applied to parts not suitably guarded, isolated, or insulated. (See "accessible" and "concealed.")

(50) **Exposed.** (As applied to wiring methods.) On or attached to the surface or behind panels designed to allow access. (See "accessible. (As applied to wiring methods.)")

(51) **Exposed.** (For the purpose of WAC 296-24-95615(5), communications systems.) Where the circuit is in such a position that in case of failure of supports or insulation, contact with another circuit may result.

(52) **Externally operable.** Capable of being operated without exposing the operator to contact with live parts.

(53) **Feeder.** All circuit conductors between the service equipment, or the generator switchboard of an isolated plant, and the final branch-circuit overcurrent device.

(54) **Fitting.** An accessory such as a locknut, bushing, or other part of a wiring system that is intended primarily to perform a mechanical rather than an electrical function.

(55) **Fuse.** (Over 600 volts, nominal.) An overcurrent protective device with a circuit opening fusible part that is heated and severed by the passage of overcurrent through it. A fuse comprises all the parts that form a unit capable of performing the prescribed functions. It may or may not be the complete device necessary to connect it into an electrical circuit.

(56) **Ground.** A conducting connection, whether intentional or accidental, between an electrical circuit or equipment and the earth, or to some conducting body that serves in place of the earth.

(57) **Grounded.** Connected to earth or to some conducting body that serves in place of the earth.

(58) **Grounded, effectively.** (Over 600 volts, nominal.) Permanently connected to earth through a ground connection of sufficiently low impedance and having sufficient ampacity that ground fault current which may occur cannot build up to voltages dangerous to personnel.

(59) **Grounded conductor.** A system or circuit conductor that is intentionally grounded.

(60) **Grounding conductor.** A conductor used to connect equipment or the grounded circuit of a wiring system to a grounding electrode or electrodes.

(61) **Grounding conductor, equipment.** The conductor used to connect the noncurrent-carrying metal parts of equipment, raceways, and other enclosures to the system grounded conductor and/or the grounding electrode conductor at the service equipment or at the source of a separately derived system.

(62) **Grounding electrode conductor.** The conductor used to connect the grounding electrode to the equipment grounding conductor and/or to the grounded conductor of the circuit at the service equipment or at the source of a separately derived system.

(63) **Ground-fault circuit-interrupter.** A device whose function is to interrupt the electric circuit to the load when a fault current to ground exceeds some predetermined value that is less than that required to operate the overcurrent protective device of the supply circuit.

(64) **Guarded.** Covered, shielded, fenced, enclosed, or otherwise protected by means of suitable covers, casings, barriers, rails, screens, mats, or platforms to remove the likelihood of approach to a point of danger or contact by persons or objects.

(65) **Health care facilities.** Buildings or portions of buildings and mobile homes that contain, but are not limited

to, hospitals, nursing homes, extended care facilities, clinics, and medical and dental offices, whether fixed or mobile.

(66) **Heating equipment.** For the purposes of WAC 296-24-95611(7), the term "heating equipment" includes any equipment used for heating purposes if heat is generated by induction or dielectric methods.

(67) **Hoistway.** Any shaftway, hatchway, well hole, or other vertical opening or space in which an elevator or dumbwaiter is designed to operate.

(68) **Identified.** Identified, as used in reference to a conductor or its terminal, means that such conductor or terminal can be readily recognized as grounded.

(69) **Induction heating.** Induction heating is the heating of a nominally conductive material due to its own I²R losses when the material is placed in a varying electromagnetic field.

(70) **Insulated conductor.** See "conductor."

(71) **Interrupter switch.** (Over 600 volts, nominal.) A switch capable of making, carrying, and interrupting specified currents.

(72) **Irrigation machine.** An irrigation machine is an electrically driven or controlled machine, with one or more motors, not hand portable, and used primarily to transport and distribute water for agricultural purposes.

(73) **Isolated.** Not readily accessible to persons unless special means for access are used.

(74) **Isolated power system.** A system comprising an isolating transformer or its equivalent, a line isolation monitor, and its ungrounded circuit conductors.

(75) **Labeled.** Equipment is "labeled" if there is attached to it a label, symbol, or other identifying mark of a nationally recognized testing laboratory which, (a) makes periodic inspections of the production of such equipment, and (b) whose labeling indicates compliance with nationally recognized standards or tests to determine safe use in a specified manner.

(76) **Lighting outlet.** An outlet intended for the direct connection of a lampholder, a lighting fixture, or a pendant cord terminating in a lampholder.

(77) **Line-clearance tree trimming.** The pruning, trimming, repairing, maintaining, removing, or clearing of trees or cutting of brush that is within 10 feet of electric supply lines and equipment.

(78) **Listed.** Equipment is "listed" if it is of a kind mentioned in a list which, (a) is published by a nationally recognized laboratory which makes periodic inspection of the production of such equipment, and (b) states such equipment meets nationally recognized standards or has been tested and found safe for use in a specified manner.

(79) **Location.**

(a) **Damp location.** Partially protected locations under canopies, marquees, roofed open porches, and like locations, and interior locations subject to moderate degrees of moisture, such as some basements, some barns, and some cold-storage warehouses.

(b) **Dry location.** A location not normally subject to dampness or wetness. A location classified as dry may be temporarily subject to dampness or wetness, as in the case of a building under construction.

(c) **Wet location.** Installations underground or in concrete slabs or masonry in direct contact with the earth, and

locations subject to saturation with water or other liquids, such as vehicle-washing areas, and locations exposed to weather and unprotected.

(80) **Medium voltage cable.** Type MV medium voltage cable is a single or multiconductor solid dielectric insulated cable rated 2000 volts or higher.

(81) **Metal-clad cable.** Type MC cable is a factory assembly of one or more conductors, each individually insulated and enclosed in a metallic sheath of interlocking tape, or a smooth or corrugated tube.

(82) **Mineral-insulated metal-sheathed cable.** Type MI mineral-insulated metal-sheathed cable is a factory assembly of one or more conductors insulated with a highly compressed refractory mineral insulation and enclosed in a liquidtight and gastight continuous copper sheath.

(83) **Mobile X ray.** X-ray equipment mounted on a permanent base with wheels and/or casters for moving while completely assembled.

(84) **Nonmetallic-sheathed cable.** Nonmetallic-sheathed cable is a factory assembly of two or more insulated conductors having an outer sheath of moisture resistant, flame-retardant, nonmetallic material. Nonmetallic sheathed cable is manufactured in the following types:

(a) **Type NM.** The overall covering has a flame-retardant and moisture-resistant finish.

(b) **Type NMC.** The overall covering is flame-retardant, moisture-resistant, fungus-resistant, and corrosion-resistant.

(85) **Oil (filled) cutout.** (Over 600 volts, nominal.) A cutout in which all or part of the fuse support and its fuse link or disconnecting blade are mounted in oil with complete immersion of the contacts and the fusible portion of the conducting element (fuse link), so that arc interruption by severing of the fuse link or by opening of the contacts will occur under oil.

(86) **Open wiring on insulators.** Open wiring on insulators is an exposed wiring method using cleats, knobs, tubes, and flexible tubing for the protection and support of single insulated conductors run in or on buildings, and not concealed by the building structure.

(87) **Outlet.** A point on the wiring system at which current is taken to supply utilization equipment.

(88) **Outline lighting.** An arrangement of incandescent lamps or electric discharge tubing to outline or call attention to certain features such as the shape of a building or the decoration of a window.

(89) **Oven, wall-mounted.** An oven for cooking purposes designed for mounting in or on a wall or other surface and consisting of one or more heating elements, internal wiring, and built-in or separately mountable controls. (See "cooking unit, counter-mounted.")

(90) **Overcurrent.** Any current in excess of the rated current of equipment or the ampacity of a conductor. It may result from overload (see definition), short circuit, or ground fault. A current in excess of rating may be accommodated by certain equipment and conductors for a given set of conditions. Hence the rules for overcurrent protection are specific for particular situations.

(91) **Overload.** Operation of equipment in excess of normal, full load rating, or of a conductor in excess of rated ampacity which, when it persists for a sufficient length of time, would cause damage or dangerous overheating. A fault,

such as a short circuit or ground fault, is not an overload. (See "overcurrent.")

(92) **Panelboard.** A single panel or group of panel units designed for assembly in the form of a single panel; including buses, automatic overcurrent devices, and with or without switches for the control of light, heat, or power circuits; designed to be placed in a cabinet or cutout box placed in or against a wall or partition and accessible only from the front. (See "switchboard.")

(93) **Permanently installed decorative fountains and reflection pools.** Those that are constructed in the ground, on the ground, or in a building in such a manner that the pool cannot be readily disassembled for storage and are served by electrical circuits of any nature. These units are primarily constructed for their aesthetic value and not intended for swimming or wading.

(94) **Permanently installed swimming pools, wading and therapeutic pools.** Those that are constructed in the ground, on the ground, or in a building in such a manner that the pool cannot be readily disassembled for storage whether or not served by electrical circuits of any nature.

(95) **Portable X ray.** X-ray equipment designed to be hand-carried.

(96) **Power and control tray cable.** Type TC power and control tray cable is a factory assembly of two or more insulated conductors, with or without associated bare or covered grounding conductors under a nonmetallic sheath, approved for installation in cable trays, in raceways, or where supported by a messenger wire.

(97) **Power fuse.** (Over 600 volts, nominal.) See "fuse."

(98) **Power-limited tray cable.** Type PLTC nonmetallic-sheathed power limited tray cable is a factory assembly of two or more insulated conductors under a nonmetallic jacket.

(99) **Power outlet.** An enclosed assembly which may include receptacles, circuit breakers, fuseholders, fused switches, buses and watt-hour meter mounting means; intended to supply and control power to mobile homes, recreational vehicles or boats, or to serve as a means for distributing power required to operate mobile or temporarily installed equipment.

(100) **Premises wiring system.** That interior and exterior wiring, including power, lighting, control, and signal circuit wiring together with all of its associated hardware, fittings, and wiring devices, both permanently and temporarily installed, which extends from the load end of the service drop, or load end of the service lateral conductors to the outlet(s). Such wiring does not include wiring internal to appliances, fixtures, motors, controllers, motor control centers, and similar equipment.

(101) **Qualified person.** One familiar with the construction and operation of the equipment and the hazards involved.

Note 1: Whether an employee is considered to be a "qualified person" will depend upon various circumstances in the workplace. It is possible and, in fact, likely for an individual to be considered "qualified" with regard to certain equipment in the workplace, but "unqualified" as to other equipment. (See WAC 296-24-970 for training requirements that specifically apply to qualified persons.)

Note 2: An employee who is undergoing on-the-job training and who, in the course of such training, has demonstrated an ability to perform duties safely at his or her level of training and who is under the direct supervision of a qualified per-

son is considered to be a qualified person for the performance of those duties.

(102) **Raceway.** A channel designed expressly for holding wires, cables, or busbars, with additional functions as permitted in this part. Raceways may be of metal or insulating material, and the term includes rigid metal conduit, rigid non-metallic conduit, intermediate metal conduit, liquidtight flexible metal conduit, flexible metallic tubing, flexible metal conduit, electrical metallic tubing, underfloor raceways, cellular concrete floor raceways, cellular metal floor raceways, surface raceways, wireways, and busways.

(103) **Readily accessible.** Capable of being reached quickly for operation, renewal, or inspections, without requiring those to whom ready access is requisite to climb over or remove obstacles or to resort to portable ladders, chairs, etc. (See "accessible.")

(104) **Receptacle.** A receptacle is a contact device installed at the outlet for the connection of a single attachment plug. A single receptacle is a single contact device with no other contact device on the same yoke. A multiple receptacle is a single device containing two or more receptacles.

(105) **Receptacle outlet.** An outlet where one or more receptacles are installed.

(106) **Remote-control circuit.** Any electric circuit that controls any other circuit through a relay or an equivalent device.

(107) **Sealable equipment.** Equipment enclosed in a case or cabinet that is provided with a means of sealing or locking so that live parts cannot be made accessible without opening the enclosure. The equipment may or may not be operable without opening the enclosure.

(108) **Separately derived system.** A premises wiring system whose power is derived from generator, transformer, or converter winding and has no direct electrical connection, including a solidly connected grounded circuit conductor, to supply conductors originating in another system.

(109) **Service.** The conductors and equipment for delivering energy from the electricity supply system to the wiring system of the premises served.

(110) **Service cable.** Service conductors made up in the form of a cable.

(111) **Service conductors.** The supply conductors that extend from the street main or from transformers to the service equipment of the premises supplied.

(112) **Service drop.** The overhead service conductors from the last pole or other aerial support to and including the splices, if any, connecting to the service-entrance conductors at the building or other structure.

(113) **Service-entrance cable.** Service-entrance cable is a single conductor or multiconductor assembly provided with or without an overall covering, primarily used for services and of the following types:

(a) *Type SE*, having a flame-retardant, moisture-resistant covering, but not required to have inherent protection against mechanical abuse.

(b) *Type USE*, recognized for underground use, having a moisture-resistant covering, but not required to have a flame-retardant covering or inherent protection against mechanical abuse. Single-conductor cables having an insulation specifically approved for the purpose do not require an outer covering.

(114) **Service-entrance conductors, overhead system.**

The service conductors between the terminals of the service equipment and a point usually outside the building, clear of building walls, where joined by tap or splice to the service drop.

(115) **Service entrance conductors, underground system.** The service conductors between the terminals of the service equipment and the point of connection to the service lateral. Where service equipment is located outside the building walls, there may be no service-entrance conductors, or they may be entirely outside the building.

(116) **Service equipment.** The necessary equipment, usually consisting of a circuit breaker or switch and fuses, and their accessories, located near the point of entrance of supply conductors to a building or other structure, or an otherwise defined area, and intended to constitute the main control and means of cutoff of the supply.

(117) **Service raceway.** The raceway that encloses the service-entrance conductors.

(118) **Shielded nonmetallic-sheathed cable.** Type SNM, shielded nonmetallic-sheathed cable is a factory assembly of two or more insulated conductors in an extruded core of moisture-resistant, flame-resistant nonmetallic material, covered with an overlapping spiral metal tape and wire shield and jacketed with an extruded moisture-resistant, flame-resistant, oil-resistant, corrosion-resistant, fungus-resistant, and sunlight-resistant nonmetallic material.

(119) **Show window.** Any window used or designed to be used for the display of goods or advertising material, whether it is fully or partly enclosed or entirely open at the rear and whether or not it has a platform raised higher than the street floor level.

(120) **Sign.** See "electric sign."

(121) **Signaling circuit.** Any electric circuit that energizes signaling equipment.

(122) **Special permission.** The written consent of the authority having jurisdiction.

(123) **Storable swimming or wading pool.** A pool with a maximum dimension of fifteen feet and a maximum wall height of three feet and is so constructed that it may be readily disassembled for storage and reassembled to its original integrity.

(124) **Switchboard.** A large single panel, frame, or assembly of panels which have switches, buses, instruments, overcurrent and other protective devices mounted on the face or back or both. Switchboards are generally accessible from the rear as well as from the front and are not intended to be installed in cabinets. (See "panelboard.")

(125) **Switches.**

(a) **General-use switch.** A switch intended for use in general distribution and branch circuits. It is rated in amperes, and it is capable of interrupting its rated current at its rated voltage.

(b) **General-use snap switch.** A form of general-use switch so constructed that it can be installed in flush device boxes or on outlet box covers, or otherwise used in conjunction with wiring systems recognized by this part.

(c) **Isolating switch.** A switch intended for isolating an electric circuit from the source of power. It has no interrupting rating, and it is intended to be operated only after the circuit has been opened by some other means.

(d) **Motor-circuit switch.** A switch, rated in horsepower, capable of interrupting the maximum operating overload current of a motor of the same horsepower rating as the switch at the rated voltage.

(126) **Switching devices.** (Over 600 volts, nominal.) Devices designed to close and/or open one or more electric circuits. Included in this category are circuit breakers, cutouts, disconnecting (or isolating) switches, disconnecting means, interrupter switches, and oil (filled) cutouts.

(127) **Transportable X ray.** X-ray equipment installed in a vehicle or that may readily be disassembled for transport in a vehicle.

(128) **Utilization equipment.** Utilization equipment means equipment which utilizes electric energy for mechanical, chemical, heating, lighting, or similar useful purpose.

(129) **Utilization system.** A utilization system is a system which provides electric power and light for employee workplaces, and includes the premises wiring system and utilization equipment.

(130) **Ventilated.** Provided with a means to permit circulation of air sufficient to remove an excess of heat, fumes, or vapors.

(131) **Volatile flammable liquid.** A flammable liquid having a flash point below 38 degrees C (100 degrees F) or whose temperature is above its flash point.

(132) **Voltage (of a circuit).** The greatest root-mean-square (effective) difference of potential between any two conductors of the circuit concerned.

(133) **Voltage, nominal.** A nominal value assigned to a circuit or system for the purpose of conveniently designating its voltage class (as 120/240, 480Y/277, 600, etc.). The actual voltage at which a circuit operates can vary from the nominal within a range that permits satisfactory operation of equipment.

(134) **Voltage to ground.** For grounded circuits, the voltage between the given conductor and that point or conductor of the circuit that is grounded; for undergrounded circuits, the greatest voltage between the given conductor and any other conductor of the circuit.

(135) **Watertight.** So constructed that moisture will not enter the enclosure.

(136) **Weatherproof.** So constructed or protected that exposure to the weather will not interfere with successful operation. Rainproof, raintight, or watertight equipment can fulfill the requirements for weatherproof where varying weather conditions other than wetness, such as snow, ice, dust, or temperature extremes, are not a factor.

(137) **Wet location.** See "location."

(138) **Wireways.** Wireways are sheet-metal troughs with hinged or removable covers for housing and protecting electric wires and cable and in which conductors are laid in place after the wireway has been installed as a complete system.

[Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-24-95601, filed 7/20/94, effective 9/20/94; 91-24-017 (Order 91-07), § 296-24-95601, filed 11/22/91, effective 12/24/91; 88-23-054 (Order 88-25), § 296-24-95601, filed 11/14/88; 87-24-051 (Order 87-24), § 296-24-95601, filed 11/30/87. Statutory Authority: RCW 49.17.040 and 49.17.050. 82-08-026 (Order 82-10), § 296-24-95601, filed 3/30/82.]

WAC 296-24-95603 Electric utilization systems. (1) Scope.

(a) **Covered.** The provisions of WAC 296-24-95603 through 296-24-985 cover electrical installations and utilization equipment installed or used within or on buildings, structures, and other premises including:

- (i) Yards;
- (ii) Carnivals;
- (iii) Parking and other lots;
- (iv) Mobile homes;
- (v) Recreational vehicles;
- (vi) Industrial substations under 750 volts. Chapter 296-45 WAC, Safety standards for electrical workers, shall apply to industrial substations of 750 volts or more;
- (vii) Conductors that connect the installations to a supply of electricity; and
- (viii) Other outside conductors on the premises.

(b) **Not covered.** The provisions of WAC 296-24-95603 through 296-24-985 do not cover:

- (i) Installations in ships, watercraft, railway rolling stock, aircraft, or automotive vehicles other than mobile homes and recreational vehicles.
- (ii) Installations underground in mines.
- (iii) Installations of railways for generation, transformation, transmission, or distribution of power used exclusively for operation of rolling stock or installations used exclusively for signaling and communication purposes.
- (iv) Installations of communication equipment under the exclusive control of communication utilities, located outdoors or in building spaces used exclusively for such installations.

(v) Installations under the exclusive control of electric utilities for the purpose of communication or metering; or for the generation, control, transformation, transmission, and distribution of electric energy located in buildings used exclusively by utilities for such purposes or located outdoors on property owned or leased by the utility or on public highways, streets, roads, etc., or outdoors by established rights on private property.

(2) Extent of application.

(a) The requirements contained in the sections listed below shall apply to all electrical installations and utilization equipment, regardless of when they were designed or installed:

Sections:

WAC 296-24-95605	(2)	Examination, installation, and use of equipment.
"	"	(3)
"	"	(4)
"	"	(5)
"	"	(6)
"	"	(7)(b)
WAC 296-24-95607	(5)(a)(i)	Protection of conductors and equipment.
"	"	(5)(a)(iv)
"	"	(5)(a)(v)
"	"	(6)(a)(ii)
"	"	(6)(a)(iii) and
"	"	(iv)
"	"	(6)(a)(v)
"	"	(6)(c)

Sections:

"	"	(6)(d)
WAC 296-24-95607	(6)(e)(iv)	(A) through (D)
"	"	(6)(e)(v)
"	"	(6)(e)(vi)
"	"	(6)(f)(i)
WAC 296-24-95609	(7)(a)(i) and (ii)	
"	"	(7)(a)(iii)
"	"	(7)(b)(ii)
"	"	(7)(b)(iii)
WAC 296-24-95613		Hazardous (classified) locations.

(b) Every electric utilization system and all utilization equipment installed after March 15, 1972, and every major replacement, modification, repair, or rehabilitation, after March 15, 1972, of any part of any electric utilization system or utilization equipment installed before March 15, 1972, shall comply with the provisions of WAC 296-24-956 through 296-24-985.

Note: "Major replacements, modifications, repairs, or rehabilitations" include work similar to that involved when a new building or facility is built, a new wing is added, or an entire floor is renovated.

(c) The following provisions apply to electric utilization systems and utilization equipment installed after April 16, 1981:

WAC 296-24-95605	(8)(d)(i) and (ii)	Entrance and access to work space (over 600 volts).
WAC 296-24-95607	(5) (a)(vi)(B)	Circuit breakers operated vertically.
"	"	(5)(a)(vi)(C)
"	"	(6)(g)(ii)
WAC 296-24-95609	(10)(f)(ii)(B)	Switching series capacitors over 600 volts.
WAC 296-24-95611	(3)(b)	Warning signs for elevators and escalators.
"	"	(9)
"	"	(10)(e)
WAC 296-24-95615	(1)(a)(ii)	Physical protection of conductors over 600 volts.
"	"	(3)(b)
"	"	(4)

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060. 04-07-161, § 296-24-95603, filed 3/23/04, effective 6/1/04. Statutory Authority: Chapter 49.17 RCW. 91-24-017 (Order 91-07), § 296-24-95603, filed 11/22/91, effective 12/24/91; 87-24-051 (Order 87-24), § 296-24-95603, filed 11/30/87. Statutory Authority: RCW 49.17.040 and 49.17.050. 82-08-026 (Order 82-10), § 296-24-95603, filed 3/30/82.]

WAC 296-24-95605 General requirements. (1) Approval. The conductors and equipment required or permitted by this section shall be acceptable only if approved.

(2) Examination, installation, and use of equipment.

(a) **Examination.** Electrical equipment shall be free from recognized hazards that are likely to cause death or serious physical harm to employees. Safety of equipment shall be determined using the following considerations:

(i) Suitability for installation and use in conformity with the provisions of this part. Suitability of equipment for an identified purpose may be evidenced by listing or labeling for that identified purpose.

(ii) Mechanical strength and durability, including, for parts designed to enclose and protect other equipment, the adequacy of the protection thus provided.

(iii) Electrical insulation.

(iv) Heating effects under conditions of use.

(v) Arcing effects.

(vi) Classification by type, size, voltage, current capacity, specific use.

(vii) Other factors which contribute to the practical safeguarding of employees using or likely to come in contact with the equipment.

(b) **Installation and use.** Listed or labeled equipment shall be used or installed in accordance with any instructions included in the listing or labeling.

(3) **Splices.** Conductors shall be spliced or joined with splicing devices suitable for the use or by brazing, welding, or soldering with a fusible metal or alloy. Soldered splices shall first be so spliced or joined as to be mechanically and electrically secure without solder and then soldered. All splices and joints and the free ends of conductors shall be covered with an insulation equivalent to that of the conductors or with an insulating device suitable for the purpose.

(4) **Arcing parts.** Parts of electric equipment which in ordinary operation produce arcs, sparks, flames, or molten metal shall be enclosed or separated and isolated from all combustible material.

(5) **Marking.** Electrical equipment may not be used unless the manufacturer's name, trademark, or other descriptive marking by which the organization responsible for the product may be identified is placed on the equipment. Other markings shall be provided giving voltage, current, wattage, or other ratings as necessary. The marking shall be of sufficient durability to withstand the environment involved.

(6) **Identification of disconnecting means and circuits.** Each disconnecting means required by this part for motors and appliances shall be legibly marked to indicate its purpose, unless located and arranged so the purpose is evident. Each service, feeder, and branch circuit, at its disconnecting means or overcurrent device, shall be legibly marked to indicate its purpose, unless located and arranged so the purpose is evident. These markings shall be of sufficient durability to withstand the environment involved.

(7) 600 volts, nominal, or less.

(a) **Working space about electric equipment.** Sufficient access and working space shall be provided and maintained about all electric equipment to permit ready and safe operation and maintenance of such equipment.

(i) **Working clearances.** Except as required or permitted elsewhere in this chapter, the dimension of the working space in the direction of access to live parts operating at 600 volts or less and likely to require examination, adjustment, servicing, or maintenance while alive may not be less than indi-

cated in Table S-1. In addition to the dimensions shown in Table S-1, workspace may not be less than 30 inches wide in front of the electric equipment. Distances shall be measured from the live parts if they are exposed, or from the enclosure front or opening if the live parts are enclosed. Concrete, brick, or tile walls are considered to be grounded. Working space is not required in back of assemblies such as dead-front switchboards or motor control centers where there are no renewable or adjustable parts such as fuses or switches on the back and where all connections are accessible from locations other than the back.

TABLE S-1—Working clearances

Nominal voltage to ground	Minimum clear distance for condition ² (ft)		
	(a)	(b)	(c)
0-150 -----	1 ³	1 ³	3
151-600 -----	1 ³	3 1/2	4

¹ Minimum clear distances may be 2 feet 6 inches for installations built prior to effective date of this section.

² Conditions (a), (b), (c), are as follows: (a) Exposed live parts on one side and no live or grounded parts on the other side of the working space, or exposed live parts on both sides effectively guarded by suitable wood or other insulating material. Insulated wire or insulated busbars operating at not over 300 volts are not considered live parts. (b) Exposed live parts on one side and grounded parts on the other side (c) Exposed live parts on both sides of the workspace (not guarded as provided in condition (a)) with the operator between.

(ii) **Clear spaces.** Working space required by this part may not be used for storage. When normally enclosed live parts are exposed for inspection or servicing, the working space, if in a passageway or general open space, shall be suitably guarded.

(iii) **Access and entrance to working space.** At least one entrance of sufficient area shall be provided to give access to the working space about electric equipment.

(iv) **Front working space.** Where there are live parts normally exposed on the front of switchboards or motor control centers, the working space in front of such equipment may not be less than 3 feet.

(v) **Illumination.** Illumination shall be provided for all working spaces about service equipment, switchboards, panelboards, and motor control centers installed indoors.

(vi) **Headroom.** The minimum headroom of working spaces about service equipment, switchboards, panelboards, or motor control centers shall be 6 feet 3 inches.

Note: As used in this section, a motor control center is an assembly of one or more enclosed sections having a common power bus and principally containing motor control units.

(b) Guarding of live parts.

(i) Except as required or permitted elsewhere in this section, live parts of electric equipment operating at 50 volts or more shall be guarded against accidental contact by approved cabinets or other forms of approved enclosures, or by any of the following means:

(A) By location in a room, vault, or similar enclosure that is accessible only to qualified persons.

(B) By suitable permanent, substantial partitions or screens so arranged that only qualified persons will have access to the space within reach of the live parts. Any openings in such partitions or screens shall be so sized and located that persons are not likely to come into accidental contact

with live parts or to bring conducting objects into contact with them.

(C) By location on a suitable balcony, gallery, or platform so elevated and arranged as to exclude unqualified persons.

(D) By elevation of 8 feet or more above the floor or other working surface.

(ii) In locations where electric equipment would be exposed to physical damage, enclosures or guards shall be so arranged and of such strength as to prevent such damage.

(iii) Entrances to rooms and other guarded locations containing exposed live parts shall be marked with conspicuous warning signs forbidding unqualified persons to enter.

(8) Over 600 volts, nominal.

(a) **General.** Conductors and equipment used on circuits exceeding 600 volts, nominal, shall comply with all applicable provisions of subsections (1) through (7) of this section and with the following provisions which supplement or modify those requirements. The provisions of (b), (c) and (d) of this subsection do not apply to equipment on the supply side of the service conductors.

(b) **Enclosure for electrical installations.** Electrical installations in a vault, room, closet or in an area surrounded by a wall, screen, or fence, access to which is controlled by lock and key or other approved means, are considered to be accessible to qualified persons only. A wall, screen, or fence less than 8 feet in height is not considered to prevent access unless it has other features that provide a degree of isolation equivalent to an 8 foot fence. The entrances to all buildings, rooms, or enclosures containing exposed live parts or exposed conductors operating at over 600 volts, nominal, shall be kept locked or shall be under the observation of a qualified person at all times.

(i) **Installations accessible to qualified persons only.** Electrical installations having exposed live parts shall be accessible to qualified persons only and shall comply with the applicable provisions of (c) of this subsection.

(ii) **Installations accessible to unqualified persons.** Electrical installations that are open to unqualified persons shall be made with metal-enclosed equipment or shall be enclosed in a vault or in an area, access to which is controlled by a lock. If metal-enclosed equipment is installed so that the bottom of the enclosure is less than 8 feet above the floor, the door or cover shall be kept locked. Metal-enclosed switchgear, unit substations, transformers, pull boxes, connection boxes, and other similar associated equipment shall be marked with appropriate caution signs. If equipment is exposed to physical damage from vehicular traffic, suitable guards shall be provided to prevent such damage. Ventilating or similar openings in metal-enclosed equipment shall be designed so that foreign objects inserted through these openings will be deflected from energized parts.

(c) **Workspace about equipment.** Sufficient space shall be provided and maintained about electric equipment to permit ready and safe operation and maintenance of such equipment. Where energized parts are exposed, the minimum clear workspace may not be less than 6 feet 6 inches high (measured vertically from the floor or platform), or less than 3 feet wide (measured parallel to the equipment). The depth shall be as required in Table S-2. The workspace shall be adequate to permit at least a 90-degree opening of doors or hinged panels.

(i) **Working space.** The minimum clear working space in front of electric equipment such as switchboards, control panels, switches, circuit breakers, motor controllers, relays, and similar equipment may not be less than specified in Table S-2 unless otherwise specified in this part. Distances shall be measured from the live parts if they are exposed, or from the enclosure front or opening if the live parts are enclosed. However, working space is not required in back of equipment such as deadfront switchboards or control assemblies where there are no renewable or adjustable parts (such as fuses or switches) on the back and where all connections are accessible from locations other than the back. Where rear access is required to work on deenergized parts on the back of enclosed equipment, a minimum working space of 30 inches horizontally shall be provided.

TABLE S-2—Minimum Depth of Clear Working Space in Front of Electric Equipment

Nominal voltage to ground	Conditions ² (ft)		
	(a)	(b)	(c)
601 to 2,500	3	4	5
2,501 to 9,000	4	5	6
9,001 to 25,000	5	6	9
25,001 to 75kV ¹	6	8	10
Above 75kV ¹	8	10	12

¹ Minimum depth of clear working space in front of electric equipment with a nominal voltage to ground above 25,000 volts may be the same as for 25,000 volts under conditions (a), (b) and (c) for installations built prior to April 16, 1981. (2) Conditions (a), (b) and (c) are as follows: (a) Exposed live parts on one side and no live or grounded parts on the other side of the working space, or exposed live parts on both sides effectively guarded by suitable wood or other insulating materials. Insulated wire or insulated busbars operating at not over 300 volts are not considered live parts. (b) Exposed live parts on one side and grounded parts on the other side. Concrete, brick, or tile walls will be considered as grounded surfaces. (c) Exposed live parts on both sides of the workspace not guarded as provided in condition (a) with the operator between.

(ii) **Illumination.** Adequate illumination shall be provided for all working spaces about electric equipment. The lighting outlets shall be so arranged that persons changing lamps or making repairs on the lighting system will not be endangered by live parts or other equipment. The points of control shall be so located that persons are not likely to come in contact with any live part or moving part of the equipment while turning on the lights.

(iii) **Elevation of unguarded live parts.** Unguarded live parts above working space shall be maintained at elevations not less than specified in Table S-3.

TABLE S-3—Elevation of Unguarded Energized Parts Above Working Space

Nominal voltage between phases	Minimum elevation
601 to 7,500	*8 feet 6 inches.
7,501 to 35,000	9 feet.
Over 35kV	9 feet+ 0.37 inches per kV above 35kV.

Note: Minimum elevation may be 8 feet 0 inches for installations built prior to April 16, 1981, if the nominal voltage between phases is in the range of 601-6600 volts.

(d) **Entrance and access to workspace.** (See WAC 296-24-95603 (2)(c).)

(i) At least one entrance not less than 24 inches wide and 6 feet 6 inches high shall be provided to give access to the working space about electric equipment. On switchboard and control panels exceeding 48 inches in width, there shall be

one entrance at each end of such board where practicable. Where bare energized parts at any voltage or insulated energized parts above 600 volts are located adjacent to such entrance, they shall be suitably guarded.

(ii) Permanent ladders or stairways shall be provided to give safe access to the working space around electric equipment installed on platforms, balconies, mezzanine floors, or in attic or roof rooms or spaces.

[Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-24-95605, filed 7/20/94, effective 9/20/94; 87-24-051 (Order 87-24), § 296-24-95605, filed 11/30/87. Statutory Authority: RCW 49.17.040 and 49.17.050. 82-08-026 (Order 82-10), § 296-24-95605, filed 3/30/82.]

WAC 296-24-95607 Wiring design and protection.

(1) Use and identification of grounded and grounding conductors.

(a) **Identification of conductors.** A conductor used as a grounded conductor shall be identifiable and distinguishable from all other conductors. A conductor used as an equipment grounding conductor shall be identifiable and distinguishable from all other conductors.

(b) **Polarity of connections.** No grounded conductor may be attached to any terminal or lead so as to reverse designated polarity.

(c) **Use of grounding terminals and devices.** A grounding terminal or grounding-type device on a receptacle, cord connector, or attachment plug may not be used for purposes other than grounding.

(2) **Outlet devices.** Outlet devices shall have an ampere rating not less than the load to be served.

(3) **Outside conductors, 600 volts, nominal, or less.** Subdivisions (a), (b), (c) and (d) of this subsection apply to branch circuit, feeder, and service conductors rated 600 volts, nominal, or less and run outdoors as open conductors. Subdivision (e) of this subsection applies to lamps installed under such conductors.

(a) **Conductors on poles.** Conductors supported on poles shall provide a horizontal climbing space not less than the following:

(i) Power conductors below communication conductors—30 inches.

(ii) Power conductors alone or above communication conductors: 300 volts or less—24 inches; more than 300 volts—30 inches.

(iii) Communication conductors below power conductors with power conductors 300 volts or less—24 inches; more than 300 volts—30 inches.

(b) **Clearance from ground.** Open conductors shall conform to the following minimum clearances:

(i) 10 feet—above finished grade, sidewalks, or from any platform or projection from which they might be reached.

(ii) 12 feet—over areas subject to vehicular traffic other than truck traffic.

(iii) 15 feet—over areas other than those specified in item (b)(iv) of this subsection that are subject to truck traffic.

(iv) 18 feet—over public streets, alleys, roads, and driveways.

(c) **Clearance from building openings.** Conductors shall have a clearance of at least 3 feet from windows, doors, porches, fire escapes, or similar locations. Conductors run above the top level of a window are considered to be out of

reach from that window and, therefore, do not have to be 3 feet away.

(d) **Clearance over roofs.** Conductors shall have a clearance of not less than 8 feet from the highest point of roofs over which they pass, except that:

(i) Where the voltage between conductors is 300 volts or less and the roof has a slope of not less than 4 inches in 12, the clearance from the roofs shall be at least 3 feet; or

(ii) Where the voltage between conductors is 300 volts or less and the conductors do not pass over more than 4 feet of the overhang portion of the roof and they are terminated at a through-the-roof raceway or approved support, the clearance from the roofs shall be at least 18 inches.

(e) **Location of outdoor lamps.** Lamps for outdoor lighting shall be located below all live conductors, transformers, or other electric equipment, unless such equipment is controlled by a disconnecting means that can be locked in the open position or unless adequate clearances or other safeguards are provided for relamping operations.

(4) Services.

(a) Disconnecting means.

(i) **General.** Means shall be provided to disconnect all conductors in a building or other structure from the service-entrance conductors. The disconnecting means shall plainly indicate whether it is in the open or closed position and shall be installed at a readily accessible location nearest the point of entrance of the service-entrance conductors.

(ii) **Simultaneous opening of poles.** Each service disconnecting means shall simultaneously disconnect all ungrounded conductors.

(b) **Services over 600 volts, nominal.** The following additional requirements apply to services over 600 volts, nominal.

(i) **Guarding.** Service-entrance conductors installed as open wires shall be guarded to make them accessible only to qualified persons.

(ii) **Warning signs.** Signs warning of high voltage shall be posted where other than qualified employees might come in contact with live parts.

(5) Overcurrent protection.

Over 600 volts, nominal. Feeders and branch circuits over 600 volts, nominal, shall have short-circuit protection.

(6) **Grounding.** Subdivisions (a) through (g) of this subsection contain grounding requirements for systems, circuits, and equipment.

(a) **Systems to be grounded.** The following systems which supply premises wiring shall be grounded:

(i) All 3-wire DC systems shall have their neutral conductor grounded.

(ii) Two-wire DC systems operating at over 50 volts through 300 volts between conductors shall be grounded unless:

(A) They supply only industrial equipment in limited areas and are equipped with a ground detector; or

(B) They are rectifier-derived from an AC system complying with items (a)(iii), (a)(iv), and (a)(v) of this subsection; or

(C) They are fire-protective signaling circuits having a maximum current of 0.030 amperes.

(iii) AC circuits of less than 50 volts shall be grounded if they are installed as overhead conductors outside of buildings

or if they are supplied by transformers and the transformer primary supply system is ungrounded or exceeds 150 volts to ground.

(iv) AC systems of 50 volts to 1000 volts shall be grounded under any of the following conditions, unless exempted by item (a)(v) of this subsection:

(A) If the system can be so grounded that the maximum voltage to ground on the ungrounded conductors does not exceed 150 volts;

(B) If the system is nominally rated 480Y/277 volt, 3-phase, 4-wire in which the neutral is used as a circuit conductor;

(C) If the system is nominally rated 240/120 volt, 3-phase, 4-wire in which the midpoint of one phase is used as a circuit conductor; or

(D) If a service conductor is uninsulated.

(v) AC systems of 50 volts to 1000 volts are not required to be grounded under any of the following conditions:

(A) If the system is used exclusively to supply industrial electric furnaces for melting, refining, tempering, and the like.

(B) If the system is separately derived and is used exclusively for rectifiers supplying only adjustable speed industrial drives.

(C) If the system is separately derived and is supplied by a transformer that has a primary voltage rating less than 1000 volts, provided all of the following conditions are met:

(I) The system is used exclusively for control circuits;

(II) The conditions of maintenance and supervision assure that only qualified persons will service the installation;

(III) Continuity of control power is required; and

(IV) Ground detectors are installed on the control system.

(D) If the system is an isolated power system that supplies circuits in health care facilities.

(b) **Conductors to be grounded.** For AC premises wiring systems the identified conductor shall be grounded.

(c) **Grounding connections.**

(i) For a grounded system, a grounding electrode conductor shall be used to connect both the equipment grounding conductor and the grounded circuit conductor to the grounding electrode. Both the equipment grounding conductor and the grounding electrode conductor shall be connected to the grounded circuit conductor on the supply side of the service disconnecting means, or on the supply side of the system disconnecting means or overcurrent devices if the system is separately derived.

(ii) For an ungrounded service-supplied system, the equipment grounding conductor shall be connected to the grounding electrode conductor at the service equipment. For an ungrounded separately derived system, the equipment grounding conductor shall be connected to the grounding electrode conductor at, or ahead of, the system disconnecting means or overcurrent devices.

(iii) On extensions of existing branch circuits which do not have an equipment grounding conductor, grounding-type receptacles may be grounded to a grounded cold water pipe near the equipment.

(d) **Grounding path.** The path to ground from circuits, equipment, and enclosures shall be permanent and continuous.

(e) **Supports, enclosures, and equipment to be grounded.**

(i) **Supports and enclosures for conductors.** Metal cable trays, metal raceways, and metal enclosures for conductors shall be grounded, except that:

(A) Metal enclosures such as sleeves that are used to protect cable assemblies from physical damage need not be grounded; or

(B) Metal enclosures for conductors added to existing installations of open wire, knob-and-tube wiring, and nonmetallic-sheathed cable need not be grounded if all of the following conditions are met:

(I) Runs are less than 25 feet;

(II) Enclosures are free from probable contact with ground, grounded metal, metal laths, or other conductive materials; and

(III) Enclosures are guarded against employee contact.

(ii) **Service equipment enclosures.** Metal enclosures for service equipment shall be grounded.

(iii) **Frames of ranges and clothes dryers.** Frames of electric ranges, wall-mounted ovens, counter-mounted cooking units, clothes dryers, and metal outlet or junction boxes which are part of the circuit for these appliances shall be grounded.

(iv) **Fixed equipment.** Exposed noncurrent-carrying metal parts of fixed equipment which may become energized shall be grounded under any of the following conditions:

(A) If within 8 feet vertically or 5 feet horizontally of ground or grounded metal objects and subject to employee contact.

(B) If located in a wet or damp location and not isolated.

(C) If in electrical contact with metal.

(D) If in a hazardous (classified) location.

(E) If supplied by a metal-clad, metal-sheathed, or grounded metal raceway wiring method.

(F) If equipment operates with any terminal at over 150 volts to the ground; however, the following need not be grounded:

(I) Enclosures for switches or circuit breakers used for other than service equipment and accessible to qualified persons only;

(II) Metal frames of electrically heated appliances which are permanently and effectively insulated from ground; and

(III) The cases of distribution apparatus such as transformers and capacitors mounted on wooden poles at a height exceeding 8 feet above ground or grade level.

(v) **Equipment connected by cord and plug.** Under any of the conditions described in subitems (e)(v)(A) through (e)(v)(C) of this subsection, exposed noncurrent-carrying metal parts of cord-connected and plug-connected equipment which may become energized shall be grounded.

(A) If in hazardous (classified) locations (see WAC 296-24-95613).

(B) If operated at over 150 volts to ground, except for guarded motors and metal frames of electrically heated appliances if the appliance frames are permanently and effectively insulated from ground.

(C) If the equipment is of the following types:

(I) Refrigerators, freezers, and air conditioners;

(II) Clothes-washing, clothes-drying and dishwashing machines, sump pumps, and electrical aquarium equipment;

(III) Hand-held motor-operated tools;

(IV) Motor-operated appliances of the following types: Hedge clippers, lawn mowers, snow blowers, and wet scrubbers;

(V) Cord-connected and plug-connected appliances used in damp or wet locations or by employees standing on the ground or on metal floors or working inside of metal tanks or boilers;

(VI) Portable and mobile X-ray and associated equipment;

(VII) Tools likely to be used in wet and conductive locations; and

(VIII) Portable hand lamps. Tools likely to be used in wet and conductive locations need not be grounded if supplied through an isolating transformer with an ungrounded secondary of not over 50 volts. Listed or labeled portable tools and appliances protected by an approved system of double insulation, or its equivalent, need not be grounded. If such a system is employed, the equipment shall be distinctively marked to indicate that the tool or appliance utilizes an approved system of double insulation.

(vi) **Nonelectrical equipment.** The metal parts of the following nonelectrical equipment shall be grounded: Frames and tracks of electrically operated cranes; frames of nonelectrically driven elevator cars to which electric conductors are attached; hand operated metal shifting ropes or cables of electric elevators, and metal partitions, grill work, and similar metal enclosures around equipment of over 750 volts between conductors.

(f) Methods of grounding fixed equipment.

(i) Noncurrent-carrying metal parts of fixed equipment, if required to be grounded by this section, shall be grounded by an equipment grounding conductor which is contained within the same raceway, cable, or cord, or runs with or encloses the circuit conductors. For DC circuits only, the equipment grounding conductor may be run separately from the circuit conductors.

(ii) Electric equipment is considered to be effectively grounded if it is secured to, and in electrical contact with, a metal rack or structure that is provided for its support and the metal rack or structure is grounded by the method specified for the noncurrent-carrying metal parts of fixed equipment in item (f)(i) of this subsection. For installations made before May 30, 1982, only, electric equipment is also considered to be effectively grounded if it is secured to, and in metallic contact with, the grounded structural metal frame of a building. Metal car frames supported by metal hoisting cables attached to or running over metal sheaves or drums of grounded elevator machines are also considered to be effectively grounded.

(g) Grounding of systems and circuits of 1000 volts and over (high voltage).

(i) **General.** If high voltage systems are grounded, they shall comply with all applicable provisions of subdivisions (a) through (f) of this subsection as supplemented and modified by the subdivision (g) of this subsection.

(ii) **Grounding of systems supplying portable or mobile equipment.** (See WAC 296-24-95603 (2)(c) and 296-800-280.) Systems supplying portable or mobile high voltage equipment, other than substations installed on a temporary basis, shall comply with the following:

(A) Portable and mobile high voltage equipment shall be supplied from a system having its neutral grounded through an impedance. If a delta-connected high voltage system is used to supply the equipment, a system neutral shall be derived.

(B) Exposed noncurrent-carrying metal parts of portable and mobile equipment shall be connected by an equipment grounding conductor to the point at which the system neutral impedance is grounded.

(C) Ground-fault detection and relaying shall be provided to automatically deenergize any high voltage system component which has developed a ground fault. The continuity of the equipment grounding conductor shall be continuously monitored so as to deenergize automatically the high voltage feeder to the portable equipment upon loss of continuity of the equipment grounding conductor.

(D) The grounding electrode to which the portable or mobile equipment system neutral impedance is connected shall be isolated from and separated in the ground by at least 20 feet from any other system or equipment grounding electrode, and there shall be no direct connection between the grounding electrodes, such as buried pipe, fence, etc.

(iii) **Grounding of equipment.** All noncurrent-carrying metal parts of portable equipment and fixed equipment including their associated fences, housings, enclosures, and supporting structures shall be grounded. However, equipment which is guarded by location and isolated from ground need not be grounded. Additionally, pole-mounted distribution apparatus at a height exceeding 8 feet above ground or grade level need not be grounded.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 01-11-038, § 296-24-95607, filed 5/9/01, effective 9/1/01. Statutory Authority: Chapter 49.17 RCW. 91-24-017 (Order 91-07), § 296-24-95607, filed 11/22/91, effective 12/24/91; 87-24-051 (Order 87-24), § 296-24-95607, filed 11/30/87. Statutory Authority: RCW 49.17.040 and 49.17.050. 82-08-026 (Order 82-10), § 296-24-95607, filed 3/30/82.]

WAC 296-24-95609 Wiring methods, components, and equipment for general use. (1) Wiring methods. The provisions of this section do not apply to the conductors that are an integral part of factory-assembled equipment.

(a) General requirements.

(i) **Electrical continuity of metal raceways and enclosures.** Metal raceways, cable armor, and other metal enclosures for conductors shall be metallically joined together into a continuous electric conductor and shall be so connected to all boxes, fittings, and cabinets as to provide effective electrical continuity.

(ii) **Wiring in ducts.** No wiring systems of any type shall be installed in ducts used to transport dust, loose stock or flammable vapors. No wiring system of any type may be installed in any duct used for vapor removal or for ventilation of commercial-type cooking equipment, or in any shaft containing only such ducts.

(b) **Temporary wiring.** Temporary electrical power and lighting wiring methods may be of a class less than would be required for a permanent installation. Except as specifically modified in this section, all other requirements of this part for permanent wiring shall apply to temporary wiring installations.

(i) **Uses permitted, 600 volts, nominal or less.** Temporary electrical power and lighting installations 600 volts, nominal, or less may be used only:

(A) During and for remodeling, maintenance, repair, or demolition of buildings, structures, or equipment, and similar activities;

(B) For experimental or development work; and

(C) For a period not to exceed 90 days for Christmas decorative lighting, carnivals, and similar purposes.

(ii) **Uses permitted, over 600 volts, nominal.** Temporary wiring over 600 volts, nominal, may be used only during periods of tests, experiments, or emergencies.

(iii) **General requirements for temporary wiring.**

(A) Feeders shall originate in an approved distribution center. The conductors shall be run as multiconductor cord or cable assemblies, or, where not subject to physical damage, they may be run as open conductors on insulators not more than 10 feet apart.

(B) Branch circuits shall originate in an approved power outlet or panelboard. Conductors shall be multiconductor cord or cable assemblies or open conductors. If run as open conductors they shall be fastened at ceiling height every 10 feet. No branch-circuit conductor may be laid on the floor. Each branch circuit that supplies receptacles or fixed equipment shall contain a separate equipment grounding conductor if run as open conductors.

(C) Receptacles shall be of the grounding type. Unless installed in a complete metallic raceway, each branch circuit shall contain a separate equipment grounding conductor and all receptacles shall be electrically connected to the grounding conductor.

(D) No bare conductors nor earth returns may be used for the wiring of any temporary circuit.

(E) Suitable disconnecting switches or plug connectors shall be installed to permit the disconnection of all ungrounded conductors of each temporary circuit.

(F) Lamps for general illumination shall be protected from accidental contact or breakage. Protection shall be provided by elevation of at least 7 feet from normal working surface or by a suitable fixture or lampholder with a guard.

(G) Flexible cords and cables shall be protected from accidental damage. Sharp corners and projections shall be avoided. Where passing through doorways or other pinch points, flexible cords and cables shall be provided with protection to avoid damage.

(c) **Cable trays.**

(i) **Uses permitted.**

(A) Only the following may be installed in cable tray systems:

(I) Mineral-insulated metal-sheathed cable (Type MI);

(II) Armored cable (Type AC);

(III) Metal-clad cable (Type MC);

(IV) Power-limited tray cable (Type PLTC);

(V) Nonmetallic-sheathed cable (Type NM or NMC);

(VI) Shielded nonmetallic-sheathed cable (Type SNM);

(VII) Multiconductor service-entrance cable (Type SE or USE);

(VIII) Multiconductor underground feeder and branch-circuit cable (Type UF);

(IX) Power and control tray cable (Type TC);

(X) Other factory-assembled, multiconductor control, signal, or power cables which are specifically approved for installation in cable trays; or

(XI) Any approved conduit or raceway with its contained conductors.

(B) In industrial establishments only, where conditions of maintenance and supervision assure that only qualified persons will service the installed cable tray system, the following cables may also be installed in ladder, ventilated trough, or 4 inch ventilated channel-type cable trays:

(I) Single conductor cables which are 250 MCM or larger and are Types RHH, RHW, MV, USE, or THW, and other 250 MCM or larger single conductor cables if specifically approved for installation in cable trays. Where exposed to direct rays of the sun, cables shall be sunlight-resistant.

(II) Type MV cables, where exposed to direct rays of the sun, shall be sunlight-resistant.

(C) Cable trays in hazardous (classified) locations shall contain only the cable types permitted in such locations.

(ii) **Uses not permitted.** Cable tray systems may not be used in hoistways or where subjected to severe physical damage.

(d) **Open wiring on insulators.**

(i) **Uses permitted.** Open wiring on insulators is only permitted on systems of 600 volts, nominal, or less for industrial or agricultural establishments and for services.

(ii) **Conductor supports.** Conductors shall be rigidly supported on noncombustible, nonabsorbent insulating materials and may not contact any other objects.

(iii) **Flexible nonmetallic tubing.** In dry locations where not exposed to severe physical damage, conductors may be separately enclosed in flexible nonmetallic tubing. The tubing shall be in continuous lengths not exceeding 15 feet and secured to the surface by straps at intervals not exceeding 4 feet 6 inches.

(iv) **Through walls, floors, wood cross members, etc.** Open conductors shall be separated from contact with walls, floors, and wood cross members, or partitions through which they pass by tubes or bushings of noncombustible, nonabsorbent insulating material. If the bushing is shorter than the hole, a waterproof sleeve of nonconductive material shall be inserted in the hole and an insulating bushing slipped into the sleeve at each end in such a manner as to keep the conductors absolutely out of contact with the sleeve. Each conductor shall be carried through a separate tube or sleeve.

(v) **Protection from physical damage.** Conductors within 7 feet from the floor are considered exposed to physical damage. Where open conductors cross ceiling joints and wall studs and are exposed to physical damage, they shall be protected.

(2) **Cabinets, boxes, and fittings.**

(a) **Conductors entering boxes, cabinets, or fittings.**

Conductors entering boxes, cabinets, or fittings shall be protected from abrasion, and openings through which conductors enter shall be effectively closed. Unused openings in cabinets, boxes, and fittings shall also be effectively closed.

(b) **Covers and canopies.** All pull boxes, junction boxes, and fittings shall be provided with covers approved for the purpose. If metal covers are used they shall be grounded. In completed installations each outlet box shall have a cover, faceplate, or fixture canopy. Covers of outlet boxes having

holes through which flexible cord pendants pass shall be provided with bushings designed for the purpose or shall have smooth, well-rounded surfaces on which the cords may bear.

(c) **Pull and junction boxes for systems over 600 volts, nominal.** In addition to other requirements in this section for pull and junction boxes, the following shall apply to these boxes for systems over 600 volts, nominal:

(i) Boxes shall provide a complete enclosure for the contained conductors or cables.

(ii) Boxes shall be closed by suitable covers securely fastened in place. Underground box covers that weight over 100 pounds meet this requirement. Covers for boxes shall be permanently marked "HIGH VOLTAGE." The marking shall be on the outside of the box cover and shall be readily visible and legible.

(3) **Switches.**

(a) **Knife switches.** Single-throw knife switches shall be so connected that the blades are dead when the switch is in the open position. Single-throw knife switches shall be so placed that gravity will not tend to close them. Single-throw knife switches approved for use in the inverted position shall be provided with a locking device that will ensure that the blades remain in the open position when so set. Double-throw knife switches may be mounted so that the throw will be either vertical or horizontal. However, if the throw is vertical a locking device shall be provided to ensure that the blades remain in the open position when so set.

(b) **Faceplates for flush-mounted snap switches.** Flush snap switches that are mounted in ungrounded metal boxes and located within reach of conducting floors or other conducting surfaces shall be provided with faceplates of nonconducting, noncombustible material.

(4) **Switchboards and panelboards.** Switchboards that have any exposed live parts shall be located in permanently dry locations and accessible only to qualified persons. Panelboards shall be mounted in cabinets, cutout boxes, or enclosures approved for the purpose and shall be dead front. However, panelboards other than the dead front externally-operable type are permitted where accessible only to qualified persons. Exposed blades of knife switches shall be dead when open.

(5) **Enclosures for damp or wet locations.**

(a) Cabinets, cutout boxes, fittings, boxes, and panelboard enclosures in damp or wet locations shall be installed so as to prevent moisture or water from entering and accumulating within the enclosures. In wet locations the enclosures shall be weatherproof.

(b) Switches, circuit breakers, and switchboards installed in wet locations shall be enclosed in weatherproof enclosures.

(6) **Conductors for general wiring.** All conductors used for general wiring shall be insulated unless otherwise permitted in this section. The conductor insulation shall be of a type that is approved for the voltage, operating temperature, and location of use. Insulated conductors shall be distinguishable by appropriate color or other suitable means as being grounded conductors, ungrounded conductors, or equipment grounding conductors.

(7) **Flexible cords and cables.**

(a) **Use of flexible cords and cables.**

(i) Flexible cords and cables shall be approved and suitable for conditions of use and location. Flexible cords and cables shall be used only for:

(A) Pendants;

(B) Wiring of fixtures;

(C) Connection of portable lamps or appliances;

(D) Elevator cables;

(E) Wiring of cranes and hoists;

(F) Connection of stationary equipment to facilitate their frequent interchange;

(G) Prevention of the transmission of noise or vibration;

(H) Appliances where the fastening means and mechanical connections are designed to permit removal for maintenance and repair; or

(I) Data processing cables approved as a part of the data processing system.

(ii) If used as permitted in subitem (a)(i)(C), (a)(i)(F) or (a)(i)(H) of this subsection, the flexible cord shall be equipped with an attachment plug and shall be energized from an approved receptacle outlet.

(iii) Unless specifically permitted in item (a)(i) of this subsection, flexible cords and cables may not be used:

(A) As a substitute for the fixed wiring of a structure;

(B) Where run through holes in walls, ceilings, or floors;

(C) Where run through doorways, windows, or similar openings;

(D) Where attached to building surfaces; or

(E) Where concealed behind building walls, ceilings, or floors.

(iv) Flexible cords used in show windows and showcases shall be Type S, SO, SJ, SJO, ST, STO, SJT, SJTO, or AFS except for the wiring of chain-supported lighting fixtures and supply cords for portable lamps and other merchandise being displayed or exhibited.

(b) **Identification, splices, and terminations.**

(i) A conductor of a flexible cord or cable that is used as a grounded conductor or an equipment grounding conductor shall be distinguishable from other conductors. Types SJ, SJO, SJT, SJTO, S, SO, ST, and STO shall be durably marked on the surface with the type designation, size, and number of conductors.

(ii) Flexible cords shall be used only in continuous lengths without splice or tap. Hard service flexible cords No. 12 or larger may be repaired if spliced so that the splice retains the insulation, outer sheath properties, and usage characteristics of the cord being spliced.

(iii) Flexible cords shall be connected to devices and fittings so that strain relief is provided which will prevent pull from being directly transmitted to joints or terminal screws.

(8) **Portable cables over 600 volts, nominal.** Multiconductor portable cable for use in supplying power to portable or mobile equipment at over 600 volts, nominal, shall consist of No. 8 or larger conductors employing flexible stranding. Cables operated at over 2,000 volts shall be shielded for the purpose of confining the voltage stresses to the insulation. Grounding conductors shall be provided. Connectors for these cables shall be of a locking type with provisions to prevent their opening or closing while energized. Strain relief shall be provided at connections and terminations. Portable

cables may not be operated with splices unless the splices are of the permanent molded, vulcanized, or other approved type. Termination enclosures shall be suitably marked with a high voltage hazard warning, and terminations shall be accessible only to authorized and qualified personnel.

(9) **Fixture wires.**

(a) **General.** Fixture wires shall be approved for the voltage, temperature, and location of use. A fixture wire which is used as a grounded conductor shall be identified.

(b) **Uses permitted.** Fixture wires may be used:

(i) For installation in lighting fixtures and in similar equipment where enclosed or protected and not subject to bending or twisting in use; or

(ii) For connecting lighting fixtures to the branch-circuit conductors supplying the fixtures.

(c) **Uses not permitted.** Fixture wires may not be used as branch-circuit conductors except as permitted for Class 1 power limited circuits.

(10) **Equipment for general use.**

(a) **Lighting fixtures, lampholders, lamps, and receptacles.**

(i) Fixtures, lampholders, lamps, rosettes, and receptacles may have no live parts normally exposed to employee contact. However, rosettes and cleat-type lampholders and receptacles located at least 8 feet above the floor may have exposed parts.

(ii) Handlamps of the portable type supplied through flexible cords shall be equipped with a handle of molded composition or other material approved for the purpose, and a substantial guard shall be attached to the lampholder or the handle.

(iii) Lampholders of the screw-shell type shall be installed for use as lampholders only. Lampholders installed in wet or damp locations shall be of the weatherproof type.

(iv) Fixtures installed in wet or damp locations shall be approved for the purpose and shall be so constructed or installed that water cannot enter or accumulate in wireways, lampholders, or other electrical parts.

(b) **Receptacles, cord connectors, and attachment plugs (caps).**

(i) Receptacles, cord connectors, and attachment plugs shall be constructed so that no receptacle or cord connector will accept an attachment plug with a different voltage or current rating than that for which the device is intended. However, a 20-ampere T-slot receptacle or cord connector may accept a 15-ampere attachment plug of the same voltage rating.

(ii) A receptacle installed in a wet or damp location shall be suitable for the location.

(c) **Appliances.**

(i) Appliances, other than those in which the current-carrying parts at high temperatures are necessarily exposed, may have no live parts normally exposed to employee contact.

(ii) A means shall be provided to disconnect each appliance.

(iii) Each appliance shall be marked with its rating in volts and amperes or volts and watts.

(d) **Motors.** This subdivision applies to motors, motor circuits, and controllers.

(i) **In sight from.** If specified that one piece of equipment shall be "in sight from" another piece of equipment, one shall be visible and not more than 50 feet from the other.

(ii) **Disconnecting means.**

(A) A disconnecting means shall be located in sight from the controller location. However, a single disconnecting means may be located adjacent to a group of coordinated controllers mounted adjacent to each other or a multimotor continuous process machine. The controller disconnecting means for motor branch circuits over 600 volts, nominal, may be out of sight of the controller, if the controller is marked with a warning label giving the location and identification of the disconnecting means which is to be locked in the open position.

(B) The disconnecting means shall disconnect the motor and the controller from all ungrounded supply conductors and shall be so designed that no pole can be operated independently.

(C) If a motor and the driven machinery are not in sight from the controller location, the installation shall comply with one of the following conditions:

(I) The controller disconnecting means shall be capable of being locked in the open position.

(II) A manually operable switch that will disconnect the motor from its source of supply shall be placed in sight from the motor location.

(D) The disconnecting means shall plainly indicate whether it is in the open (off) or closed (on) position.

(E) The disconnecting means shall be readily accessible. If more than one disconnect is provided for the same equipment, only one need be readily accessible.

(F) An individual disconnecting means shall be provided for each motor, but a single disconnecting means may be used for a group of motors under any one of the following conditions:

(I) If a number of motors drive special parts of a single machine or piece of apparatus, such as a metal or woodworking machine, crane, or hoist;

(II) If a group of motors is under the protection of one set of branch-circuit protective devices; or

(III) If a group of motors is in a single room in sight from the location of the disconnecting means.

(iii) **Motor overload, short-circuit, and ground-fault protection.** Motors, motor-control apparatus, and motor branch-circuit conductors shall be protected against overheating due to motor overloads or failure to start, and against short-circuits or ground faults. These provisions shall not require overload protection that will stop a motor where a shutdown is likely to introduce additional or increased hazards, as in the case of fire pumps, or where continued operation of a motor is necessary for a safe shutdown of equipment or process and motor overload sensing devices are connected to a supervised alarm.

(iv) **Protection of live parts—all voltages.**

(A) Stationary motors having commutators, collectors, and brush rigging located inside of motor end brackets and not conductively connected to supply circuits operating at more than 150 volts to ground need not have such parts guarded. Exposed live parts of motors and controllers operating at 50 volts or more between terminals shall be guarded against accidental contact by any of the following:

(I) By installation in a room or enclosure that is accessible only to qualified persons;

(II) By installation on a suitable balcony, gallery, or platform, so elevated and arranged as to exclude unqualified persons; or

(III) By elevation 8 feet or more above the floor.

(B) Where live parts of motors or controllers operating at over 150 volts to ground are guarded against accidental contact only by location, and where adjustment or other attendance may be necessary during the operation of the apparatus, suitable insulating mats or platforms shall be provided so that the attendant cannot readily touch live parts unless standing on the mats or platforms.

(e) Transformers.

(i) The following items cover the installation of all transformers except the following:

(A) Current transformers;

(B) Dry-type transformers installed as a component part of other apparatus;

(C) Transformers which are an integral part of an X-ray, high frequency, or electrostatic-coating apparatus;

(D) Transformers used with Class 2 and Class 3 circuits, sign and outline lighting, electric discharge lighting, and power-limited fire-protective signalling circuits; and

(E) Liquid-filled or dry-type transformers used for research, development, or testing, where effective safeguard arrangements are provided.

(ii) The operating voltage of exposed live parts of transformer installations shall be indicated by warning signs or visible markings on the equipment or structure.

(iii) Dry-type, high fire point liquid-insulated, and askarel-insulated transformers installed indoors and rated over 35kV shall be in a vault.

(iv) If they present a fire hazard to employees, oil-insulated transformers installed indoors shall be in a vault.

(v) Combustible material, combustible buildings and parts of buildings, fire escapes, and door and window openings shall be safeguarded from fires which may originate in oil-insulated transformers attached to or adjacent to a building or combustible material.

(vi) Transformer vaults shall be constructed so as to contain fire and combustible liquids within the vault and to prevent unauthorized access. Locks and latches shall be so arranged that a vault door can be readily opened from the inside.

(vii) Any pipe or duct system foreign to the vault installation may not enter or pass through a transformer vault.

(viii) Materials may not be stored in transformer vaults.

(f) Capacitors.

(i) All capacitors, except surge capacitors or capacitors included as a component part of other apparatus, shall be provided with an automatic means of draining the stored charge after the capacitor is disconnected from its source of supply.

(ii) Capacitors rated over 600 volts, nominal, shall comply with the following additional requirements:

(A) Isolating or disconnecting switches (with no interrupting rating) shall be interlocked with the load interrupting device or shall be provided with prominently displayed caution signs to prevent switching load current.

(B) For series capacitors (see WAC 296-24-95603 (2)(c)), the proper switching shall be assured by use of at least one of the following:

(I) Mechanically sequenced isolating and bypass switches;

(II) Interlocks; or

(III) Switching procedure prominently displayed at the switching location.

(g) **Storage batteries.** Provisions shall be made for sufficient diffusion and ventilation of gases from storage batteries to prevent the accumulation of explosive mixtures.

[Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-24-95609, filed 7/20/94, effective 9/20/94; 87-24-051 (Order 87-24), § 296-24-95609, filed 11/30/87. Statutory Authority: RCW 49.17.040 and 49.17.050. 82-08-026 (Order 82-10), § 296-24-95609, filed 3/30/82.]

WAC 296-24-95611 Specific purpose equipment and installations. (1) Electric signs and outline lighting.

(a) **Disconnecting means.** Signs operated by electronic or electromechanical controllers located outside the sign shall have a disconnecting means located inside the controller enclosure or within sight of the controller location, and it shall be capable of being locked in the open position. Such disconnecting means shall have no pole that can be operated independently, and it shall open all ungrounded conductors that supply the controller and sign. All other signs, except the portable type, and all outline lighting installations shall have an externally operable disconnecting means which can open all ungrounded conductors and is within the sight of the sign or outline lighting it controls.

(b) Doors or covers giving access to uninsulated parts of indoor signs or outline lighting exceeding 600 volts and accessible to other than qualified persons shall either be provided with interlock switches to disconnect the primary circuit or shall be so fastened that the use of other than ordinary tools will be necessary to open them.

(2) **Cranes and hoists.** This subsection applies to the installation of electric equipment and wiring used in connection with cranes, monorail hoists, hoists, and all runways.

(a) Disconnecting means.

(i) A readily accessible disconnecting means shall be provided between the runway contact conductors and the power supply.

(ii) Another disconnecting means, capable of being locked in the open position, shall be provided in the leads from the runway contact conductors or other power supply on any crane or monorail hoist.

(A) If this additional disconnection means is not readily accessible from the crane or monorail hoist operating station means shall be provided at the operating station, to open the power circuit to all motors of the crane or monorail hoist.

(B) The additional disconnect may be omitted if a monorail hoist or hand-propelled crane bridge installation meets all of the following:

(I) The unit is floor controlled;

(II) The unit is within view of the power supply disconnecting means; and

(III) No fixed work platform has been provided for servicing the unit.

(b) **Control.** A limit switch or other device shall be provided to prevent the load block from passing the safe upper limit of travel of any hoisting mechanism.

(c) **Clearance.** The dimension of the working space in the direction of access to live parts which may require examination, adjustment, servicing, or maintenance while alive shall be a minimum of 2 feet 6 inches. Where controls are enclosed in cabinets, the door(s) shall either open at least 90 degrees or be removable.

(3) Elevators, dumbwaiters, escalators, and moving walks.

(a) **Disconnecting means.** Elevators, dumbwaiters, escalators, and moving walks shall have a single means for disconnecting all ungrounded main power supply conductors for each unit.

(b) **Warning signs.** If interconnections between control panels are necessary for operation of the system on a multicar installation that remains energized from a source other than the disconnecting means, a warning sign shall be mounted on or adjacent to the disconnecting means. The sign shall be clearly legible and shall read "Warning—Parts of the control panel are not de-energized by this switch." (See WAC 296-24-95603 (2)(c).)

(c) **Control panels.** If control panels are not located in the same space as the drive machine, they shall be located in cabinets with doors or panels capable of being locked closed.

(4) Electric welders—disconnecting means.

(a) A disconnecting means shall be provided in the supply circuit for each motor-generator arc welder, and for each AC transformer and DC rectifier arc welder which is not equipped with a disconnect mounted as an integral part of the welder.

(b) A switch or circuit breaker shall be provided by which each resistance welder and its control equipment can be isolated from the supply circuit. The ampere rating of this disconnecting means may not be less than the supply conductor ampacity.

(5) **Data processing systems—disconnecting means.** A disconnecting means shall be provided to disconnect the power to all electronic equipment in data processing or computer rooms. This disconnecting means shall be controlled from locations readily accessible to the operator at the principal exit doors. There shall also be a similar disconnecting means to disconnect the air conditioning system serving this area.

(6) **X-ray equipment.** This subsection applies to X-ray equipment for other than medical or dental use.

(a) Disconnecting means.

(i) A disconnecting means shall be provided in the supply circuit. The disconnecting means shall be operable from a location readily accessible from the X-ray control. For equipment connected to a 120-volt branch circuit of 30 amperes or less, a grounding-type attachment plug cap and receptacle of proper rating may serve as a disconnecting means.

(ii) If more than one piece of equipment is operated from the same high-voltage circuit, each piece or each group of equipment as a unit shall be provided with a high-voltage switch or equivalent disconnecting means. This disconnecting means shall be constructed, enclosed, or located so as to avoid contact by employees with its live parts.

(b) Control.

(i) **Radiographic and fluoroscopic types.** Radiographic and fluoroscopic-type equipment shall be effectively enclosed or shall have interlocks that de-energize the equipment automatically to prevent ready access to live current-carrying parts.

(ii) **Diffraction and irradiation types.** Diffraction-type and irradiation-type equipment shall be provided with a means to indicate when it is energized unless the equipment or installation is effectively enclosed or is provided with interlocks to prevent access to live current-carrying parts during operation.

(7) Induction and dielectric heating equipment.

(a) **Scope.** Subdivisions (b) and (c) of this subsection cover induction and dielectric heating equipment and accessories for industrial and scientific applications, but not for medical dental applications or for appliances.

(b) Guarding and grounding.

(i) **Enclosures.** The converting apparatus (including the DC line) and high-frequency electric circuits (excluding the output circuits and remote-control circuits) shall be completely contained within enclosures of noncombustible material.

(ii) **Panel controls.** All panel controls shall be of dead-front construction.

(iii) **Access to internal equipment.** Where doors are used for access to voltages from 500 to 1000 volts AC or DC, either door locks or interlocks shall be provided. Where doors are used for access to voltages of over 1000 volts AC or DC, either mechanical lockouts with a disconnecting means to prevent access until voltage is removed from the cubicle, or both door interlocking and mechanical door locks, shall be provided.

(iv) **Warning labels.** "Danger" labels shall be attached on the equipment and shall be plainly visible even when doors are open or panels are removed from compartments containing voltages of over 250 volts AC or DC.

(v) **Work applicator shielding.** Protective cages or adequate shielding shall be used to guard work applicators other than induction heating coils. Induction heating coils shall be protected by insulation and/or refractory materials. Interlock switches shall be used on all hinged access doors, sliding panels, or other such means of access to the applicator. Interlock switches shall be connected in such a manner as to remove all power from the applicator when any one of the access doors or panels is open. Interlocks on access doors or panels are not required if the applicator is an induction heating coil at DC ground potential or operating at less than 150 volts AC.

(vi) **Disconnecting means.** A readily accessible disconnecting means shall be provided by which each unit of heating equipment can be isolated from its supply circuit.

(c) **Remote control.** If remote controls are used for applying power, a selector switch shall be provided and interlocked to provide power from only one control point at a time. Switches operated by foot pressure shall be provided with a shield over the contact button to avoid accidental closing the switch.

(8) Electrolytic cells.

(a) **Scope.** These provisions for electrolytic cells apply to the installation of the electrical components and accessory equipment of electrolytic cells, electrolytic cell lines, and

process power supply for the production of aluminum, cadmium, chlorine, copper, fluorine, hydrogen peroxide, magnesium, sodium, sodium chlorate, and zinc. Cells used as a source of electric energy and for electroplating processes and cells used for production of hydrogen are not covered by these provisions.

(b) Definitions applicable to this subsection.

Cell line: An assembly of electrically interconnected electrolytic cells supplied by a source of direct-current power.

Cell line attachments and auxiliary equipment: Cell line attachments and auxiliary equipment include, but are not limited to: Auxiliary tanks; process piping; duct work; structural supports; exposed cell line conductors; conduits and other raceways; pumps; positioning equipment and cell cutout or bypass electrical devices. Auxiliary equipment also includes tools, welding machines, crucibles, and other portable equipment used for operation and maintenance within the electrolytic cell line working zone. In the cell line working zone, auxiliary equipment includes the exposed conductive surfaces of ungrounded cranes and crane-mounted cell-servicing equipment.

Cell line working zone: The cell line working zone is the space envelope wherein operation or maintenance is normally performed on or in the vicinity of exposed energized surfaces of cell lines or their attachments.

Electrolytic cells: A receptacle or vessel in which electrochemical reactions are caused by applying energy for the purpose of refining or producing usable materials.

(c) Application. Installations covered by subsection (8) of this section shall comply with all applicable provisions of this section except as follows:

(i) Overcurrent protection of electrolytic cell DC process power circuits need not comply with the requirements of WAC 296-24-95607(5).

(ii) Equipment located or used within the cell line working zone or associated with the cell line DC power circuits need not comply with the provisions of WAC 296-24-95607(6).

(iii) Electrolytic cells, cell line conductors, cell line attachments, and the wiring of auxiliary equipment and devices within the cell line working zone need not comply with the provisions of WAC 296-24-95605 and 296-24-95607 (2) and (3).

(d) Disconnecting means.

(i) If more than one DC cell line process power supply serves the same cell line, a disconnecting means shall be provided on the cell line circuit side of each power supply to disconnect it from the cell line circuit.

(ii) Removable links or removable conductors may be used as the disconnecting means.

(e) Portable electric equipment.

(i) The frames and enclosures of portable electric equipment used within the cell line working zone may not be grounded. However, these frames and enclosures may be grounded if the cell line circuit voltage does not exceed 200 volts DC or if the frames are guarded.

(ii) Ungrounded portable electric equipment shall be distinctively marked and may not be interchangeable with grounded portable electric equipment.

(f) Power supply circuits and receptacles for portable electric equipment.

(i) Circuits supplying power to ungrounded receptacles for hand-held, cord- and plug-connected equipment shall be electrically isolated from any distribution system supplying areas other than the cell line working zone and shall be ungrounded. Power for these circuits shall be supplied through isolating transformers.

(ii) Receptacles and their mating plugs for ungrounded equipment may not have provision for a grounding conductor and shall be of a configuration which prevents their use for equipment required to be grounded.

(iii) Receptacles on circuits supplied by an isolating transformer with an ungrounded secondary shall have a distinctive configuration, shall be distinctively marked, and may not be used in any other location in the plant.

(g) Fixed and portable electric equipment.

(i) AC systems supplying fixed and portable electric equipment within the cell line working zone need not be grounded.

(ii) Exposed conductive surfaces, such as electric equipment housings, cabinets, boxes, motors, raceways and the like that are within the cell line working zone need not be grounded.

(iii) Auxiliary electrical devices, such as motors, transducers, sensors, control devices, and alarms, mounted on an electrolytic cell or other energized surface, shall be connected by any of the following means:

(A) Multiconductor hard usage or extra hard usage flexible cord;

(B) Wire or cable in suitable raceways; or

(C) Exposed metal conduit, cable tray, armored cable, or similar metallic systems installed with insulating breaks such that they will not cause a potentially hazardous electrical condition.

(iv) Fixed electric equipment may be bonded to the energized conductive surfaces of the cell line, its attachments, or auxiliaries. If fixed electric equipment is mounted on an energized conductive surface, it shall be bonded to that surface.

(h) Auxiliary nonelectric connections. Auxiliary nonelectric connections, such as air hoses, water hoses, and the like, to an electrolytic cell, its attachments, or auxiliary equipment may not have continuous conductive reinforcing wire, armor, braids, and the like. Hoses shall be of a nonconductive material.

(i) Cranes and hoists.

(i) The conductive surfaces of cranes and hoists that enter the cell line working zone need not be grounded. The portion of an overhead crane or hoist which contacts an energized electrolytic cell or energized attachments shall be insulated from ground.

(ii) Remote crane or hoist controls which may introduce hazardous electrical conditions into the cell line working zone shall employ one or more of the following systems:

(A) Insulated and ungrounded control circuit;

(B) Nonconductive rope operator;

(C) Pendent pushbutton with nonconductive supporting means and having nonconductive surfaces or ungrounded exposed conductive surfaces; or

(D) Radio.

(9) **Electrically driven or controlled irrigation machines.** (See WAC 296-24-95603 (2)(c).)

(a) **Lightning protection.** If an electrically driven or controlled irrigation machine has a stationary point, a driven ground rod shall be connected to the machine at the stationary point for lightning protection.

(b) **Disconnecting means.** The main disconnecting means for a center pivot irrigation machine shall be located at the point of connection of electrical power to the machine and shall be readily accessible and capable of being locked in the open position. A disconnecting means shall be provided for each motor and controller.

(10) **Swimming pools, fountains, and similar installations.**

(a) **Scope.** Subdivisions (b) through (e) of this subsection apply to electric wiring for and equipment in or adjacent to all swimming, wading, therapeutic, and decorative pools and fountains, whether permanently installed or storable, and to metallic auxiliary equipment, such as pumps, filters, and similar equipment. Therapeutic pools in health care facilities are exempt from these provisions.

(b) **Lighting and receptacles.**

(i) **Receptacles.** A single receptacle of the locking and grounding type that provides power for a permanently installed swimming pool recirculating pump motor may be located not less than 5 feet from the inside walls of a pool. All other receptacles on the property shall be located at least 10 feet from the inside walls of a pool. Receptacles which are located within 15 feet of the inside walls of the pool shall be protected by ground-fault circuit interrupters.

Note: In determining these dimensions, the distance to be measured is the shortest path the supply cord of an appliance connected to the receptacle would follow without piercing a floor, wall, or ceiling of a building or other effective permanent barrier.

(ii) **Lighting fixtures and lighting outlets.**

(A) Unless they are 12 feet above the maximum water level, lighting fixtures and lighting outlets may not be installed over a pool or over the area extending 5 feet horizontally from the inside walls of a pool. However, a lighting fixture or lighting outlet which has been installed before April 16, 1981, may be located less than 5 feet measured horizontally from the inside walls of a pool if it is at least 5 feet above the surface of the maximum water level and shall be rigidly attached to the existing structure. It shall also be protected by a ground-fault circuit interrupter installed in the branch circuit supplying the fixture.

(B) Unless installed 5 feet above the maximum water level and rigidly attached to the structure adjacent to or enclosing the pool, lighting fixtures and lighting outlets installed in the area extending between 5 feet and 10 feet horizontally from the inside walls of a pool shall be protected by a ground-fault circuit interrupter.

(c) **Cord-connected and plug-connected equipment.** Flexible cords used with the following equipment may not exceed 3 feet in length and shall have a copper equipment grounding conductor with a grounding-type attachment plug.

(i) Cord-connected and plug-connected lighting fixtures installed within 16 feet of the water surface of permanently installed pools.

(ii) Other cord-connected and plug-connected, fixed or stationary equipment used with permanently installed pools.

(d) **Underwater equipment.**

(i) A ground-fault circuit interrupter shall be installed in the branch circuit supplying underwater fixtures operating at more than 15 volts. Equipment installed underwater shall be approved for the purpose.

(ii) No underwater lighting fixtures may be installed for operation at over 150 volts between conductors.

(e) **Fountains.** All electric equipment operating at more than 15 volts, including power supply cords, used with fountains shall be protected by ground-fault circuit interrupters. (See WAC 296-24-95603 (2)(c).)

(11) Safety procedure and protective equipment required for exposure to movie theater Xenon bulbs. Exposure also includes opening of the lamphouse where the bulb is installed. The following are minimum requirements for theater personnel or others who install, change, or dispose of Xenon bulbs and are exposed to potential explosion hazard:

(a) All bulbs, new, used or subject to future disposal, must be stored in the protective jacket provided until time of use.

(b) Protective equipment shall be furnished at no cost to the employee and the use shall be strictly enforced for any exposed employee. Basic safety equipment required is:

(i) Full protective face shield with crown protector.

(ii) Safety glasses for use under face shield. (To meet required impact resistance test of ANSI Z87.1.)

(iii) Impact resistant, long-sleeved jacket of a length adequate to protect vital organs.

(iv) Impact resistant gloves.

(c) A bulb subject to disposal should be removed with the regular, proper precautions, carefully placed in its protective jacket or cover and deliberately broken by dropping from a sufficient height. An unbroken bulb must never be disposed of as regular garbage or trash.

(d) Bulbs must be handled only at room temperature. If they have been in operation, adequate time (at least 10 minutes) must be allowed for the bulb to cool to room temperature before handling.

[Statutory Authority: Chapter 49.17 RCW. 91-03-044 (Order 90-18), § 296-24-95611, filed 1/10/91, effective 2/12/91; 87-24-051 (Order 87-24), § 296-24-95611, filed 11/30/87. Statutory Authority: RCW 49.17.040 and 49.17.050. 82-08-026 (Order 82-10), § 296-24-95611, filed 3/30/82.]

WAC 296-24-95613 Hazardous (classified) locations.

(1) **Scope.** This section covers the requirements for electric equipment and wiring in locations which are classified depending on the properties of the flammable vapors, liquids or gases, or combustible dusts or fibers which may be present therein and the likelihood that a flammable combustible concentration or quantity is present. Hazardous (classified) locations may be found in occupancies such as, but not limited to, the following: Aircraft hangars, gasoline dispensing and service stations, bulk storage plants for gasoline or other volatile flammable liquids, paint-finishing process plants, health care facilities, agricultural or other facilities where excessive combustible dusts may be present, marinas, boat yards, and petroleum and chemical processing plants. Each room, section or area shall be considered individually in determining

its classification. These hazardous (classified) locations are assigned six designations as follows:

Class I,	Division 1
Class I,	Division 2
Class II,	Division 1
Class II,	Division 2
Class III,	Division 1
Class III,	Division 2

For definitions of these locations see WAC 296-24-95601(1). All applicable requirements in this part shall apply to hazardous (classified) locations, unless modified by provisions of this section.

(2) **Electrical installations.** Equipment, wiring methods, and installations of equipment in hazardous (classified) locations shall be intrinsically safe, or approved for the hazardous (classified) location, or safe for the hazardous (classified) location. Requirements for each of these options are as follows:

(a) **Intrinsically safe.** Equipment and associated wiring approved as intrinsically safe shall be permitted in any hazardous (classified) location for which it is approved.

(b) **Approved for the hazardous (classified) location.**

(i) Equipment shall be approved not only for the class of location but also for the ignitable or combustible properties of the specific gas, vapor, dust, or fiber that will be present.

Note: NFPA 70, the National Electrical Code, lists or defines hazardous gases, vapors, and dusts by "groups" characterized by their ignitable or combustible properties.

(ii) Equipment shall be marked to show the class, group, and operating temperature or temperature range, based on operation in a 40 degrees C ambient, for which it is approved. The temperature marking may not exceed the ignition temperature of the specific gas or vapor to be encountered. However, the following provisions modify this marking requirement for specific equipment:

(A) Equipment of the nonheat-producing type, such as junction boxes, conduit, and fittings, and equipment of the heat-producing type having a maximum temperature not more than 100 degrees C (212 degrees F) need not have a marked operating temperature or temperature range.

(B) Fixed lighting fixtures marked for use in Class I, Division 2 locations only, need not be marked to indicate the group.

(C) Fixed general-purpose equipment in Class I locations, other than lighting fixtures, which is acceptable for use in Class I, Division 2 locations need not be marked with the class, group, division, or operating temperature.

(D) Fixed dust-tight equipment, other than lighting fixtures, which is acceptable for use in Class II, Division 2 and Class III locations need not be marked with the class, group, division, or operating temperature.

(c) **Safe for the hazardous (classified) location.** Equipment which is safe for the location shall be of a type and design which the employer demonstrates will provide protection from the hazards arising from the combustibility and flammability of vapors, liquids, gases, dusts, or fibers.

Note: The National Electrical Code, NFPA 70, contains guidelines for determining the type and design of equipment and installations which will meet this requirement. The guide-

lines of this document address electric wiring, equipment, and systems installed in hazardous (classified) locations and contain specific provisions for the following: Wiring methods, wiring connections; conductor insulation, flexible cords, sealing and drainage, transformers, capacitors, switches, circuit breakers, fuses, motor controllers, receptacles, attachment plugs, meters, relays, instruments, resistors, generators, motors, lighting fixtures, storage battery charging equipment, electric cranes, electric hoists and similar equipment, utilization equipment, signaling systems, alarm systems, remote control systems, local loud speaker and communication systems, ventilation piping, live parts, lighting surge protection, and grounding. Compliance with these guidelines will constitute one means, but not the only means, of compliance with this subsection.

(3) **Conduits.** All conduits shall be threaded and shall be made wrench-tight. Where it is impractical to make a threaded joint tight, a bonding jumper shall be utilized.

(4) **Equipment in Division 2 locations.** Equipment that has been approved for a Division 1 location may be installed in a Division 2 location of the same class and group. General-purpose equipment or equipment in general-purpose enclosures may be installed in Division 2 locations if the equipment does not constitute a source of ignition under normal operating conditions.

(5) **Motors and generators.** Motors and generators shall conform to the following: Class I, Division 1. In Class I, Division 1 locations, motors, generators and other rotating electric machinery shall be: (a) Approved for Class I, Division 1 locations (explosion-proof); or (b) of the totally enclosed type supplied with positive-pressure ventilation from a source of clean air with discharge to a safe area, so arranged to prevent energizing of the machine until ventilation has been established and the enclosure has been purged with at least 10 volumes of air, and also arranged to automatically deenergize the equipment when the air supply fails; or (c) of the totally enclosed inert-gas-filled type supplied with a suitable reliable source of inert gas for pressuring the enclosure, with devices provided to ensure a positive pressure in the enclosure and arranged to automatically deenergize the equipment when the gas supply fails; or (d) of a type designed to be submerged in a liquid which is flammable only when vaporized and mixed with air, or in a gas or vapor at a pressure greater than atmospheric and which is flammable only when mixed with air; and the machine is so arranged to prevent energizing it until it has been purged with the liquid or gas to exclude air, and also arranged to automatically deenergize the equipment when the supply of liquid, or gas or vapor fails or the pressure is reduced to atmospheric. Totally enclosed motors of types (b) and (c) shall have no external surface with an operating temperature in degrees Celsius in excess of eighty percent of the ignition temperature of the gas or vapor involved, as determined by ASTM test procedure (Designation: D-2155-69). Appropriate devices shall be provided to detect any increase in temperature of the motor beyond design limits and automatically deenergize the equipment or provide an adequate alarm. Auxiliary equipment shall be of a type approved for the location in which it is installed.

[Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-24-95613, filed 7/20/94, effective 9/20/94; 87-24-051 (Order 87-24), § 296-24-95613, filed 11/30/87. Statutory Authority: RCW 49.17.040 and 49.17.050. 82-08-026 (Order 82-10), § 296-24-95613, filed 3/30/82.]

WAC 296-24-95615 Special systems. (1) **Systems over 600 volts, nominal.** Subdivisions (a) through (d) of this subsection cover the general requirements for all circuits and equipment operated at over 600 volts.

(a) **Wiring methods for fixed installations.**

(i) Above-ground conductors shall be installed in rigid metal conduit, in intermediate metal conduit, in cable trays, in cablebus, in other suitable raceways, or as open runs of metal-clad cable suitable for the use and purpose. However, open runs of nonmetallic-sheathed cable or of bare conductors or busbars may be installed in locations accessible only to qualified persons. Metallic shielding components, such as tapes, wires, or braids for conductors, shall be grounded. Open runs of insulated wires and cables having a bare lead sheath or a braided outer covering shall be supported in a manner designed to prevent physical damage to the braid or sheath.

(ii) Conductors emerging from the ground shall be enclosed in approved raceways. (See WAC 296-24-95603 (2)(c).)

(b) **Interrupting and isolating devices.**

(i) Circuit breaker installations located indoors shall consist of metal-enclosed units or fire-resistant cell-mounted units. In locations accessible only to qualified personnel, open mounting of circuit breakers is permitted. A means of indicating the open and closed position of circuit breakers shall be provided.

(ii) Fused cutouts installed in buildings or transformer vaults shall be of a type approved for the purpose. They shall be readily accessible for fuse replacement.

(iii) A means shall be provided to completely isolate equipment for inspection and repairs. Isolating means which are not designed to interrupt the load current of the circuit shall be either interlocked with an approved circuit interrupter or provided with a sign warning against opening them under load.

(c) **Mobile and portable equipment.**

(i) **Power cable connections to mobile machines.** A metallic enclosure shall be provided on the mobile machine for enclosing the terminals of the power cable. The enclosure shall include provisions for a solid connection for the ground wire(s) terminal to effectively ground the machine frame. The method of cable termination used shall prevent any strain or pull on the cable from stressing the electrical connections. The enclosure shall have provision for locking so only authorized qualified persons may open it and shall be marked with a sign warning of the presence of energized parts.

(ii) **Guarding live parts.** All energized switching and control parts shall be enclosed in effectively grounded metal cabinets or enclosures. Circuit breakers and protective equipment shall have the operating means projecting through the metal cabinet or enclosure so these units can be reset without locked doors being opened. Enclosures and metal cabinets shall be locked so that only authorized qualified persons have access and shall be marked with a sign warning of the presence of energized parts. Collector ring assemblies on revolving-type machines (shovels, draglines, etc.) shall be guarded.

(d) **Tunnel installations.**

(i) **Application.** The provisions of this subsection apply to installation and use of high-voltage power distribution and utilization equipment which is portable and/or mobile, such

as substations, trailers, cars, mobile shovels, draglines, hoists, drills, dredges, compressors, pumps, conveyors, and underground excavators.

(ii) **Conductors.** Conductors in tunnels shall be installed in one or more of the following:

- (A) Metal conduit or other metal raceway,
- (B) Type MC cable, or
- (C) Other approved multiconductor cable.

Conductors shall also be so located or guarded as to protect them from physical damage. Multiconductor portable cable may supply mobile equipment. An equipment grounding conductor shall be run with circuit conductors inside the metal raceway or inside the multiconductor cable jacket. The equipment grounding conductor may be insulated or bare.

(iii) **Guarding live parts.** Bare terminals of transformers, switches, motor controllers, and other equipment shall be enclosed to prevent accidental contact with energized parts. Enclosures for use in tunnels shall be drip-proof, weather-proof, or submersible as required by the environmental conditions.

(iv) **Disconnecting means.** A disconnecting means that simultaneously opens all ungrounded conductors shall be installed at each transformer or motor location.

(v) **Grounding and bonding.** All nonenergized metal parts of electric equipment and metal raceways and cable sheaths shall be effectively grounded and bonded to all metal pipes and rails at the portal and at intervals not exceeding 1000 feet throughout the tunnel.

(2) **Emergency power systems.**

(a) **Scope.** The provisions for emergency systems apply to circuits, systems, and equipment intended to supply power for illumination and special loads, in the event of failure of the normal supply.

(b) **Wiring methods.** Emergency circuit wiring shall be kept entirely independent of all other wiring and equipment and may not enter the same raceway, cable, box, or cabinet as other wiring except either where common circuit elements suitable for the purpose are required, or for transferring power from the normal to the emergency source.

(c) **Emergency illumination.** Where emergency lighting is necessary, the system shall be so arranged that the failure of any individual lighting element, such as the burning out of a light bulb, cannot leave any space in total darkness.

(3) **Class 1, Class 2, and Class 3 remote control, signaling, and power-limited circuits.**

(a) **Classification.** Class 1, Class 2, or Class 3 remote control, signaling, or power-limited circuits are characterized by their usage and electrical power limitation which differentiates them from light and power circuits. These circuits are classified in accordance with their respective voltage and power limitations as summarized in items (a)(i) through (a)(iii) of this subsection.

(i) **Class 1 circuits.**

(A) A Class 1 power-limited circuit is supplied from a source having a rated output of not more than 30 volts and 1000 volt-amperes.

(B) A Class 1 remote control circuit or a Class 1 signaling circuit has a voltage which does not exceed 600 volts; however, the power output of the source need not be limited.

(ii) **Class 2 and Class 3 circuits.**

(A) Power for Class 2 and Class 3 circuits is limited either inherently (in which no overcurrent protection is required) or by a combination of a power source and overcurrent protection.

(B) The maximum circuit voltage is 150 volts AC or DC for a Class 2 inherently limited power source, and 100 volts AC or DC for a Class 3 inherently limited power source.

(C) The maximum circuit voltage is 30 volts AC and 60 volts DC for a Class 2 power source limited by overcurrent protection, and 150 volts AC or DC for a Class 3 power source limited by overcurrent protection.

(iii) The maximum circuit voltages in items (a)(i) and (a)(ii) of this subsection apply to sinusoidal AC or continuous DC power sources, and where wet contact occurrence is not likely.

(b) **Marking.** A Class 2 or Class 3 power supply unit shall be durably marked where plainly visible to indicate the class of supply and its electrical rating. (See WAC 296-24-95603 (2)(c).)

(4) **Fire protective signaling systems.** (See WAC 296-24-95603 (2)(c).)

(a) **Classifications.** Fire protective signaling circuits shall be classified either as nonpower limited or power limited.

(b) **Power sources.** The power sources for use with fire protective signaling circuits shall be either power limited or nonlimited as follows:

(i) The power supply of nonpower-limited fire protective signaling circuits shall have an output voltage not in excess of 600 volts.

(ii) The power for power-limited fire protective signaling circuits shall be either inherently limited, in which no overcurrent protection is required, or limited by a combination of power source and overcurrent protection.

(c) **Nonpower-limited conductor location.** Nonpower-limited fire protective signaling circuits and Class 1 circuits may occupy the same enclosure, cable, or raceway provided all conductors are insulated for maximum voltage of any conductor within the enclosure, cable or raceway. Power supply and fire protective signaling circuit conductors are permitted in the same enclosure, cable, or raceway only if connected to the same equipment.

(d) **Power-limited conductor location.** Where open conductors are installed, power-limited fire protective signaling circuits shall be separated at least 2 inches from conductors of any light, power, Class 1, and nonpower-limited fire protective signaling circuits unless a special and equally protective method of conductor separation is employed. Cables and conductors of two or more power-limited fire protective signaling circuits or Class 3 circuits are permitted in the same cable, enclosure, or raceway. Conductors of one or more Class 2 circuits are permitted within the same cable, enclosure, or raceway with conductors of power-limited fire protective signaling circuits provided that the insulation of Class 2 circuit conductors in the cable, enclosure, or raceway is at least that needed for the power-limited fire protective signaling circuits.

(e) **Identification.** Fire protective signaling circuits shall be identified at terminal and junction locations in a manner which will prevent unintentional interference with the signal-

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ing circuit during testing and servicing. Power-limited fire protective signaling circuits shall be durably marked as such where plainly visible at terminations.

(5) **Communications systems.**

(a) **Scope.** These provisions for communication systems apply to such systems as central-station-connected and non-central-station-connected telephone circuits, radio and television receiving and transmitting equipment, including community antenna television and radio distribution systems, telegraph, district messenger, and outside wiring for fire and burglar alarm, and similar central station systems. These installations need not comply with the provisions of WAC 296-24-95605 through 296-24-95615(4) except 296-24-95607 (3)(a) and 296-24-95613(2).

(b) **Protective devices.**

(i) Communication circuits so located as to be exposed to accidental contact with light or power conductors operating at over 300 volts shall have each circuit so exposed provided with a protector approved for the purpose.

(ii) Each conductor of a lead-in from an outdoor antenna shall be provided with an antenna discharge unit or other suitable means that will drain static charges from the antenna system.

(c) **Conductor location.**

(i) **Outside of buildings.**

(A) Receiving distribution lead-in or aerial-drop cables attached to buildings and lead-in conductors to radio transmitters shall be so installed as to avoid the possibility of accidental contact with electric light or power conductors.

(B) The clearance between lead-in conductors and any lightning protection conductors may not be less than 6 feet.

(ii) **On poles.** Where practicable, communication conductors on poles shall be located below the light or power conductors. Communications conductors may not be attached to a crossarm that carries light or power conductors.

(iii) **Inside of buildings.** Indoor antennas, lead-ins, and other communication conductors attached as open conductors to the inside of buildings shall be located at least 2 inches from conductors of any light or power or Class 1 circuits unless a special and equally protective method of conductor separation, approved for the purpose, is employed.

(d) **Equipment location.** Outdoor metal structures supporting antennas, as well as self-supporting antennas such as vertical rods or dipole structures, shall be located as far away from overhead conductors of electric light and power circuits of over 150 volts to ground as necessary to avoid the possibility of the antenna or structure falling into or making accidental contact with such circuits.

(e) **Grounding.**

(i) **Lead-in conductors.** If exposed to contact with electric light and power conductors, the metal sheath of aerial cables entering buildings shall be grounded or shall be interrupted close to the entrance to the building by an insulating joint or equivalent device. Where protective devices are used, they shall be grounded in an approved manner.

(ii) **Antenna structures.** Masts and metal structures supporting antennas shall be permanently and effectively grounded without splice or connection in the grounding conductor.

(iii) **Equipment enclosures.** Transmitters shall be enclosed in a metal frame or grill or separated from the oper-

ating space by a barrier, all metallic parts of which are effectively connected to ground. All external metal handles and controls accessible to the operating personnel shall be effectively grounded. Unpowered equipment and enclosures shall be considered grounded where connected to an attached coaxial cable with an effectively grounded metallic shield.

[Statutory Authority: RCW 49.17.040 and 49.17.050. 82-08-026 (Order 82-10), § 296-24-95615, filed 3/30/82.]

WAC 296-24-95617 Reserved.

[Statutory Authority: Chapter 49.17 RCW. 91-24-017 (Order 91-07), § 296-24-95617, filed 11/22/91, effective 12/24/91. Statutory Authority: RCW 49.17.040 and 49.17.050. 82-08-026 (Order 82-10), § 296-24-95617, filed 3/30/82.]

WAC 296-24-95699 Appendices. Appendix A - Reference documents. The following references provide information which can be helpful in understanding and complying with the requirements contained in WAC 296-24-956 through 296-24-95615.

ANSI A17.1-71 Safety Code for Elevators, Dumbwaiters, Escalators and Moving Walks.
 ANSI B9.1-71 Safety Code for Mechanical Refrigeration.
 ANSI B30.2-76 Safety Code for Overhead and Gantry Cranes.
 ANSI B30.3-75 Hammerhead Tower Cranes.
 ANSI B30.4-73 Safety Code for Portal, Tower, and Pillar Cranes.
 ANSI B30.5-68 Safety Code for Crawler, Locomotive, and Truck Cranes.
 ANSI B30.6-77 Derricks.
 ANSI B30.7-77 Base Mounted Drum Hoists.
 ANSI B30.8-71 Safety Code for Floating Cranes and Floating Derricks.
 ANSI B30.11-73 Monorail Systems and Underhung Cranes.
 ANSI B30.12-75 Handling Loads Suspended from Rotorcraft.
 ANSI B30.13-77 Controlled Mechanical Storage Cranes.
 ANSI B30.15-73 Safety Code for Mobile Hydraulic Cranes.
 ANSI B30.16-73 Overhead Hoists.
 ANSI C2-81 National Electrical Safety Code.
 ANSI C33.27-74 Safety Standard for Outlet Boxes and Fittings for Use in Hazardous Locations, Class I, Groups A, B, C, and D, and Class II, Groups E, F, and G.
 ANSI K61.1-72 Safety Requirements for the Storage and Handling of Anhydrous Ammonia.
 ASTM D2155-66 Test Method for Autoignition Temperature of Liquid Petroleum Products.
 ASTM D3176-74 Method for Ultimate Analysis of Coal and Coke.
 ASTM D3180-74 Method for Calculating Coal and Coke Analyses from as Determined to Different Bases.
 IEEE 463-77 Standard for Electrical Safety Practices in Electrolytic Cell Line Working Zones.
 NFPA 20-76 Standard for the Installation of Centrifugal Fire Pumps.
 NFPA 30-78 Flammable and Combustible Liquids Code.
 NFPA 32-74 Standard for Drycleaning Plants.
 NFPA 33-73 Standard for Spray Application Using Flammable and Combustible Materials.

NFPA 34-74 Standard for Dip Tanks Containing Flammable or Combustible Liquids.
 NFPA 35-76 Standard for the Manufacture of Organic Coatings.
 NFPA 36-74 Standard for Solvent Extraction Plants.
 NFPA 40-74 Standard for the Storage and Handling of Cellulose Nitrate Motion Picture Film.
 NFPA 56A-73 Standard for the Use of Inhalation Anesthetics (Flammable and Nonflammable).
 NFPA 56F-74 Standard for Nonflammable Medical Gas Systems.
 NFPA 58-76 Standard for the Storage and Handling of Liquefied Petroleum Gases.
 NFPA 59-76 Standard for the Storage and Handling of Liquefied Petroleum Gases at Utility Gas Plants.
 NFPA 70-78 National Electrical Code.
 NFPA 70C-74 Hazardous Locations Classification.
 NFPA 70E Standard for the Electrical Safety Requirements for Employee Workplaces.
 NFPA 71-77 Standard for the Installation, Maintenance, and Use of Central Station Signaling Systems.
 NFPA 72A-75 Standard for the Installation, Maintenance, and Use of Local Protective Signaling Systems for Watchman, Fire Alarm, and Supervisory Service.
 NFPA 72B-75 Standard for the Installation, Maintenance, and Use of Auxiliary Protective Signaling Systems for Fire Alarm Service.
 NFPA 72C-75 Standard for the Installation, Maintenance, and Use of Remote Station Protective Signaling Systems.
 NFPA 72D-75 Standard for the Installation, Maintenance, and Use of Proprietary Protective Signaling Systems for Watchman, Fire Alarm, and Supervisory Service.
 NFPA 72E-74 Standard for Automatic Fire Detectors.
 NFPA 74-75 Standard for Installation, Maintenance, and Use of Household Fire Warning Equipment.
 NFPA 76A-73 Standard for Essential Electrical Systems for Health Care Facilities.
 NFPA 77-72 Recommended Practice on Static Electricity.
 NFPA 80-77 Standard for Fire Doors and Windows.
 NFPA 86A-73 Standard for Ovens and Furnaces; Design, Location and Equipment.
 NFPA 88A-73 Standard for Parking Structures.
 NFPA 88B-73 Standard for Repair Garages.
 NFPA 91-73 Standard for the Installation of Blower and Exhaust Systems for Dust, Stock, and Vapor Removal, or Conveying.
 NFPA 101-78 Code for Safety to Life from Fire in Buildings and Structures. (Life Safety Code.)
 NFPA 325M-69 Fire-Hazard Properties of Flammable Liquids, Gases, and Volatile Solids.
 NFPA 493-75 Standard for Intrinsically Safe Apparatus for Use in Class I Hazardous Locations and its Associated Apparatus.
 NFPA 496-74 Standard for Purged and Pressurized Enclosures for Electrical Equipment in Hazardous Locations.
 NFPA 497-75 Recommended Practice for Classification of Class I Hazardous Locations for Electrical Installations in Chemical Plants.
 NFPA 505-75 Fire Safety Standard for Powered Industrial Trucks Including Type Designations and Areas of Use.

NMAB 353-1-79 Matrix of Combustion-Relevant Properties and Classification of Gases, Vapors, and Selected Solids.
 NMAB 353-2-79 Test Equipment for Use in Determining Classifications of Combustible Dusts.
 NMAB 353-3-80 Classification of Combustible Dusts in Accordance with the National Electrical Code.

[Statutory Authority: RCW 49.17.040 and 49.17.050. 82-08-026 (Order 82-10), § 296-24-95699, filed 3/30/82.]

WAC 296-24-960 Working on or near exposed energized parts. (1) Application. This section applies to work performed on exposed live parts (involving either direct contact or contact by means of tools or materials) or near enough to them for employees to be exposed to any hazard they present.

(2) Work on energized equipment. Only qualified persons shall work on electric circuit parts or equipment that have not been deenergized under the procedures of WAC 296-24-975(2). Such persons shall be capable of working safely on energized circuits and shall be familiar with the proper use of special precautionary techniques, personal protective equipment, insulating and shielding materials, and insulated tools.

(3) General requirements - high voltage lines.

(a) Minimum clearance.

(i) No work shall be performed, no material shall be piled, stored or otherwise handled, no scaffolding, commercial signs, or structures shall be erected or dismantled, nor any tools, machinery or equipment operated within the specified minimum distances from any energized high voltage electrical conductor capable of energizing the material or equipment; except where the electrical distribution and transmission lines have been deenergized and visibly grounded at point of work, or where insulating barriers not a part of or an attachment to the equipment have been erected, to prevent physical contact with the lines, equipment shall be operated proximate to, under, over, by, or near powerlines only in accordance with the following:

(ii) For lines rated 50 kv. or below, minimum clearance between the lines and any part of the equipment or load shall be 10 feet.

(iii) For lines rated over 50 kv. minimum, clearance between the lines and any part of the equipment or load shall be 10 feet plus 0.4 inch for each 1 kv. over 50 kv., or twice the length of the line insulator but never less than 10 feet.

(b) Overhead electric lines. Where overhead electric conductors are encountered in proximity to a work area, the employer shall be responsible for:

(i) Ascertaining the voltage and minimum clearance distance required, and

(ii) Maintaining the minimum clearance distance, and

(iii) Ensuring that the requirements of subsection (3) of this section are complied with.

(c) Not covered: Employees working under chapters 296-32 and 296-45 WAC.

(4) Low voltage lines. When work is being carried out in proximity to energized electrical service conductors operating at 750 volts or less, such work shall be performed in a manner to prevent contact by any worker with the energized conductors.

(5) Overhead lines. If work is to be performed near overhead lines, the lines shall be deenergized and grounded, or other protective measures shall be provided before work is started. If the lines are to be deenergized, arrangements shall be made with the person or organization that operates or controls the electric circuits involved to deenergize and ground them. If protective measures, such as guarding, isolating, or insulating, these precautions shall prevent employees from contacting such lines directly with any part of their body or indirectly through conductive materials, tools, or equipment.

(6) Unqualified persons. When an unqualified person is working in an elevated position, or on the ground, near overhead lines, the location shall be such that the person and the longest conductive object he or she may contact cannot come closer to any unguarded, energized overhead line than the following distances:

(a) For voltages to ground 50kV or below—10 ft.;

(b) For voltages to ground over 50kV—10 ft. plus 0.4 inch for every 1 kV over 50 kV.

(7) Qualified persons. When a qualified person is working in the vicinity of overhead lines, whether in an elevated position or on the ground, the person shall not approach or take any conductive object without an approved insulating handle closer to exposed energized parts than shown in subsections (3) and (4) of this section unless:

(a) The person is insulated from the energized part (gloves, with sleeves if necessary, rated for the voltage involved are considered to be insulation of the person from the energized part on which work is performed); or

(b) The energized part is insulated both from all other conductive objects at a different potential and from the person; or

(c) The person is insulated from all conductive objects at a potential different from that of the energized part.

(8) Vehicular and mechanical equipment.

(a) Any vehicle or mechanical equipment capable of having parts of its structure elevated near energized overhead lines shall be operated so that a clearance of 10 ft. is maintained. If the voltage is higher than 50kV, the clearance shall be increased 0.4 inch for every 1kV over that voltage. However, under any of the following conditions, the clearance may be reduced:

(i) If the vehicle is in transit with its structure lowered, the clearance may be reduced to 4 ft. If the voltage is higher than 50kV, the clearance shall be increased 0.4 inch for every 1kV over that voltage.

(ii) If insulating barriers are installed to prevent contact with the lines, and if the barriers are rated for the voltage of the line being guarded and are not a part of or an attachment to the vehicle or its raised structure, the clearance may be reduced to a distance within the designed working dimensions of the insulating barrier.

(b) If the equipment is an aerial lift insulated for the voltage involved, and if the work is performed by a qualified person, the clearance (between the uninsulated portion of the aerial lift and the power line) may be reduced to the distance given in subsections (3) and (4) of this section.

(c) Employees standing on the ground shall not contact the vehicle or mechanical equipment or any of its attachments, unless:

(i) The employee is using protective equipment rated for the voltage; or

(ii) The equipment is located so that no uninsulated part of its structure (that portion of the structure that provides a conductive path to employees on the ground) can come closer to the line than permitted in this section.

(d) If any vehicle or mechanical equipment capable of having parts of its structure elevated near energized overhead lines is intentionally grounded, employees working on the ground near the point of grounding shall not stand at the grounding location whenever there is a possibility of overhead line contact. Additional precautions, such as the use of barricades or insulation, shall be taken to protect employees from hazardous ground potentials, depending on earth resistivity and fault currents, which can develop within the first few feet or more outward from the grounding point.

(9) Illumination.

(a) Employees shall not enter spaces containing exposed energized parts, unless illumination is provided that enables the employees to perform the work safely.

(b) Where lack of illumination or an obstruction precludes observation of the work to be performed, employees shall not perform tasks near exposed energized parts. Employees shall not reach blindly into areas which may contain energized parts.

(10) Confined or enclosed work spaces. When an employee works in a confined or enclosed space (such as a manhole or vault) that contains exposed energized parts, the employer shall provide, and the employee shall use, protective shields, protective barriers, or insulating materials as necessary to avoid inadvertent contact with these parts. Doors, hinged panels, and the like shall be secured to prevent their swinging into an employee and causing the employee to contact exposed energized parts.

(11) Conductive materials and equipment. Conductive materials and equipment that are in contact with any part of an employee's body shall be handled in a manner that will prevent them from contacting exposed energized conductors or circuit parts. If an employee must handle long dimensional conductive objects (such as ducts and pipes) in areas with exposed live parts, the employer shall institute work practices (such as the use of insulation, guarding, and material handling techniques) which will minimize the hazard.

(12) Portable ladders. Portable ladders shall have non-conductive siderails if they are used where the employee or the ladder could contact exposed energized parts.

(13) Conductive apparel. Conductive articles of jewelry and clothing (such as watch bands, bracelets, rings, key chains, necklaces, metalized aprons, cloth with conductive thread, or metal headgear) shall not be worn if they might contact exposed energized parts.

(14) Housekeeping duties.

(a) Where live parts present an electrical contact hazard, employees shall not perform housekeeping duties at such close distances to the parts that there is a possibility of contact, unless adequate safeguards (such as insulating equipment or barriers) are provided.

(b) Electrically conductive cleaning materials (including conductive solids such as steel wool, metalized cloth, and silicon carbide, as well as conductive liquid solutions) shall not

be used in proximity to energized parts unless procedures are followed which will prevent electrical contact.

(15) Interlocks. Only a qualified person following the requirements of this section may defeat an electrical safety interlock, and then only temporarily while he or she is working on the equipment. The interlock system shall be returned to its operable condition when this work is completed.

[Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-24-960, filed 7/20/94, effective 9/20/94; 91-24-017 (Order 91-07), § 296-24-960, filed 11/22/91, effective 12/24/91. Statutory Authority: RCW 49.17.040 and 49.17.050. 82-13-045 (Order 82-22), § 296-24-960, filed 6/11/82; 82-02-003 (Order 81-32), § 296-24-960, filed 12/24/81.]

WAC 296-24-965 Safety-related work practices. (1)

Scope. Covered work by both qualified and unqualified persons. The provisions of WAC 296-24-960 through 296-24-985 cover electrical safety-related work practices for both qualified persons (those who have training in avoiding the electrical hazards of working on or near exposed energized parts) and unqualified persons (those with little or no such training) working on, near, or with the following installations:

(a) Premises wiring. Installations of electric conductors and equipment within or on buildings or other structures, and on other premises such as yards, carnival, parking, and other lots, and industrial substations;

(b) Wiring for connection to supply. Installations of conductors that connect to the supply of electricity;

(c) Other wiring. Installations of other outside conductors on the premises; and

(d) Optical fiber cable. Installations of optical fiber cable where such installations are made along with electric conductors.

Note: See WAC 296-24-95601 for the definition of "qualified person." See WAC 296-24-970 for training requirements that apply to qualified and unqualified persons.

(2) Other covered work by unqualified persons. The provisions of WAC 296-24-960 through 296-24-985 also cover work performed by unqualified persons on, near, or with the installations listed in subsection (3) of this section.

(3) Excluded work by qualified persons. The provisions of WAC 296-24-960 through 296-24-985 do not apply to work performed by qualified persons on or directly associated with the following installations:

(a) Generation, transmission, and distribution installations. Installations for the generation, control, transformation, transmission, and distribution of electric energy (including communication and metering) located in buildings used for such purposes or located outdoors.

Note 1: Work on or directly associated with installations of utilization equipment used for purposes other than generating, transmitting, or distributing electric energy (such as installations which are in office buildings, warehouses, garages, machine shops, or recreational buildings, or other utilization installations which are not an integral part of a generating installation, substation, or control center) is covered under subsection (1)(a) of this section.

Note 2: Work on or directly associated with generation, transmission, or distribution installations includes:
1. Work performed directly on such installations, such as repairing overhead or underground distribution lines or repairing a feed-water pump for the boiler in a generating plant.

2. Work directly associated with such installations, such as line-clearance tree trimming and replacing utility poles.
3. Work on electric utilization circuits in a generating plant provided that:
 - a. Such circuits are commingled with installations of power generation equipment or circuits; and
 - b. The generation equipment or circuits present greater electrical hazards than those posed by the utilization equipment or circuits (such as exposure to higher voltages or lack of overcurrent protection).

(b) Communications installations. Installations of communication equipment to the extent that the work is covered under chapter 296-32 WAC.

(c) Installations in vehicles. Installations in ships, watercraft, railway rolling stock, aircraft, or automotive vehicles other than mobile homes and recreational vehicles.

(d) Railway installations. Installations of railways for generation, transformation, transmission, or distribution of power used exclusively for operation of rolling stock or installations of railways used exclusively for signaling and communication purposes.

[Statutory Authority: Chapter 49.17 RCW. 91-24-017 (Order 91-07), § 296-24-965, filed 11/22/91, effective 12/24/91.]

WAC 296-24-970 Training. (1) Scope. The training requirements contained in this section apply to employees who face a risk of electric shock that is not reduced to a safe level by the electrical installation requirements of WAC 296-24-95605 through 296-24-95615.

Note: Employees in occupations listed in Table S-4 face such a risk and are required to be trained. Other employees who also may reasonably be expected to face a comparable risk of injury due to electric shock or other electrical hazards must also be trained.

(2) Content of training.

(a) Practices addressed in this standard. Employees shall be trained in and familiar with the safety-related work practices required by WAC 296-24-960 through 296-24-985 that pertain to their respective job assignments.

(b) Additional requirements for unqualified persons. Employees who are covered by subsection (1) of this section but who are not qualified persons shall also be trained in and familiar with any electrically related safety practices not specifically addressed by WAC 296-24-960 through 296-24-985 but which are necessary for their safety.

(c) Additional requirements for qualified persons. Qualified persons (i.e., those permitted to work on or near exposed energized parts) shall, at a minimum, be trained in and familiar with the following:

(i) The skills and techniques necessary to distinguish exposed live parts from other parts of electric equipment;

(ii) The skills and techniques necessary to determine the nominal voltage of exposed live parts; and

(iii) The clearance distances specified in WAC 296-24-960 and the corresponding voltages to which the qualified person will be exposed.

Note 1: For the purposes of WAC 296-24-960 through 296-24-985 a person must have the training required by (c) of this subsection in order to be considered a qualified person.

Note 2: Qualified persons whose work on energized equipment involves either direct contact or contact by means of tools or materials must also have the training needed to meet WAC 296-24-960.

(3) Type of training. The training required by this section shall be of the classroom or on-the-job type. The degree of (2007 Ed.)

training provided shall be determined by the risk to the employee.

TABLE S-4.—TYPICAL OCCUPATIONAL CATEGORIES OF EMPLOYEES FACING A HIGHER THAN NORMAL RISK OF ELECTRICAL ACCIDENT

Occupation
Blue collar supervisors. ¹
Electrical and electronic engineers. ¹
Electrical and electronic equipment assemblers. ¹
Electrical and electronic technicians. ¹
Electricians.
Industrial machine operators. ¹
Material handling equipment operators. ¹
Mechanics and repairers. ¹
Painters. ¹
Riggers and roustabouts. ¹
Stationary engineers. ¹
Welders.

¹ Workers in these groups do not need to be trained if their work or the work of those they supervise does not bring them or the employees they supervise close enough to exposed parts of electric circuits operating at 50 volts or more to ground for a hazard to exist.

[Statutory Authority: Chapter 49.17 RCW. 91-24-017 (Order 91-07), § 296-24-970, filed 11/22/91, effective 12/24/91.]

WAC 296-24-975 Selection and use of work practices. (1) General. Safety-related work practices shall be employed to prevent electric shock or other injuries resulting from either direct or indirect electrical contacts, when work is performed near or on equipment or circuits which are or may be energized. The specific safety-related work practices shall be consistent with the nature and extent of the associated electrical hazards.

(a) Deenergized parts. Live parts to which an employee may be exposed shall be deenergized before the employee works on or near them, unless the employer can demonstrate that deenergizing introduces additional or increased hazards or is infeasible due to equipment design or operational limitations. Live parts that operate at less than 50 volts to ground need not be deenergized if there will be no increased exposure to electrical burns or to explosion due to electric arcs.

Note 1: Examples of increased or additional hazards include interruption of life support equipment, deactivation of emergency alarm systems, shutdown of hazardous location ventilation equipment, or removal of illumination for an area.

Note 2: Examples of work that may be performed on or near energized circuit parts because of infeasibility due to equipment design or operational limitations include testing of electric circuits that can only be performed with the circuit energized and work on circuits that form an integral part of a continuous industrial process in a chemical plant that would otherwise need to be completely shut down in order to permit work on one circuit or piece of equipment.

Note 3: Work on or near deenergized parts is covered by subsection (2) of this section.

(b) Energized parts. If the exposed live parts are not deenergized (i.e., for reasons of increased or additional hazards or infeasibility), other safety-related work practices shall be used to protect employees who may be exposed to the electrical hazards involved. Such work practices shall protect employees against contact with energized circuit parts

directly with any part of their body or indirectly through some other conductive object. The work practices that are used shall be suitable for the conditions under which the work is to be performed and for the voltage level of the exposed electric conductors or circuit parts. Specific work practice requirements are detailed in WAC 296-24-960.

(2) Working on or near exposed deenergized parts.

(a) Application. This subsection applies to work on exposed deenergized parts or near enough to them to expose the employee to any electrical hazard they present. Conductors and parts of electric equipment that have been deenergized but have not been locked out or tagged according to this subsection shall be treated as energized parts, and WAC 296-24-960 applies to work on or near them.

(b) Lockout and tagging. While any employee is exposed to contact with parts of fixed electric equipment or circuits which have been deenergized, the circuits energizing the parts shall be locked out or tagged or both according to the requirements of this section. The requirements shall be followed in the order in which they are presented (i.e., (b)(i) of this subsection first, then (b)(ii) of this subsection.

Note 1: As used in this section, fixed equipment refers to equipment fastened in place or connected by permanent wiring methods.

Note 2: Lockout and tagging procedures that comply with chapter 296-803 WAC, Lockout/tagout (control of hazardous energy) will also be deemed to comply with (b) of this subsection provided that:

1. The procedures address the electrical safety hazards covered by this part; and
2. The procedures also incorporate the requirements of (b)(iii)(D) and (b)(iv)(B) of this subsection.

(i) Procedures. The employer shall maintain a written copy of the procedures outlined in (b) of this subsection and shall make it available for inspection by employees and by the director and his or her authorized representatives.

Note: The written procedures may be in the form of a copy of subsection (2) of this section.

(ii) Deenergizing equipment.

(A) Safe procedures for deenergizing circuits and equipment shall be determined before circuits or equipment are deenergized.

(B) The circuits and equipment to be worked on shall be disconnected from all electric energy sources. Control circuit devices, such as push buttons, selector switches, and interlocks, shall not be used as the sole means for deenergizing circuits or equipment. Interlocks for electric equipment shall not be used as a substitute for lockout and tagging procedures.

(C) Stored electric energy which might endanger personnel shall be released. Capacitors shall be discharged and high capacitance elements shall be short-circuited and grounded, if the stored electric energy might endanger personnel.

Note: If the capacitors or associated equipment are handled in meeting this requirement, they shall be treated as energized.

(D) Stored nonelectrical energy in devices that could reenergize electric circuit parts shall be blocked or relieved to the extent that the circuit parts could not be accidentally energized by the device.

(iii) Application of locks and tags.

(A) A lock and a tag shall be placed on each disconnecting means used to deenergize circuits and equipment on which work is to be performed, except as provided in subitems (C) and (E) of this item. The lock shall be attached to prevent persons from operating the disconnecting means unless they resort to undue force or the use of tools.

(B) Each tag shall contain a statement prohibiting unauthorized operation of the disconnecting means and removal of the tag.

(C) If a lock cannot be applied, or if the employer can demonstrate that tagging procedures will provide a level of safety equivalent to that obtained by the use of a lock, a tag may be used without a lock.

(D) A tag used without a lock, as permitted by subitem (C) of this item, shall be supplemented by at least one additional safety measure that provides a level of safety equivalent to that obtained by the use of a lock. Examples of additional safety measures include the removal of an isolating circuit element, blocking of a controlling switch, or opening of an extra disconnecting device.

(E) A lock may be placed without a tag only under the following conditions:

(I) Only one circuit or piece of equipment is deenergized; and

(II) The lockout period does not extend beyond the work shift; and

(III) Employees exposed to the hazards associated with reenergizing the circuit or equipment are familiar with this procedure.

(iv) Verification of deenergized condition. The requirements of this subsection shall be met before any circuits or equipment can be considered and worked as deenergized.

(A) A qualified person shall operate the equipment operating controls or otherwise verify that the equipment cannot be restarted.

(B) A qualified person shall use test equipment to test the circuit elements and electrical parts of equipment to which employees will be exposed and shall verify that the circuit elements and equipment parts are deenergized. The test shall also determine if any energized condition exists as a result of inadvertently induced voltage or unrelated voltage backfeed even though specific parts of the circuit have been deenergized and presumed to be safe. If the circuit to be tested is over 600 volts, nominal, the test equipment shall be checked for proper operation immediately before and immediately after this test.

(v) Reenergizing equipment. These requirements shall be met, in the order given, before circuits or equipment are reenergized, even temporarily.

(A) A qualified person shall conduct tests and visual inspections, as necessary, to verify that all tools, electrical jumpers, shorts, grounds, and other such devices have been removed, so that the circuits and equipment can be safely energized.

(B) Employees exposed to the hazards associated with reenergizing the circuit or equipment shall be warned to stay clear of circuits and equipment.

(C) Each lock and tag shall be removed by the employee who applied it or under his or her direct supervision. However, if this employee is absent from the workplace, then the

lock or tag may be removed by a qualified person designated to perform this task provided that:

(I) The employer ensures that the employee who applied the lock or tag is not available at the workplace; and

(II) The employer ensures that the employee is aware that the lock or tag has been removed before he or she resumes work at that workplace.

(D) There shall be a visual determination that all employees are clear of the circuits and equipment.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060. 04-15-105, § 296-24-975, filed 7/20/04, effective 11/1/04. Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-24-975, filed 7/20/94, effective 9/20/94; 91-24-017 (Order 91-07), § 296-24-975, filed 11/22/91, effective 12/24/91.]

WAC 296-24-980 Safeguards for personnel protection. (1) Use of protective equipment.

(a) Personal protective equipment.

(i) Employees working in areas where there are potential electrical hazards shall be provided with, and shall use, electrical protective equipment that is appropriate for the specific parts of the body to be protected and for the work to be performed.

Note: Personal protective equipment requirements are contained in chapter 296-24 WAC Part L, and WAC 296-800-160.

(ii) Protective equipment shall be maintained in a safe, reliable condition and shall be periodically inspected or tested, as required by chapter 296-24 WAC Part L, and WAC 296-800-160.

(iii) If the insulating capability of protective equipment may be subject to damage during use, the insulating material shall be protected. (For example, an outer covering of leather is sometimes used for the protection of rubber insulating material.)

(iv) Employees shall wear nonconductive head protection wherever there is a danger of head injury from electric shock or burns due to contact with exposed energized parts.

(v) Employees shall wear protective equipment for the eyes or face wherever there is danger of injury to the eyes or face from electric arcs or flashes or from flying objects resulting from electrical explosion.

(b) General protective equipment and tools.

(i) When working near exposed energized conductors or circuit parts, each employee shall use insulated tools or handling equipment if the tools or handling equipment might make contact with such conductors or parts. If the insulating capability of insulated tools or handling equipment is subject to damage, the insulating material shall be protected.

(A) Fuse handling equipment, insulated for the circuit voltage, shall be used to remove or install fuses when the fuse terminals are energized.

(B) Ropes and handlines used near exposed energized parts shall be nonconductive.

(ii) Protective shields, protective barriers, or insulating materials shall be used to protect each employee from shock, burns, or other electrically related injuries while that employee is working near exposed energized parts which might be accidentally contacted or where dangerous electric heating or arcing might occur. When normally enclosed live parts are exposed for maintenance or repair, they shall be

guarded to protect unqualified persons from contact with the live parts.

(2) Alerting techniques. The following alerting techniques shall be used to warn and protect employees from hazards which could cause injury due to electric shock, burns, or failure of electric equipment parts:

(a) Safety signs and tags. Safety signs, safety symbols, or accident prevention tags shall be used where necessary to warn employees about electrical hazards which may endanger them.

(b) Barricades. Barricades shall be used in conjunction with safety signs where it is necessary to prevent or limit employee access to work areas exposing employees to uninsulated energized conductors or circuit parts. Conductive barricades may not be used where they might cause an electrical contact hazard.

(c) Attendants. If signs and barricades do not provide sufficient warning and protection from electrical hazards, an attendant shall be stationed to warn and protect employees.

(3) Design requirements. Insulating blankets, matting, covers, line hose, gloves, and sleeves made of rubber shall meet the following requirements:

(a) Manufacture and marking.

(i) Blankets, gloves, and sleeves shall be produced by a seamless process.

(ii) Each item shall be clearly marked as follows:

(A) Class 0 equipment shall be marked Class 0.

(B) Class 1 equipment shall be marked Class 1.

(C) Class 2 equipment shall be marked Class 2.

(D) Class 3 equipment shall be marked Class 3.

(E) Class 4 equipment shall be marked Class 4.

(F) Nonozone-resistant equipment other than matting shall be marked Type I.

(G) Ozone-resistant equipment other than matting shall be marked Type II.

(H) Other relevant markings, such as the manufacturer's identification and the size of the equipment, may also be provided.

(iii) Markings shall be nonconducting and shall be applied in such a manner as not to impair the insulating qualities of the equipment.

(iv) Markings on gloves shall be confined to the cuff portion of the glove.

(b) Electrical requirements.

(i) Equipment shall be capable of withstanding the a-c proof-test voltage specified in Table A-2 or the d-c proof-test voltage specified in Table A-3.

(A) The proof-test shall reliably indicate that the equipment can withstand the voltage involved.

(B) The test voltage shall be applied continuously for three minutes for equipment other than matting and shall be applied continuously for one minute for matting.

(C) Gloves shall also be capable of withstanding the a-c proof-test voltage specified in Table A-2 after a sixteen-hour water soak. (See the note following (c)(ii)(B) of this subsection.)

(ii) When the a-c proof-test is used on gloves, the 60 hertz proof-test current may not exceed the values specified in Table A-2 at any time during the test period.

(A) If the a-c proof-test is made at a frequency other than 60 hertz, the permissible proof-test current shall be computed from the direct ratio of the frequencies.

(B) For the test, gloves (right side out) shall be filled with tap water and immersed in water to a depth that is in accordance with Table A-4. Water shall be added to or removed from the glove, as necessary, so that the water level is the same inside and outside the glove.

(C) After the sixteen-hour water soak specified in (b)(i)(C) of this subsection, the 60-hertz proof-test current may exceed the values given in Table A-2 by not more than 2 milliamperes.

(iii) Equipment that has been subjected to a minimum breakdown voltage test may not be used for electrical protection. (See the note following (c)(ii)(B) of this subsection.)

(iv) Material used for Type II insulating equipment shall be capable of withstanding an ozone test, with no visible effects. The ozone test shall reliably indicate that the material will resist ozone exposure in actual use. Any visible signs of ozone deterioration of the material, such as checking, cracking, breaks, or pitting, is evidence of failure to meet the requirements for ozone-resistant material. (See the note following (c)(ii)(B) of this subsection.)

(c) Workmanship and finish.

(i) Equipment shall be free of harmful physical irregularities that can be detected by the tests or inspections required under this section.

(ii) Surface irregularities that may be present on all rubber goods because of imperfections on forms or molds or because of inherent difficulties in the manufacturing process and that may appear as indentations, protuberances, or imbedded foreign material are acceptable under the following conditions:

(A) The indentation or protuberance blends into a smooth slope when the material is stretched.

(B) Foreign material remains in place when the insulating material is folded and stretches with the insulating material surrounding it.

Note: Rubber insulating equipment meeting the following national consensus standards is deemed to be in compliance with subsection (1) of this section:

American Society for Testing and Materials (ASTM) D 120-87, Specification for Rubber Insulating Gloves.

ASTM D 178-93, Specification for Rubber Insulating Matting.

ASTM D 1048-93, Specification for Rubber Insulating Blankets.

ASTM D 1049-93, Specification for Rubber Insulating Covers.

ASTM D 1050-90, Specification for Rubber Insulating Line Hose.

ASTM D 1051-87, Specification for Rubber Insulating Sleeves.

These standards contain specifications for conducting the various tests required in subsection (1) of this section. For example, the a-c and d-c proof-tests, the breakdown test, the water soak procedure, and the ozone test mentioned in this paragraph are described in detail in the ASTM standards.

(4) In-service care and use.

(a) Electrical protective equipment shall be maintained in a safe, reliable condition.

(b) The following specific requirements apply to insulating blankets, covers, line hose, gloves, and sleeves made of rubber:

(i) Maximum use voltages shall conform to those listed in Table A-5.

(ii) Insulating equipment shall be inspected for damage before each day's use and immediately following any incident that can reasonably be suspected of having caused damage. Insulating gloves shall be given an air test, along with the inspection.

(iii) Insulating equipment with any of the following defects may not be used:

(A) A hole, tear, puncture, or cut;

(B) Ozone cutting or ozone checking (the cutting action produced by ozone on rubber under mechanical stress into a series of interlacing cracks);

(C) An embedded foreign object;

(D) Any of the following texture changes: Swelling, softening, hardening, or becoming sticky or inelastic.

(E) Any other defect that damages the insulating properties.

(iv) Insulating equipment found to have other defects that might affect its insulating properties shall be removed from service and returned for testing under (b)(viii) and (ix) of this subsection.

(v) Insulating equipment shall be cleaned as needed to remove foreign substances.

(vi) Insulating equipment shall be stored in such a location and in such a manner as to protect it from light, temperature extremes, excessive humidity, ozone, and other injurious substances and conditions.

(vii) Protector gloves shall be worn over insulating gloves.

(viii) Electrical protective equipment shall be subjected to periodic electrical tests. Test voltages and the maximum intervals between tests shall be in accordance with Table A-5 and Table A-6.

(ix) The test method used under (b)(viii) and (xi) of this subsection shall reliably indicate whether the insulating equipment can withstand the voltages involved.

Note: Standard electrical test methods considered as meeting this requirement are given in the following national consensus standards:

American Society for Testing and Materials (ASTM) D 120-87, Specification for Rubber Insulating Gloves.

ASTM D 1048-93, Specification for Rubber Insulating Blankets.

ASTM D 1049-93, Specification for Rubber Insulating Covers.

ASTM D 1050-90, Specification for Rubber Insulating Line Hose.

ASTM D 1051-87, Specification for Rubber Insulating Sleeves.

ASTM F 478-92, Specification for In-Service Care of Insulating Line Hose and Covers.

ASTM F 479-88a, Specification for In-Service Care of Insulating Blankets.

ASTM F 496-93b, Specification for In-Service Care of Insulating Gloves and Sleeves.

(x) Insulating equipment failing to pass inspections or electrical tests shall not be used by employees, except as follows:

(A) Rubber insulating line hose could be used in shorter lengths with the defective portion cut off.

(B) Rubber insulating blankets could be repaired using a compatible patch that results in physical and electrical properties equal to those of the blanket.

(C) Rubber insulating blankets could be salvaged by severing the defective area from the undamaged portion of the blanket. The resulting undamaged area shall not be smaller than twenty-two inches by twenty-two inches (560 mm by 560 mm) for Class 1, 2, 3, and 4 blankets.

(xi) Repaired insulating equipment shall be retested before it may be used by employees.

Table A-2. -A-C Proof-Test Requirements

Maximum proof-test current, mA (gloves only)	Proof-test voltage rms V	267-mm (10.5-in) glove	356-mm (14-in) glove	406-mm (16-in) glove	457-mm (18-in) glove
Class of equipment					
0	5,000	8	12	14	16
1	10,000		14	16	18
2	20,000		16	18	20
3	30,000		18	20	22
4	40,000			22	24

Table A-3. -D-C Proof-Test Requirements

Class of equipment	Proof-test voltage
0	20,000
1	40,000
2	50,000
3	60,000
4	70,000

Note: The d-c voltages listed in this table are not appropriate for proof-testing rubber insulating line hose or covers. For this equipment, d-c proof-tests shall use a voltage high enough to indicate that the equipment can be safely used at the voltages listed in Table A-4. See ASTM D 1050-90 and ASTM D 1049-88 for further information on proof-tests for rubber insulating line hose and covers.

Table A-4. -Glove Tests-Water Level^{1, 2}

Class of glove	mm.	A-C proof-test in.	mm.	D-C proof-test in.
0	38	1.5	38	1.5
1	38	1.5	51	2.0
2	64	2.5	76	3.0
3	89	3.5	102	4.0
4	127	5.0	153	6.0

¹ The water level is given as the clearance from the cuff of the glove to the water line, with a tolerance of 13 mm. (0.5 in.).

² If atmospheric conditions make the specified clearances impractical, the clearances may be increased by a maximum of 25 mm. (1 in.).

Table A-5. -Rubber Insulating Equipment Voltage Requirements

Class of equipment	Maximum use voltage ¹ a-c rms	Retest voltage ² a-c rms	Retest voltage ² d-c rms
0	1,000	5,000	20,000
1	7,500	10,000	40,000
2	17,000	20,000	50,000
3	26,500	30,000	60,000
4	36,000	40,000	70,000

Note: Rubber gloves shall only be used on voltages of 5000 volts phase-to-phase or less.

¹The maximum use voltage is the a-c voltage (rms) classification of the protective equipment that designates the maximum nominal design/voltage of the energized system that may be safely worked. The nominal design voltage is equal to the phase-to-phase voltage on multiphase circuits. However, the phase-to-ground potential is considered to be the nominal design/voltage:

1. If there is no multiphase exposure in a system area and if the voltage exposure is limited to the phase-to-ground potential, or

(xii) The employer shall certify that equipment has been tested in accordance with the requirements of (b)(viii), (ix), and (xi) of this subsection. The certification shall identify the equipment that passed the test and the date it was tested.

Note: Marking of equipment and entering the results of the tests and the dates of testing onto logs are two acceptable means of meeting this requirement.

2. If the electrical equipment and devices are insulated or isolated or both so that the multiphase exposure on a grounded wye circuit is removed.

² The proof-test voltage shall be applied continuously for at least one minute, but no more than three minutes.

Table A-6. -Rubber Insulating Equipment Test Intervals

Type of equipment	When to test
Rubber insulating line hose	Upon indication that insulating value is suspect.
Rubber insulating covers	Upon indication that insulating value is suspect.
Rubber insulating blankets	Before first issue and every 12 months thereafter. ¹
Rubber insulating gloves	Before first issue and every 6 months thereafter. ¹
Rubber insulating sleeves	Before first issue and every 12 months thereafter. ¹

¹ If the insulating equipment has been electrically tested but not issued for service, it may not be placed into service unless it has been electrically tested within the previous 12 months.

(5) Where switches or fuses of more than 150 volts to ground are not guarded during ordinary operations, suitable insulating floors, mats or platforms shall be provided on which the operator must stand while handling the switches.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. 04-18-080, § 296-24-980, filed 8/31/04, effective 11/1/04. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 01-11-038, § 296-24-980, filed 5/9/01, effective 9/1/01. Statutory Authority: Chapter 49.17 RCW. 91-24-017 (Order 91-07), § 296-24-980, filed 11/22/91, effective 12/24/91.]

WAC 296-24-985 Use of equipment. (1) Portable electric equipment. This section applies to the use of cord- and plug-connected equipment, including flexible cord sets (extension cords).

(a) Handling. Portable equipment shall be handled in a manner which will not cause damage. Flexible electric cords connected to equipment shall not be used for raising or lowering the equipment. Flexible cords shall not be fastened with staples or otherwise hung in such a fashion as could damage the outer jacket or insulation.

(b) Visual inspection.

(i) Portable cord- and plug-connected equipment and flexible cord sets (extension cords) shall be visually inspected before use on any shift for external defects (such as loose parts, deformed and missing pins, or damage to outer jacket or insulation) and for evidence of possible internal damage (such as pinched or crushed outer jacket). Cord- and plug-connected equipment and flexible cord sets (extension cords) which remain connected once they are put in place and are not exposed to damage need not be visually inspected until they are relocated.

(ii) If there is a defect or evidence of damage that might expose an employee to injury, the defective or damaged item shall be removed from service, and no employee shall use it until repairs and tests necessary to render the equipment safe have been made.

(iii) When an attachment plug is to be connected to a receptacle (including any on a cord set), the relationship of the plug and receptacle contacts shall first be checked to ensure they are of proper mating configurations.

(c) Grounding-type equipment.

(i) A flexible cord used with grounding-type equipment shall contain an equipment grounding conductor.

(ii) Attachment plugs and receptacles shall not be connected or altered in a manner which would prevent proper continuity of the equipment grounding conductor at the point where plugs are attached to receptacles. Additionally, these devices shall not be altered to allow the grounding pole of a plug to be inserted into slots intended for connection to the current-carrying conductors.

(iii) Adapters which interrupt the continuity of the equipment grounding connection shall not be used.

(d) Conductive work locations. Portable electric equipment and flexible cords used in highly conductive work locations (such as those inundated with water or other conductive liquids), or in job locations where employees are likely to contact water or conductive liquids, shall be approved for those locations.

(e) Connecting attachment plugs.

(i) Employees' hands shall not be wet when plugging and unplugging flexible cords and cord- and plug-connected equipment, if energized equipment is involved.

(ii) Energized plug and receptacle connections shall be handled only with insulating protective equipment if the condition of the connection could provide a conducting path to the employee's hand (if, for example, a cord connector is wet from being immersed in water).

(iii) Locking-type connectors shall be properly secured after connection.

(2) Electric power and lighting circuits.

(a) Routine opening and closing of circuits. Load rated switches, circuit breakers, or other devices specifically designed as disconnecting means shall be used for the opening, reversing, or closing of circuits under load conditions. Cable connectors not of the load-break type, fuses, terminal lugs, and cable splice connections shall not be used for such purposes, except in an emergency.

(b) Reclosing circuits after protective device operation. After a circuit is deenergized by a circuit protective device, the circuit shall not be manually reenergized until it has been determined that the equipment and circuit can be safely ener-

gized. The repetitive manual reclosing of circuit breakers or reenergizing circuits through replaced fuses is prohibited.

Note: When it can be determined from the design of the circuit and the overcurrent devices involved that the automatic operation of a device was caused by an overload rather than a fault condition, no examination of the circuit or connected equipment is needed before the circuit is reenergized.

(c) Overcurrent protection modification. Overcurrent protection of circuits and conductors shall not be modified, even on a temporary basis, beyond that allowed by chapter 296-24 WAC Part L the installation safety requirements for overcurrent protection.

(3) Test instruments and equipment.

(a) Use. Only qualified persons shall perform testing work on electric circuits or equipment.

(b) Visual inspection. Test instruments and equipment and all associated test leads, cables, power cords, probes, and connectors shall be visually inspected for external defects and damage before the equipment is used. If there is a defect or evidence of damage that might expose an employee to injury, the defective or damaged item shall be removed from service, and no employee shall use it until necessary repairs and tests to render the equipment safe have been made.

(c) Rating of equipment. Test instruments and equipment and their accessories shall be rated for the circuits and equipment to which they will be connected and shall be designed for the environment in which they will be used.

(4) Occasional use of flammable or ignitable materials. Where flammable materials are present only occasionally, electric equipment capable of igniting them shall not be used, unless measures are taken to prevent hazardous conditions from developing. Such materials include, but are not limited to: flammable gases, vapors, or liquids; combustible dust; and ignitable fibers or flyings.

Note: Electrical installation requirements for locations where flammable materials are present on a regular basis are contained in WAC 296-24-95613.

[Statutory Authority: Chapter 49.17 RCW. 91-24-017 (Order 91-07), § 296-24-985, filed 11/22/91, effective 12/24/91.]

Chapter 296-27 WAC

RECORDKEEPING AND REPORTING

WAC

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 296-27-061 Nonmandatory Appendix A—Age adjustment calculations for comparing audiograms for recording hearing loss.

DISPOSITION OF SECTIONS FORMERLY CODIFIED IN THIS CHAPTER

<p>296-27-010 Purpose and scope. [Statutory Authority: Chapters 42.30 and 43.22 RCW, RCW 49.17.040, 49.17.050 and 49.17.240. 78-07-052 (Order 78-10), § 296-27-010, filed 6/28/78; Order 74-22, § 296-27-010, filed 5/6/74.] Repealed by 02-01-064, filed 12/14/01, effective 1/1/02. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.</p> <p>296-27-01117 Recording criteria for cases involving work-related musculoskeletal disorders. [Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060. 02-22-029, § 296-27-01117, filed 10/28/02, effective 1/1/03. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-01-064, § 296-27-01117, filed 12/14/01, effective 1/1/02.] Repealed by 03-24-085, filed 12/2/03, effective 1/1/04. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060.</p> <p>296-27-020 Definitions. [Statutory Authority: Chapter 49.17 RCW. 91-24-017 (Order 91-07), § 296-27-020, filed 11/22/91, effective 12/24/91; 89-11-035 (Order 89-03), § 296-27-020, filed 5/15/89, effective 6/30/89. Statutory Authority: RCW 49.17.040 and 49.17.050. 83-15-017 (Order 83-19), § 296-27-020, filed 7/13/83, effective 9/12/83. Statutory Authority: Chapters 42.30 and 43.22 RCW, RCW 49.17.040, 49.17.050 and 49.17.240. 78-07-052 (Order 78-10), § 296-27-020, filed 6/28/78; Order 74-22, § 296-27-020, filed 5/6/74.] Repealed by 02-01-064, filed 12/14/01, effective 1/1/02. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.</p> <p>296-27-030 Log and summary of occupational injuries and illnesses. [Statutory Authority: RCW 49.17.040, 49.17.150, and 49.17.240. 79-08-115 (Order 79-9), § 296-27-030, filed 7/31/79. Statutory Authority: Chapters 42.30 and 43.22 RCW, RCW 49.17.040, 49.17.050 and 49.17.240. 78-07-052 (Order 78-10), § 296-27-030, filed 6/28/78; Order 74-22, § 296-27-030, filed 5/6/74.] Repealed by 02-01-064, filed 12/14/01, effective 1/1/02. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.</p> <p>296-27-040 Period covered by logs. [Statutory Authority: RCW 49.17.040, 49.17.150, and 49.17.240. 79-08-115 (Order 79-9), § 296-27-040, filed 7/31/79; Order 74-22, § 296-27-040, filed 5/6/74.] Repealed by 02-01-064, filed 12/14/01, effective 1/1/02. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.</p> <p>296-27-050 Supplementary record. [Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-27-050, filed 7/20/94, effective 9/20/94. Statutory Authority: RCW 49.17.040, 49.17.150, and 49.17.240. 79-08-115 (Order 79-9), § 296-27-050, filed 7/31/79. Statutory Authority: Chapters 42.30 and 43.22 RCW, RCW 49.17.040, 49.17.050 and 49.17.240. 78-07-052 (Order 78-10), § 296-27-050, filed 6/28/78; Order 74-22, § 296-27-050, filed 5/6/74.] Repealed by 02-01-064, filed 12/14/01, effective 1/1/02. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.</p> <p>296-27-060 Annual summary. [Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-27-060, filed 7/20/94, effective 9/20/94. Statutory Authority: Chapters 42.30 and 43.22 RCW, RCW 49.17.040, 49.17.050 and 49.17.240. 78-07-052 (Order 78-10), § 296-27-060, filed 6/28/78; Order 74-22, § 296-27-060, filed 5/6/74.] Repealed by 02-01-064, filed 12/14/01, effective 1/1/02.</p>	<p>296-27-070 Retention of records. [Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-27-070, filed 7/20/94, effective 9/20/94. Statutory Authority: RCW 49.17.040, 49.17.150, and 49.17.240. 79-08-115 (Order 79-9), § 296-27-070, filed 7/31/79; Order 74-22, § 296-27-070, filed 5/6/74.] Repealed by 02-01-064, filed 12/14/01, effective 1/1/02. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.</p> <p>296-27-075 Employees not in fixed establishments. [Order 74-22, § 296-27-075, filed 5/6/74.] Repealed by 02-01-064, filed 12/14/01, effective 1/1/02. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.</p> <p>296-27-077 Small employers. [Statutory Authority: Chapters 42.30 and 43.22 RCW, RCW 49.17.040, 49.17.050 and 49.17.240. 78-07-052 (Order 78-10), § 296-27-077, filed 6/28/78.] Repealed by 02-01-064, filed 12/14/01, effective 1/1/02. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.</p> <p>296-27-078 Private employers classified in standard industrial classification codes (SIC) 52 through 89, (except 52 through 54, 70, 75, 76, 79 and 80). [Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-27-078, filed 7/20/94, effective 9/20/94. Statutory Authority: RCW 49.17.040 and 49.17.050. 83-24-013 (Order 83-34), § 296-27-078, filed 11/30/83; 83-15-017 (Order 83-19), § 296-27-078, filed 7/13/83, effective 9/12/83.] Repealed by 02-01-064, filed 12/14/01, effective 1/1/02. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.</p> <p>296-27-080 Access to records. [Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-27-080, filed 7/20/94, effective 9/20/94. Statutory Authority: RCW 49.17.040, 49.17.150, and 49.17.240. 79-08-115 (Order 79-9), § 296-27-080, filed 7/31/79; Order 74-22, § 296-27-080, filed 5/6/74.] Repealed by 02-01-064, filed 12/14/01, effective 1/1/02. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.</p> <p>296-27-090 Reporting of fatality or multiple hospitalization incidents. [Statutory Authority: Chapter 49.17 RCW. 94-20-057 (Order 94-16), § 296-27-090, filed 9/30/94, effective 11/20/94. Statutory Authority: RCW 49.17.040 and 49.17.050. 86-03-064 (Order 86-02), § 296-27-090, filed 1/17/86; Order 74-22, § 296-27-090, filed 5/6/74.] Repealed by 01-11-038, filed 5/9/01, effective 9/1/01. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.</p> <p>296-27-100 Falsification, failure to keep records or reports. [Order 74-22, § 296-27-100, filed 5/6/74.] Repealed by 02-01-064, filed 12/14/01, effective 1/1/02. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.</p> <p>296-27-110 Change of ownership. [Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-27-110, filed 7/20/94, effective 9/20/94; Order 74-22, § 296-27-110, filed 5/6/74.] Repealed by 02-01-064, filed 12/14/01, effective 1/1/02. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.</p> <p>296-27-120 Petitions for recordkeeping exceptions. [Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-27-120, filed 7/20/94, effective 9/20/94. Statutory Authority: Chapters 42.30 and 43.22 RCW, RCW 49.17.040, 49.17.050 and 49.17.240. 78-07-052 (Order 78-10), § 296-27-120, filed 6/28/78; Order 76-29, § 296-27-120, filed 9/30/76; Order 74-22, § 296-27-120, filed 5/6/74.] Repealed by 02-01-064, filed 12/14/01, effective 1/1/02. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.</p> <p>296-27-121 Additional recordkeeping requirements. [Order 76-29, § 296-27-121, filed 9/30/76.] Repealed by 02-01-064, filed 12/14/01, effective 1/1/02. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.</p> <p>296-27-130 Description of statistical program. [Statutory Authority: RCW 49.17.040, 49.17.150, and 49.17.240. 79-08-115 (Order 79-9), § 296-27-130, filed 7/31/79; Order 74-22, § 296-27-130, filed 5/6/74.] Repealed by 02-01-064, filed 12/14/01, effective 1/1/02. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.</p> <p>296-27-140 Duties of employers—Statistical program. [Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-27-140, filed 7/20/94, effective 9/20/94. Statutory Authority: Chapters 42.30 and 43.22 RCW, RCW 49.17.040, 49.17.050 and 49.17.240. 78-07-052 (Order 78-10), § 296-27-140, filed 6/28/78; Order 74-22, §</p>
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	296-27-140, filed 5/6/74.] Repealed by 02-01-064, filed 12/14/01, effective 1/1/02. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.		5/17/00, effective 8/1/00. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.
296-27-150	Effective date of regulations. [Statutory Authority: Chapters 42.30 and 43.22 RCW, RCW 49.17.040, 49.17.050 and 49.17.240. 78-07-052 (Order 78-10), § 296-27-150, filed 6/28/78; Order 74-22, § 296-27-150, filed 5/6/74.] Repealed by 00-11-098, filed 5/17/00, effective 8/1/00. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.	296-27-16009	Follow-up inspections. [Statutory Authority: RCW 49.17.040 and 49.17.050. 86-03-064 (Order 86-02), § 296-27-16009, filed 1/17/86; 81-14-006 (Order 81-13), § 296-27-16009, filed 6/22/81.] Repealed by 87-03-011 (Order 86-48), filed 1/12/87. Statutory Authority: RCW 49.17.040 and 49.17.050.
296-27-15501	Division of consultation and compliance, public records. [Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-27-15501, filed 7/20/94, effective 9/20/94; 88-14-108 (Order 88-11), § 296-27-15501, filed 7/6/88. Statutory Authority: RCW 49.17.040 and 49.17.050. 86-03-064 (Order 86-02), § 296-27-15501, filed 1/17/86.] Repealed by 01-11-038, filed 5/9/01, effective 9/1/01. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.	296-27-16011	Refusal or limitation of inspection. [Statutory Authority: RCW 49.17.040 and 49.17.050. 87-03-011 (Order 86-48), § 296-27-16011, filed 1/12/87; 83-24-013 (Order 83-34), § 296-27-16011, filed 11/30/83; 81-14-006 (Order 81-13), § 296-27-16011, filed 6/22/81.] Repealed by 00-11-098, filed 5/17/00, effective 8/1/00. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.
296-27-15503	Special exemptions for confidential reports within the department's files. [Statutory Authority: RCW 49.17.040, [49.17].050 and [49.17].060. 97-11-054, § 296-27-15503, filed 5/20/97, effective 6/20/97. Statutory Authority: Chapter 49.17 RCW. 96-17-056, § 296-27-15503, filed 8/20/96, effective 10/15/96; 94-15-096 (Order 94-07), § 296-27-15503, filed 7/20/94, effective 9/20/94. Statutory Authority: RCW 49.17.040 and 49.17.050. 86-03-064 (Order 86-02), § 296-27-15503, filed 1/17/86.] Repealed by 01-11-038, filed 5/9/01, effective 9/1/01. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.	296-27-16013	WISHA—Required investigations and inspections. [Statutory Authority: RCW 49.17.040 and 49.17.050. 81-14-006 (Order 81-13), § 296-27-16013, filed 6/22/81.] Repealed by 87-03-011 (Order 86-48), filed 1/12/87. Statutory Authority: RCW 49.17.040 and 49.17.050.
296-27-15505	Accident investigation reports. [Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-27-15505, filed 7/20/94, effective 9/20/94. Statutory Authority: RCW 49.17.040 and 49.17.050. 86-03-064 (Order 86-02), § 296-27-15505, filed 1/17/86.] Repealed by 01-11-038, filed 5/9/01, effective 9/1/01. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.	296-27-16015	WITS—In general. [Statutory Authority: RCW 49.17.040 and 49.17.050. 81-14-006 (Order 81-13), § 296-27-16015, filed 6/22/81.] Repealed by 87-03-011 (Order 86-48), filed 1/12/87. Statutory Authority: RCW 49.17.040 and 49.17.050.
296-27-160	Safety and health inspections. [Statutory Authority: RCW 49.17.040 and 49.17.050. 87-03-011 (Order 86-48), § 296-27-160, filed 1/12/87; 81-14-006 (Order 81-13), § 296-27-160, filed 6/22/81.] Repealed by 00-11-098, filed 5/17/00, effective 8/1/00. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.	296-27-16017	WITS—Safety. [Statutory Authority: RCW 49.17.040 and 49.17.050. 81-14-006 (Order 81-13), § 296-27-16017, filed 6/22/81.] Repealed by 87-03-011 (Order 86-48), filed 1/12/87. Statutory Authority: RCW 49.17.040 and 49.17.050.
296-27-16001	Definitions. [Statutory Authority: Chapter 49.17 RCW. 96-17-056, § 296-27-16001, filed 8/20/96, effective 10/15/96; 91-24-017 (Order 91-07), § 296-27-16001, filed 11/22/91, effective 12/24/91. Statutory Authority: RCW 49.17.040 and 49.17.050. 87-03-011 (Order 86-48), § 296-27-16001, filed 1/12/87; 81-14-006 (Order 81-13), § 296-27-16001, filed 6/22/81.] Repealed by 00-11-098, filed 5/17/00, effective 8/1/00. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.	296-27-16018	Compliance inspections. [Statutory Authority: RCW 49.17.040 and 49.17.050. 87-03-011 (Order 86-48), § 296-27-16018, filed 1/12/87.] Repealed by 00-11-098, filed 5/17/00, effective 8/1/00. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.
296-27-16002	Inspection hours. [Statutory Authority: RCW 49.17.040 and 49.17.050. 87-03-011 (Order 86-48), § 296-27-16002, filed 1/12/87.] Repealed by 00-11-098, filed 5/17/00, effective 8/1/00. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.	296-27-16019	WITS—Safety. [Statutory Authority: RCW 49.17.040 and 49.17.050. 81-14-006 (Order 81-13), § 296-27-16019, filed 6/22/81.] Repealed by 87-03-011 (Order 86-48), filed 1/12/87. Statutory Authority: RCW 49.17.040 and 49.17.050.
296-27-16003	Inspection format. [Statutory Authority: RCW 49.17.040 and 49.17.050. 87-03-011 (Order 86-48), § 296-27-16003, filed 1/12/87; 81-14-006 (Order 81-13), § 296-27-16003, filed 6/22/81.] Repealed by 00-11-098, filed 5/17/00, effective 8/1/00. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.	296-27-16020	Inspection selection, scheduling criteria, and limit on number of inspections. [Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-27-16020, filed 7/20/94, effective 9/20/94. Statutory Authority: RCW 49.17.040 and 49.17.050. 87-03-011 (Order 86-48), § 296-27-16020, filed 1/12/87.] Repealed by 00-11-098, filed 5/17/00, effective 8/1/00. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.
296-27-16004	Interprogram referrals. [Statutory Authority: RCW 49.17.040 and 49.17.050. 87-03-011 (Order 86-48), § 296-27-16004, filed 1/12/87.] Repealed by 00-11-098, filed 5/17/00, effective 8/1/00. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.	296-27-16021	WITS—Safety—Limit on number of inspections. [Statutory Authority: RCW 49.17.040 and 49.17.050. 81-14-006 (Order 81-13), § 296-27-16021, filed 6/22/81.] Repealed by 87-03-011 (Order 86-48), filed 1/12/87. Statutory Authority: RCW 49.17.040 and 49.17.050.
296-27-16005	Objects of inspection. [Statutory Authority: RCW 49.17.040 and 49.17.050. 81-14-006 (Order 81-13), § 296-27-16005, filed 6/22/81.] Repealed by 87-03-011 (Order 86-48), filed 1/12/87. Statutory Authority: RCW 49.17.040 and 49.17.050.	296-27-16022	Unprogrammed inspections, follow-up inspections, monitoring inspections, and "high hazard" inspections. [Statutory Authority: RCW 49.17.040 and 49.17.050. 87-03-011 (Order 86-48), § 296-27-16022, filed 1/12/87.] Repealed by 00-11-098, filed 5/17/00, effective 8/1/00. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.
296-27-16007	Citations, penalty assessments and notices of violations. [Statutory Authority: Chapter 49.17 RCW. 91-24-017 (Order 91-07), § 296-27-16007, filed 11/22/91, effective 12/24/91. Statutory Authority: RCW 49.17.040 and 49.17.050. 87-03-011 (Order 86-48), § 296-27-16007, filed 1/12/87; 81-14-006 (Order 81-13), § 296-27-16007, filed 6/22/81.] Repealed by 00-11-098, filed	296-27-16023	Adjustment factors. [Statutory Authority: RCW 49.17.040 and 49.17.050. 81-14-006 (Order 81-13), § 296-27-16023, filed 6/22/81.] Repealed by 87-03-011 (Order 86-48), filed 1/12/87. Statutory Authority: RCW 49.17.040 and 49.17.050.
		296-27-16026	Programmed inspections. [Statutory Authority: RCW 49.17.040 and 49.17.050. 87-03-011 (Order 86-48), § 296-27-16026, filed 1/12/87.] Repealed by 00-11-098, filed 5/17/00, effective 8/1/00. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.
		296-27-200	Posting of notice, availability of act regulations and applicable standards. [Order 74-22, § 296-27-200, filed 5/6/74.] Repealed by Order 75-14, filed 4/14/75. See WAC 296-350-400.
		296-27-210	Abatement verification. [Statutory Authority: RCW 49.17.040. 99-02-019, § 296-27-210, filed 12/29/98, effective 7/1/99.] Repealed by 01-11-038, filed 5/9/01, effective 9/1/01. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.
		296-27-21001	What is the purpose of this rule? [Statutory Authority: RCW 49.17.040. 99-02-019, § 296-27-21001, filed 12/29/98, effective 7/1/99.] Repealed by 01-11-038,

- filed 5/9/01, effective 9/1/01. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.
- 296-27-21005 When does this rule apply? [Statutory Authority: RCW 49.17.040, 99-02-019, § 296-27-21005, filed 12/29/98, effective 7/1/99.] Repealed by 01-11-038, filed 5/9/01, effective 9/1/01. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.
- 296-27-21010 What definitions apply to this rule? [Statutory Authority: RCW 49.17.040, 99-02-019, § 296-27-21010, filed 12/29/98, effective 7/1/99.] Repealed by 01-11-038, filed 5/9/01, effective 9/1/01. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.
- 296-27-21015 What must an employer do when asked to abate a violation? [Statutory Authority: RCW 49.17.040, 99-02-019, § 296-27-21015, filed 12/29/98, effective 7/1/99.] Repealed by 01-11-038, filed 5/9/01, effective 9/1/01. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.
- 296-27-21020 When must an employer submit additional documentation of abatement? [Statutory Authority: RCW 49.17.040, 99-02-019, § 296-27-21020, filed 12/29/98, effective 7/1/99.] Repealed by 01-11-038, filed 5/9/01, effective 9/1/01. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.
- 296-27-21025 When must an employer provide abatement plans? [Statutory Authority: RCW 49.17.040, 99-02-019, § 296-27-21025, filed 12/29/98, effective 7/1/99.] Repealed by 01-11-038, filed 5/9/01, effective 9/1/01. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.
- 296-27-21030 When must an employer submit progress reports? [Statutory Authority: RCW 49.17.040, 99-02-019, § 296-27-21030, filed 12/29/98, effective 7/1/99.] Repealed by 01-11-038, filed 5/9/01, effective 9/1/01. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.
- 296-27-21035 What must an employer do to keep employees informed about abatement activities? [Statutory Authority: RCW 49.17.040, 99-02-019, § 296-27-21035, filed 12/29/98, effective 7/1/99.] Repealed by 01-11-038, filed 5/9/01, effective 9/1/01. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.
- 296-27-21040 How will the department determine the date that documents are submitted? [Statutory Authority: RCW 49.17.040, 99-02-019, § 296-27-21040, filed 12/29/98, effective 7/1/99.] Repealed by 01-11-038, filed 5/9/01, effective 9/1/01. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.
- 296-27-21045 What are the requirements related to movable equipment? [Statutory Authority: RCW 49.17.040, 99-02-019, § 296-27-21045, filed 12/29/98, effective 7/1/99.] Repealed by 01-11-038, filed 5/9/01, effective 9/1/01. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.
- 296-27-21050 Appendix A (Nonmandatory). [Statutory Authority: RCW 49.17.040, 99-02-019, § 296-27-21050, filed 12/29/98, effective 7/1/99.] Repealed by 01-11-038, filed 5/9/01, effective 9/1/01. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.

WAC 296-27-00101 Purpose and scope. (1) Purpose.

The purpose of this standard is to require employers to record and report work-related fatalities, injuries and illnesses.

Note 1: Recording or reporting a work-related injury, illness, or fatality does not mean that the employer or employee was at fault, that a rule has been violated, or that the employee is eligible for workers' compensation or other benefits.

(2) **Scope.** All employers covered by the Washington Industrial Safety and Health Act (WISHA) are covered by this standard. However, most employers do not have to keep injury and illness records unless WISHA, OSHA, or the Bureau of Labor Statistics (BLS) informs them in writing that they must keep records. For example, employers with ten or fewer employees and business establishments in certain industry classifications are partially exempt from keeping injury and illness records.

Note: The recordkeeping and reporting requirements of this chapter are separate and distinct from the recordkeeping and

reporting requirements under Title 51 RCW (the Industrial Insurance Act) unless otherwise noted in this chapter.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-01-064, § 296-27-00101, filed 12/14/01, effective 1/1/02.]

WAC 296-27-00103 Partial exemption for employers with ten or fewer employees. (1) Basic requirement.

(a) If your company had ten or fewer employees at all times during the last calendar year, you do not need to keep injury and illness records unless WISHA, OSHA, or the BLS informs you in writing that you must keep records under this section. However, as required by WAC 296-27-03101, all employers covered by the WISH Act must report any workplace incident that results in a fatality or the hospitalization of two or more employees.

(b) If your company had more than ten employees at any time during the last calendar year, you must keep injury and illness records unless your establishment is classified as a partially exempt industry under WAC 296-27-00105.

(2) Implementation.

(a) **Is the partial exemption for size based on the size of my entire company or on the size of an individual business establishment?** The partial exemption for size is based on the number of employees in the entire company.

(b) **How do I determine the size of my company to find out if I qualify for the partial exemption for size?** To determine if you are exempt because of size, you need to determine your company's peak employment during the last calendar year. If you had no more than ten employees at any time in the last calendar year, your company qualifies for the partial exemption for size.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-01-064, § 296-27-00103, filed 12/14/01, effective 1/1/02.]

WAC 296-27-00105 Partial exemption for private employers in certain industries. (1) Basic requirement.

(a) If your private business establishment is classified in a specific low hazard retail, service, finance, insurance or real estate industry listed in Table 1 you do not need to keep injury and illness records unless WISHA, OSHA, or the BLS asks you to keep the records under WAC 296-27-03105 or 296-27-03107. (Public employers are not included in this exemption, except as indicated in (b) of this subsection.) However, all employers must report to WISHA any workplace incident that results in a fatality or the hospitalization of two or more employees (see WAC 296-800-32005).

(b) If you are a public employer in SIC 821 (elementary and secondary schools) and 823 (libraries), you do not need to keep injury and illness records unless WISHA, OSHA, or the BLS asks you to keep the records under WAC 296-27-03105 or 296-27-03107. However, all employers must report to WISHA any workplace incident that results in a fatality or the hospitalization of two or more employees (see WAC 296-800-32005).

(c) If one or more of your company's establishments are classified in a nonexempt industry, you must keep injury and illness records for all of such establishments unless your company is partially exempted because of size under WAC 296-27-00103.

(2) Implementation.

(a) **Does the partial industry classification exemption apply only to business establishments in the retail, services, finance, insurance or real estate industries (SICs 52-89)?** Yes, business establishments classified in agriculture; mining; construction; manufacturing; transportation; communication, electric, gas and sanitary services; or wholesale trade are not eligible for the partial industry classification exemption.

(b) **Is the partial industry classification exemption based on the industry classification of my entire company or on the classification of individual business establishments operated by my company?** The partial industry classification exemption applies to individual business establishments. If a company has several business establishments engaged in different classes of business activities, some of the company's establishments may be required to keep records, while others may be exempt.

(c) **How do I determine the Standard Industrial Classification code for my company or for individual establishments?** You determine your Standard Industrial Classification (SIC) code by using the Standard Industrial Classification manual, *Executive Office of the President, Office of Management and Budget*. You may contact your local L&I office for help in determining your SIC or visit Department of Revenue's web site, http://dor.wa.gov/reports/Qbrsearch/sic_list.htm.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-01-064, § 296-27-00105, filed 12/14/01, effective 1/1/02.]

WAC 296-27-00107 Keeping records for more than one agency. If you create records to comply with another government agency's injury and illness recordkeeping requirements, OSHA will consider those records as meeting federal recordkeeping requirements if OSHA accepts the other agency's records under a memorandum of understanding with that agency, or if the other agency's records contain the same information as required by 29 CFR, Part 1904 requires you to record. You may contact WISHA or your local L&I office for help in determining whether your records meet OSHA's requirements.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-01-064, § 296-27-00107, filed 12/14/01, effective 1/1/02.]

WAC 296-27-00109 Nonmandatory appendix to this section—Partially exempt industries. Employers are not required to keep OSHA injury and illness records for any establishment classified in the following Standard Industrial Classification (SIC) codes, unless they are asked in writing to do so by WISHA, OSHA, or the Bureau of Labor Statistics (BLS). All employers, including those partially exempted by reason of company size or industry classification, must report to WISHA any workplace incident that results in a fatality or the hospitalization of two or more employees (see WAC 296-800-32005).

See Table "I" at the end of this document.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-01-064, § 296-27-00109, filed 12/14/01, effective 1/1/02.]

[Title 296 WAC—p. 880]

WAC 296-27-011 Recordkeeping forms and recording criteria. This section describes the work-related injuries and illnesses that an employer must enter into the OSHA records and explains the OSHA forms that employers must use to record work-related fatalities, injuries, and illnesses.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-01-064, § 296-27-011, filed 12/14/01, effective 1/1/02.]

WAC 296-27-01101 Recording criteria. (1) Basic requirement. Each employer required by this chapter to keep records of fatalities, injuries, and illnesses must record each fatality, injury and illness that:

- Is work-related;
- Is a new case; and
- Meets one or more of the general recording criteria of WAC 296-27-01107 or the application to specific cases of WAC 296-27-01109 through 296-27-01117.

(2) Implementation.

(a) **What sections of this rule describe recording criteria for recording work-related injuries and illnesses?** The table below indicates which sections of the rule address each topic.

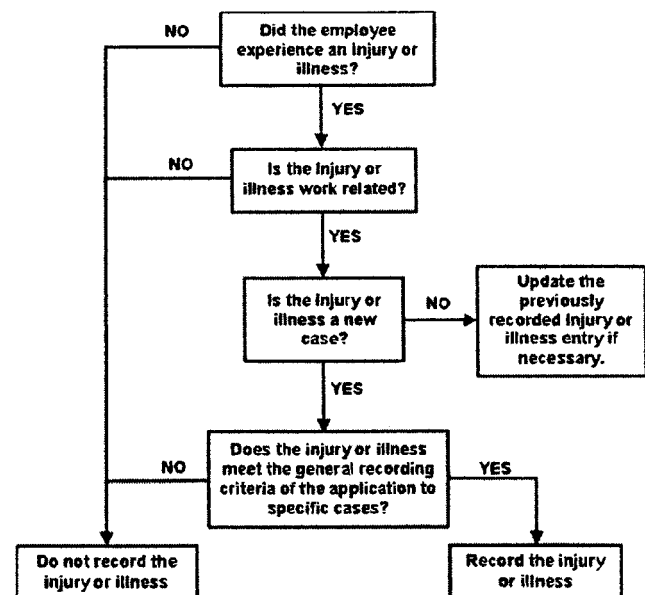
(i) Determination of work-relatedness. See WAC 296-27-01103.

(ii) Determination of a new case. See WAC 296-27-01105.

(iii) General recording criteria. See WAC 296-27-01107.

(iv) Additional criteria. (Needlestick and sharps injury cases, tuberculosis cases, hearing loss cases, medical removal cases, and musculoskeletal disorder cases). See WAC 296-27-01109 through 296-27-01117.

(b) **How do I decide whether a particular injury or illness is recordable?** The decision tree for recording work-related injuries and illnesses below shows the steps involved in making this determination.



(c) **May I be required to keep other records or report additional information?** Yes, the director may require that additional records be kept or additional information reported to achieve the purpose of the WISH Act.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-01-064, § 296-27-01101, filed 12/14/01, effective 1/1/02.]

WAC 296-27-01103 Determination of work-relatedness. (1) Basic requirement. You must consider an injury or illness to be work-related if an event or exposure in the work environment either caused or contributed to the resulting condition or significantly aggravated a preexisting injury or illness. Work-relatedness is presumed for injuries and illnesses resulting from events or exposures occurring in the work environment, unless an exception in WAC 296-27-01103 (2)(b) specifically applies.

(2) Implementation.

(a) **What is the "work environment"?** Work environment is defined as "the establishment and other locations where one or more employees are working or are present as a condition of their employment. The work environment includes not only physical locations, but also the equipment or materials used by the employee during the course of his or her work."

(b) **Are there situations where an injury or illness occurs in the work environment and is not considered work-related?** Yes, an injury or illness occurring in the work environment that falls under one of the following exceptions is not work-related, and therefore is not recordable.

You are **not** required to record injuries and illnesses if:

- At the time of the injury or illness, the employee was present in the work environment as a member of the general public rather than as an employee.
- The injury or illness involves signs or symptoms that surface at work but result solely from a nonwork-related event or exposure that occurs outside the work environment.
- The injury or illness results solely from voluntary participation in a wellness program or in a medical, fitness, or recreational activity such as blood donation, physical examination, flu shot, exercise class, racquetball, or baseball.
- The injury or illness is solely the result of an employee eating, drinking, or preparing food or drink for personal consumption (whether bought on the employer's premises or brought in). For example, if the employee is injured by choking on a sandwich while in the employer's establishment, the case would not be considered work-related.

Note: If the employee is made ill by ingesting food contaminated by workplace contaminants (such as lead), or gets food poisoning from food supplied by the employer, the case would be considered work-related.

- The injury or illness is solely the result of an employee doing personal tasks (unrelated to their employment) at the establishment outside of the employee's assigned working hours.

- The injury or illness is solely the result of personal grooming, self medication for a nonwork-related condition, or is intentionally self-inflicted.

- The injury or illness is caused by a motor vehicle accident and occurs on a company parking lot or company access road while the employee is commuting to or from work.

- The illness is the common cold or flu.

Note: Contagious diseases such as tuberculosis, brucellosis, hepatitis A, or plague are considered work-related if the employee is infected at work.

- The illness is a mental illness. Mental illness will not be considered work-related unless the employee voluntarily provides the employer with an opinion from a physician or other licensed health care professional with appropriate training and experience (psychiatrist, psychologist, psychiatric nurse practitioner, etc.) stating that the employee has a mental illness that is work-related.

(c) **How do I handle a case if it is not obvious whether the precipitating event or exposure occurred in the work environment or occurred away from work?** In these situations, you must evaluate the employee's work duties and environment to decide whether or not one or more events or exposures in the work environment either caused or contributed to the resulting condition or significantly aggravated a preexisting condition.

(d) **How do I know if an event or exposure in the work environment "significantly aggravated" a preexisting injury or illness?** A preexisting injury or illness has been significantly aggravated, for purposes of injury and illness recordkeeping, when an event or exposure in the work environment results in any of the following:

- Death, provided that the preexisting injury or illness would likely not have resulted in death but for the occupational event or exposure.
- Loss of consciousness, provided that the preexisting injury or illness would likely not have resulted in loss of consciousness but for the occupational event or exposure.
- One or more days away from work, or days of restricted work, or days of job transfer that otherwise would not have occurred but for the occupational event or exposure.
- Medical treatment in a case where no medical treatment was needed for the injury or illness before the workplace event or exposure, or a change in medical treatment was necessitated by the workplace event or exposure.

(e) **Which injuries and illnesses are considered preexisting conditions?** An injury or illness is a preexisting condition if it resulted solely from a nonwork-related event or exposure that occurred outside the work environment.

(f) **How do I decide whether an injury or illness is work-related if the employee is on travel status at the time the injury or illness occurs?** Injuries and illnesses that occur while an employee is on travel status are work-related if, at the time of the injury or illness, the employee was engaged in work activities "in the interest of the employer." Examples of such activities include travel to and from customer contacts, conducting job tasks, and entertaining or being entertained to transact, discuss, or promote business (work-related entertainment includes only entertainment activities being engaged in at the direction of the employer).

Injuries or illnesses that occur when the employee is on travel status do not have to be recorded if they meet one of the exceptions listed below.

If the employee has:

- Checked into a hotel or motel for one or more days

- Taken a detour for personal reasons

(g) **How do I decide if a case is work-related when the employee is working at home?** Injuries and illnesses that occur while an employee is working at home, including work in a home office, will be considered work-related if the injury or illness occurs while the employee is performing work for pay or compensation in the home, and the injury or illness is directly related to the performance of work rather than to the general home environment or setting. For example, if an employee drops a box of work documents and injures his or her foot, the case is considered work-related. If an employee's fingernail is punctured by a needle from a sewing machine used to perform garment work at home, becomes infected and requires medical treatment, the injury is considered work-related. If an employee is injured because he or she trips on the family dog while rushing to answer a work phone call, the case is not considered work-related. If an employee working at home is electrocuted because of faulty home wiring, the injury is not considered work-related.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-01-064, § 296-27-01103, filed 12/14/01, effective 1/1/02.]

WAC 296-27-01105 Determination of new cases. (1) Basic requirement. You must consider an injury or illness to be a "new case" if:

(a) The employee has not previously experienced a recorded injury or illness of the same type that affects the same part of the body; or

(b) The employee previously experienced a recorded injury or illness of the same type that affected the same part of the body but had recovered completely (all signs and symptoms had disappeared) from the previous injury or illness and an event or exposure in the work environment caused the signs or symptoms to reappear.

(2) Implementation.

(a) **When an employee experiences the signs or symptoms of a chronic work-related illness, do I need to consider each recurrence of signs or symptoms to be a new case?** No, for occupational illnesses where the signs or symptoms may recur or continue in the absence of an exposure in the workplace, the case must only be recorded once.

[Title 296 WAC—p. 882]

You may use the following to determine if an injury or illness is work-related.

When a traveling employee checks in to a hotel, motel, or into another temporary residence, he or she establishes a "home away from home." You must evaluate the employee's activities after he or she checks into the hotel, motel, or other temporary residence for their work-relatedness in the same manner as you evaluate the activities of a nontraveling employee. When the employee checks into the temporary residence, he or she is considered to have left the work environment. When the employee begins work each day, he or she reenters the work environment. If the employee has established a "home away from home" and is reporting to a fixed worksite each day, you also do not consider injuries or illnesses work-related if they occur while the employee is commuting between the temporary residence and the job location.

Injuries or illnesses are not considered work-related if they occur while the employee is on a personal detour from a reasonably direct route of travel (e.g., has taken a side trip for personal reasons).

Examples may include occupational cancer, asbestosis, byssinosis and silicosis.

(b) **When an employee experiences the signs or symptoms of an injury or illness as a result of an event or exposure in the workplace, such as an episode of occupational asthma, must I treat the episode as a new case?** Yes, because the episode or recurrence was caused by an event or exposure in the workplace, the incident must be treated as a new case.

(c) **May I rely on a physician or other licensed health care professional to determine whether a case is a new case or a recurrence of an old case?** You are not required to seek the advice of a physician or other licensed health care professional. However, if you do seek such advice, you must follow the physician or other licensed health care professional's recommendation about whether the case is a new case or a recurrence. If you receive recommendations from two or more physicians or other licensed health care professionals, you must make a decision as to which recommendation is the most authoritative (best documented, best reasoned, or most authoritative), and record the case based upon that recommendation.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-01-064, § 296-27-01105, filed 12/14/01, effective 1/1/02.]

WAC 296-27-01107 General recording criteria. (1) Basic requirement. You must consider an injury or illness to meet the general recording criteria, and therefore to be recordable, if it results in any of the following: Death, days away from work, restricted work or transfer to another job, medical treatment beyond first aid, or loss of consciousness. You must also consider a case to meet the general recording criteria if it involves a significant injury or illness diagnosed by a physician or other licensed health care professional, even if it does not result in death, days away from work, restricted work or job transfer, medical treatment beyond first aid, or loss of consciousness.

(2007 Ed.)

(2) Implementation.

(a) **How do I decide if a case meets one or more of the general recording criteria?** A work-related injury or illness must be recorded if it results in one or more of the following:

(i) Death. See (b) of this subsection.

(ii) Days away from work. See (c) of this subsection.

(iii) Restricted work or transfer to another job. See (d) of this subsection.

(iv) Medical treatment beyond first aid. See (e) of this subsection.

(v) Loss of consciousness. See (f) of this subsection.

(vi) A significant injury or illness diagnosed by a physician or other licensed health care professional. See (g) of this subsection.

(b) **How do I record a work-related injury or illness that results in the employee's death?** You must record an injury or illness that results in death by entering a check mark on the OSHA 300 Log in the space for cases resulting in death. You must also report any work-related fatality to WISHA within eight hours, as required by WAC 296-27-03101.

(c) **How do I record a work-related injury or illness that results in days away from work?** When an injury or illness involves one or more days away from work, you must record the injury or illness on the OSHA 300 Log with a check mark in the space for cases involving days away and an entry of the number of calendar days away from work in the number of days column. If the employee is out for an extended period of time, you must enter an estimate of the days that the employee will be away, and update the day count when the actual number of days is known.

(i) **Do I count the day on which the injury occurred or the illness began?** No, you begin counting days away on the day after the injury occurred or the illness began.

(ii) **How do I record an injury or illness when a physician or other licensed health care professional recommends that the worker stay at home but the employee comes to work anyway?** You must record these injuries and illnesses on the OSHA 300 Log using the check box for cases with days away from work and enter the number of calendar days away recommended by the physician or other licensed health care professional. If a physician or other licensed health care professional recommends days away, you should encourage your employee to follow that recommendation. However, the days away must be recorded whether the injured or ill employee follows the physician or licensed health care professional's recommendation or not. If you receive recommendations from two or more physicians or other licensed health care professionals, you may make a decision as to which recommendation is the most authoritative, and record the case based upon that recommendation.

(iii) **How do I handle a case when a physician or other licensed health care professional recommends that the worker return to work but the employee stays at home anyway?** In this situation, you must end the count of days away from work on the date the physician or other licensed health care professional recommends that the employee return to work.

(iv) **How do I count weekends, holidays, or other days the employee would not have worked anyway?** You must count the number of calendar days the employee was unable

to work as a result of the injury or illness, regardless of whether or not the employee was scheduled to work on those day(s). Weekend days, holidays, vacation days or other days off are included in the total number of days recorded if the employee would not have been able to work on those days because of a work-related injury or illness.

(v) **How do I record a case in which a worker is injured or becomes ill on a Friday and reports to work on a Monday, and was not scheduled to work on the weekend?** You need to record this case only if you receive information from a physician or other licensed health care professional indicating that the employee should not have worked, or should have performed only restricted work, during the weekend. If so, you must record the injury or illness as a case with days away from work or restricted work, and enter the day counts, as appropriate.

(vi) **How do I record a case in which a worker is injured or becomes ill on the day before scheduled time off such as a holiday, a planned vacation, or a temporary plant closing?** You need to record a case of this type only if you receive information from a physician or other licensed health care professional indicating that the employee should not have worked, or should have performed only restricted work, during the scheduled time off. If so, you must record the injury or illness as a case with days away from work or restricted work, and enter the day counts, as appropriate.

(vii) **Is there a limit to the number of days away from work I must count?** Yes, you may "cap" the total days away at one hundred eighty calendar days. You are not required to keep track of the number of calendar days away from work if the injury or illness resulted in more than one hundred eighty calendar days away from work and/or days of job transfer or restriction. In such a case, entering one hundred eighty in the total days away column will be considered adequate.

(viii) **May I stop counting days if an employee who is away from work because of an injury or illness retires or leaves my company?** Yes, if the employee leaves your company for some reason unrelated to the injury or illness, such as retirement, a plant closing, or to take another job, you may stop counting days away from work or days of restriction/job transfer. If the employee leaves your company because of the injury or illness, you must estimate the total number of days away or days of restriction/job transfer and enter the day count on the 300 Log.

(ix) **If a case occurs in one year but results in days away during the next calendar year, do I record the case in both years?** No, you only record the injury or illness once. You must enter the number of calendar days away for the injury or illness on the OSHA 300 Log for the year in which the injury or illness occurred. If the employee is still away from work because of the injury or illness when you prepare the annual summary, estimate the total number of calendar days you expect the employee to be away from work, use this number to calculate the total for the annual summary, and then update the initial log entry later when the day count is known or reaches the one hundred eighty day cap.

(d) **How do I record a work-related injury or illness that results in restricted work or job transfer?** When an injury or illness involves restricted work or job transfer but does not involve death or days away from work, you must

record the injury or illness on the OSHA 300 Log by placing a check mark in the space for job transfer or restriction and an entry of the number of restricted or transferred days in the restricted workdays column.

(i) How do I decide if the injury or illness resulted in restricted work? Restricted work occurs when, as the result of a work-related injury or illness:

- You keep the employee from performing one or more of the routine functions of his or her job, or from working the full workday that he or she would otherwise have been scheduled to work; or
- A physician or other licensed health care professional recommends that the employee not perform one or more of the routine functions of his or her job, or not work the full workday that he or she would otherwise have been scheduled to work.

(ii) What is meant by "routine functions"? For recordkeeping purposes, an employee's routine functions are those work activities the employee regularly performs at least once per week.

(iii) Do I have to record restricted work or job transfer if it applies only to the day on which the injury occurred or the illness began? No, you do not have to record restricted work or job transfers if you, or the physician or other licensed health care professional, impose the restriction or transfer only for the day on which the injury occurred or the illness began.

(iv) If you or a physician or other licensed health care professional recommends a work restriction, is the injury or illness automatically recordable as a "restricted work" case? No, a recommended work restriction is recordable only if it affects one or more of the employee's routine job functions. To determine whether this is the case, you must evaluate the restriction in light of the routine functions of the injured or ill employee's job. If the restriction from you or the physician or other licensed health care professional keeps the employee from performing one or more of his or her routine job functions, or from working the full workday the injured or ill employee would otherwise have worked, the employee's work has been restricted and you must record the case.

(v) How do I record a case where the worker works only for a partial work shift because of a work-related injury or illness? A partial day of work is recorded as a day of job transfer or restriction for recordkeeping purposes, except for the day on which the injury occurred or the illness began.

(vi) If the injured or ill worker produces fewer goods or services than he or she would have produced prior to the injury or illness but otherwise performs all of the routine functions of his or her work, is the case considered a restricted work case? No, the case is considered restricted work only if the worker does not perform all of the routine functions of his or her job or does not work the full shift that he or she would otherwise have worked.

(vii) How do I handle vague restrictions from a physician or other licensed health care professional, such as that the employee engage only in "light duty" or "take it easy for a week"? If you are not clear about the physician or other licensed health care professional's recommendation, you may ask that person whether the employee can do all of

his or her routine job functions and work all of his or her normally assigned work shift. If the answer to both of these questions is "Yes," then the case does not involve a work restriction and does not have to be recorded as such. If the answer to one or both of these questions is "No," the case involves restricted work and must be recorded as a restricted work case. If you are unable to obtain this additional information from the physician or other licensed health care professional who recommended the restriction, record the injury or illness as a case involving restricted work.

(viii) What do I do if a physician or other licensed health care professional recommends a job restriction meeting the definition, but the employee does all of his or her routine job functions anyway? You must record the injury or illness on the OSHA 300 Log as a restricted work case. If a physician or other licensed health care professional recommends a job restriction, you should ensure that the employee complies with that restriction. If you receive recommendations from two or more physicians or other licensed health care professionals, you may make a decision as to which recommendation is the most authoritative, and record the case based upon that recommendation.

(ix) How do I decide if an injury or illness involved a transfer to another job? If you assign an injured or ill employee to a job other than his or her regular job for part of the day, the case involves transfer to another job.

Note: This does not include the day on which the injury or illness occurred.

(x) Are transfers to another job recorded in the same way as restricted work cases? Yes, both job transfer and restricted work cases are recorded in the same box on the OSHA 300 Log. For example, if you assign, or a physician or other licensed health care professional recommends that you assign, an injured or ill worker to his or her routine job duties for part of the day and to another job for the rest of the day, the injury or illness involves a job transfer. You must record an injury or illness that involves a job transfer by placing a check in the box for job transfer.

(xi) How do I count days of job transfer or restriction? You count days of job transfer or restriction in the same way you count days away from work, using (c)(i) through (viii) of this subsection. The only difference is that, if you permanently assign the injured or ill employee to a job that has been modified or permanently changed in a manner that eliminates the routine functions the employee was restricted from performing, you may stop the day count when the modification or change is made permanent. You must count at least one day of restricted work or job transfer for such cases.

(e) How do I record an injury or illness that involves medical treatment beyond first aid? If a work-related injury or illness results in medical treatment beyond first aid, you must record it on the OSHA 300 Log. If the injury or illness did not involve death, one or more days away from work, one or more days of restricted work, or one or more days of job transfer, you enter a check mark in the box for cases where the employee received medical treatment but remained at work and was not transferred or restricted.

(i) What is the definition of medical treatment? "Medical treatment" means the management and care of a

patient to combat disease or disorder. For the purposes of this section, medical treatment does not include:

- Visits to a physician or other licensed health care professional solely for observation or counseling;
- The conduct of diagnostic procedures, such as X rays and blood tests, including the administration of prescription medications used solely for diagnostic purposes (e.g., eye drops to dilate pupils); or

- "First aid" as defined in (e) of this subsection.

(ii) **What is "first aid"?** For the purposes of this section, "first aid" means the following:

- Using a nonprescription medication at nonprescription strength (for medications available in both prescription and nonprescription form, a recommendation by a physician or other licensed health care professional to use a nonprescription medication at prescription strength is considered medical treatment for recordkeeping purposes);

- Administering tetanus immunizations (other immunizations, such as Hepatitis B vaccine or rabies vaccine, are considered medical treatment);

- Cleaning, flushing or soaking wounds on the surface of the skin;

- Using wound coverings such as bandages, Band-Aids™, gauze pads, etc.; or using butterfly bandages or Steri-Strips™ (other wound closing devices such as sutures, staples, etc., are considered medical treatment);

- Using hot or cold therapy;

- Using any nonrigid means of support, such as elastic bandages, wraps, nonrigid back belts, etc. (devices with rigid stays or other systems designed to immobilize parts of the body are considered medical treatment for recordkeeping purposes);

- Using temporary immobilization devices while transporting an accident victim (e.g., splints, slings, neck collars, back boards, etc.);

- Drilling of a fingernail or toenail to relieve pressure, or draining fluid from a blister;

- Using eye patches;

- Removing foreign bodies from the eye using only irrigation or a cotton swab;

- Removing splinters or foreign material from areas other than the eye by irrigation, tweezers, cotton swabs or other simple means;

- Using finger guards;

- Using massages (physical therapy or chiropractic treatment are considered medical treatment for recordkeeping purposes); or

- Drinking fluids for relief of heat stress.

(iii) **Are any other procedures included in first aid?** No, this is a complete list of all treatments considered first aid for the purpose of this section.

(iv) **Does the professional status of the person providing the treatment have any effect on what is considered first aid or medical treatment?** No, the treatments listed in (e)(ii) of this subsection are considered to be first aid regardless of the professional status of the person providing the treatment. Even when these treatments are provided by a physician or other licensed health care professional, they are considered first aid for the purposes of this section. Similarly, treatment beyond first aid is considered to be medical treat-

ment even when it is provided by someone other than a physician or other licensed health care professional.

(v) **What if a physician or other licensed health care professional recommends medical treatment but the employee does not follow the recommendation?** If a physician or other licensed health care professional recommends medical treatment, you should encourage the injured or ill employee to follow that recommendation. However, you must record the case even if the injured or ill employee does not follow the physician or other licensed health care professional's recommendation.

(f) **Is every work-related injury or illness case involving a loss of consciousness recordable?** Yes, you must record a work-related injury or illness if the worker becomes unconscious, regardless of the length of time the employee remains unconscious.

(g) **What is a "significant" diagnosed injury or illness that is recordable under the general criteria even if it does not result in death, days away from work, restricted work or job transfer, medical treatment beyond first aid, or loss of consciousness?** Work-related cases involving cancer, chronic irreversible disease, a fractured or cracked bone, or a punctured eardrum must always be recorded under the general criteria at the time of diagnosis by a physician or other licensed health care professional.

Note: OSHA believes that most significant injuries and illnesses will result in one of the criteria listed in WAC 296-27-01107(1): Death, days away from work, restricted work or job transfer, medical treatment beyond first aid, or loss of consciousness. However, there are some significant injuries, such as a punctured eardrum or a fractured toe or rib, for which neither medical treatment nor work restrictions may be recommended. In addition, there are some significant progressive diseases, such as byssinosis, silicosis, and some types of cancer, for which medical treatment or work restrictions may not be recommended at the time of diagnosis but are likely to be recommended as the disease progresses. Cancer, chronic irreversible diseases, fractured or cracked bones, and punctured eardrums are generally considered significant injuries and illnesses, and must be recorded at the initial diagnosis, even if medical treatment or work restrictions are not recommended, or are postponed, in a particular case.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-01-064, § 296-27-01107, filed 12/14/01, effective 1/1/02.]

WAC 296-27-01109 Recording criteria for needlestick and sharps injuries. (1) Basic requirement. You must record all work-related needlestick injuries and cuts from sharp objects that are contaminated with another person's blood or other potentially infectious material (as defined by chapter 296-823 WAC, Occupational exposure to bloodborne pathogens). You must enter the case on the OSHA 300 Log as an injury. To protect the employee's privacy, you may not enter the employee's name on the OSHA 300 Log (see the requirements for privacy cases in WAC 296-27-01119).

(2) Implementation.

(a) **What does "other potentially infectious materials" mean?** The term "other potentially infectious materials" is defined in the bloodborne pathogens portion of Part J (Biological Agents) of chapter 296-62 WAC, General occupational health standards. These materials include:

- The following human body fluids: Semen, vaginal secretions, cerebrospinal fluid, synovial fluid, pleural fluid, pericardial fluid, peritoneal fluid, amniotic fluid, saliva in

dental procedures, any body fluid that is visibly contaminated with blood, and all body fluids in situations where it is difficult or impossible to differentiate between body fluids;

- Any unfixed tissue or organ (other than intact skin) from a human (living or dead); and
- HIV-containing cell or tissue cultures, organ cultures, and HIV- or HBV-containing culture medium or other solutions; and blood, organs, or other tissues from experimental animals infected with HIV or HBV.

(b) **Does this mean that I must record all cuts, lacerations, punctures, and scratches?** No, you need to record cuts, lacerations, punctures, and scratches only if they are work-related and involve contamination with another person's blood or other potentially infectious material. If the cut, laceration, or scratch involves a clean object, or a contaminant other than blood or other potentially infectious material, you need to record the case only if it meets one or more of the recording criteria in WAC 296-27-01107.

(c) **If I record an injury and the employee is later diagnosed with an infectious bloodborne disease, do I need to update the OSHA 300 Log?** Yes, you must update the classification of the case on the OSHA 300 Log if the case results in death, days away from work, restricted work, or job transfer. You must also update the description to identify the infectious disease and change the classification of the case from an injury to an illness.

(d) **What if one of my employees is splashed or exposed to blood or other potentially infectious material without being cut or scratched? Do I need to record this incident?** You need to record such an incident on the OSHA 300 Log as an illness if:

- (i) It results in the diagnosis of a bloodborne illness, such as HIV, hepatitis B, or hepatitis C; or
- (ii) It meets one or more of the recording criteria in WAC 296-27-01107.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060. 03-09-110, § 296-27-01109, filed 4/22/03, effective 8/1/03. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-01-064, § 296-27-01109, filed 12/14/01, effective 1/1/02.]

WAC 296-27-01111 Recording criteria for cases involving medical removal under OSHA standards. (1) Basic requirement. If an employee is medically removed under the medical surveillance requirements, you must record the case on the OSHA 300 Log.

(2) Implementation.

(a) **How do I classify medical removal cases on the OSHA 300 Log?** You must enter each medical removal case on the OSHA 300 Log as either a case involving days away from work or a case involving restricted work activity, depending on how you decide to comply with the medical removal requirement. If the medical removal is the result of a chemical exposure, you must enter the case on the OSHA 300 Log by checking the "poisoning" column.

(b) **Do all standards have medical removal provisions?** No, some OSHA standards, such as the standards covering bloodborne pathogens and noise, do not have medical removal provisions. Many standards that cover specific chemical substances have medical removal provisions. These standards include, but are not limited to, lead, cadmium, methylene chloride, formaldehyde, and benzene.

(c) **Do I have to record a case where I voluntarily removed the employee from exposure before the medical removal criteria are met?** No, if the case involves voluntary medical removal before the medical removal levels required by this standard, you do not need to record the case on the OSHA 300 Log.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-01-064, § 296-27-01111, filed 12/14/01, effective 1/1/02.]

WAC 296-27-01113 Recording criteria for cases involving occupational hearing loss. (1) Basic requirement. You must record a hearing loss case on the OSHA Log if an employee's hearing test (audiogram) reveals that a recordable threshold shift (RTS) in one or both ears has occurred.

(2) Implementation.

(a) **How do I evaluate the current audiogram to determine whether a recordable threshold shift has occurred?**

(i) If the employee has never previously experienced a recorded hearing loss, you must compare the employee's current audiogram with that employee's baseline audiogram. If the employee has previously experienced a recorded hearing loss, you must compare the employee's current audiogram with the employee's revised baseline audiogram (the audiogram reflecting the employee's previously recorded hearing loss case.)

(ii) The employee has a recordable threshold shift when:

- There is a change in the hearing threshold, relative to the baseline audiogram for that employee, of an average of 10 decibels (dB) or greater at 2000, 3000, and 4000 hertz (Hz) in one or both ears.

AND

- The employee's overall hearing loss (threshold) is 25 dB or greater (averaged at 2000, 3000, and 4000 Hz) in the same ear as the change.

Note: Audiometric test results reflect the employee's overall hearing ability in comparison to audiometric zero.

(b) **May I adjust the current audiogram to reflect the effects of aging on hearing?** Yes. When you are determining whether an RTS has occurred, you may age adjust the employee's current audiogram results by using Tables A-1 or A-2, as appropriate, in Appendix A of this chapter. You may not use an age adjustment when determining whether the employee's total hearing level is 25 dB or more above audiometric zero.

(c) **Do I have to record the hearing loss if I am going to retest the employee's hearing?** No, if you retest the employee's hearing within thirty days of the first test, and the retest does not confirm the RTS, you are not required to record the hearing loss case on the OSHA 300 Log. If the retest confirms the RTS, you must record the hearing loss illness within seven calendar days of the retest. If subsequent audiometric testing indicates that an RTS is not persistent, you may erase or line-out the recorded entry.

(d) **Are there any special rules for determining whether a hearing loss case is work-related?** No. You must use the rules in WAC 296-27-01103 to determine if the hearing loss is work-related. If an event or exposure in the work environment either caused or contributed to the hearing loss, or significantly aggravated a preexisting hearing loss, you must consider the case to be work-related.

(e) **If a physician or other licensed health care professional determines the hearing loss is not work-related, do I still need to record the case?** No. If a physician or other licensed health care professional determines that the hearing loss is not work-related or has not been significantly aggravated by occupational noise exposure, you are not required to consider the case work-related or to record the case on the OSHA 300 Log.

(f) When you enter a recordable hearing loss case on the OSHA 300 Log, you must check the 300 Log column for hearing loss.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060. 03-24-085, § 296-27-01113, filed 12/2/03, effective 1/1/04; 02-22-029, § 296-27-01113, filed 10/28/02, effective 1/1/03. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-01-064, § 296-27-01113, filed 12/14/01, effective 1/1/02.]

WAC 296-27-01115 Recording criteria for work-related tuberculosis cases. (1) Basic requirement. If any of your employees has been occupationally exposed to anyone with a known case of active tuberculosis (TB), and that employee subsequently develops a tuberculosis infection, as evidenced by a positive skin test or diagnosis by a physician or other licensed health care professional, you must record the case on the OSHA 300 Log by checking the "respiratory condition" column.

(2) Implementation.

(a) **Do I have to record, on the Log, a positive TB skin test result obtained at a preemployment physical?** No, you do not have to record it because the employee was not occupationally exposed to a known case of active tuberculosis in your workplace.

(b) **May I line-out or erase a recorded TB case if I obtain evidence that the case was not caused by occupational exposure?** Yes, you may line-out or erase the case from the Log under the following circumstances:

- The worker is living in a household with a person who has been diagnosed with active TB;
- The public health department has identified the worker as a contact of an individual with a case of active TB unrelated to the workplace; or
- A medical investigation shows that the employee's infection was caused by exposure to TB away from work, or proves that the case was not related to the workplace TB exposure.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-01-064, § 296-27-01115, filed 12/14/01, effective 1/1/02.]

WAC 296-27-01119 Forms. (1) Basic requirement. You must use OSHA 300, 300-A, and 301 forms, or equivalent forms, for recordable injuries and illnesses. The OSHA 300 form is called the Log of Work-Related Injuries and Illnesses, the 300-A is the Summary of Work-Related Injuries and Illnesses, and the OSHA 301 form is called the Injury and Illness Incident Report.

(2) Implementation.

(a) **What do I need to do to complete the OSHA 300 Log?** You must enter information about your business at the top of the OSHA 300 Log, enter a one or two line description for each recordable injury or illness, and summarize this information on the OSHA 300-A at the end of the year.

(b) **What do I need to do to complete the OSHA 301 Incident Report?** You must complete an OSHA 301 Incident Report form, or an equivalent form, for each recordable injury or illness entered on the OSHA 300 Log.

(c) **How quickly must each injury or illness be recorded?** You must enter each recordable injury or illness on the OSHA 300 Log and 301 Incident Report within seven calendar days of receiving information that a recordable injury or illness has occurred.

(d) **What is an equivalent form?** An equivalent form is one that has the same information, is as readable and understandable, and is completed using the same instructions as the OSHA form it replaces. Many employers use an insurance form instead of the OSHA 301 Incident Report, or supplement an insurance form by adding any additional information listed on the OSHA form.

(e) **May I keep my records on a computer?** Yes, if the computer can produce equivalent forms when they are needed, as described under WAC 296-27-02111 and 296-27-03103, you may keep your records using the computer system.

(f) **Are there situations where I do not put the employee's name on the forms for privacy reasons?** Yes, if you have a "privacy concern case," you may not enter the employee's name on the OSHA 300 Log. Instead, enter "privacy case" in the space normally used for the employee's name. This will protect the privacy of the injured or ill employee when another employee, a former employee, or an authorized employee representative is provided access to the OSHA 300 Log under WAC 296-27-02111. You must keep a separate, confidential list of the case numbers and employee names for your privacy concern cases so you can update the cases and provide the information to the government if asked to do so.

(g) **How do I determine if an injury or illness is a privacy concern case?** You must consider the following injuries or illnesses to be privacy concern cases:

- An injury or illness to an intimate body part or the reproductive system;
- An injury or illness resulting from a sexual assault;
- Mental illnesses;
- HIV infection, hepatitis, or tuberculosis;
- Needlestick injuries and cuts from sharp objects that are contaminated with another person's blood or other potentially infectious material (WAC 296-27-01109 for definitions); **and**

- Other illnesses if the employee independently and voluntarily requests that his or her name not be entered on the log.

(h) **May I classify any other types of injuries and illnesses as privacy concern cases?** No, this is a complete list of all injuries and illnesses considered privacy concern cases for the purposes of this section.

(i) **If I have removed the employee's name, but still believe that the employee may be identified from the information on the forms, is there anything else that I can do to further protect the employee's privacy?** Yes, if you have a reasonable basis to believe that information describing the privacy concern case may be personally identifiable even though the employee's name has been omitted, you may use discretion in describing the injury or illness on both the

OSHA 300 and 301 forms. You must enter enough information to identify the cause of the incident and the general severity of the injury or illness, but you do not need to include details of an intimate or private nature. For example, a sexual assault case could be described as "injury from assault," or an injury to a reproductive organ could be described as "lower abdominal injury."

(j) **What must I do to protect employee privacy if I wish to provide access to the OSHA Forms 300 and 301 to persons other than government representatives, employees, former employees or authorized representatives?** If you decide to voluntarily disclose the forms to persons other than government representatives, employees, former employees or authorized representatives (as required by WAC 296-27-02111 and 296-27-03103), you must remove or hide the employees' names and other personally identifying information, except for the following cases. You may disclose the forms with personally identifying information only:

(i) To an auditor or consultant hired by the employer to evaluate the safety and health program;

(ii) To the extent necessary for processing a claim for workers' compensation or other insurance benefits; or

(iii) To a public health authority or law enforcement agency for uses and disclosures for which consent, an authorization, or opportunity to agree or object is not required under Department of Health and Human Services Standards for Privacy of Individually Identifiable Health Information, 45 CFR 164.512.

(3) Falsification, failure to keep records or reports.

(a) RCW 49.17.190(2) of the act provides that "whoever knowingly makes any false statement, representation, or certification in any application, record, report, plan, or other document filed or required to be maintained pursuant to this chapter shall, upon conviction be guilty of a gross misdemeanor and be punished by a fine of not more than ten thousand dollars, or by imprisonment for not more than six months or by both."

(b) Failure to maintain records or file reports required by this chapter, or in the detail required by the forms and instructions issued under this chapter, may result in the issuance of citations and assessment of penalties as provided for in WAC 296-800-35002 through 296-800-35052.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060. 03-24-085, § 296-27-01119, filed 12/2/03, effective 1/1/04; 02-22-029, § 296-27-01119, filed 10/28/02, effective 1/1/03. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-01-064, § 296-27-01119, filed 12/14/01, effective 1/1/02.]

WAC 296-27-021 Other injury and illness record-keeping requirements.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-01-064, § 296-27-021, filed 12/14/01, effective 1/1/02.]

WAC 296-27-02101 Multiple business establishments. (1) Basic requirement. You must keep a separate OSHA 300 Log for each establishment that is expected to be in operation for one year or longer.

(2) Implementation.

(a) **Do I need to keep injury and illness records for short-term establishments (i.e., establishments that will exist for less than a year)?** Yes, however, you do not have

to keep a separate OSHA 300 Log for each such establishment. You may keep one OSHA 300 Log that covers all of your short-term establishments. You may also include the short-term establishments' recordable injuries and illnesses on an OSHA 300 Log that covers short-term establishments for individual company divisions or geographic regions.

(b) **May I keep the records for all of my establishments at my headquarters location or at some other central location?** Yes, you may keep the records for an establishment at your headquarters or other central location if you can:

- Transmit information about the injuries and illnesses from the establishment to the central location within seven calendar days of receiving information that a recordable injury or illness has occurred; and

- Produce and send the records from the central location to the establishment within the time frames required by WAC 296-27-02111 and 296-27-03103 when you are required to provide records to a government representative, employees, former employees or employee representatives.

(c) **Some of my employees work at several different locations or do not work at any of my establishments at all. How do I record cases for these employees?** You must link each of your employees with one of your establishments, for recordkeeping purposes. You must record the injury and illness on the OSHA 300 Log of the injured or ill employee's establishment, or on an OSHA 300 Log that covers that employee's short-term establishment.

(d) **How do I record an injury or illness when an employee of one of my establishments is injured or becomes ill while visiting or working at another of my establishments, or while working away from any of my establishments?** If the injury or illness occurs at one of your establishments, you must record the injury or illness on the OSHA 300 Log of the establishment at which the injury or illness occurred. If the employee is injured or becomes ill and is not at one of your establishments, you must record the case on the OSHA 300 Log at the establishment at which the employee normally works.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-01-064, § 296-27-02101, filed 12/14/01, effective 1/1/02.]

WAC 296-27-02103 Covered employees. (1) Basic requirement. You must record on the OSHA 300 Log the recordable injuries and illnesses of all employees on your payroll, whether they are labor, executive, hourly, salary, part-time, seasonal, or migrant workers. You also must record the recordable injuries and illnesses that occur to employees who are not on your payroll if you supervise these employees on a day-to-day basis. If your business is organized as a sole proprietorship or partnership, the owner or partners are not considered employees for recordkeeping purposes.

(2) Implementation.

(a) **If a self-employed person is injured or becomes ill while doing work at my business, do I need to record the injury or illness?** No, self-employed individuals are not covered by the WISH Act or this standard.

(b) **If I obtain employees from a temporary help service, employee leasing service, or personnel supply service, do I have to record an injury or illness occurring to**

one of those employees? You must record these injuries and illnesses if you supervise these employees on a day-to-day basis.

(c) If an employee in my establishment is a contractor's employee, must I record an injury or illness occurring to that employee? If the contractor's employee is under the day-to-day supervision of the contractor, the contractor is responsible for recording the injury or illness. If you supervise the contractor employee's work on a day-to-day basis, you must record the injury or illness.

(d) Must the personnel supply service, temporary help service, employee leasing service, or contractor also record the injuries or illnesses occurring to temporary, leased or contract employees that I supervise on a day-to-day basis? No, you and the temporary help service, employee leasing service, personnel supply service, or contractor should coordinate your efforts to make sure that each injury and illness is recorded only once: Either on your OSHA 300 Log (if you provide day-to-day supervision) or on the other employer's OSHA 300 Log (if that company provides day-to-day supervision).

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-01-064, § 296-27-02103, filed 12/14/01, effective 1/1/02.]

WAC 296-27-02105 Annual summary. (1) Basic requirement. At the end of each calendar year, you must:

- Review the OSHA 300 Log to verify that the entries are complete and accurate, and correct any deficiencies identified;

- Create an annual summary of injuries and illnesses recorded on the OSHA 300 Log;

- Certify the summary; and

- Post the annual summary.

(2) Implementation.

(a) How extensively do I have to review the OSHA 300 Log entries at the end of the year? You must review the entries as extensively as necessary to make sure that they are complete and correct.

(b) How do I complete the annual summary? You must:

- Total the columns on the OSHA 300 Log (if you had no recordable cases, enter zeros for each column total); and

- Enter the calendar year covered, the company's name, establishment name, establishment address, annual average number of employees covered by the OSHA 300 Log, and the total hours worked by all employees covered by the OSHA 300 Log.

- If you are using an equivalent form other than the OSHA 300-A summary form, as permitted under WAC 296-27-01105, the summary you use must also include the employee access and employer penalty statements found on the OSHA 300-A summary form.

(c) How do I certify the annual summary? A company executive must certify that he or she has examined the OSHA 300 Log and that he or she reasonably believes, based on his or her knowledge of the process by which the information was recorded, that the annual summary is correct and complete.

(d) Who is considered a company executive? The company executive who certifies the log must be one of the following persons:

- An owner of the company (only if the company is a sole proprietorship or partnership);

- An officer of the corporation;

- The highest ranking company official working at the establishment; or

- The immediate supervisor of the highest ranking company official working at the establishment.

(e) How do I post the annual summary? You must post a copy of the annual summary in each establishment in a conspicuous place or places where notices to employees are customarily posted. You must ensure that the posted annual summary is not altered, defaced or covered by other material.

(f) When do I have to post the annual summary? You must post the summary no later than February 1 of the year following the year covered by the records and keep the posting in place until April 30.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-01-064, § 296-27-02105, filed 12/14/01, effective 1/1/02.]

WAC 296-27-02107 Retention and updating. (1) Basic requirement. You must save the OSHA 300 Log, the privacy case list (if one exists), the annual summary, and the OSHA 301 Incident Report forms for five years following the end of the calendar year that these records cover.

(2) Implementation.

(a) Do I have to update the OSHA 300 Log during the five-year storage period? Yes, during the storage period, you must update your stored OSHA 300 Logs to include newly discovered recordable injuries or illnesses and to show any changes that have occurred in the classification of previously recorded injuries and illnesses. If the description or outcome of a case changes, you must remove or line-out the original entry and enter the new information.

(b) Do I have to update the annual summary? No, you are not required to update the annual summary, but you may do so if you wish.

(c) Do I have to update the OSHA 301 Incident Reports? No, you are not required to update the OSHA 301 Incident Reports, but you may do so if you wish.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-01-064, § 296-27-02107, filed 12/14/01, effective 1/1/02.]

WAC 296-27-02109 Change in business ownership. If your business changes ownership, you are responsible for recording and reporting work-related injuries and illnesses only for that period of the year during which you owned the establishment. You must transfer these records to the new owner. The new owner must save all records of the establishment kept by the prior owner, as required by WAC 296-27-02107, but need not update or correct the records of the prior owner.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-01-064, § 296-27-02109, filed 12/14/01, effective 1/1/02.]

WAC 296-27-02111 Employee involvement. (1) Basic requirement. Your employees and their representatives must be involved in the recordkeeping system in several ways.

(a) You must inform each employee of how he or she is to report an injury or illness to you.

(b) You must provide limited access to your injury and illness records for your employees and their representatives.

(2) Implementation.

(a) **What must I do to make sure that employees report work-related injuries and illnesses to me?**

- You must set up a way for employees to report work-related injuries and illnesses promptly; and

- You must tell each employee how to report work-related injuries and illnesses to you.

(b) **Do I have to give my employees and their representatives access to the OSHA injury and illness records?**

Yes, your employees, former employees, their personal representatives, and their authorized employee representatives have the right to access the OSHA injury and illness records, with some limitations, as discussed below.

- **Who is an authorized employee representative?** An authorized employee representative is an authorized collective bargaining agent of employees.

- **Who is a "personal representative" of an employee or former employee?** A personal representative is:

- Any person that the employee or former employee designates as such, in writing; or

- The legal representative of a deceased or legally incapacitated employee or former employee.

- **If an employee or representative asks for access to the OSHA 300 Log, when do I have to provide it?**

- When an employee, former employee, personal representative, or authorized employee representative asks for copies of your current or stored OSHA 300 Log(s) for an establishment the employee or former employee has worked in, you must give the requester a copy of the relevant OSHA 300 Log(s) by the end of the next business day.

- **May I remove the names of the employees or any other information from the OSHA 300 Log before I give copies to an employee, former employee, or employee representative?** No, you must leave the names on the OSHA 300 Log. However, to protect the privacy of injured and ill employees, you may not record the employee's name on the OSHA 300 Log for certain "privacy concern cases," as specified in WAC 296-27-01119 (2)(f) through (i).

- **If an employee or representative asks for access to the OSHA 301 Incident Report, when do I have to provide it?**

- When an employee, former employee, or personal representative asks for a copy of the OSHA 301 Incident Report describing an injury or illness to that employee or former employee, you must give the requester a copy of the OSHA 301 Incident Report containing that information by the end of the next business day.

- When an authorized employee representative asks for copies of the OSHA 301 Incident Reports for an establishment where the agent represents employees under a collective bargaining agreement, you must give copies of those forms to the authorized employee representative within seven calendar days. You are only required to give the authorized employee representative information from the OSHA 301 Incident Report section titled "Tell us about the case." You must remove all other information from the copy of the OSHA 301 Incident Report or the equivalent substitute form that you give to the authorized employee representative.

- **May I charge for the copies?** No, you may not charge for these copies the first time they are provided. However, if one of the designated persons asks for additional copies, you may assess a reasonable charge for retrieving and copying the records.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-01-064, § 296-27-02111, filed 12/14/01, effective 1/1/02.]

WAC 296-27-02113 Prohibition against discrimination. Employers are prohibited from discriminating against an employee for reporting a work-related fatality, injury or illness. Employees are also protected when they file a safety and health complaint, or ask for records which are required to be maintained by this section or exercise rights extended by the WISH Act.

(1) WISHA may not issue a variance to a private sector employer and must recognize all variances issued by Federal OSHA.

(2) WISHA may only grant an injury and illness recording and reporting variance to a state or local government employer within the state after obtaining approval to grant the variance from Federal OSHA.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-01-064, § 296-27-02113, filed 12/14/01, effective 1/1/02.]

WAC 296-27-02117 Variances from the recordkeeping rule. (1) Basic requirement. If you wish to keep records in a different manner from that prescribed in this section, you may submit a variance petition to the Assistant Secretary of Labor for Occupational Safety and Health, U.S. Department of Labor, Washington, DC 20210. You can obtain a variance only if you can show that your alternative recordkeeping system:

- Collects the same information as this section requires;
- Meets the purposes of the act; and
- Does not interfere with the administration of the act.

(2) Implementation.

(a) **What do I need to include in my variance petition?**

You must include the following items in your petition:

- Your name and address;
- A list of the state(s) where the variance would be used;
- The address(es) of the business establishment(s) involved;

- A description of why you are seeking a variance;
- A description of the different recordkeeping procedures you propose to use;

- A description of how your proposed procedures will collect the same information as would be collected by this section and achieve the purpose of the act; and

- A statement that you have informed your employees of the petition by giving them or their authorized representative a copy of the petition and by posting a statement summarizing the petition in the same way as notices are posted under 29 CFR 1903.2(a).

(b) **How will the Assistant Secretary handle my variance petition?** The Assistant Secretary will take the following steps to process your variance petition.

- The Assistant Secretary will offer your employees and their authorized representatives an opportunity to submit written data, views, and arguments about your variance petition.

- The Assistant Secretary may allow the public to comment on your variance petition by publishing the petition in the *Federal Register*. If the petition is published, the notice will establish a public comment period and may include a schedule for a public meeting on the petition.

- After reviewing your variance petition and any comments from your employees and the public, the Assistant Secretary will decide whether or not your proposed recordkeeping procedures will meet the purposes of the act, will not otherwise interfere with the act, and will provide the same information as required by this section. If your procedures meet these criteria, the Assistant Secretary may grant the variance subject to such conditions as he or she finds appropriate.

- If the Assistant Secretary grants your variance petition, OSHA will publish a notice in the *Federal Register* to announce the variance. The notice will include the practices the variance allows you to use, any conditions that apply, and the reasons for allowing the variance.

(c) If I apply for a variance, may I use my proposed recordkeeping procedures while the Assistant Secretary is processing the variance petition? No, alternative recordkeeping practices are only allowed after the variance is approved. You must comply with this section's requirements while the Assistant Secretary is reviewing your variance petition.

(d) If I have already been cited for not following the requirements of this section, will my variance petition have any effect on the citation and penalty? No, in addition, the Assistant Secretary may elect not to review your variance petition if it includes an element for which you have been cited and the citation is still under review by a court, an administrative law judge (ALJ), or the OSH review commission.

(e) If I receive a variance, may it be revoked at a later date? Yes, a variance may be revoked for good cause. The variance revocation procedures are the same as those followed to request the exception. In cases of willfulness or where necessary for public safety, the Assistant Secretary will:

- Notify you in writing of the facts or conduct that may warrant revocation of your variance; and
- Provide you, your employees, and authorized employee representatives with an opportunity to participate in the revocation procedures.

(f) The department of labor and industries must recognize any variance issued by federal OSHA.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-01-064, § 296-27-02117, filed 12/14/01, effective 1/1/02.]

WAC 296-27-031 Reporting fatality, injury, and illness information. (1) Basic requirement. You must report fatalities, injuries and illnesses information as required by WAC 296-800-32005.

(2) Implementation.

(a) If the local L&I office is closed, how do I report the incident? If the local office is closed, you must report a fatality or multiple hospitalization incident by calling either the department at 1-800-4BE-SAFE (1-800-423-7233) or by contacting the Occupational Safety and Health Administra-

tion (OSHA) by calling its central number at 1-800-321-6742.

(b) What information do I need to give about the incident? You must give the following information for each fatality or multiple hospitalization incident:

- Name of the work place;
- Location of the incident;
- Time and date of the incident;
- Number of fatalities or hospitalized employees;
- Names of injured employees;
- Contact person and phone number; and
- Brief description of the incident.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-01-064, § 296-27-031, filed 12/14/01, effective 1/1/02.]

WAC 296-27-03101 Providing records to government representatives. (1) Basic requirement. When an authorized government representative asks for the records you keep under this section, you must provide copies of the records within four business hours.

(2) Implementation.

(a) What government representatives have the right to get copies of records required by this section? The government representatives authorized to receive the records are:

- A representative of the Secretary of Labor conducting an inspection or investigation under the act;
- A representative of the Secretary of Health and Human Services (including the National Institute for Occupational Safety and Health-NIOSH) conducting an investigation under section 20(b) of the act; or
- A representative of the state department of labor and industries.

(b) Do I have to produce the records within four hours if my records are kept at a location in a different time zone? Your response will be considered timely if you give the records to the government representative within four business hours of the request. If you maintain the records at a location in a different time zone, you may use the business hours of the establishment at which the records are located when calculating the deadline.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-01-064, § 296-27-03101, filed 12/14/01, effective 1/1/02.]

WAC 296-27-03103 Annual OSHA injury and illness survey. (1) Basic requirement. If you receive OSHA's annual survey form, you must fill it out and send it to OSHA or OSHA's designee, as stated on the survey form. You must report the following information for the year described on the form:

- The number of workers you employed;
- The number of hours worked by your employees; and
- The requested information from the records that you keep under this section.

(2) Implementation.

(a) Does every employer have to send data to OSHA? No, each year, OSHA sends injury and illness survey forms to employers in certain industries. In any year, some employers will receive an OSHA survey form and others will not. You do not have to send injury and illness data to OSHA unless you receive a survey form.

(b) **How quickly do I need to respond to an OSHA survey form?** You must send the survey reports to OSHA, or OSHA's designee, by mail or other means described in the survey form, within thirty calendar days, or by the date stated in the survey form, whichever is later.

(c) **Do I have to respond to an OSHA survey form if I am normally exempt from keeping OSHA injury and illness records?** Yes, even if you are exempt from keeping injury and illness records under WAC 296-27-001, OSHA may inform you in writing that it will be collecting injury and illness information from you in the following year. If you receive such a letter, you must keep the injury and illness records required by WAC 296-27-01103 to 296-27-01117 and make a survey report for the year covered by the survey.

(d) **Do employers in Washington have to answer the OSHA survey form?** Yes.

(e) **Does this section affect WISHA/OSHA's authority to inspect my workplace?** No, nothing in this section affects WISHA/OSHA's statutory authority to investigate conditions related to occupational safety and health.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-01-064, § 296-27-03103, filed 12/14/01, effective 1/1/02.]

WAC 296-27-03105 Requests from the Bureau of Labor Statistics for data. (1) Basic requirement. If you receive a Survey of Occupational Injuries and Illnesses form from the Bureau of Labor Statistics (BLS), or a BLS designee, you must promptly complete the form and return it following the instructions contained on the survey form.

(2) Implementation.

(a) **Does every employer have to send data to the BLS?** No, each year, the BLS sends injury and illness survey forms to randomly selected employers and uses the information to create the nation's occupational injury and illness statistics. In any year, some employers will receive a BLS survey form and others will not. You do not have to send injury and illness data to the BLS unless you receive a survey form.

(b) **If I get a survey form from the BLS, what do I have to do?** If you receive a Survey of Occupational Injuries and Illnesses form from the Bureau of Labor Statistics (BLS), or a BLS designee, you must promptly complete the form and return it, following the instructions contained on the survey form.

(c) **Do I have to respond to a BLS survey form if I am normally exempt from keeping OSHA injury and illness records?** Yes, even if you are exempt from keeping injury and illness records under WAC 296-27-00103 through 296-27-00107, the BLS may inform you in writing that it will be collecting injury and illness information from you in the coming year. If you receive such a letter, you must keep the injury and illness records required by WAC 296-27-01103 to 296-27-01117 and make a survey report for the year covered by the survey.

(d) **Do I have to answer the BLS survey form if I am located in a state-plan state?** Yes, all employers who receive a survey form must respond to the survey, even those in state-plan states.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-01-064, § 296-27-03105, filed 12/14/01, effective 1/1/02.]

[Title 296 WAC—p. 892]

WAC 296-27-041 Transition from the former rule.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-01-064, § 296-27-041, filed 12/14/01, effective 1/1/02.]

WAC 296-27-04101 Summary and posting of the 2001 data. (1) Basic requirement. If you were required to keep OSHA 200 Logs in 2001, you must post a 2001 annual summary from the OSHA 200 Log of occupational injuries and illnesses for each establishment.

(2) Implementation.

(a) **What do I have to include in the summary?**

(i) You must include a copy of the totals from the 2001 OSHA 200 Log and the following information from that form:

- The calendar year covered;
- Your company name;
- The name and address of the establishment; and
- The certification signature, title and date.

(ii) If no injuries or illnesses occurred at your establishment in 2001, you must enter zeros on the totals line and post the 2001 summary.

(b) **When am I required to summarize and post the 2001 information?**

• You must complete the summary by February 1, 2002; and

• You must post a copy of the summary in each establishment in a conspicuous place or places where notices to employees are customarily posted. You must ensure that the summary is not altered, defaced or covered by other material.

(c) **How long must I post the 2001 summary?** You must post the 2001 summary from February 1, 2002 to March 1, 2002.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-01-064, § 296-27-04101, filed 12/14/01, effective 1/1/02.]

WAC 296-27-04103 Retention and updating of old forms. You must save your copies of the OSHA 200 and 101 forms for five years following the year to which they relate and continue to provide access to the data as though these forms were the OSHA 300 and 301 forms. You are not required to update your old 200 and 101 forms.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-01-064, § 296-27-04103, filed 12/14/01, effective 1/1/02.]

WAC 296-27-051 Definitions.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-01-064, § 296-27-051, filed 12/14/01, effective 1/1/02.]

WAC 296-27-05101 Definitions. Employer means a person, firm, corporation, partnership, business trust, legal representative, or other business entity which engages in any business, industry, profession, or activity in this state and employs one or more employees or who contracts with one or more persons, the essence of which is the personal labor of such person or persons and includes the state, counties, cities, and all municipal corporations, public corporations, political subdivisions of the state, and charitable organizations: Provided, That any persons, partnership, or business entity not having employees, and who is covered by the Industrial Insurance Act must be considered both an employer and employee.

(2007 Ed.)

Establishment means a single physical location where business is conducted or where services or industrial operations are performed. For activities where employees do not work at a single physical location, such as construction; transportation; communications, electric, gas and sanitary services; and similar operations, the establishment is represented by main or branch offices, terminals, stations, etc., that either supervise such activities or are the base from which personnel carry out these activities.

(1) **Can one business location include two or more establishments?** Normally, one business location has only one establishment. Under limited conditions, the employer may consider two or more separate businesses that share a single location to be separate establishments. An employer may divide one location into two or more establishments only when:

- Each of the establishments represents a distinctly separate business;
- Each business is engaged in a different economic activity;
- No one industry description in the *Standard Industrial Classification Manual* (1987) applies to the joint activities of the establishments; and
- Separate reports are routinely prepared for each establishment on the number of employees, their wages and salaries, sales or receipts, and other business information. For example, if an employer operates a construction company at the same location as a lumber yard, the employer may consider each business to be a separate establishment.

(2) **Can an establishment include more than one physical location?** Yes, but only under certain conditions. An employer may combine two or more physical locations into a single establishment only when:

- The employer operates the locations as a single business operation under common management;
- The locations are all located in close proximity to each other; and
- The employer keeps one set of business records for the locations, such as records on the number of employees, their wages and salaries, sales or receipts, and other kinds of business information. For example, one manufacturing establishment might include the main plant, a warehouse a few blocks away, and an administrative services building across the street.

(3) **If an employee telecommutes from home, is his or her home considered a separate establishment?** No, for employees who telecommute from home, the employee's home is not a business establishment and a separate OSHA 300 Log is not required. Employees who telecommute must be linked to one of your establishments under WAC 296-27-02101 (2)(c).

Injury or illness means an abnormal condition or disorder. Injuries include cases such as, but not limited to, a cut, fracture, sprain, or amputation. Illnesses include both acute and chronic illnesses, such as, but not limited to, a skin disease, respiratory disorder, or poisoning.

Note: Injuries and illnesses are recordable only if they are new, work-related cases that meet one or more of this section's recording criteria.

"OSHA" means Occupational Safety and Health Administration.

Physician or other licensed health care professional means a physician or other licensed health care professional whose legally permitted scope of practice (i.e., license, registration, or certification) allows him or her to independently perform, or be delegated the responsibility to perform, the activities described by this regulation.

You means an employer.

Table "1" - Private Employer Exemptions SIC Industry description code

525 Hardware Stores
542 Meat and Fish Markets
544 Candy, Nut, and Confectionary Stores
545 Dairy Products Stores
546 Retail Bakeries
549 Miscellaneous Food Stores
551 New and Used Car Dealers
552 Used Car Dealers
554 Gasoline Service Stations
557 Motorcycle Dealers
56 Apparel and Accessory Stores
573 Radio, Television, & Computer Stores
58 Eating and Drinking Places
591 Drug Stores and Proprietary Stores
592 Liquor Stores
594 Miscellaneous Shopping Goods Stores
599 Retail Stores, Not Elsewhere Classified
60 Depository Institutions (banks & savings institutions)
61 Nondepository
62 Security and Commodity Brokers
63 Insurance Carriers
64 Insurance Agents, Brokers & Services
653 Real Estate Agents and Managers
654 Title Abstract Offices
67 Holding and Other Investment Offices
722 Photographic Studios, Portrait
723 Beauty Shops
724 Barber Shops
725 Shoe Repair and Shoeshine Parlors
726 Funeral Service and Crematories
729 Miscellaneous Personal Services
731 Advertising Services
732 Credit Reporting and Collection Services
733 Mailing, Reproduction, & Stenographic Services
737 Computer and Data Processing Services
738 Miscellaneous Business Services
764 Reupholstery and Furniture Repair
78 Motion Picture
791 Dance Studios, Schools, and Halls
792 Producers, Orchestras, Entertainers
793 Bowling Centers
81 Legal Services
82 Educational Services (schools, colleges, universities and libraries)
832 Individual and Family Services
835 Child Day Care Services
839 Social Services, Not Elsewhere Classified
841 Museums and Art Galleries
86 Membership Organizations

SIC Industry description code

87 Engineering, Accounting, Research, Management and Related Services

899 Services, not elsewhere classified

Table "2" - Public Employer Exemptions**SIC Industry description code**

821 Public Elementary and Secondary Schools

823 Public Libraries

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-01-064, § 296-27-05101, filed 12/14/01, effective 1/1/02.]

WAC 296-27-061 Nonmandatory Appendix A—Age adjustment calculations for comparing audiograms for recording hearing loss. IMPORTANT: These computations may only be used for comparison of audiograms to record hearing loss on the OSHA 300 Log. This appendix is non-mandatory.

In determining whether a recordable threshold shift has occurred, allowance may be made for the contribution of aging to the change in hearing level by adjusting the most recent audiogram. If you choose to adjust the audiogram, you must follow the procedure described below. This procedure and the age correction tables were developed by the National Institute for Occupational Safety and Health in the criteria document entitled "Criteria for a Recommended Standard...Occupational Exposure to Noise," ((HSM)-11001).

For each audiometric test frequency:

(i) Determine from Tables A-1 or A-2 the age correction values for the employee by:

(A) Finding the age at which the most recent audiogram was taken and recording the corresponding values of age corrections at 1000 Hz through 6000 Hz;

(B) Finding the age at which the baseline audiogram was taken and recording the corresponding values of age corrections at 1000 Hz through 6000 Hz.

(ii) Subtract the values found in step (i)(B) from the value found in step (i)(A).

(iii) The differences calculated in step (ii) represent that portion of the change in hearing that may be due to aging.

EXAMPLE: Employee is a 32-year-old male. The audiometric history for his right ear is shown in decibels below.

Audiometric Test Frequency (Hz)					
Employee's age	1000	2000	3000	4000	6000
26	10	5	5	10	5
*27	0	0	0	5	5
28	0	0	0	10	5
29	5	0	5	15	5
30	0	5	10	20	10
31	5	10	20	15	15
*32	5	10	10	25	20

The audiogram at age 27 is considered the baseline since it shows the best hearing threshold levels. Asterisks have been used to identify the baseline and most recent audiogram. A threshold shift of 20 dB exists at 4000 Hz between the audiograms taken at ages 27 and 32.

(The threshold shift is computed by subtracting the hearing threshold at age 27, which was 5, from the hearing thresh-

old at age 32, which is 25.) A retest audiogram has confirmed this shift. The contribution of aging to this change in hearing may be estimated in the following manner:

Go to Table A-1 and find the age correction values (in dB) for 4000 Hz at age 27 and age 32.

	Frequency (Hz)				
	1000	2000	3000	4000	6000
Age 32	6	5	7	10	14
Age 27	5	4	6	7	11
Difference	1	1	1	3	3

The difference represents the amount of hearing loss that may be attributed to aging in the time period between the baseline audiogram and the most recent audiogram. In this example, the difference at 4000 Hz is 3 dB. This value is subtracted from the hearing level at 4000 Hz, which in the most recent audiogram is 25, yielding 22 after adjustment. Then the hearing threshold in the baseline audiogram at 4000 Hz (5) is subtracted from the adjusted annual audiogram hearing threshold at 4000 Hz (22). Thus the age-corrected threshold shift would be 17 dB (as opposed to a threshold shift of 20 dB without age correction).

TABLE A-1 - AGE CORRECTION VALUES IN DECIBELS FOR MALES

Age	Audiometric Test Frequency (Hz)				
	1000	2000	3000	4000	6000
20 or younger	5	3	4	5	8
21	5	3	4	5	8
22	5	3	4	5	8
23	5	3	4	6	9
24	5	3	5	6	9
25	5	3	5	7	10
26	5	4	5	7	10
27	5	4	6	7	11
28	6	4	6	8	11
29	6	4	6	8	12
30	6	4	6	9	12
31	6	4	7	9	13
32	6	5	7	10	14
33	6	5	7	10	14
34	6	5	8	11	15
35	7	5	8	11	15
36	7	5	9	12	16
37	7	6	9	12	17
38	7	6	9	13	17
39	7	6	10	14	18
40	7	6	10	14	19
41	7	6	10	14	20
42	8	7	11	16	20
43	8	7	12	16	21
44	8	7	12	17	22
45	8	7	13	18	23
46	8	8	13	19	24
47	8	8	14	19	24
48	9	8	14	20	25
49	9	9	15	21	26
50	9	9	16	22	27
51	9	9	16	23	28
52	9	10	17	24	29

TABLE A-1 - AGE CORRECTION VALUES IN DECIBELS FOR MALES

Audiometric Test Frequency (Hz)					
Age	1000	2000	3000	4000	6000
53	9	10	18	25	30
54	10	10	18	26	31
55	10	11	19	27	32
56	10	11	20	28	34
57	10	11	21	29	35
58	10	12	22	31	36
59	11	12	22	32	37
60 or older	11	13	23	33	38

TABLE F-2 - AGE CORRECTION VALUES IN DECIBELS FOR FEMALES

Audiometric Test Frequency (Hz)					
Age	1000	2000	3000	4000	6000
20 or younger	7	4	3	3	6
21	7	4	4	3	6
22	7	4	4	4	6
23	7	5	4	4	7
24	7	5	4	4	7
25	8	5	4	4	7
26	8	5	5	4	8
27	8	5	5	5	8
28	8	5	5	5	8
29	8	5	5	5	9
30	8	6	5	5	9
31	8	6	6	5	9
32	9	6	6	6	10
33	9	6	6	6	10
34	9	6	6	6	10
35	9	6	7	7	11
36	9	7	7	7	11
37	9	7	7	7	12
38	10	7	7	7	12
39	10	7	8	8	12
40	10	7	8	8	13
41	10	8	8	8	13
42	10	8	9	9	13
43	11	8	9	9	14
44	11	8	9	9	14
45	11	8	10	10	15
46	11	9	10	10	15
47	11	9	10	11	16
48	12	9	11	11	16
49	12	9	11	11	16
50	12	10	11	12	17
51	12	10	12	12	17
52	12	10	12	13	18
53	13	10	13	13	18
54	13	11	13	14	19
55	13	11	14	14	19
56	13	11	14	15	20
57	13	11	15	15	20
58	14	12	15	16	21
59	14	12	16	16	21
60 or older	14	12	16	17	22

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.-060. 03-24-085, § 296-27-061, filed 12/2/03, effective 1/1/04.]

Chapter 296-30 WAC

RULES FOR THE ADMINISTRATION OF THE CRIME VICTIMS COMPENSATION PROGRAM

WAC

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DISPOSITION OF SECTIONS FORMERLY CODIFIED IN THIS CHAPTER

- 296-30-025 Medical assistance eligibility. [Statutory Authority: RCW 7.68.030, 51.04.020(1) and 51.04.030. 95-15-004, § 296-30-025, filed 7/5/95, effective 8/5/95. Statutory Authority: RCW 7.68.030, 7.68.070 (12) and (16) and 51.04.030. 89-23-004, § 296-30-025, filed 11/3/89, effective 11/10/89.] Repealed by 99-07-004, filed 3/4/99, effective 4/4/99.
 296-30-050 Distribution of third party recoveries. [Statutory Authority: Chapter 7.68 RCW. 94-02-015, § 296-30-050, filed 12/23/93, effective 1/24/94; 86-01-028 (Order 85-37), § 296-30-050, filed 12/11/85; 85-03-060 (Order 85-3), § 296-30-050, filed 1/15/85.] Repealed by 98-14-076, filed 6/30/98, effective 7/31/98. Statutory Authority: RCW 7.68.030.
 296-30-130 How are death benefits paid to a survivor(s) receiving public or private death benefits? [Statutory Authority: RCW 7.68.030, 7.68.070, 7.68.130, 51.32.050. 00-10-003, § 296-30-130, filed 4/20/00, effective 5/22/00. Statutory Authority: Chapter 7.68 RCW. 94-02-015, § 296-30-130, filed 12/23/93, effective 1/24/94; 86-01-028 (Order 85-37), § 296-30-130, filed 12/11/85; 85-03-060 (Order 85-3), § 296-30-130, filed 1/15/85.] Repealed by 01-13-013, filed 6/11/01, effective 7/12/01. Statutory Authority: RCW 7.68.030, 7.68.070.

WAC 296-30-010 Definitions. The following definitions are used to administer the crime victims compensation program:

Acceptance, accepted condition: A determination by the department that the diagnosis of the claimant's medical or mental health condition is the result of the criminal act. The condition being accepted must be specified by one or more diagnostic codes from the current edition of the International Classification of Diseases, Clinically Modified (ICD-CM), or the Diagnostic and Statistical Manual of Mental Disorders (DSM).

Authorization: Notification by a qualified representative of the department that specific treatment, services or equipment provided for the accepted condition is allowable under the claim. Providers must insure they maintain records

indicating the name of the qualified representative who authorizes treatment, services or equipment.

Bodily injury: Any harmful or offensive touching, including severe emotional distress where no touching takes place when:

- (1) The victim **is not** the object of the criminal act and:
 - (a) The distress is intentionally or recklessly inflicted by extreme or outrageous conduct;
 - (b) Caused the victim to have a reasonable apprehension of imminent bodily harm; and
 - (c) The victim is in the immediate vicinity at the time of the criminal act.
- (2) The victim **is** the object of the criminal act and:
 - (a) The distress is intentionally or recklessly inflicted by extreme or outrageous conduct; and
 - (b) Caused the victim to have a reasonable apprehension of imminent bodily harm.

Claimant: A victim who submits an application for benefits, or on whose behalf an application is submitted.

Consultation: The services rendered by a mental health provider whose opinion or advice is requested by the attending (treating) mental health provider, or agency, or by the department in the evaluation and/or treatment of a claimant. Case management or case staffing does not constitute a consultation.

Criminal act: An act defined in RCW 7.68.020, the occurrence of which can be verified by the department or which is reasonably credible. Physically impossible acts, highly improbable acts for which verification is not available, or unverified memories of acts occurring prior to the age of two will not be accepted as reasonably credible. In evaluating evidence to determine verification of claimed criminal acts, the department will give greater weight to the quality, than to the quantity, of evidence. Evidence that can be considered for verification of claimed criminal acts includes, but is not limited to, one or more of the following:

- (1) Police or other investigation reports.
- (2) Child protective services or other government agency reports.
- (3) Diaries or journals kept by victims and others.
- (4) Third party reports from school counselors, therapists and others.
- (5) Current medical examinations.
- (6) Medical or psychological forensic evaluations. In the absence of other adequate forensic evaluation reports, independent assessments per WAC 296-31-069 may be conducted when indicated.
- (7) Legal and historical reports.
- (8) Current and past medical and mental health records.
- (9) Reports of interviews with the victim's family members, friends, acquaintances and others who may have knowledge of pertinent facts. When such interviews are necessary to determine eligibility, the victim will be given the choice of whether to allow the interviews to be conducted. The victim will also be given the understanding that eligibility may be denied if the interviews are not conducted. The department will act according to the victim's choice.

Crisis intervention: Therapy to alleviate the claimant's most pressing problems. The vital mental and safety functions of the claimant are stabilized by providing support, structure and, if necessary, restraint.

Disability awards for mental health conditions:

Direct monetary compensation that may be provided to an eligible claimant who is either temporarily totally disabled, permanently totally disabled, or permanently partially disabled resulting from an accepted condition.

Family therapy: Therapy involving one or more members of the claimant's family, excluding the perpetrator, which centers on issues resulting from the claimant's sexual assault pursuant to WAC 296-30-080.

Group therapy: Therapy involving the claimant, and one or more clients who are not related to the claimant, which includes issues related to the claimant's condition and pertinent to other group members.

Immediate family members: Any claimant's parents, spouse, child(ren), siblings, grandparents, and those members of the same household who have assumed the rights and duties commonly associated with a family unit.

Individual therapy: Therapy provided on a one-to-one basis between a therapist and client.

Mental health provider: Any person, firm, corporation, partnership, association, agency, institution, or other entity providing any kind of mental health services related to the treatment of a claimant. This includes, but is not limited to, hospitals, psychiatrists, psychologists, advanced registered nurse practitioners with a specialty in psychiatric and mental health nursing, registered and/or licensed master level counselors, and other qualified service providers licensed, registered and/or certified with the department of health and registered with the crime victims compensation program. (Refer to WAC 296-31-030 for specific details.)

Permanent partial disability: Any anatomic or functional loss after maximum recovery has been achieved. When the attending provider has reason to believe a permanent functional loss exists, the department should be notified. Specified disabilities (amputation or loss of function of extremities, loss of hearing or vision) are to be rated utilizing a nationally recognized impairment rating guide. Unspecified disabilities (internal injuries, spinal injuries, mental health, etc.) are to be rated utilizing the category system detailed under WAC 296-20-200, et al. Under Washington law disability awards are based solely on physical or mental impairment due to the accepted injury or conditions without consideration of economic factors. Maximum benefit levels are established by statute.

Permanent total disability (pension): A condition permanently incapacitating a claimant from performing work at any gainful employment. Maximum benefit levels are established by statute.

Proper and necessary: (1) Proper and necessary services for the diagnosis or rehabilitative treatment of an accepted condition;

(2) Reflective of accepted standards of good practice within the scope of the provider's license, certification, or registration;

(3) Not delivered primarily for the convenience of the claimant, the claimant's attending provider, or another provider;

(4) Curative or rehabilitative care that produces long lasting changes which reduces the effects of the accepted condition;

(5) Provided at the least cost and in the least intensive setting of care consistent with the other provisions of this definition; and

(6) Concluded once a claimant has reached a state of maximum improvement. Maximum improvement occurs when no fundamental or marked change in an accepted condition can be expected with or without treatment. A claimant's condition may have reached maximum improvement though it might be expected to improve or deteriorate with the passage of time. Once a claimant's condition has reached maximum improvement, treatment that results only in temporary changes is not proper and necessary. Maximum improvement is equivalent to fixed and stable.

Reasonable cooperation: The victim is able to talk to the police and give information to help in the investigation and prosecution of the alleged offender. There may be circumstances in which the victim is not able to fully cooperate. In these instances, consideration is given to the needs of the victim. The department may consider the following issues. The list is not inclusive:

- (1) There is fear of retribution from the offender;
- (2) There is a mental or physical condition which inhibits cooperation;
- (3) The victim is dependent upon the offender for support;
- (4) The victim is a minor.

Temporary partial disability (loss of earning power): Partial time loss compensation may be paid when the claimant can return to work on a limited basis, or return to a lesser paying job is necessitated by the accepted condition. The claimant must have a reduction in wages of at least five percent before consideration of partial time loss can be made. No partial time loss compensation can be paid after the claimant's condition is stationary. All time loss compensation must be certified by the attending provider based on objective findings.

Temporary total disability (time loss compensation): Time loss compensation may be paid when the claimant is temporarily unable to return to reasonable continuous gainful employment as a direct result of an accepted condition. Maximum benefit levels are established by statute.

Termination of treatment: When treatment is no longer required because the accepted condition for which the claim was allowed has become stable. The provider should submit a report indicating the date the condition became stable to the department. The claimant may require continued treatment for conditions not related to the crime injury condition; however, financial responsibility for such care must be the claimants.

The result of: The test used to define "the result of" used in RCW 7.68.070 (3)(a) is two-pronged. First, it must be determined that cause in fact exists, and second, it must then be determined that proximate cause exists.

- (1) Cause in fact exists if "but for" the acts of the victim the crime that produced the injury would not have occurred.
- (2) Proximate cause exists if, once cause in fact is found, it is determined that the acts of the victim:
 - (a) Resulted in a foreseeable injury to the victim;
 - (b) Played a substantial role in the injury; and
 - (c) Were the direct cause of the injury.

Time loss certification: Documentation from a physician, or mental health professional qualified to treat under the Crime Victims Act, based upon objective findings which are specific symptoms that an accepted condition of a claimant either partially or totally incapacitates the claimant from returning to work.

Unjustly enriched: It would not be fair or equitable justice to allow a person to obtain, or have control of, or access to benefits or compensation paid to a victim of crime.

[Statutory Authority: RCW 7.68.030. 01-22-105, § 296-30-010, filed 11/7/01, effective 12/8/01; 00-10-003, § 296-30-010, filed 4/20/00, effective 5/22/00. Statutory Authority: RCW 51.36.010, 7.68.030, 51.04.020 (1) and (4), 51.04.030, 7.68.080 and 7.68.120. 97-02-090, § 296-30-010, filed 12/31/96, effective 1/31/97. Statutory Authority: Chapter 7.68 RCW. 94-02-015, § 296-30-010, filed 12/23/93, effective 1/24/94. Statutory Authority: RCW 7.68.030, 7.68.070 (12) and (16) and 51.04.030. 89-23-004, § 296-30-010, filed 11/3/89, effective 11/10/89. Statutory Authority: Chapter 7.68 RCW. 86-01-028 (Order 85-37), § 296-30-010, filed 12/11/85; 85-03-060 (Order 85-3), § 296-30-010, filed 1/15/85.]

WAC 296-30-020 Who is covered when a motor vehicle crime occurs? The Crime Victims Act covers injury or death in motor vehicle crimes covered by RCW 7.68.020 (2)(a). Anyone injured or killed in the accident is eligible for benefits.

[Statutory Authority: RCW 7.68.020 and 7.68.030. 99-07-004, § 296-30-020, filed 3/4/99, effective 4/4/99. Statutory Authority: Chapter 7.68 RCW. 94-02-015, § 296-30-020, filed 12/23/93, effective 1/24/94; 86-01-028 (Order 85-37), § 296-30-020, filed 12/11/85; 85-03-060 (Order 85-3), § 296-30-020, filed 1/15/85.]

WAC 296-30-060 Who does a victim report the crime to in order to meet reporting requirements? The crime can be reported to any of the following:

- (1) Local law enforcement (city, county or state police agencies);
- (2) Federal police;
- (3) Indian tribal police;
- (4) Military police; or
- (5) Child protective services (CPS) when they have reported to local police.

[Statutory Authority: RCW 7.68.060 (1)(b) and 7.68.030. 99-07-004, § 296-30-060, filed 3/4/99, effective 4/4/99. Statutory Authority: RCW 51.36.010, 7.68.030, 51.04.020 (1) and (4), 51.04.030, 7.68.080 and 7.68.120. 97-02-090, § 296-30-060, filed 12/31/96, effective 1/31/97. Statutory Authority: Chapter 7.68 RCW. 94-02-015, § 296-30-060, filed 12/23/93, effective 1/24/94; 86-01-028 (Order 85-37), § 296-30-060, filed 12/11/85; 85-03-060 (Order 85-3), § 296-30-060, filed 1/15/85.]

WAC 296-30-080 Can family members of sexual assault victims receive counseling? (1) Counseling for immediate family members of sexual assault victims is appropriate when:

- (a) The family member suffers psychological trauma as a result of the sexual assault; or
- (b) Counseling the family member will help the client's recovery.
- (2) Immediate family members are the client's parents, spouse, child(ren), siblings, grandparents, and those members of the same household who have assumed the rights and duties commonly associated with a family unit.
- (3) Counseling for immediate family members will be covered under the victim's sexual assault claim.

[Statutory Authority: RCW 7.68.030, 7.68.070(12), 00-03-056, § 296-30-080, filed 1/14/00, effective 2/14/00. Statutory Authority: Chapter 7.68 RCW, 94-02-015, § 296-30-080, filed 12/23/93, effective 1/24/94; 86-01-028 (Order 85-37), § 296-30-080, filed 12/11/85; 85-03-060 (Order 85-3), § 296-30-080, filed 1/15/85.]

WAC 296-30-081 What are the general obligations of a provider who provides medical or mental health services to a crime victim? (1) When treating a crime victim who comes under our jurisdiction, you agree to accept and comply with the department's rules and fees.

(a) All providers must comply with this chapter and the department's medical aid rules and fee schedules.

(b) Mental health providers must comply with this chapter, the department's medical aid rules and fee schedules, and the *Crime Victims Compensation Programs Mental Health Treatment Rules and Fees*.

(2) You must inform the victim of his or her rights under the Crime Victims Act and give whatever assistance is necessary for the victim to apply for compensation and provide proof of other matters required by our rules. Providers may not charge the victim for these services.

(3) Providers are urged to bill on a monthly basis. In order to be considered for payment, bills must be submitted within one year from the date of service, or the date of claim allowance. If private or public insurance exists, bills must be received within one year of the primary insurer's payment decision. You must attach a copy of the primary insurer's explanation of benefits when submitting your bill for payment consideration.

[Statutory Authority: RCW 7.68.030, 04-14-069, § 296-30-081, filed 7/2/04, effective 8/2/04. Statutory Authority: RCW 7.68.030, 7.68.060, 7.68.080, 00-03-056, § 296-30-081, filed 1/14/00, effective 2/14/00. Statutory Authority: RCW 7.68.030, 7.68.080, 7.68.120, 51.36.010, 51.04.020 (1) and (4) and 51.04.030, 99-07-004, § 296-30-081, filed 3/4/99, effective 4/4/99. Statutory Authority: RCW 51.36.010, 7.68.030, 51.04.020 (1) and (4), 51.04.030, 7.68.080 and 7.68.120, 97-02-090, § 296-30-081, filed 12/31/96, effective 1/31/97. Statutory Authority: RCW 7.68.030, 51.04.020(1) and 51.04.030, 95-15-004, § 296-30-081, filed 7/5/95, effective 8/5/95. Statutory Authority: Chapter 7.68 RCW, 94-02-015, § 296-30-081, filed 12/23/93, effective 1/24/94; 92-23-034, § 296-30-081, filed 11/13/92, effective 12/14/92; 92-16-033, § 296-30-081, filed 7/30/92, effective 8/30/92; 86-01-028 (Order 85-37), § 296-30-081, filed 12/11/85.]

WAC 296-30-085 What is different about billing for a crime victim client? (1) Providers must qualify as approved providers and register with the crime victims compensation program before they are authorized to provide treatment and receive payment. To register with the crime victims compensation program, you must send us:

(a) A completed provider application and Form W-9.

(b) A legible copy of your professional license, certification and/or registration.

(c) Ph.D.s not licensed as psychologists and master level counselors must provide a legible copy of their degree.

(2) Providers must determine if any public or private insurance benefits are available before billing the department. Available public or private insurance must be billed first and a copy of the insurance explanation of benefits must be attached to billings submitted to the department.

(3) A client must not be billed for treatment of his or her accepted condition. All copayments, deductibles or out of pocket expenses not covered by primary insurance should be included in your billings to the department.

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EXCEPTION: A provider may require the client to pay for treatment if the client's eligibility is in question (e.g., when an investigation or claim determination is pending). If the claim is subsequently allowed, the provider must refund the client in full and bill us at their usual and customary fees if such rates are in excess of the public or private insurance entitlements.

(4) On claims closed over ninety days, we will pay for completion of a reopening application, an office visit and diagnostic studies necessary to complete the application. No other benefits will be paid until the reopening decision is made. If the reopening application is approved, we can pay benefits for a period not to exceed sixty days prior to the date the reopening application was received by us.

[Statutory Authority: RCW 7.68.030, 7.68.080, 7.68.130, 00-03-056, § 296-30-085, filed 1/14/00, effective 2/14/00.]

WAC 296-30-090 What are the maximum allowable fees? (1) Maximum allowable fees for medical and mental health services are those fees established by the department of labor and industries for the crime victims compensation program, less any available benefits of public or private insurance.

EXCEPTION: If any of the maximum allowable fees established by the department of labor and industries for the crime victims compensation program, are lower than the maximum allowable fees for those procedures established by the department of social and health services under Title 74 RCW, the Title 74 RCW fees are the maximum allowable fees for those procedures.

(2) The percent of allowed charges authorized for hospital inpatient and outpatient services billed by revenue codes are those rates established by the department of social and health services under Title 74 RCW and WAC 388-550-4500 (1)(a) and 388-550-6000 (1)(a) less any available benefits of public or private insurance.

[Statutory Authority: RCW 7.68.030, 05-16-096, § 296-30-090, filed 8/2/05, effective 9/2/05. Statutory Authority: RCW 7.68.030, 7.68.080, 7.68.130, 00-03-056, § 296-30-090, filed 1/14/00, effective 2/14/00.]

WAC 296-30-095 How do the rules and fees apply to out-of-state providers? Rules and fees are the same for out-of-state providers as for in state providers.

EXCEPTION: Out-of-state independent medical or mental health examinations are reimbursed at the examiners usual and customary fee.

[Statutory Authority: RCW 7.68.030, 00-03-056, § 296-30-095, filed 1/14/00, effective 2/14/00.]

WAC 296-30-100 Will the department notify providers if a fee schedule is amended or established? We will give you at least thirty days advance notice by mail when we amend or establish a fee schedule.

[Statutory Authority: RCW 7.68.030, 00-03-056, § 296-30-100, filed 1/14/00, effective 2/14/00.]

WAC 296-30-105 What protest or appeal rights are available? If you or the client do not agree with our order, decision or award a written protest may be sent to the crime victims compensation program or appeal to the board of industrial insurance appeals. A protest or appeal to our order or decision requiring repayment by a provider must be received within twenty days from receipt of the order or decision. A protest or appeal regarding other issues must be

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received within ninety days of receipt of the order or decision.

Note: Protest and appeal rights are governed under chapter 51.52 RCW and RCW 7.68.110.

[Statutory Authority: RCW 7.68.030, 7.68.110, 51.52.050, 51.52.060(1), 00-03-056, § 296-30-105, filed 1/14/00, effective 2/14/00.]

WAC 296-30-120 May the department waive, modify or adjust the debt owed by a convicted offender? Yes, the department may consider the following issues in the decision. The list is not inclusive.

- (1) Justice:
 - (a) Gravity of the criminal offense;
 - (b) History of criminal convictions;
 - (c) Type of crime;
 - (d) Circumstances surrounding the criminal act;
 - (e) Sentence imposed by the court.
- (2) Well-being of the victim:
 - (a) Extent of injury to victim;
 - (b) Safety of victim;
 - (c) Dependency of the victim on the offender;
 - (d) Recovery of victim.
- (3) Rehabilitation of the individual:
 - (a) Attempts at rehabilitation;
 - (b) Employment status;
 - (c) Ability to pay.

[Statutory Authority: RCW 7.68.030, 7.68.120, 00-03-056, § 296-30-120, filed 1/14/00, effective 2/14/00. Statutory Authority: RCW 51.36.010, 7.68.030, 51.04.020 (1) and (4), 51.04.030, 7.68.080 and 7.68.120, 97-02-090, § 296-30-120, filed 12/31/96, effective 1/31/97. Statutory Authority: Chapter 7.68 RCW, 86-01-028 (Order 85-37), § 296-30-120, filed 12/11/85.]

WAC 296-30-170 Who is required to pay for sexual assault examinations? When a sexual assault examination is performed for the purpose of gathering evidence for possible prosecution, the costs of the examination must be billed to the crime victims compensation program. We are the primary payer of this benefit. The client is not required to file an application with us to receive this benefit and may not be billed for these costs. If the examination includes treatment costs or the client will require follow-up treatment, an application for benefits must be filed with us for these services to be considered for payment.

[Statutory Authority: RCW 7.68.030, 7.68.170, 00-03-056, § 296-30-170, filed 1/14/00, effective 2/14/00. Statutory Authority: Chapter 7.68 RCW, 86-01-028 (Order 85-37), § 296-30-170, filed 12/11/85; 85-03-060 (Order 85-3), § 296-30-170, filed 1/15/85.]

WAC 296-30-180 What protection is available to crime victims to prevent unjust enrichment to others from their benefits? (1) The Crime Victims Act prohibits the department from paying benefits or compensation to a person:

- (a) Who caused the crime victim's injuries; or
 - (b) Any person who would be unjustly enriched by the victim's benefits (e.g., there is a danger the person may divert benefits intended for the victim to his or her own use).
- (2) To prevent unjust enrichment, the department, victim, or the victim's guardian may file a motion to:
- (a) Request that the victim or other responsible adult establish:
 - (i) A trust account with a neutral third party as trustee; or

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(ii) A savings or checking account with a neutral third party to cosign all withdrawals or checks.

(b) Crime victim compensation benefits will then be deposited in the established account.

(3) The department will continue to pay providers directly.

[Statutory Authority: RCW 7.68.030, 7.68.070(15), 7.68.120, 00-03-056, § 296-30-180, filed 1/14/00, effective 2/14/00. Statutory Authority: RCW 51.36.010, 7.68.030, 51.04.020 (1) and (4), 51.04.030, 7.68.080 and 7.68.120, 97-02-090, § 296-30-180, filed 12/31/96, effective 1/31/97. Statutory Authority: Chapter 7.68 RCW, 86-01-028 (Order 85-37), § 296-30-180, filed 12/11/85.]

WAC 296-30-900 What law controls a claim if a statute is amended after the date of the criminal act? The statute in effect when the criminal act occurred is the controlling law. The act occurs when the perpetrator commits the criminal conduct.

[Statutory Authority: RCW 7.68.030, 99-07-004, § 296-30-900, filed 3/4/99, effective 4/4/99. Statutory Authority: RCW 51.36.010, 7.68.030, 51.04.020 (1) and (4), 51.04.030, 7.68.080 and 7.68.120, 97-02-090, § 296-30-900, filed 12/31/96, effective 1/31/97. Statutory Authority: Chapter 7.68 RCW, 85-03-060 (Order 85-3), § 296-30-900, filed 1/15/85.]

Chapter 296-31 WAC

CRIME VICTIMS COMPENSATION MENTAL HEALTH TREATMENT RULES AND FEES

WAC

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296-31-012	What mental health treatment and services are not authorized?
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296-31-030	What are the eligibility requirements of a mental health treatment provider under the Crime Victims Act?
296-31-035	How do I register to become an authorized provider with the crime victims compensation program?
296-31-040	Can the department purchase or authorize a special service or treatment that does not appear in its fee schedule?
296-31-045	Can the department deny, revoke, suspend or impose conditions on a provider's authorization to treat crime victim claimants?
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296-31-057	Can the department penalize a provider?
296-31-058	What protest and appeal rights are available?
296-31-060	What reports are required from mental health providers?
296-31-065	Can my client be referred for a consultation?
296-31-067	When is concurrent treatment allowed?
296-31-068	When can a client transfer providers?
296-31-069	For what reasons may the department require independent mental health or independent medical evaluations be obtained?
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DISPOSITION OF SECTIONS FORMERLY CODIFIED IN THIS CHAPTER

296-31-020	Definitions. [Statutory Authority: RCW 51.36.010, 7.68.030, 51.04.020 (1) and (4), 51.04.030, 7.68.080 and 7.68.120. 97-02-090, § 296-31-020, filed 12/31/96, effective 1/31/97. Statutory Authority: RCW 7.68.030, 51.04.020(1) and 51.04.030. 95-15-004, § 296-31-020, filed 7/5/95, effective 8/5/95. Statutory Authority: Chapter 7.68 RCW. 94-02-015, § 296-31-020, filed 12/23/93, effective 1/24/94. Statutory Authority: RCW 43.22.050. 92-23-033, § 296-31-020, filed 11/13/92, effective 12/14/92.] Repealed by 00-10-003, filed 4/20/00, effective 5/22/00.
296-31-050	Initial treatment and application for benefits. [Statutory Authority: RCW 7.68.030, 51.04.020(1) and 51.04.030. 95-15-004, § 296-31-050, filed 7/5/95, effective 8/5/95. Statutory Authority: RCW 43.22.050. 92-23-033, § 296-31-050, filed 11/13/92, effective 12/14/92.] Repealed by 00-03-056, filed 1/14/00, effective 2/14/00.
296-31-090	Mental health fees. [Statutory Authority: RCW 7.68.030, 51.04.020(1) and 51.04.030. 95-15-004, § 296-31-090, filed 7/5/95, effective 8/5/95. Statutory Authority: Chapter 7.68 RCW. 94-02-015, § 296-31-090, filed 12/23/93, effective 1/24/94. Statutory Authority: RCW 43.22.050. 92-23-033, § 296-31-090, filed 11/13/92, effective 12/14/92.] Repealed by 00-03-056, filed 1/14/00, effective 2/14/00.
296-31-095	Consultation fees. [Statutory Authority: RCW 43.22.050. 92-23-033, § 296-31-095, filed 11/13/92, effective 12/14/92.] Repealed by 94-02-015, filed 12/23/93, effective 1/24/94. Statutory Authority: Chapter 7.68 RCW.
296-31-100	Severability. [Statutory Authority: RCW 43.22.050. 92-23-033, § 296-31-100, filed 11/13/92, effective 12/14/92.] Repealed by 99-07-004, filed 3/4/99, effective 4/4/99.

WAC 296-31-010 What mental health treatment and services are available? (1) The crime victims compensation program provides payment for mental health treatment and services to victims of crime who are eligible for compensation under chapter 7.68 RCW, the Crime Victims' Act.

EXCEPTION: Benefits under the crime victims compensation program are secondary to services available from any other public or private insurance.

(2) Services and treatment are limited to procedures that are:

- (a) Proper and necessary for the diagnoses of an accepted condition;
- (b) Available at the least cost;
- (c) Consistent with accepted standards of mental health care; and
- (d) Will enable the client to reach maximum recovery.

[Statutory Authority: 7.68.030, 7.68.130, 51.04.030 and 51.36.010. 99-20-031, § 296-31-010, filed 9/29/99, effective 11/1/99. Statutory Authority: RCW 51.36.010, 7.68.030, 51.04.020 (1) and (4), 51.04.030, 7.68.080 and 7.68.120. 97-02-090, § 296-31-010, filed 12/31/96, effective 1/31/97. Statutory Authority: RCW 7.68.030, 51.04.020(1) and 51.04.030. 95-15-004, § 296-31-010, filed 7/5/95, effective 8/5/95. Statutory Authority: RCW 43.22.050. 92-23-033, § 296-31-010, filed 11/13/92, effective 12/14/92.]

WAC 296-31-012 What mental health treatment and services are not authorized? (1) The crime victims compensation program will not authorize services and treatment:

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(a) Beyond the point that the accepted condition becomes fixed and stable (i.e., maintenance care);

(b) After the date a permanent partial disability award is made;

(c) After a client is placed on a permanent pension roll, except as allowed in RCW 51.36.010;

(d) When services are not considered proper and necessary. Services that are inappropriate to the accepted condition, which present hazards in excess of the expected benefit, are controversial, obsolete, or experimental are presumed not to be proper and necessary, and shall only be authorized on an individual case basis with written authorization for the service from the department; or

(e) For any therapies which focus on the recovery of repressed memory or recovery of memory which focuses on memories of physically impossible acts, highly improbable acts for which verification should be available, but is not, or unverified memories of acts occurring prior to the age of two.

(2) We will not pay for services or treatment, including medications:

(a) On rejected claims;

EXCEPTION: We will pay for assessments or diagnostic services used as a basis for the department's decision.

(b) After the date a claim is closed.

EXCEPTION: Therapy for eligible survivors of victims of homicide can be provided on closed claims.

[Statutory Authority: RCW 7.68.030, 51.04.030, 51.36.010. 00-10-003, § 296-31-012, filed 4/20/00, effective 5/22/00; 99-20-031, § 296-31-012, filed 9/29/99, effective 11/1/99.]

WAC 296-31-016 What treatment or services require authorization from the crime victims compensation program? (1) The program must authorize the following mental health services and/or treatment:

(a) Treatment beyond thirty sessions for adults or forty sessions for children;

(b) Treatment beyond fifty sessions for adults or sixty sessions for children;

(c) Consultations beyond what are allowed in WAC 296-31-065;

(d) Inpatient hospitalization;

(e) Concurrent treatment with more than one provider;

(f) Electroconvulsive therapy;

(g) Neuropsychological evaluation (testing);

(h) Day treatment for seriously ill children under eighteen years old;

(i) Referrals for services or treatment not in our fee schedule (see WAC 296-31-040).

(2) Your request for authorization must be in writing and include:

(a) A statement of the condition(s) diagnosed;

(b) Current DSM or ICD codes;

(c) The relationship of the condition(s) diagnosed to the criminal act; and

(d) An outline of the proposed treatment program that includes its length, components, procedure codes and expected prognosis.

[Statutory Authority: RCW 7.68.030 and 51.04.030. 99-20-031, § 296-31-016, filed 9/29/99, effective 11/1/99.]

WAC 296-31-030 What are the eligibility requirements of a mental health treatment provider under the Crime Victims Act? (1) Mental health providers must qualify as an approved provider and register with the crime victims compensation program before they are authorized to provide treatment and receive payment in accordance with these rules.

(2) The following providers who are permanently licensed or registered in Washington are eligible to register with this program:

- (a) Psychiatrists;
- (b) Psychologists;
- (c) Advanced registered nurse practitioners with a specialty in psychiatric and mental health nursing;
- (d) Ph.D.s not licensed as psychologists and master level counselors whose degree is in a field of study related to mental health services including, but not limited to, social work, marriage and family therapy or mental health counseling.

(3) Out-of-state providers must be currently licensed, registered and/or certified within the state in which they practice. Washington requires mental health counselors to have a masters degree to treat Washington crime victim clients.

EXCEPTION: In areas where the department has determined licensed, registered and/or certified providers are not available, the department may consider registration exceptions on an individual basis.

[Statutory Authority: RCW 7.68.030. 01-22-105, § 296-31-030, filed 11/7/01, effective 12/8/01. Statutory Authority: RCW 7.68.030, 7.68.080. 00-03-056, § 296-31-030, filed 1/14/00, effective 2/14/00. Statutory Authority: RCW 7.68.030, 51.04.020(1) and 51.04.030. 95-15-004, § 296-31-030, filed 7/5/95, effective 8/5/95. Statutory Authority: RCW 43.22.050. 92-23-033, § 296-31-030, filed 11/13/92, effective 12/14/92.]

WAC 296-31-035 How do I register to become an authorized provider with the crime victims compensation program? You must send us:

- (1) A completed provider application and Form W-9;
- (2) A legible copy of your license, certification and/or registration;
- (3) Ph.D.s not licensed as psychologists and master level counselors must provide a legible copy of their degree.

[Statutory Authority: RCW 7.68.030, 7.68.080. 00-03-056, § 296-31-035, filed 1/14/00, effective 2/14/00.]

WAC 296-31-040 Can the department purchase or authorize a special service or treatment that does not appear in its fee schedule? (1) We may purchase and/or authorize agreements for service or treatment not covered in the fee schedule.

(2) The service or treatment must be provided by registered providers authorized to bill the department.

(3) We must establish payment rates for special agreements for service or treatment that we purchase or authorize.

(4) We may establish criteria to ensure each claimant receives quality and effective service or treatment that is provided at the least cost and is consistent with necessary services. Examples include, but are not limited to, outcome criteria, measures of effectiveness, minimum staffing levels, certification requirements, and special reporting requirements.

(5) We may terminate a special agreement by giving the provider thirty days **written** notice.

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(6) Any request for a special agreement must be made in writing to the crime victims' compensation program.

[Statutory Authority: RCW 7.68.030. 99-07-004, § 296-31-040, filed 3/4/99, effective 4/4/99. Statutory Authority: RCW 43.22.050. 92-23-033, § 296-31-040, filed 11/13/92, effective 12/14/92.]

WAC 296-31-045 Can the department deny, revoke, suspend or impose conditions on a provider's authorization to treat crime victim claimants? The department has a duty to supervise the provisions of proper and necessary mental health care that is delivered promptly, efficiently and economically. We may deny, revoke, suspend or impose conditions on your authorization to treat crime victim claimants for reasons that include, but are not limited to:

(1) Incompetence or negligence that results in injury to a client or that exposes the client to harm.

(2) The possession, use, prescription for use, or distribution of controlled substances, legend drugs, or addictive, habituating or dependency-inducing substances except for therapeutic purposes.

(3) Limits placed on your license, certification and/or registration by any court, board or administrative agency. The limits may be temporary or permanent and may involve probation, suspension or revocation.

(4) The commission of any act involving moral turpitude, dishonesty, or corruption that relates to the practice of your profession. The act does not need to be a crime. If a court or other tribunal issues a conviction or finding regarding the act, a certified copy of the conviction or finding is conclusive evidence of the violation.

(5) Failure to comply with our rules, orders or policies.

(6) Failure, neglect or refusal to:

(a) Provide us with copies of your license, certification and/or registration and degree;

(b) Provide records requested by the department pursuant to a health care service review or an audit;

(c) Provide us with complete and timely reports that we require, or additional reports or records that we request.

(7) The submission or collusion in the submission of false or misleading reports or bills to any government agency.

(8) Billing a claimant for:

(a) Treatment of a condition for which the department has accepted responsibility; or

(b) The difference between the amount paid by the department and/or public or private insurance under the maximum allowable fee set forth in these rules and any other charge.

(9) Repeated failure to notify the department immediately and prior to burial in any death, where cause of death is not definitely known and possibly related to a crime victim injury.

(10) Repeated failure to recognize emotional and social factors that impede a client's recovery.

(11) Repeated unreasonable refusal to comply with the recommendations of a board certified or qualified specialist who examines or reviews a claim for us.

(12) Repeated use of treatment that is:

(a) Controversial or experimental;

(b) Contraindicated or hazardous;

(c) Performed after the condition stabilizes; or

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(d) Performed after maximum mental health improvement is reached.

(13) Mental incompetence declared by a court or other tribunal.

(14) Failure to comply with the applicable code of professional conduct or ethics.

(15) Failure to inform us of disciplinary action against your license, certification or registration to practice, issued by order or formal letter.

(16) The finding of reason(s) to take action against your privileges to practice by any peer group review body.

(17) Misrepresentation or omission of any material information in your application for authorization to treat crime victims.

(18) Repeated billing of the department for services that are available to clients from public or private insurance sources. You must bill us only after all public or private insurance benefits are exhausted.

[Statutory Authority: RCW 7.68.030, 7.68.080, 7.68.100. 00-03-056, § 296-31-045, filed 1/14/00, effective 2/14/00.]

WAC 296-31-055 What type of corrective action can be taken against providers? (1) If the department finds reason to take corrective action, we may also order one or more of the following:

(a) Recoup our payments to you with interest.

(b) Deny or reduce payment.

(c) Assessment of penalties for each action that falls within the scope of WAC 296-31-045 (1) through (18).

(d) Place you on a prepayment review status that requires you to submit supporting documents prior to payment.

(e) Require you to satisfactorily complete education courses and/or programs.

(f) Impose other appropriate restrictions or conditions, including revoking your privilege to be reimbursed for treating clients under the Crime Victims Act.

(2) Cases involving questions of ethics or quality of care will be referred to the department of health.

(3) We will forward a copy of any corrective action taken against you to the applicable disciplinary authority.

[Statutory Authority: RCW 7.68.030, 7.68.080, 7.68.100, 51.48.080, 51.48.250, 51.48.260, 51.48.280, 51.48.290. 00-03-056, § 296-31-055, filed 1/14/00, effective 2/14/00.]

WAC 296-31-056 Can providers be charged interest on incorrect or inappropriate payments? (1) When you receive a payment to which you are not entitled, you must repay the excess payment, plus accrued interest, without regard to whether the excess payment occurred due to your error or department error or oversight.

EXCEPTION: If you accept in good faith a determination by the department that a crime victim client is eligible for benefits under the Crime Victims Act and we later determine the client was ineligible for services, interest will not begin to accrue until notification is received by you that the client was ineligible.

(2) Interest will accrue on excess payments at the rate of one percent per month or portion of a month beginning on the thirty-first day after payment was made. When partial payment of an excess payment is made, interest accrues on the remaining balance.

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(3) The department has the option of requesting you to remit the amount of the excess payment and accrued interest or offsetting excess payments and accrued interest against future payments due to you.

[Statutory Authority: RCW 7.68.030, 7.68.080, 51.48.250, 51.48.260. 00-03-056, § 296-31-056, filed 1/14/00, effective 2/14/00.]

WAC 296-31-057 Can the department penalize a provider? The penalty provisions for physicians contained in chapter 51.48 RCW are the same for mental health providers under these rules.

[Statutory Authority: RCW 7.68.030, 7.68.080, 7.68.100, 51.48.060, 51.48.080, 51.48.090, 51.48.250, 51.48.260, 51.48.270, 51.48.280, 51.48.290. 00-03-056, § 296-31-057, filed 1/14/00, effective 2/14/00.]

WAC 296-31-058 What protest and appeal rights are available? If you or the client do not agree with our order, decision or award a written protest may be sent to the crime victims compensation program or appeal to the board of industrial insurance appeals. A protest or appeal to our order or decision requiring repayment by a provider must be received within twenty days from receipt of the order or decision. A protest or appeal regarding other issues must be received within ninety days of receipt of the order or decision.

Note: Protest and appeal rights are governed under chapter 51.52 RCW and RCW 7.68.110.

[Statutory Authority: RCW 7.68.030, 7.68.110, 51.52.050, 51.52.060(1). 00-03-056, § 296-31-058, filed 1/14/00, effective 2/14/00.]

WAC 296-31-060 What reports are required from mental health providers? The crime victims compensation program requires the following reports from mental health providers:

(1) **Initial response and assessment: Form I:** This report is required if you are seeing the client for **six sessions or less**, and must contain:

(a) The client's initial description of the criminal act for which they have filed a crime victims compensation claim;

(b) The client's presenting symptoms/issues by your observations and the client's report;

(c) An estimate of time loss from work as a result of the crime injury, if any. Provide an estimate of when the individual will return to work, why they are unable to work, the extent of impairment and the prognosis for future occupational functioning; and

(d) What type of intervention(s) you provided.

EXCEPTION: If you will be providing more than six sessions it is not necessary to complete Form I, instead complete Form II.

(2) **Initial response and assessment: Form II:** This report is required if **more than six sessions** are anticipated. Form II must be submitted no later than the sixth session, and must contain:

(a) The client's initial description of the criminal act for which they have filed a crime victims compensation claim;

(b) A summary of the essential features of the client's symptoms related to the criminal act, beliefs/attribution, vulnerabilities, defenses and/or resources that lead to your clinical impression (refer to current DSM and crime victims compensation program guidelines);

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(c) Any preexisting or coexisting emotional/behavioral or health conditions relevant to the crime impact if present, and how they may have been exacerbated by the crime victimization;

(d) Specific diagnoses with current DSM or ICD code(s), including axes 1 through 5, and the highest GAF in the past year;

(e) Treatment plan based on diagnoses and related symptoms, to include:

- (i) Specific treatment goals you and the client have set;
- (ii) Treatment strategies to achieve the goals;
- (iii) How you will measure progress toward the goals;

and

(iv) Any auxiliary care that will be incorporated.

(f) A description of your assessment of the client's treatment prognosis, as well as any extenuating circumstances and/or barriers that might affect treatment progress; and

(g) An estimate of time loss from work as a result of the crime injury, if any. Provide an estimate of when the individual will return to work, why they are unable to work, the extent of impairment and the prognosis for future occupational functioning.

(3) Progress note: Form III: This report must be completed **after session fifteen has been conducted**, and must contain:

(a) Whether there has been substantial progress towards recovery for the crime related condition(s);

(b) If you expect treatment will be completed within thirty visits (for adults) or forty visits (for children); and

(c) What complicating or confounding issues are hindering recovery.

(4) Treatment report: Form IV: This report must be completed for authorization for **treatment beyond thirty sessions for adults or forty sessions for children**, and must contain:

(a) The diagnoses at treatment onset with current DSM or ICD code(s), including axes 1 through 5, and the highest GAF in the past year;

(b) The current diagnoses, if different now, with current DSM or ICD code(s), including axes 1 through 5, and the highest GAF in the past year; and

(c) Proposed plan for treatment and number of sessions requested, and an explanation of:

- (i) Substantial progress toward treatment goals;
- (ii) Partial progress toward treatment goals; or
- (iii) Little or no progress toward treatment goals.

(5) Treatment report: Form V: This report must be completed for authorization for **treatment beyond fifty sessions for adults or sixty sessions for children**, and must contain:

(a) The diagnoses at treatment onset with current DSM or ICD code(s), including axes 1 through 5, and the highest GAF in the past year;

(b) The current diagnoses, if different now, with current DSM or ICD code(s), including axes 1 through 5, and the highest GAF in the past year;

(c) Proposed plan for treatment and number of sessions requested, and an explanation of:

- (i) Substantial progress toward treatment goals;
- (ii) Partial progress toward treatment goals; or
- (iii) Little or no progress toward treatment goals.

(6) Termination report: Form VI: If you **discontinue treatment of a client** for any reason, a termination report should be completed within sixty days of the client's last visit, and must contain:

(a) Date of last session;

(b) Diagnosis at the time client stopped treatment;

(c) Reason for termination (e.g., goals achieved, client terminated treatment, client relocated, referred to other services, etc.); and

(d) At this point in time do you believe there is any permanent loss in functioning as a result of the crime injury? If yes, describe symptoms based on diagnostic criteria for a DSM diagnosis.

(7) Reopening application: This application is **required to reopen a claim** that has been closed more than ninety days, to demonstrate a worsening of the client's condition and a need for treatment. We will reimburse you for filing the application, for an office visit, and diagnostic studies needed to complete the application. No other benefits will be paid until a decision is made on the reopening. If the claim is reopened, we will pay benefits for a maximum of sixty days prior to the date we received the reopening application.

[Statutory Authority: RCW 7.68.030, 51.04.030 and 51.36.060, 99-20-031, § 296-31-060, filed 9/29/99, effective 11/1/99. Statutory Authority: RCW 7.68.030, 51.04.020(1) and 51.04.030, 95-15-004, § 296-31-060, filed 7/5/95, effective 8/5/95. Statutory Authority: Chapter 7.68 RCW, 94-02-015, § 296-31-060, filed 12/23/93, effective 1/24/94. Statutory Authority: RCW 43.22.050, 92-23-033, § 296-31-060, filed 11/13/92, effective 12/14/92.]

WAC 296-31-065 Can my client be referred for a consultation? (1) There may be instances when the client's accepted mental health condition presents a diagnostic or therapeutic challenge. In such cases, you or the department may refer the client for a consultation or you may ask the department for an independent mental health examination.

(2) There are two levels of consultations that can be performed: Limited and extensive. Descriptions and procedure codes are included in the *Crime Victims Compensation Program Mental Health Treatment Rules and Fees*.

(3) The consultant will be required to submit a report to the department that contains the following elements:

(a) The reason(s) for the consultation referral; and

(b) Consultants related recommendations.

(4) Authorization from the department is required for:

(a) More than two consultations before the thirtieth session for adults or fortieth session for children; and

(b) More than one consultation between thirty and fifty sessions for adults or between forty and sixty sessions for children.

(5) You may **not** make a referral for a consultation if:

(a) An independent mental health examination has been scheduled;

(b) Claim reopening is pending; or

(c) The claim is closed.

Note: The consultant must meet provider registration requirements per WAC 296-31-030.

[Statutory Authority: RCW 7.68.030 and 51.04.030, 99-20-031, § 296-31-065, filed 9/29/99, effective 11/1/99. Statutory Authority: RCW 7.68.030, 51.04.020(1) and 51.04.030, 95-15-004, § 296-31-065, filed 7/5/95, effective 8/5/95. Statutory Authority: Chapter 7.68 RCW, 94-02-015, § 296-31-065, filed 12/23/93, effective 1/24/94. Statutory Authority: RCW 43.22.050, 92-23-033, § 296-31-065, filed 11/13/92, effective 12/14/92.]

WAC 296-31-067 When is concurrent treatment allowed? (1) In some cases, treatment by more than one provider may be allowed by the crime victims compensation program. We may authorize concurrent treatment on an individual basis:

(a) If the accepted condition requires specialty or multidisciplinary care.

Note: Individual and group counseling sessions given by more than one provider is not concurrent treatment.

(b) If we receive and approve your written request that contains:

(i) The name, address, discipline, and specialty of each provider requested to assist in treating the client;

(ii) An outline of each provider's responsibility in the case; and

(iii) An estimated length for the period of concurrent treatment.

(2) If we approve concurrent treatment, we will recognize one primary attending mental health treatment provider. That provider will be responsible for:

(a) Directing the overall treatment program for the client;

(b) Providing us with copies of all reports received from involved providers; and

(c) In time loss cases, providing us with adequate evidence certifying the claimant's inability to work.

[Statutory Authority: RCW 7.68.030 and 51.04.030. 99-20-031, § 296-31-067, filed 9/29/99, effective 11/1/99.]

WAC 296-31-068 When can a client transfer providers? (1) RCW 51.36.010 provides that clients are entitled to a free choice of attending providers, subject to the limits of RCW 7.68.130 and the requirements of the claimant's public or private insurance. The provider must meet registration requirements of WAC 296-31-030.

(2) The department must be notified if a client changes providers.

(3) We may require a client to select another provider for treatment under the following conditions:

(a) When a provider, qualified and available to provide treatment, is more conveniently located;

(b) When the attending provider fails to comply with our rules;

(c) Subject to the limits of RCW 7.68.130 outlined in subsection (1) of this section.

[Statutory Authority: RCW 7.68.030, 7.68.130 and 51.36.010. 99-20-031, § 296-31-068, filed 9/29/99, effective 11/1/99.]

WAC 296-31-069 For what reasons may the department require independent mental health or independent medical evaluations be obtained? Independent medical and mental health evaluations may be required by the department for the following reasons:

(1) To rate permanent impairment when treatment has been concluded; or

(2) To evaluate an application to reopen a claim; or

(3) To determine if there are conditions related to the effects of the crime or preexisting conditions aggravated by the crime for which the claim was filed; or

(4) To determine if crime-related treatment is still necessary and if present treatment is effective; or

(5) To determine if treatment is still leading to recovery; or

(6) To obtain other information that may be necessary for the department to make decisions on the victim's claim.

[Statutory Authority: RCW 7.68.030, 51.04.030, 51.32.112, 51.32.114. 00-24-065, § 296-31-069, filed 12/1/00, effective 1/1/01. Statutory Authority: RCW 7.68.030, 7.68.070, 51.32.110, 51.04.020(1) and 51.04.030. 98-24-095, § 296-31-069, filed 12/1/98, effective 1/1/99. Statutory Authority: RCW 7.68.030, 51.04.020(1) and 51.04.030. 95-15-004, § 296-31-069, filed 7/5/95, effective 8/5/95. Statutory Authority: RCW 43.22.050. 92-23-033, § 296-31-069, filed 11/13/92, effective 12/14/92.]

WAC 296-31-06901 What is required in an independent mental health evaluation report? Practitioners participating in an independent mental health evaluation ordered by the department must provide the crime victims compensation program with a report within thirty days following the evaluation date. The report must meet the guidelines published in the *Independent Mental Health Evaluators' Handbook*.

[Statutory Authority: RCW 7.68.030, 51.04.030, 51.32.112, 51.32.114. 00-24-065, § 296-31-06901, filed 12/1/00, effective 1/1/01.]

WAC 296-31-06903 Who may perform independent mental health evaluations for the crime victims compensation program? Providers who wish to perform independent mental health evaluations for the crime victims compensation program must be approved examiners and meet the following minimum qualifications:

Counselors	<ul style="list-style-type: none"> ■ Masters or doctorate degree in a field of study related to mental health; and ■ Licensed by the Washington department of health as a social worker, mental health counselor or marriage and family therapist.
Advanced registered nurse practitioners	<ul style="list-style-type: none"> ■ Licensed with the Washington department of health; and ■ Have a specialty in psychiatric and mental health nursing.
Psychologists	<ul style="list-style-type: none"> ■ Licensed with the Washington department of health; or ■ Licensed within Oregon or Idaho by that state's health care licensing authority.
Psychiatrists	<ul style="list-style-type: none"> ■ Board certified; and ■ Licensed with the Washington department of health; or ■ Licensed within Oregon or Idaho by that state's health care licensing authority.
All examiners must have	<ul style="list-style-type: none"> ■ An active practice; or ■ Be a clinical supervisor in an active practice; ■ Five years post licensure clinical experience treating crime victims; or

	<p>■ Three years clinical experience treating crime victims and two years supervising clinical work. Note: Geographic need of the program may substitute for some of the above experience requirements.</p>
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[Statutory Authority: RCW 7.68.030, 01-22-105, § 296-31-06903, filed 11/7/01, effective 12/8/01. Statutory Authority: RCW 7.68.030, 51.04.030, 51.32.112, 51.32.114, 00-24-065, § 296-31-06903, filed 12/1/00, effective 1/1/01.]

WAC 296-31-06905 How does a provider become an approved examiner to perform independent mental health evaluations for the crime victims compensation program? Providers must submit a completed independent mental health evaluator application to the crime victims compensation program. Applications and standards for independent mental health evaluations are published in the *Independent Mental Health Evaluators' Handbook*. Approved examiners will be included on the program's approved examiners list.

[Statutory Authority: RCW 7.68.030, 51.04.030, 51.32.112, 51.32.114, 00-24-065, § 296-31-06905, filed 12/1/00, effective 1/1/01.]

WAC 296-31-06907 What factors does the crime victims compensation program consider in approving or removing examiners from the approved examiners list?

(1) The program may consider the following in approving examiners. The list is not inclusive.

(a) Minimum qualifications established in WAC 296-31-06903;

(b) Disciplinary proceeding or actions;

(c) Experience in direct patient care and the area of specialty;

(d) Geographic need of the program.

(2) The program may consider the following in removing examiners. The list is not inclusive.

(a) Complaints about the conduct of the examiner;

(b) Disciplinary proceeding or actions;

(c) Ability to effectively convey and substantiate opinions and conclusions concerning victims;

(d) Quality and timeliness of reports;

(e) Availability and willingness to testify at the board of industrial insurance appeals if required;

(f) Acceptance of the program's fee schedule rates.

[Statutory Authority: RCW 7.68.030, 51.04.030, 51.32.112, 51.32.114, 00-24-065, § 296-31-06907, filed 12/1/00, effective 1/1/01.]

WAC 296-31-06909 Is there a fee schedule for independent mental health evaluations? The maximum fee schedule for performing independent mental health evaluations is published in the *Independent Mental Health Evaluators' Handbook* available from the crime victims compensation program.

[Statutory Authority: RCW 7.68.030, 51.04.030, 51.32.112, 51.32.114, 00-24-065, § 296-31-06909, filed 12/1/00, effective 1/1/01.]

WAC 296-31-070 What are my general obligations as an approved mental health provider? (1) When treating a crime victim who comes under our jurisdiction, you agree to

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accept and comply with this chapter, the department's rules, and the *Crime Victims Compensation Program's Mental Health Treatment Rules and Fee Schedule*.

(2) You must inform the client they may be entitled to benefits under the Crime Victims Act and provide whatever assistance is necessary for the client to apply for benefits. There is no charge for these services.

(3) It is the responsibility of the client to notify the provider if they believe their condition is related to a criminal act. If you discover a condition that you believe is crime related, you must notify the client. It is your responsibility to determine if you are the first treating provider.

(4) If you are the first treating provider, you must:

(a) Provide crisis intervention as necessary;

(b) Provide instructions or help the client complete their portion of the application for benefits; and

(c) Continue necessary treatment according to our mental health rules if the client remains in your care.

(5) If you are not the first treating provider, you should ask the client if an application for benefits has been filed for the condition.

(a) If an application for benefits has been filed, and you and the client agree that a change of provider is desirable, the department should be notified of the transfer according to WAC 296-31-068.

(b) If an application for benefits has not been filed:

(i) Provide instructions or help the client complete their portion of the application for benefits; and

(ii) Include the name and address of the original provider, if known.

Note: Providers must determine if the client has public or private insurance benefits available. If there is, the provider should make sure they would be able to continue treating under the client's primary insurance. Crime victims compensation is secondary to other benefits according to RCW 7.68.130.

(6) You must notify us and the client of the date they are released to regular work. Time-loss compensation terminates on the release date. We may allow further treatment if:

(a) You request it;

(b) Treatment is needed; and

(c) The accepted condition is not fixed and stable.

(7) You must notify us if permanent functional impairment or loss (permanent partial disability) is indicated after maximum recovery of the accepted condition is achieved. We will arrange to have impairments rated according to WAC 296-20-200 et al.

(8) A client must not be billed for treatment, except under the following condition:

A provider may require the client to pay for treatment if the client's eligibility is in question (e.g., when an investigation or claim determination is pending). If the claim is subsequently allowed, the provider must refund the client in full and bill us at their usual and customary fees if such rates are in excess of the public and private insurance entitlements.

(9) No fee is payable by the department for missed appointments unless the appointment is for an examination arranged by the department. Clients may be billed directly for missed or no show appointments.

[Statutory Authority: RCW 7.68.030, 04-14-069, § 296-31-070, filed 7/2/04, effective 8/2/04. Statutory Authority: RCW 7.68.030, 7.68.060, 7.68.080, 00-03-056, § 296-31-070, filed 1/14/00, effective 2/14/00. Statutory Authority: RCW 7.68.030, 51.04.020(1) and 51.04.030, 95-15-004, §

296-31-070, filed 7/5/95, effective 8/5/95. Statutory Authority: RCW 43.22.050. 92-23-033, § 296-31-070, filed 11/13/92, effective 12/14/92.]

WAC 296-31-071 What records must providers maintain? If providers request payment from us for service, they must:

- (1) Maintain all patient and billing records needed to:
 - (a) Determine the extent of services provided to claimants or to their family members. Each record must, at a minimum:
 - (i) Document the level and type of service provided; and
 - (ii) Where applicable, indicate the name of our representative who authorized equipment or treatment.
 - (b) Comply with our audit of services, if an audit is authorized.
- (2) Maintain records for audit purposes for at least five years from the claimant's last treatment date.
- (3) Provide records to us, if requested.

Note: The confidentiality (safeguarding and release) of a claimant's records is governed by RCW 7.68.140 and 7.68.145 of the Crime Victims Act.

[Statutory Authority: RCW 7.68.030, 51.04.020(4) and 51.04.030. 99-07-004, § 296-31-071, filed 3/4/99, effective 4/4/99. Statutory Authority: RCW 43.22.050. 92-23-033, § 296-31-071, filed 11/13/92, effective 12/14/92.]

WAC 296-31-072 Are provider records subject to a health care services review or an audit? (1) We may review or audit patient and related billing records to ensure:

- (a) Claimants are receiving proper and necessary care; and
- (b) You are complying with our mental health rules, fee schedules, and policies.

A records review can become the basis of corrective action against you.

- (2) We may review your records:
 - (a) Before, during or after delivery of services;
 - (b) For cause or at random;
 - (c) Using statistical sampling methods and projections based on sample findings; and
 - (d) At or away from your place(s) of business.
- (3) We must provide you with ten working days written notice that our auditors intend to review your patient and related billing records at your place(s) of business.
- (4) We will not remove original records from your place of business, but we may request copies of your records. If copies are requested, they must be legible and provided to us within thirty calendar days of receiving our request.

[Statutory Authority: RCW 7.68.030, 51.04.020(4) and 51.04.030. 99-07-004, § 296-31-072, filed 3/4/99, effective 4/4/99. Statutory Authority: RCW 43.22.050. 92-23-033, § 296-31-072, filed 11/13/92, effective 12/14/92.]

WAC 296-31-073 Can the department enlist utilization review or management programs? As a trustee of funds appropriated by the legislature, we have a duty to supervise the provisions of proper and necessary mental health care. We may enlist utilization review or management programs to monitor and control the delivery, use, and cost of necessary mental health care services. Examples include, but are not limited to, managed care contracting, prior authorization of services, and alternative reimbursement systems.

[Title 296 WAC—p. 906]

[Statutory Authority: RCW 7.68.030, 51.04.020(4) and 51.04.030. 99-07-004, § 296-31-073, filed 3/4/99, effective 4/4/99. Statutory Authority: RCW 43.22.050. 92-23-033, § 296-31-073, filed 11/13/92, effective 12/14/92.]

WAC 296-31-074 What if my patient has an unrelated condition? (1) You must immediately notify us when you are treating an unrelated condition concurrently with an accepted condition and provide us with the following information:

- (a) Diagnosis and/or nature of unrelated condition;
 - (b) Treatment being provided; and
 - (c) The effect, if any, on the accepted condition.
- (2) Temporary treatment of an unrelated condition may be allowed and payment for service authorized if:
- (a) We approve your request for authorization prior to treatment;
 - (b) You give us a thorough explanation of how the unrelated condition is affecting the accepted condition;
 - (c) Treatment of the unrelated condition is retarding recovery of the accepted condition; and
 - (d) We receive monthly reports from you, outlining treatment and its effect on both the unrelated and accepted conditions.

- (3) We will not approve or pay for treatment of:
 - (a) An unrelated condition that has no influence or no longer influences the existing condition.
 - (b) A preexisting unrelated condition that was treated prior to acceptance of the crime victim's claim, unless it is retarding recovery of the accepted condition.

[Statutory Authority: RCW 7.68.030. 00-03-056, § 296-31-074, filed 1/14/00, effective 2/14/00.]

WAC 296-31-075 What is excess recovery? The remaining balance of a recovery, which is paid to the victim but must be used to offset future payment of benefits.

How does excess effect the bill payment process?

- (1) When an excess recovery exists, the department is not responsible for payment of bills.
- (2) The provider must bill the department in accordance with the department's medical aid rules and maximum fee schedules.
- (3) The department will:
 - (a) Determine the amount payable according to the fee schedule;
 - (b) Credit the excess recovery with the amount payable; and
 - (c) Send the provider a remittance advice showing the amount due from the victim.
- (4) The victim must pay the provider in accordance with the remittance advice.
- (5) When the excess is reduced to zero the department will resume responsibility for payment of bills.

[Statutory Authority: RCW 7.68.030, 7.68.050 and 7.68.130. 99-07-004, § 296-31-075, filed 3/4/99, effective 4/4/99. Statutory Authority: RCW 7.68.030, 51.04.020(1) and 51.04.030. 95-15-004, § 296-31-075, filed 7/5/95, effective 8/5/95. Statutory Authority: RCW 43.22.050. 92-23-033, § 296-31-075, filed 11/13/92, effective 12/14/92.]

WAC 296-31-080 How do providers bill for services?

- (1) Neither the department nor the claimant is required to pay for provider services which violate the mental health treatment rules, fee schedule or department policy.

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(2) All fees listed are the maximum fees allowable. Providers must bill their usual and customary fee for each service. If this is less than our fee schedule rate, you must bill us at the lesser rate. The department will pay the lesser of the billed charge or the fee schedule's maximum allowable.

The provider is prohibited from charging the claimant for any difference between the provider's charge and our allowable amount.

(3) Regardless of who completes the bill form, you are responsible for the completeness and accuracy of the description of services and of the charges billed.

(4) All bills submitted to the department must:

(a) Be itemized on forms approved by us.

For example: Physicians, psychologists, advanced registered nurse practitioners and master level mental health counselors may use our form or the national standard HCFA 1500 health insurance claim form. Hospitals use the UB 92 billing form for institution services and the national standard HCFA 1500 health insurance claim form for professional services.

(b) Refer to the crime victims compensation program mental health treatment rules and fees booklet for procedure code listings and detailed billing instructions. Billings must be submitted in accordance with this publication.

(5) The following supporting documentation must be maintained and, if applicable, submitted when billing for services:

- (a) Intake evaluation;
- (b) Progress reports;
- (c) Consultation reports;
- (d) Special or diagnostic study reports;
- (e) Independent assessment or closing exam reports;
- (f) BR (by report) describing why a service or procedure is too unusual, variable, or complex to be assigned a value unit;

(g) The claimant's or patient's (if patient is other than claimant) private or public insurance information;

For example: When services provided are for survivors of homicide victims.

(6) The claim number must appear in the appropriate field on each bill form. Reports and other correspondence must have the claim number in the upper right hand corner of each page.

(7) You may rebill us if your bill is not reported on your remittance advice within sixty days. Unless the information on the original bill was incorrect, a rebill should be identical. Rebills must be submitted for services denied if a claim is closed or rejected and subsequently reopened or allowed.

(8) We will adjust charges when appropriate. We must provide you with a written explanation as to why a billing was adjusted. A written explanation is not required if the adjustment was made solely to conform to our maximum allowable fees. Any inquiries regarding adjustment of charges must be received in the required format within ninety days from the date of payment.

[Statutory Authority: RCW 7.68.030, 7.68.080, 7.68.120, 51.36.010, 51.04.020 (1) and (4) and 51.04.030. 99-07-004, § 296-31-080, filed 3/4/99, effective 4/4/99; 97-02-090, § 296-31-080, filed 12/31/96, effective 1/31/97. Statutory Authority: RCW 7.68.030, 51.04.020(1) and 51.04.030. 95-15-004, § 296-31-080, filed 7/5/95, effective 8/5/95. Statutory Authority: Chapter 7.68 RCW. 94-02-015, § 296-31-080, filed 12/23/93, effective 1/24/94. Statutory Authority: RCW 43.22.050. 92-23-033, § 296-31-080, filed 11/13/92, effective 12/14/92.]

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WAC 296-31-085 Can out-of-state providers bill the department? (1) Providers of mental health diagnostic and treatment services located outside the state of Washington:

(a) May bill us for services that we allow and are authorized by the crime victims compensation program mental health treatment rules;

(b) Must bill us according to the provisions of this chapter;

(c) Must bill their usual and customary fees; and

(d) Will be paid according to the Washington state crime victims compensation program mental health treatment rules and fees.

Exception: Hospitals located outside the state of Washington are paid according to WAC 296-30-081.

(2) Independent medical or mental health examinations must be billed and will be paid according to the examiner's usual and customary fee.

(3) We will not reimburse a charge for service(s) allowed under any out-of-state crime victims compensation program unless it is allowed in chapters 296-30 and 296-31 WAC. When in doubt, the provider should contact us to verify coverage.

[Statutory Authority: RCW 7.68.030, 7.68.080, 7.68.120, 51.36.010, 51.04.020 (1) and (4) and 51.04.030. 99-07-004, § 296-31-085, filed 3/4/99, effective 4/4/99.]

Chapter 296-32 WAC

SAFETY STANDARDS FOR TELECOMMUNICATIONS

WAC

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296-32-360	Tree trimming—Electrical hazards.
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DISPOSITION OF SECTIONS FORMERLY CODIFIED IN THIS CHAPTER

296-32-001	Foreword—Effective date. [Foreword, effective 4/1/66.] Repealed by Order 77-12, filed 7/11/77.
296-32-010	Statements of fact—Construction of rules. [Rules (part), effective 4/1/66; Regulations 1.3, 1.4, 1.7, 1.8, 1.9, filed 3/23/60.] Repealed by Order 77-12, filed 7/11/77.
296-32-011	Procedure for settling controversy. [Rules (part), effective 4/1/66; Regulation 1.6, filed 3/23/60.] Repealed by Order 77-12, filed 7/11/77.
296-32-020	Causes of accident. [Rules (part), effective 4/1/66; Regulation 1.10, filed 3/23/60.] Repealed by Order 77-12, filed 7/11/77.
296-32-030	Causes of accident—Safety. [Rules (part), effective 4/1/66; Regulation 1.11, filed 3/23/60.] Repealed by Order 77-12, filed 7/11/77.

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296-32-040	Definitions. [Definitions, effective 4/1/66; Regulations 1.12—1.25, filed 3/23/60.] Repealed by Order 77-12, filed 7/11/77.
296-32-050	Employer's responsibility. [Rules (part), effective 4/1/66; Regulations 2.1—2.11, filed 3/23/60.] Repealed by Order 77-12, filed 7/11/77.
296-32-060	Foreman's responsibility. [Rules (part), effective 4/1/66; Regulations 2.12—2.23, filed 3/23/60.] Repealed by Order 77-12, filed 7/11/77.
296-32-070	Employee's responsibility. [Rules (part), effective 4/1/66; Regulations 2.24—2.31, filed 3/23/60.] Repealed by Order 77-12, filed 7/11/77.
296-32-080	First-aid. [Rules (part), effective 4/1/66; Regulations 3.1—3.4, filed 3/23/60.] Repealed by Order 77-12, filed 7/11/77.
296-32-090	Industrial hygiene. [Rules (part), effective 4/1/66; Regulations 3.5—3.7, filed 3/23/60.] Repealed by Order 77-12, filed 7/11/77.
296-32-094	Overhead work. [Rules (part), effective 4/1/66.] Repealed by Order 77-12, filed 7/11/77.
296-32-098	Molten solder handling. [Rules (part), effective 4/1/66.] Repealed by Order 77-12, filed 7/11/77.
296-32-100	Aerial plant. [§ VI, Rules 6.010—6.100, effective 4/1/66; Regulations 4.1—4.15, filed 3/23/60.] Repealed by Order 77-12, filed 7/11/77.
296-32-110	Underground plant. [§ VII, Rules 7.010—7.120, effective 4/1/66; Regulations 5.1—5.12, filed 3/23/60.] Repealed by Order 77-12, filed 7/11/77.
296-32-120	Central office plant. [§ IV, Rules 4.010—4.060, effective 4/1/66; Regulations 6.1—6.7, filed 3/23/60.] Repealed by Order 77-12, filed 7/11/77.
296-32-130	Tools and protective devices. [§ II, Rules 2.010—2.460, effective 4/1/66; Regulations 7.1—7.50, filed 3/23/60.] Repealed by Order 77-12, filed 7/11/77.
296-32-140	Motor vehicles, work equipment and transportation. [§ III, Rules 3.010—3.160, effective 4/1/66; Regulations 8.1—8.14, filed 3/23/60.] Repealed by Order 77-12, filed 7/11/77.
296-32-150	Power exposures. [§ VIII, Rules 8.010—8.200, effective 4/1/66; Regulations 9.1—9.20, filed 3/23/60.] Repealed by Order 77-12, filed 7/11/77.
296-32-160	General safety requirements. [§ I, Rules 1.010—1.120, effective 4/1/66; Rules 10.2—10.7, 10.10, 10.11, 10.14, 10.15, 10.16, 10.17, filed 3/23/60.] Repealed by Order 77-12, filed 7/11/77.
296-32-170	Manlift equipment. [§ V, Rules 5.010—5.090, effective 4/1/66.] Repealed by Order 77-12, filed 7/11/77.
296-32-180	Electronic communication equipment. [§ IX, Rules 9.010—9.120, effective 4/1/66.] Repealed by Order 77-12, filed 7/11/77.

WAC 296-32-200 Scope and application. (1) This chapter sets forth safety and health standards that apply to the work conditions, practices, means, methods, operations, installations and processes performed at telecommunications centers and at telecommunications field installations, which are located outdoors or in building spaces used for such field installations. "Center" work includes the installation, operation, maintenance, rearrangement, and removal of communications equipment and other associated equipment in telecommunications switching centers. "Field" work includes the installation, operation, maintenance, rearrangement, and removal of conductors and other equipment used for signal or communication service, and of their supporting or containing structures, overhead or underground, on public or private rights of way, including buildings or other structures.

(2) These standards do not apply:

(a) To construction work, as defined in chapter 296-155 WAC, nor

(b) To installations under the exclusive control of electric utilities used for the purpose of communications or metering, or for generation, control, transformation, transmission, and distribution of electric energy, which are located in buildings used exclusively by the electric utilities for such

purposes, or located outdoors on property owned or leased by the electric utilities or on public highways, streets, roads, etc., or outdoors by established rights on private property.

(3) Operations or conditions not specifically covered by this chapter are subject to all the applicable standards contained in chapter 296-24 WAC, general safety and health standards, and chapter 296-800 WAC, the safety and health core rules. Operations which involve construction work, as defined in chapter 296-155 WAC are subject to all the applicable standards contained in chapter 296-155 WAC, safety standards for construction work.

(4) This standard shall augment the Washington state general safety and health standards, general occupational health standards, electrical workers safety rules, and any other standards which are applicable to all industries governed by chapter 80, Laws of 1973, Washington Industrial Safety and Health Act. In the event of any conflict between any portion of this chapter and any portion of any of the general application standards, the provisions of this chapter 296-32 WAC, shall apply.

(5) In exceptional cases where compliance with specific provisions of this chapter can only be accomplished to the serious detriment and disadvantage of an operation, variance from the requirement may be permitted by the director of the department of labor and industries after receipt of application for variance which meets the requirements of WAC 296-350-700.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 01-11-038, § 296-32-200, filed 5/9/01, effective 9/1/01; Order 76-38, § 296-32-200, filed 12/30/76; Order 75-41, § 296-32-200, filed 12/19/75.]

WAC 296-32-210 Definitions. (1) The terms used in these standards shall be interpreted in the most commonly accepted sense consistent with the communications industry. The words "shall" and "must," are used to indicate the provisions which are mandatory.

(2) "Aerial lifts." Aerial lifts include the following types of vehicle-mounted aerial devices used to elevate personnel to jobsites above ground:

- (a) Extensible boom platforms,
- (b) Aerial ladders,
- (c) Articulating boom platforms,
- (d) Vertical towers,

(e) A combination of any of the above defined in ANSI A92.2-1969. These devices are made of metal, wood, fiberglass, reinforced plastic (FRP), or other material; are powered or manually operated and are deemed to be aerial lifts whether or not they are capable of rotating above a substantially vertical axis.

(3) "Aerial splicing platform." This consists of a platform, approximately 3 feet x 4 feet, used to perform aerial cable work. It is furnished with fiber or synthetic ropes for supporting the platform from aerial strand, detachable guy ropes for anchoring it, and a device for raising and lowering it with a handline.

(4) "Aerial tent." A small tent usually constructed of vinyl coated canvas which is usually supported by light metal or plastic tubing. It is designed to protect employees in inclement weather while working on ladders, aerial splicing platforms, or aerial devices.

(5) "Alive or live (energized)." Electrically connected to a source of potential difference, or electrically charged so as to have a potential significantly different from that of the earth in the vicinity. The term "live" is sometimes used in the place of the term "current-carrying," where the intent is clear, to avoid repetition of the longer term.

(6) "Barricade." A physical obstruction such as tapes, cones, or "A" frame type wood and/or metal structure intended to warn and limit access to a work area.

(7) "Barrier." A physical obstruction which is intended to prevent contact with energized lines or equipment, or to prevent unauthorized access to work area.

(8) "Bond." An electrical connection from one conductive element to another for the purpose of minimizing potential differences or providing suitable conductivity for fault current or for mitigation of leakage current and electrolytic action.

(9) "Cable." A conductor with insulation, or a stranded conductor with or without insulation and other coverings (single-conductor cable), or a combination of conductors insulated from one another (multiple-conductor cable).

(10) "Cable sheath." A protective covering applied to cables.

Note: A cable sheath may consist of multiple layers of which one or more is conductive.

(11) "Circuit." A conductor or system of conductors through which an electric current is intended to flow.

(12) "Clearance."

(a) The certification by the proper authority that a specified line or piece of equipment is de-energized; that the proper precautionary measures have been taken and that the line or equipment is being turned over to the workers.

(b) Separation or protection by the use of protective devices to prevent accidental contact by persons or objects on approach to a point of danger.

(13) "Climbing space." The vertical space reserved along the side of poles or structures to permit ready access for lineworkers to equipment and conductors located on poles or structures.

(14) "Communication lines." The conductors and their supporting or containing structures for telephone, telegraph, railroad signal, data, clock, fire, police-alarm, community television antenna and other systems which are used for public or private signal or communication service, and which operate at potentials not exceeding 400 volts to ground or 750 volts between any two points of the circuit, and the transmitted power of which does not exceed 150 watts. When communications lines operate at less than 150 volts to ground, no limit is placed on the capacity of the system. Specifically designed communications cables may include communication circuits not complying with the preceding limitations, where such circuits are also used incidentally to supply power to communication equipment.

(15) "Communication plant." The conductors and their associated equipment required to provide public or private signals or communicative service.

(16) "Competent or qualified person." A person who is familiar with the construction of, or operation of, such lines and/or equipment that concerns their position and who is fully aware of the hazards connected therewith OR one who

has passed a journeyman's examination for the particular branch of the trades with which they may be connected. In case of dispute, competency shall be established by a committee appointed by the director or assistant director of the department of labor and industries consisting of representatives of all interested parties.

(17) "Conductor." A material, usually in the form of a wire, cable, or bus bar, suitable for carrying an electric current.

(18) "Effectively grounded." Intentionally connected to earth through a ground connection or connections of sufficiently low impedance and having sufficient current-carrying capacity to prevent the build-up of voltages which may result in undue hazard to connected equipment or to persons.

(19) "Emergency." When an unusual condition exists that endangers life and/or property.

(20) "Energized." Electrically connected to a source of potential difference or electrically charged so as to have a potential different from that of the earth or different from that of adjacent conductors or equipment. For the purpose of these rules, potential differences less than 100 volts shall not apply. This definition does not include communication lines of less than 300 volts.

(21) "Equipment." A general term which includes materials, fittings, devices, appliances, fixtures, apparatus, and similar items used as part of, or in connection with, a supply or communications installation.

(22) "Crewleader or person-in-charge." That person directly in charge of workers doing the work regardless of title.

(23) "Ground (reference)." That conductive body usually earth, to which an electric potential is referenced.

(24) "Ground (as a noun)." A conductive connection, whether intentional or accidental, by which an electric circuit or equipment is connected to reference ground.

(25) "Ground (as a verb)." The connecting or establishment of a connection, whether by intention or accident, of an electric circuit or equipment to reference ground.

(26) "Grounding." The act of placing shorts and grounds on conductors and equipment for the purpose of protecting workers from dangerous voltages while working on such lines or equipment.

(27) "Ground tent." A small tent usually constructed of vinyl coated canvas supported by a metal or plastic frame. Its purpose is to protect employees from inclement weather while working at buried cable pedestal sites or similar locations.

(28) "Grounded conductor." A system or circuit conductor which is intentionally grounded.

(29) "Grounded systems." A system of conductors in which at least one conductor or point (usually the middle wire, or the neutral point of transformer or generator windings) is intentionally grounded, either solidly or through a current-limiting device (not a current-interrupting device).

(30) "Grounding electrode conductor (grounding conductor)." A conductor used to connect equipment or the grounded circuit of a wiring system to a grounding electrode.

(31) "Guard or guarded." Covered, shielded, fenced, enclosed, or otherwise protected by means of suitable covers, casings, barriers, rails, screens, mats, platforms, or warning signs or devices to remove the possibility of dangerous con-

tact on approach by other persons or objects to a point of danger.

(32) "Insulated." Separated from other conducting surfaces by a dielectric substance (including air space) offering a high resistance to the passage of current.

Note: When any object is said to be insulated, it is understood to be insulated in suitable manner for the conditions to which it is subjected. Otherwise, it is, within the purpose of these standards, uninsulated. Insulating coverings of conductors is one means of making the conductor insulated.

(33) "Insulation (as applied to cable)." That which is relied upon to insulate the conductor from other conductors or conducting parts or from ground.

(34) "Joint use." The sharing of a common facility, such as a manhole, trench or pole, by two or more different kinds of utilities, (e.g., power and telecommunications).

(35) "Ladder platform." A device designed to facilitate working aloft from an extension ladder. A typical device consists of a platform (approximately 9" x 18") hinged to a welded pipe frame. The rear edge of the platform and the bottom crossmember of the frame are equipped with latches to lock the platform to ladder rungs.

(36) "Ladder seat." A removable seat used to facilitate work at an elevated position on rolling ladders in telecommunication centers.

(37) "Manhole." A subsurface enclosure which personnel may enter and which is used for the purpose of installing, operating, and maintaining submersible equipment and/or cable.

(38) "Manhole platform." A platform consisting of separate planks which are laid across steel platform supports. The ends of the supports are engaged in the manhole cable racks.

(39) "Manlift equipment." Such types of portable truck-mounted equipment as mechanical, electric or hydraulic ladders and boom-mounted buckets or cages.

(40) "Microwave transmission." The act of communicating or signaling utilizing a frequency between 1 GHz_z (gigahertz) and 300 GHz_z inclusively.

(41) "Nominal voltage." The nominal voltage of a system or circuit is the value assigned to a system or circuit of a given voltage class for the purpose of convenient designation. The actual voltage may vary above or below this value.

(42) "Pole balcony or seat." A balcony or seat used as a support for workers at pole-mounted equipment or terminal boxes. A typical device consists of a bolted assembly of steel details and a wooden platform. Steel braces run from the pole to the underside of the balcony. A guard rail (approximately 30" high) may be provided.

(43) "Pole platform." A platform intended for use by a worker in splicing and maintenance operations in an elevated position adjacent to a pole. It consists of a platform equipped at one end with a hinged chain binder for securing the platform to a pole. A brace from the pole to the underside of the platform is also provided.

(44) "Protection from hazardous voltage." The isolation from or de-energizing of equipment to prevent accidental contact by persons or objects on approach to point of danger.

(45) "Protective devices." Those devices such as rubber gloves, rubber blankets, line hose, rubber hoods or other insu-

lating devices, which are specially designed for the protection of workers.

(46) "Public highway." Every way, land, road, street, boulevard, and every way or place in the state open as matter of right to public vehicular travel, both inside and outside the limit of cities and towns.

(47) "Qualified employee." Any worker who by reason of their training and experience has demonstrated an ability to safely perform their duties.

(48) "Qualified line-clearance tree trimmer." A tree worker who through related training and on-the-job experience is familiar with the special techniques and hazards involved in line clearance.

(49) "Qualified line-clearance tree-trimmer trainee." Any worker regularly assigned to a line-clearance tree-trimming crew and undergoing on-the-job training who, in the course of such training, has demonstrated their ability to perform duties safely at their level of training.

(50) "Sheath." As applied to sharp tools that effectively covers the tool.

(51) "System operator/owner." The person or organization that operates or controls the electrical conductors involved.

(52) "Telecommunications center." An installation of communication equipment under the exclusive control of an organization providing telecommunications service, that is located outdoors or in a vault, chamber, or a building space used primarily for such installations.

Note: Telecommunication centers are facilities established, equipped and arranged in accordance with engineered plans for the purpose of providing telecommunications service. They may be located on premises owned or leased by the organization providing telecommunication service, or on the premises owned or leased by others. This definition includes switch rooms (whether electromechanical, electronic, or computer controlled), terminal rooms, power rooms, repeater rooms, transmitter and receiver rooms, switchboard operating rooms, cable vaults, and miscellaneous communications equipment rooms. Simulation rooms of telecommunication centers for training or developmental purposes are also included.

(53) "Telecommunications derricks." Rotating or nonrotating derrick structures permanently mounted on vehicles for the purpose of lifting, lowering, or positioning hardware and materials used in telecommunications work.

(54) "Telecommunication line truck." A truck used to transport workers, tools, and material, and to serve as a traveling workshop for telecommunication installation and maintenance work. It is sometimes equipped with a boom and auxiliary equipment for setting poles, digging holes, and elevating material or workers.

(55) "Telecommunication service." The furnishing of a capability to signal or communicate at a distance by means such as telephone, telegraph, police and fire-alarm, community antenna television, or similar system, using wire, conventional cable, coaxial cable, wave guides, microwave transmission, or other similar means.

(56) "Unvented vault." An enclosed vault in which the only openings are access openings.

(57) "Vault." An enclosure above or below ground which personnel may enter, and which is used for the purpose

of installing, operating, and/or maintaining equipment and/or cable which need not be of submersible design.

(58) "Vented vault." An enclosure as described in subsection (57) of this section, with provision for air changes using exhaust flue stack(s) and low level air intake(s), operating on differentials of pressure and temperature providing for air flow.

(59) "Voltage communications." Voltage used for electronic communications equipment to which workers or protective equipment may be subjected.

(a) *High* means over 600 volts to ground—RMS AC or DC or over 1,000 volts RMS across bare parts.

(b) *Medium high* means 151 to 600 volts to ground—RMS AC or DC or 301 to 1,000 volts RMS AC across any bare parts.

(60) "Voltage electric supply." The maximum effective line voltage to which the workers or protective equipment may be subjected.

(a) *Low* includes voltages from 100 to 750 volts.

(b) *High* means those voltages in excess of 750 volts.

(61) "Voltage of an effectively grounded circuit." The voltage between any conductor and ground unless otherwise indicated.

(62) "Voltage of a circuit not effectively grounded." The voltage between any two conductors. If one circuit is directly connected to and supplied from another circuit of higher voltage (as in the case of an autotransformer), both are considered as of the higher voltage, unless the circuit of lower voltage is effectively grounded, in which case its voltage is not determined by the circuit of higher voltage. Direct connection implies electric connection as distinguished from connection merely through electromagnetic or electrostatic induction.

[Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-32-210, filed 7/20/94, effective 9/20/94; Order 76-38, § 296-32-210, filed 12/30/76; Order 75-41, § 296-32-210, filed 12/19/75.]

WAC 296-32-215 Safe place standard. (1) No employer shall require any employee to go or be in any employment or place of employment which is not safe.

(2) No employer shall fail or neglect:

(a) Provide safe access to the work site.

(b) To provide and use safety devices and safeguards.

(c) To adopt and use methods and processes to render the employment and place of employment safe.

(d) To do every other thing reasonably necessary to protect the life and safety of employees.

[Order 76-38, § 296-32-215, filed 12/30/76.]

WAC 296-32-220 General. (1) Buildings containing telecommunications centers.

(a) **Illumination.** Lighting in telecommunication centers shall be provided in an amount such that continuing work operations, routine observations, and the passage of employees can be carried out in a safe and healthful manner.

(b) Specific tasks in centers, such as splicing cable and the maintenance and repair of equipment frame lineups, the employer shall install permanent lighting or portable supplemental lighting to attain a higher level of illumination.

(c) Refer to WAC 296-800-210 which shall apply as minimum standards of illumination for industrial interiors.

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(d) **Illumination of field work.** Whenever natural light is insufficient to illuminate the worksite, artificial illumination shall be provided to enable the employee to perform the work safely.

(2) **Working surfaces.**

(a) Working surfaces shall be in conformance with the latest edition of the general safety and health standard WAC 296-24-735 through 296-24-76523, and chapter 296-800 WAC, the safety and health core rule book.

(b) Guard rails and toe boards may be omitted on distribution frame mezzanine platforms to permit access to equipment. This exemption applies only on the side or sides of the platform facing the frames and only on those portions of the platform adjacent to equipped frames.

(3) **Working spaces.**

(a) Space shall be provided for access to all medium high and high voltage equipment.

(b) Every structure, new or old, designed for human occupancy shall be provided with exits to permit the prompt escape of occupants in case of fire or other emergency. The means of egress shall be a continuous and unobstructed way of exit travel from any point in a building or structure to a public way and consist of three separate and distinct parts; the way of exit access, the exit and the way of exit discharge. A means of egress comprises the vertical and horizontal ways of travel and shall include intervening room spaces, doorways, hallways, corridors, passageways, balconies, ramps, stairs, enclosures, lobbies, escalators, horizontal exits, courts and yards.

(c) "Maintenance aisles," or "wiring aisles," between equipment frame lineups are working spaces and are not a means of egress for purposes of WAC 296-24-550 and 296-800-310.

(4) **Special doors.**

(a) When blastproof or power actuated doors are installed in specially designed hardsite security buildings and spaces, they shall be designed and installed so that they can be used as a means of egress in emergencies.

(b) When high voltage apparatus is isolated in a supplementary enclosure, interlocks shall be provided on all access doors. Warning signs shall be provided, which are visible both when the guard or cover is in place or removed.

(5) **Equipment, machinery and machine guarding.**

(a) When power plant machinery in telecommunications centers is operated with commutators and couplings uncovered, the adjacent housing shall be clearly marked to alert personnel to the rotating machinery.

(b) All power switches on power panels shall be in an open position when they are not controlling an operating circuit. Before opening any power circuit, the load shall be reduced. "Men working" signs, or similar wording shall be placed on switches associated with motors or generators under repair.

(c) When working on the brushes of a machine in operation, employees shall use care not to break a circuit. When it is necessary to remove a brush from the holder, the machine shall be shut down.

(d) Only fuse pullers specifically designed for that purpose shall be used when replacing cartridge type fuses.

(6) **Battery handling.**

(a) Eye protection devices which provide side as well as frontal eye protection for employees shall be provided when measuring storage battery specific gravity or handling electrolyte, and the employer shall ensure that such devices are used by the employees.

(b) The employer shall also ensure that acid resistant gloves and aprons shall be worn for protection against spattering.

(c) Facilities for quick drenching or flushing of the eyes and body shall be provided unless the storage batteries are of the enclosed type and equipped with explosion proof vents, in which case sealed water rinse or neutralizing packs may be substituted for the quick drenching or flushing facilities.

(d) Employees assigned to work with storage batteries shall be instructed in emergency procedures such as dealing with accidental acid spills.

(e) Electrolyte (acid or base, and distilled water) for battery cells shall be mixed in a well ventilated room. Acid or base shall be poured gradually, while stirring, into the water. Water shall never be poured into concentrated (greater than 75 percent) acid solutions. Electrolyte shall never be placed in metal containers nor stirred with metal objects.

(f) When taking specific gravity readings, the open end of the hydrometer shall be covered with an acid resistant material while moving it from cell to cell to avoid splashing or throwing the electrolyte.

(g) Ventilation, shall be provided to ensure diffusion of the gasses from the battery to prevent the accumulation of an explosive type mixture.

(h) Racks and trays shall be substantial and treated to be resistant to the electrolyte.

(i) Floors shall be of acid resistant construction or be protected from acid accumulation.

(7) Hazardous materials.

(a) Highway mobile vehicles and trailers stored in garages in accordance with WAC 296-24-47513 (4)(b) may be equipped to carry more than one LP-gas container, but the total capacity of LP-gas containers per work vehicle stored in garages shall not exceed 100 pounds of LP-gas.

(b) All container valves shall be closed when not in use.

(8) Compressed gas.

(a) When using or transporting nitrogen cylinders, special compartments, racks, or blocking shall be provided to prevent cylinder movement.

(b) Regulators shall be removed or guarded before a cylinder is transported.

(9) Support structures.

(a) No employee, or any material or equipment, shall be supported or permitted to be supported on any portion of a pole structure, platform, ladder, walkway or other elevated structure or aerial device unless the employer ensures that the support structure is first inspected by a competent person and it is determined to be strong, in good working condition and properly secured in place.

(b) Workers shall not throw anything from pole to ground, from pole to pole or from ground to pole.

(10) Power exposures.

(a) The employer shall ensure that no employee approaches or takes any conductive object closer to any electrically energized overhead power lines and parts than prescribed in Table 1 unless:

(i) The employee is insulated or guarded from the energized parts (insulating gloves rated for the voltage involved shall be considered adequate insulation), or

(ii) The energized parts are insulated or guarded from the employee and any other conductive object at a different potential, or

(iii) The power conductors and equipment are deenergized and grounded.

(b) While handling communication wires, metal sheaths, or communication equipment, contact shall be avoided with street lamp brackets, trolley span wires, power guys, transformer cases and any other power equipment that may be energized. The safest possible working position shall be assumed before starting work.

(c) Communication employees shall never work in the pole space on jointly used poles between normal primary and secondary attachments.

(d) Where a hazard of a power contact exists, due to use of long handled tools, proper rubber equipment shall be used.

TABLE 1
APPROACH DISTANCES TO EXPOSED ENERGIZED
OVERHEAD POWER LINES AND PARTS

Voltage Range (phase to phase, RMS)	Approach Distance (inches)
300 V and less	(1)
Over 300 V, not over 750 V	12
Over 750 V not over 2 kV	18
Over 2 kV, not over 15 kV	24
Over 15 kV, not over 37 kV	36
Over 37 kV, not over 87.5 kV	42
Over 87.5 kV, not over 121 kV	48
Over 121 kV, not over 140 kV	54

(1) Avoid contact.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 01-11-038, § 296-32-220, filed 5/9/01, effective 9/1/01. Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-32-220, filed 7/20/94, effective 9/20/94; Order 76-38, § 296-32-220, filed 12/30/76; Order 75-41, § 296-32-220, filed 12/19/75.]

WAC 296-32-230 Training. (1) Employers shall provide training in the various precautions and safe practices described in this section and shall insure that employees do not engage in the activities to which this chapter applies until such employees have received proper training in the various precautions and safe practices required by this section. However, where the employer can demonstrate that an employee is already trained in the precautions and safe practices required by this section prior to their employment, training need not be provided to that employee in accordance with this section.

(2) Where training is required, it shall consist of on-the-job training or classroom-type training or a combination of both.

(3) The training program shall include a list of the subject courses and the types of personnel required to receive such instruction. A written description of the training program and a record of employees who have received such training shall be maintained for the duration of the employee's employment and shall be made available upon request to the director of the department of labor and industries, or his/her authorized representative.

(4) Such training shall, where appropriate, include the following subjects:

(a) Recognition and avoidance of dangers relating to encounters with harmful substances, and animal, insect, or plant life.

(b) Procedures to be followed in emergency situations, and

(c) First-aid training, including instruction in artificial respiration.

(5) It shall be the responsibility of the employer to hold monthly safety meetings at practical points throughout the operation and insist upon employees attending said meetings. Minutes shall be kept of each safety meeting and retained for a period of one year.

(6) It shall be the responsibility of management to develop and maintain a chemical hazard communication program as required by WAC 296-800-170, which will provide information to all employees relative to hazardous chemicals or substances to which they are exposed, or may become exposed, in the course of their employment.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 01-11-038, § 296-32-230, filed 5/9/01, effective 9/1/01. Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-32-230, filed 7/20/94, effective 9/20/94; 89-11-035 (Order 89-03), § 296-32-230, filed 5/15/89, effective 6/30/89; Order 76-38, § 296-32-230, filed 12/30/76; Order 75-41, § 296-32-230, filed 12/19/75.]

WAC 296-32-240 Employee protection in public work areas. (1)(a) Before work begins in the vicinity of vehicular or pedestrian traffic that may endanger employees, traffic control signs, devices, and barriers must be positioned and used according to the requirements of chapter 296-155 WAC, Part E. When flaggers are used, employers, responsible contractors and/or project owners must comply with the requirements of WAC 296-155-305.

(b) During hours of darkness, warning lights must be prominently displayed and excavated areas must be enclosed with protective barricades.

(2) When work exposes energized or moving parts that are normally protected, danger signs shall be displayed and barricades erected to warn other personnel in the area.

(3) The employer shall insure that an employee finding any crossed or fallen wires which create or may create a hazardous situation at the work area:

(a) Remains on guard or adopts other adequate means to warn other employees of the danger, and

(b) Has the proper authority notified at the earliest practical moment.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050, 2000 c 239, and chapter 34.05 RCW. 01-07-075, § 296-32-240, filed 3/20/01, effective 4/20/01; Order 76-38, § 296-32-240, filed 12/30/76; Order 75-41, § 296-32-240, filed 12/19/75.]

WAC 296-32-250 Tools and personal protective equipment—General. (1) Personal protective equipment, protective devices and special tools needed for the work of employees shall be provided and the employer shall ensure that they are used by employees.

(a) Before each day's use the employer shall ensure that these personal protective devices, tools, and equipment are carefully inspected by a competent person to ascertain that they are in good condition.

(b) Tools found to be defective shall be taken out of service.

(2) Head protection. Head protection meeting the requirements of ANSI Z89.2-1971, "Safety Requirements for Industrial Protective Helmets for Electrical Workers, Class B", must be provided whenever there is possible exposure to high voltage electrical contact. Employers must make sure that employees use the head protection.

(3) Eye protection. Protective eye and face equipment shall be required where there is a possibility of injury that can be prevented by such equipment. In such cases, employers shall make conveniently available a type of protector suitable for the work to be performed, and employees shall use such protectors.

Note: See WAC 296-800-160 for additional personal protective equipment requirements.

(4) Tent heaters, torches and open flame. Open flames shall not be used within ground tents or on platforms within aerial tents unless:

(a) The tent covers are constructed of fire resistant materials, and

(b) Ventilation is provided to maintain safe oxygen levels and avoid harmful buildup of combustion products and combustible gases.

(5) Portable power equipment.

(a) All portable power equipment used in the telecommunications industry shall be grounded.

(b) Nominal 120V, or less, portable generators used for providing power at work locations do not require grounding if the output circuit is completely isolated from the frame of the unit.

(c) Grounding shall be omitted when using soldering irons, guns or wire-wrap tools on telecommunication circuits.

(6) Vehicle-mounted utility generators. Vehicle-mounted utility generators used for providing nominal 240V AC or less for powering portable tools and equipment need not be grounded to earth if all of the following conditions are met:

(a) One side of the voltage source is solidly strapped to the metallic structure of the vehicle;

(b) Grounding-type outlets are used, with a "grounding" conductor between the outlet grounding terminal and the side of the voltage source that is strapped to the vehicle;

(c) All metallic encased tools and equipment that are powered from this system are equipped with three-wire cords and grounding-type attachment plugs, except as designated in subsection (7) of this section.

(7) Portable lights, tools and appliances. When operated from commercial power such metal parts of these devices shall be grounded, unless these tools or appliances are protected by a system of double insulation, or its equivalent. Where such a system is employed, the equipment shall be distinctively marked to indicate double insulation.

(8) Lead work. When operated from commercial power the metal housing of electric solder pots shall be grounded. Electric solder pots may be used with the power equipment described in this subsection, without a grounding conductor.

The employer shall ensure that wiping gloves or cloths and eye protection are used in lead wiping operations. A drip pan to catch hot lead drippings shall also be provided and used.

(9) Fire extinguishers.

(a) Fire extinguishers shall be provided for the protection of both the building structure and the occupancy hazards contained therein.

(b) Employees shall be familiar with the location and operation of fire extinguishers.

(c) Any fire extinguishers showing defects shall be removed from service.

(d) Fire extinguishers shall be thoroughly examined and/or recharged or repaired to insure operability and safety once every year.

(e) Each fire extinguisher shall have a durable tag securely attached to show the maintenance or recharge date and the initials or signature of the person performing this service.

Note: For additional requirements relating to portable fire extinguishers see WAC 296-800-300.

[Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050. 02-12-098, § 296-32-250, filed 6/5/02, effective 8/1/02; 01-23-060, § 296-32-250, filed 11/20/01, effective 12/1/01; 01-11-038, § 296-32-250, filed 5/9/01, effective 9/1/01. Statutory Authority: Chapter 49.17 RCW. 94-20-057 (Order 94-16), § 296-32-250, filed 9/30/94, effective 11/20/94. Statutory Authority: RCW 49.17.040 and 49.17.050. 82-13-045 (Order 82-22), § 296-32-250, filed 6/11/82; Order 76-38, § 296-32-250, filed 12/30/76; Order 75-41, § 296-32-250, filed 12/19/75.]

WAC 296-32-260 Rubber insulating equipment. (1)

Rubber insulating equipment designed for the voltage levels to be encountered shall be provided and the employer shall ensure that they are used by employees as required by this section. The requirements of WAC 296-24-980, Electrical protective equipment, shall be followed except for Table A-6.

(2) The employer is responsible for periodic retesting of all insulating gloves, blankets, and other rubber insulating equipment. This retesting shall be electrical, visual and mechanical. The following maximum retesting intervals shall apply:

Gloves, Blankets, and Other Insulating Equipment	Natural Rubber (Months)	Synthetic Rubber (Months)
New _____	12	18
Reissued _____	9	15

(3) Protector for gloves. Approved protectors must be worn at all times over rubber gloves. Inner liners may be worn if desired.

(4) Gloves and blankets shall be marked to indicate compliance with the retest schedule and shall be marked with the date the next test date is due.

Any rubber gloves found to be defective shall be removed from service and marked as being defective.

(5) Patching rubber goods is prohibited; rubber protective equipment shall not be vulcanized or patched.

(6) Rubber gloves for workers. A pair of rubber gloves, specifically designed for the protection of workers, shall be assigned each worker when required to work on or be exposed to energized parts.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 01-11-038, § 296-32-260, filed 5/9/01, effective 9/1/01; 99-17-094, § 296-32-260, filed 8/17/99, effective 12/1/99; Order 76-38, § 296-32-260, filed 12/30/76; Order 75-41, § 296-32-260, filed 12/19/75.]

WAC 296-32-270 Personal climbing equipment. (1)

General. Safety belts and straps shall be provided and the employer shall ensure their use when work is performed at positions more than 4 feet above ground, on poles, and on towers, except as provided in WAC 296-32-340 (7)(8) of this chapter. No safety belts, safety straps or lanyards acquired after January 1, 1976, may be used unless they meet the tests set forth in chapter 296-45 WAC. The employer shall ensure that all safety belts and straps are inspected by a competent person prior to each day's use to determine that they are in safe working condition.

(2) Telecommunication lineman's body belts, safety straps and lanyards, general requirements. Hardware for lineman's body belts, safety straps and lanyards shall be drop forged or pressed steel and shall have a corrosion resistant finish tested to meet the requirements of the American Society for Testing and Materials B117-64 (50-hour test).

Exception: Lineman's body belts shall be at least four inches in width.

(3) Pole climbers.

(a) Pole climbers may not be used if the gaffs are less than 1-1/4 inches in length as measured on the underside of the gaff.

(b) The gaffs of pole climbers shall be covered with safety caps when not being used for their intended use.

(c) The employer shall ensure that pole climbers are inspected by a competent person for the following conditions: Fractured or cracked gaffs or leg irons, loose or dull gaffs, broken straps or buckles. If any of these conditions exist, the defect shall be corrected before the climbers are used.

(d) Pole climbers shall be inspected as required in this subsection before each day's use and a gaff cut-out test performed at least weekly when in use.

(e) Pole climbers shall not be worn when:

(i) Working in trees (specifically designed tree climbers shall be used for tree climbing),

(ii) Working on ladders,

(iii) Working in an aerial lift,

(iv) Driving a vehicle,

(v) Walking on rocky, hard, frozen, brushy or hilly terrain.

[Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-32-270, filed 7/20/94, effective 9/20/94; Order 76-38, § 296-32-270, filed 12/30/76; Order 75-41, § 296-32-270, filed 12/19/75.]

WAC 296-32-280 Ladders. (1)

The employer shall ensure that no employee nor any material or equipment shall be supported or permitted to be supported on any portion of a ladder unless it is first determined, by inspections and checks conducted by a competent person that such ladder is free of defects, in good condition and secured in place.

(2) The spacing between steps or rungs permanently installed on poles and towers shall be no more than 18 inches (36 inches on any one side). This requirement also applies to fixed ladders on towers, when towers are so equipped. Spacing between steps shall be uniform above the initial unstepped section, except where working, standing, or access steps are required. Fixed ladder rungs and step rungs for poles and towers shall have a minimum diameter of 5/8 inch. Fixed ladder rungs shall have a minimum clear width of 12

inches. Steps for poles and towers shall have a minimum clear width of 4-1/2 inches. The spacing between detachable steps may not exceed 30 inches on any one side, and these steps shall be secured when in use.

(3) Portable wood ladders intended for general use must not be painted, but may be coated with a translucent nonconductive coating. Portable wood ladders must not be longitudinally reinforced with metal.

(4) Portable wood ladders that are not being carried on vehicles and are not in active use shall be stored where they will not be exposed to the elements and where there is good ventilation.

(5) Rolling ladders.

(a) Rolling ladders used in telecommunication centers shall have a width between the side rails, inside to inside, of at least 12 inches.

(b) Except in working spaces that are not a means of egress, the ladders shall have a minimum inside width, between the side rails, of at least eight inches.

(6) Climbing ladders or stairways on scaffolds used for access and egress shall be affixed or built into the scaffold by proper design and engineering, and shall be so located that their use will not disturb the stability of the scaffold. The rungs of the climbing device shall be equally spaced, but may not be less than 12 inches nominal nor more than 16 inches nominal apart. Horizontal end rungs used for platform support may also be utilized as a climbing device if such rungs meet the spacing requirement of this subsection, and if clearance between the rung and the edge of the platform is sufficient to afford a secure handhold. If a portable ladder is affixed to the scaffold, it shall be securely attached and shall have rungs meeting the spacing requirements of this subsection. Clearance shall be provided in the back of the ladder of not less than 6 inches from center of rung to the nearest scaffold structural member.

(7) When a ladder is supported by an aerial strand, and ladder hooks or other supports are not being used, the ladder shall be extended at least 2 feet above the strand and shall be secured to it (e.g. lashed or held by a safety strap around the strand and ladder side rail). When a ladder is supported by a pole, it shall be securely lashed to the pole unless the ladder is specifically designed to prevent movement when used in this application.

(8) Portable wood straight ladders, when in use, shall be equipped with safety shoes.

(9) Ladders shall be inspected by a competent person prior to each use. Ladders which have developed defects shall be withdrawn from service for repair or destruction and tagged or marked as "dangerous do not use."

[Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050. 02-12-098, § 296-32-280, filed 6/5/02, effective 8/1/02. Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-32-280, filed 7/20/94, effective 9/20/94; Order 76-38, § 296-32-280, filed 12/30/76; Order 75-41, § 296-32-280, filed 12/19/75.]

WAC 296-32-290 Vehicle-mounted material handling devices and other mechanical equipment. (1) General.

(a) The employer shall ensure that visual inspections are made of the equipment by a competent person each day the

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equipment is to be used to ascertain that it is in good condition.

(b) The employer shall ensure that tests shall be made at the beginning of each shift by a competent person to insure the vehicle brakes and operating systems are in proper working condition.

(2) Scrapers, loaders, dozers, graders and tractors.

All mobile, self-propelled scrapers, mobile front end loaders, mobile dozers, agricultural and industrial tractors, crawler tractors, crawler-type loaders, and motor graders, with or without attachments, that are used in telecommunications work shall have rollover protective structures that meet the requirements of WAC 296-155-950 through 296-155-965.

(3) Aerial manlift equipment.

(a) These devices shall not be operated with any conductive part of the equipment closer to exposed energized power lines than the clearances set forth in Table 1 of this chapter.

(b) Only qualified drivers shall be permitted to operate aerial manlift equipment and shall possess a current motor vehicle operator's license.

(c) When performing work from aerial manlift equipment, the worker shall wear a safety belt attached to the boom.

(d) When any aerial manlift equipment is parked at the jobsite, the brakes shall be set. Wheel chocks shall be used to prevent uncontrolled movement. If equipped with outriggers, the outriggers shall be implanted on firm footing.

(e) Manufacturer's recommended maximum load limit shall be posted near each set of controls, kept in legible condition and the maximum load limit shall not be exceeded.

(f) Flashing warning lights shall be installed and maintained on all aerial manlift equipment used on public thoroughfares.

(4)(a) The operation of all motor vehicles and trailers shall be in conformance with the motor vehicle laws, the general safety and health standards of the state of Washington and all local traffic ordinances.

(b) When it is necessary for the worker to work in the bucket at an elevated position with the vehicle in motion, there shall be direct communication between the worker and the vehicle operator.

(5) Derrick trucks and similar equipment.

(a) This equipment shall not be operated with any conductive part of the equipment closer to exposed energized power lines than the clearances set forth in Table 1 of this chapter.

(b) When derricks are used to handle poles near energized power conductors, these operations shall comply with the requirements contained in WAC 296-32-220(10) and 296-32-330(11) of this chapter.

(c) Moving parts of equipment and machinery carried on or mounted on telecommunications line trucks shall be guarded. This may be done with barricades as specified in WAC 296-32-240(2) of this chapter.

(d) Derricks and the operation of derricks shall comply with the following requirements:

(i) Manufacturer's specifications, load ratings and instructions for derrick operation shall be strictly observed.

(ii) Rated load capacities and instructions related to derrick operation shall be conspicuously posted on a permanent

weather-resistant plate or decal in a location on the derrick that is plainly visible to the derrick operator.

(iii) Prior to derrick operation the parking brake must be set and the stabilizers extended if the vehicle is so equipped. When the vehicle is situated on a grade, at least two wheels must be chocked on the downgrade side.

(iv) Only persons trained in the operation of the derrick shall be permitted to operate the derrick.

(v) Hand signals to derrick operators shall be those prescribed by ANSI B30.6-1969, "Safety Code for Derricks."

(vi) The employer shall ensure that the derrick and its associated equipment are inspected by a competent person at intervals set by the manufacturer but in no case less than once per year. Records shall be maintained including the dates of inspections, and necessary repairs made.

(vii) Modifications or additions to the derrick and its associated equipment that alter its capacity or affect its safe operation shall be made only with written certification from the manufacturer, or other equivalent entity, such as a nationally recognized testing laboratory, that the modification results in the equipment being safe for its intended use. Such changes shall require the changing and posting of revised capacity and instruction decals or plates. These new ratings or limitations shall be as provided by the manufacturer or other equivalent entity.

(viii) Wire rope used with derricks shall be of improved plow steel or equivalent. Wire rope safety factors shall be in accordance with American National Standards Institute B30.6-1969.

(ix) Wire rope shall be taken out of service, or the defective portion removed, when any of the following conditions exist:

(A) The rope strength has been significantly reduced due to corrosion, pitting, or excessive heat, or

(B) The thickness of the outer wires of the rope has been reduced to two-thirds or less of the original thickness, or

(C) There are more than six broken wires in any one rope lay, or

(D) There is excessive permanent distortion caused by kinking, crushing, or severe twisting of the rope.

[Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-32-290, filed 7/20/94, effective 9/20/94; Order 76-38, § 296-32-290, filed 12/30/76; Order 75-41, § 296-32-290, filed 12/19/75.]

WAC 296-32-300 Materials handling and storage. (1) Poles.

(a) When working with poles in piles or stacks, work shall be performed from the ends of the poles and precautions shall be taken for the safety of employees at the other end of the pole.

(b) During pole hauling operations, all loads shall be secured to prevent displacement. Lights, reflectors and/or flags shall be displayed on the end and sides of the load.

(c) The requirements for installation, removal, or other handling of poles in pole lines are prescribed in WAC 296-32-330 which pertains to overhead lines.

(d) In the case of hoisting machinery equipped with a positive stop load-holding device, it shall be permissible for the operator to leave their position at the controls (while a load is suspended) for the sole purpose of assisting in positioning the load prior to landing it.

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(e) Prior to unloading steel, poles, crossarms, and similar material, the load shall be thoroughly examined to ascertain that the load has not shifted, that binders or stakes have not broken, and that the load is not otherwise hazardous to employees.

(2) Cable reels. Cable reels and poles in storage shall be checked or otherwise restrained to prevent uncontrollable movement.

(3) All tools and materials shall be stored in a safe and orderly manner.

(4) Workers shall not carry loose materials, tools, or equipment on or in vehicles in a manner that would constitute a hazard.

(5) All buildings, storage yards, equipment and other property shall be kept in a clean and orderly manner.

[Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-32-300, filed 7/20/94, effective 9/20/94; Order 76-38, § 296-32-300, filed 12/30/76; Order 75-41, § 296-32-300, filed 12/19/75.]

WAC 296-32-310 Cable fault locating and testing. (1)

Employees involved in using high voltages to locate trouble or test cables shall be instructed in the precautions necessary for their own safety and the safety of other employees.

(2) Before voltage is applied to equipment not isolated, all possible precautions shall be taken to insure that no employee can make contact with the energized conductors under test.

(3) Only trained and authorized personnel shall repair and test medium and high voltage equipment.

[Order 76-38, § 296-32-310, filed 12/30/76; Order 75-41, § 296-32-310, filed 12/19/75.]

WAC 296-32-320 Grounding for employee protection—Pole lines. (1) Power conductors.

Electric power conductors and equipment shall be considered as energized until the employee can determine that they are bonded to one of the grounds as listed in subsection (4) of this section.

(2) Nonworking open wire. Nonworking open wire communications lines shall be bonded to one of the grounds listed in subsection (4) of this section.

(3) Vertical power conduit, power ground wires and street light fixtures.

(a) Metal power conduit on joint use poles, exposed vertical power ground wires, and street light fixtures which are below communications attachments or less than 20 inches above these attachments, shall be considered energized and shall be tested for voltage unless the employee can visually determine that they are bonded to the communications suspension strand or cable sheath.

(b) If no hazardous voltage is shown by the voltage test, a temporary bond shall be placed between such street light fixture, exposed vertical power grounding conductor, or metallic power conduit and the communications cable strand. Temporary bonds used for this purpose shall have sufficient conductivity to carry at least 500 amperes for a period of one second without fusing.

(4) Protective grounding. Acceptable grounds for protective grounding are as follows:

(a) A vertical ground wire which has been tested, found safe, and is connected to a power system multigrounded neu-

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tral or the grounded neutral of a power secondary system where there are at least three services connected;

(b) Communications cable sheath or shield and its supporting strand where the sheath or shield is:

(i) Bonded to an underground or buried cable which is connected to a central office ground, or

(ii) Bonded to an underground metallic piping system, or

(iii) Bonded to a power system multigrounded neutral or grounded neutral of a power secondary system which has at least three services connected;

(c) Guys which are bonded to the grounds specified in subdivisions (a) and (b) of this subsection and which have continuity uninterrupted by an insulator; and

(d) If all of the preceding grounds are not available, arrays of driven ground rods where the resultant resistance to ground will be low enough to eliminate danger to personnel or permit prompt operation of protective devices.

(5) Attaching and removing temporary bonds. When attaching grounds (bonds), the first attachment shall be made to the protective ground. When removing bonds, the connection to the line or equipment shall be removed first. Insulating gloves shall be worn during these operations.

(6) Temporary grounding of suspension strand.

(a) The suspension strand shall be grounded to the existing grounds listed in subsection (4) of this section when being placed on jointly used poles.

(b) Where power crossings are encountered on nonjoint lines, the strand shall be bonded to an existing ground listed in subsection (4) of this section as close as possible to the crossing. This bonding is not required where crossings are made on a common crossing pole unless there is an upward change in grade at the pole.

(c) Where traveling roller-type bonds are used, they shall be restrained so as to avoid stressing the electrical connections.

(d) Bonds between the suspension strand and the existing ground shall be at least No. 6AWG copper.

(e) Temporary bonds shall be left in place until the strand has been tensioned, dead-ended, and permanently grounded.

(f) The requirements of subdivision (a) through (e) of this subsection do not apply to the installation of insulated strand.

(7) Antenna work-radio transmitting stations 3-30 MHZ.

(a) Prior to grounding a radio transmitting station antenna, the employer shall insure that the rigger in charge:

(i) Prepares a danger tag signed with their signature,

(ii) Requests the transmitting technician to shutdown the transmitter and to ground the antenna with its grounding switch,

(iii) Is notified by the transmitting technician that the transmitter has been shutdown, and

(iv) Tags the antenna ground switch personally in the presence of the transmitting technician after the antenna has been grounded by the transmitting technician.

(b) Power shall not be applied to the antenna, nor shall the grounding switch be opened under any circumstances while the tag is affixed.

(c)(i) Where no grounding switches are provided, grounding sticks shall be used, one on each side of line, and tags shall be placed on the grounding sticks, antenna switch, or plate power switch in a conspicuous place.

(ii) To further reduce excessive radio frequency pickup, ground sticks or short circuits shall be placed directly on the transmission lines near the transmitter in addition to the regular grounding switches.

(iii) In other cases, the antenna lines may be disconnected from ground and the transmitter to reduce pickup at the point in the field.

(d) All radio frequency line wires shall be tested for pickup with an insulated probe before they are handled either with bare hands or with metal tools.

(e) The employer shall insure that the transmitting technician warn the riggers about adjacent lines which are, or may become energized.

(f) The employer shall insure that when antenna work has been completed, the rigger in charge of the job returns to the transmitter, notifies the transmitting technician in charge that work has been completed, and personally removes the tag from the antenna ground switch.

[Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-32-320, filed 7/20/94, effective 9/20/94; Order 76-38, § 296-32-320, filed 12/30/76; Order 75-41, § 296-32-320, filed 12/19/75.]

WAC 296-32-330 Overhead lines. (1) Handling suspension strand.

(a) The employer shall insure that when handling cable suspension strand which is being installed on poles carrying exposed energized power conductors, employees shall wear insulating gloves and shall avoid body contact with the strand until after it has been tensioned, dead-ended and permanently grounded.

(b) The strand shall be restrained against upward movement during installation:

(i) On joint-use poles, where there is an upward change in grade at the pole, and

(ii) On nonjoint-use poles, where the line crosses under energized power conductors.

(2) Need for testing wood poles. Unless temporary guys or braces are attached, the following poles shall be tested in accordance with subsection (3) of this section and determined to be safe before employees are permitted to climb them:

(a) Dead-end poles, except properly braced or guyed "Y" or "T" cable junction poles,

(b) Straight line poles which are not storm guyed and where adjacent span lengths exceed 165 feet.

(c) Poles at which there is a downward change in grade and which are not guyed or braced corner poles or cable junction poles.

(d) Poles which support only telephone drop wire, and

(e) Poles which carry less than ten communication line wires. On joint use poles, one power line wire shall be considered as two communication wires for purposes of this subdivision (2)(e).

(3) Methods for testing wood poles. The following method or an equivalent method shall be used for testing wood poles:

(a) Rap the pole sharply with a lineman's hammer, starting near the ground line and continuing upwards circumferentially around the pole to a height of approximately 6 feet. The hammer will produce a clear sound and rebound sharply when striking sound wood. Decay pockets will be indicated by a dull sound and/or a less pronounced hammer rebound.

When decay pockets are indicated, the pole shall be considered unsafe.

(b) The pole shall be prodded as near the ground line as possible using a pole prod or a screwdriver with a single blade at least five inches long.

(c) If the pole is found unsafe, it shall be guyed or braced or supported in such a manner as to allow workers to safely perform their work.

(4) Unsafe poles or structures.

(a) Poles or structures determined to be unsafe by test or observation may not be climbed until made safe by guying, bracing or other means.

(b) Poles determined to be unsafe to climb shall, until they are made safe, be marked in a conspicuous place to alert and warn all employees of the unsafe condition.

(5) Test requirements for cable suspension strand.

(a) Before attaching a splicing platform to a cable suspension strand, the strand shall be tested and determined to have strength sufficient to support the weight of the platform and the employee. Where the strand crosses above power wires or railroad tracks it may not be tested but shall be inspected in accordance with subsection (6) of this section.

(b) The following method or an equivalent method shall be used for testing the strength of the strand: A rope, at least three-eighths inches in diameter, shall be thrown over the strand. On joint lines, the rope shall be passed over the strand using tree pruner handles or a wire raising tool. If two employees are present, both shall grip the double rope and slowly transfer their entire weight to the rope and attempt to raise themselves off the ground. If only one employee is present, one end of the rope which has been passed over the strand shall be tied to the bumper of the truck, or other equally secure anchorage. The employee then shall grasp the other end of the rope and attempt to raise himself off the ground.

(6) Inspection of strand. Where strand passes over electric power wires or railroad tracks, it shall be inspected from an elevated working position at each pole supporting the span in question. The strand may not be used to support any splicing platform, scaffold or cable car, if any of the following conditions exist:

(a) Corrosion so that no galvanizing can be detected,

(b) One or more wires of the strand are broken,

(c) Worn spots, or

(d) Burn marks such as those caused by contact with electric power wires.

(7) Outside work platforms. Unless railings are provided, safety straps and body belts shall be used while working on elevated work platforms such as aerial splicing platforms, pole platforms, ladder platforms and terminal balconies.

(8) Other elevated locations. Safety straps and body belts shall be worn when working at elevated positions on poles, towers or similar structures, which do not have guarded work areas.

(9) Installing and removing wire and cable. Before installing or removing wire or cable, the pole or structure shall be guyed, braced, or otherwise supported, as necessary, to prevent failure of the pole or structure.

(10) Avoiding contact with energized power conductors or equipment. When cranes, derricks, or other mechanized

equipment are used for setting, moving, or removing poles, all necessary precautions shall be taken to avoid contact with energized power conductors or equipment.

(11) Handling poles near energized power conductors.

(a) Joint use poles may not be set, moved, or removed where the nominal voltage of open electrical power conductors exceeds 34.5 kV phase to phase or 20 kV phase to ground.

(b) Poles that are to be placed, moved or removed during heavy rains, sleet or wet snow in joint lines carrying more than 8.7 kV phase to phase voltage or 5 kV phase to ground shall be guarded or otherwise prevented from direct contact with overhead energized power conductors.

(c)(i) In joint lines where the power voltage is greater than 750 volts but less than 34.5 kV phase to phase or 20 kV phase to ground, wet poles being placed, moved or removed shall be insulated with either a rubber insulating blanket, a fiberglass box guide, or equivalent protective equipment.

(ii) In joint lines where the power voltage is greater than 8.7 kV phase to phase or 5 kV phase to ground but less than 34.5 kV phase to phase or 20 kV phase to ground, dry poles being placed, moved, or removed shall be insulated with either a rubber insulating blanket, a fiberglass box guide, or equivalent protective equipment.

(iii) Where wet or dry poles are being removed, insulation of the pole is not required if the pole is cut off 2 feet or more below the lowest power wire and also cut off near the ground line.

(d) Insulating gloves shall be worn when handling the pole with either hands or tools, when there exists a possibility that the pole may contact a power conductor. Where the voltage to ground of the power conductor exceeds 15 kV to ground, Class II gloves (as defined in ANSI J6.6-1971) shall be used. For voltages not exceeding 15 kV to ground, insulating gloves shall have a breakdown voltage of at least 17 kV.

(e) The guard or insulating material used to protect the pole shall meet the appropriate 3 minute proof test voltage requirements contained in the ANSI J6.4-1971.

(f) When there exists a possibility of contact between the pole or the vehicle-mounted equipment used to handle the pole, and an energized power conductor, the following precautions shall be observed:

(i) When on the vehicle which carries the derrick, avoid all contact with the ground, with persons standing on the ground, and with all grounded objects such as guys, tree limbs, or metal sign posts. To the extent feasible, remain on the vehicle as long as the possibility of contact exists.

(ii) When it is necessary to leave the vehicle, step onto an insulating blanket and break all contact with the vehicle before stepping off the blanket and onto the ground. As a last resort, if a blanket is not available, the employee may jump cleanly from the vehicle.

(iii) When it is necessary to enter the vehicle, first step onto an insulating blanket and break all contact with the ground, grounded objects and other persons before touching the truck or derrick.

(12) Working position on poles. Climbing and working are prohibited above the level of the lowest electric power conductor on the pole (exclusive of vertical runs and street light wiring), except:

(a) Where communications facilities are attached above the electric power conductors, and a rigid fixed barrier is installed between the electric power facility and the communications facility, or

(b) Where the electric power conductors are cabled secondary service drops carrying less than 300 volts to ground and are attached 40 inches or more below the communications conductors or cables.

(13) Metal tapes and ropes.

(a) Metal measuring tapes, metal measuring ropes, or tapes containing conductive strands shall not be used when working near exposed energized parts.

(b) Where it is necessary to measure clearances from energized parts, only nonconductive devices shall be used.

[Order 76-38, § 296-32-330, filed 12/30/76; Order 75-41, § 296-32-330, filed 12/19/75.]

WAC 296-32-340 Underground lines and cable vaults. The provisions of this section apply to the guarding of manholes and street openings, and to the ventilation and testing for gas in manholes and unvented vaults, where telecommunications field work is performed on or with underground lines.

(1) Guarding manholes and street openings.

(a) When covers of manholes or vaults are removed, the opening shall be promptly guarded by a railing, temporary cover, or other acceptable temporary barrier to prevent an accidental fall through the opening and to protect employees working in the manhole from foreign objects entering the manhole.

(b) When work is to be performed on underground plant, the immediate foreman in charge and the craftsman assigned to do the work shall make a complete evaluation of the work location in regard to the hazards that are created or that could exist prior to beginning the work in underground plant.

(c) The immediate foreman and the craftsman responsible for the job completion shall be in agreement of the proper method of eliminating or reducing any hazards that are present or could be caused by the location of the work site, before the job proceeds.

(2) Requirements prior to entry of manholes and unvented vaults.

(a) The internal atmosphere shall be tested for combustible gas.

(b) Mechanical forced air ventilation shall be in operation at all times when workers are required to be in the manhole.

(c) The mechanical forced air equipment provided shall be of a quantity to replace the exhausted air and shall be tempered when necessary.

(d) Ventilation equipment shall be designed in such a manner that workers will not be subjected to excessive air velocities.

(3) Joint power and telecommunication manholes. While work is being performed in a manhole occupied jointly by an electric utility and a telecommunication utility, an employee with basic first-aid training shall be available in the immediate vicinity to render emergency assistance as required. This employee is not to be precluded from occasionally entering a manhole to provide assistance other than in an emergency. The requirement of WAC 296-32-340(3) does not preclude a

qualified employee, working alone, from entering for brief periods of time, a manhole where energized cables or equipment are in service, for the purpose of inspection, housekeeping, taking readings, or similar work if such work can be performed safely.

(4) Ladders.

(a) Ladders shall be used to enter and exit manholes exceeding four feet in depth.

(b) Metal manhole ladders shall be free of structural defects and free of accident hazards such as sharp edges and burrs. The metal shall be protected against corrosion unless inherently corrosion-resistant.

(c) These ladders may be designed with parallel side rails, or with side rails varying uniformly in separation along the length (tapered) or with side rails flaring at the base to increase stability.

(d) The spacing of rungs or steps shall be on 12-inch centers.

(e) Connections between rungs or steps and side rails shall be constructed to ensure rigidity as well as strength.

(f) Rungs and steps shall be corrugated, knurled, dimpled, coated with skid-resistant material, or otherwise treated to minimize the possibility of slipping.

(g) Ladder hardware shall meet the ladder's component parts and shall be of a material that is protected against corrosion unless inherently corrosion-resistant. Metals shall be so selected as to avoid excessive galvanic action.

(5) Flames. When open flames must be used in manholes, the following precautions shall be taken to protect against the accumulation of combustible gas:

(a) A test for combustible gas shall be made immediately before using any open flame device, and

(b) A fuel tank (e.g., acetylene) may not be in the manhole unless in actual use.

[Order 76-38, § 296-32-340, filed 12/30/76; Order 75-41, § 296-32-340, filed 12/19/75.]

WAC 296-32-350 Microwave transmission. (1) Eye protection. Employers shall insure that employees do not look into an open waveguide which is connected to an energized source of microwave radiation.

(2) Hazardous area. Accessible areas associated with microwave communication systems where the electromagnetic radiation level exceeds the radiation protection guide given in WAC 296-62-09005 shall be posted as described in that section. The lower half of the warning symbol shall indicate the following:

Radiation in this area may exceed hazard limitations and special precautions are required. Obtain specific instruction before entering.

(3) Protective measures. When an employee works in an area where the electromagnetic radiation exceeds the radiation protection guide, the employer shall institute measures that insure that the employee's exposure is not greater than that permitted by the radiation guide. Such measures shall include, but not be limited to those of an administrative or engineering nature or those involving personal protective equipment.

[Order 76-38, § 296-32-350, filed 12/30/76; Order 75-41, § 296-32-350, filed 12/19/75.]

WAC 296-32-360 Tree trimming—Electrical hazards. (1) General.

(a) Employees engaged in pruning, trimming, removing, or clearing trees from lines shall be required to consider all overhead and underground electrical power conductors to be energized with potentially fatal voltages, never to be touched (contacted) either directly or indirectly.

(b) Employees engaged in line-clearing operations shall be instructed that:

(i) A direct contact is made when any part of the body touches or contacts an energized conductor, or other energized electrical fixture or apparatus.

(ii) An indirect contact is made when any part of the body touches any object in contact with an energized electrical conductor, or other energized fixture or apparatus.

(iii) An indirect contact can be made through conductive tools, tree branches, truck equipment, or other objects, or as a result of communications wires, cables, fences, or guy wires being accidentally energized.

(iv) Electric shock will occur when an employee, by either direct or indirect contact with an energized conductor, energized tree limb, tool, equipment, or other object, provides a path for the flow of electricity to a grounded object or to the ground itself. Simultaneous contact with two energized conductors will also cause electric shock which may result in serious or fatal injury.

(c) Before any work is performed in proximity to energized conductors, the system operator/owner of the energized conductors shall be contacted to ascertain if they know of any hazards associated with the conductors which may not be readily apparent. This rule does not apply when operations are performed by the system operator/owner.

(2) Working in proximity to electrical hazards.

(a) Employers shall ensure that a close inspection is made by the employee and by the crewleader or supervisor in charge before climbing, entering, or working around any tree, to determine whether an electrical power conductor passes through the tree, or passes within reaching distance of an employee working in the tree. If any of these conditions exist either directly or indirectly, an electrical hazard shall be considered to exist unless the system operator/owner has caused the hazard to be removed by deenergizing the lines, or installing protective equipment.

(b) Only employees or trainees, familiar with the special techniques and hazards involved in line clearance, shall be permitted to perform the work if it is found that an electrical hazard exists.

(c) During all tree working operations aloft where an electrical hazard of more than 750 volts exists, there shall be a second employee or trainee qualified in line clearance tree trimming within normal voice communication.

(d) Where tree work is performed by employees qualified in line-clearance tree trimming and trainees qualified in line-clearance tree trimming, the clearances from energized conductors given in Table 2 shall apply.

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TABLE 2

Minimum Working Distances From Energized Conductors For Line-Clearance Tree Trimmers and Line-Clearance Tree-Trimmer Trainees

Voltage Range (Phase to Phase) (kilovolts)	Minimum Working Distance
2.1 to 15.0	2 ft. 0 in.
15.1 to 35.0	2 ft. 4 in.
35.1 to 46.0	2 ft. 6 in.
46.1 to 72.5	3 ft. 0 in.
72.6 to 121.0	3 ft. 4 in.
138.0 to 145.0	3 ft. 6 in.
161.0 to 169.0	3 ft. 8 in.
230.0 to 242.0	5 ft. 0 in.
345.0 to 362.0	7 ft. 0 in.
500.0 to 552.0	11 ft. 0 in.
700.0 to 765.0	15 ft. 0 in.

(e) Branches hanging on an energized conductor may only be removed using insulated equipment by a qualified electrical worker.

(f) Rubber footwear, including lineman's overshoes, shall not be considered as providing any measure of safety from electrical hazards.

(g) Ladders, platforms, and aerial devices, including insulated aerial devices, shall not be brought in contact with an electrical conductor. Reliance shall not be placed on their dielectric capabilities.

(h) When an aerial lift device contacts an electrical conductor, the truck supporting the aerial lift device shall be considered as energized.

(3) Storm work and emergency conditions.

(a) Since storm work and emergency conditions create special hazards, only authorized representatives of the electric utility system operator/owner and not telecommunication workers may perform tree work in these situations where energized electrical power conductors are involved.

(b) When an emergency condition develops due to tree operations, work shall be suspended and the system operator/owner shall be notified immediately.

[Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-32-360, filed 7/20/94, effective 9/20/94; Order 76-38, § 296-32-360, filed 12/30/76; Order 75-41, § 296-32-360, filed 12/19/75.]

WAC 296-32-370 Buried facilities—Communications lines and power lines in the same trench. [Reserved.]

[Order 75-41, § 296-32-370, filed 12/19/75.]

Chapter 296-33 WAC ATTENDANT SERVICES

WAC

296-33-010

Attendant services.

WAC 296-33-010 Attendant services. (1) What are attendant services?

Attendant services are proper and necessary personal care services (custodial care) provided to maintain the victim in their residence.

(2) Who may receive attendant services?

Victims who are temporarily or permanently totally disabled and rendered physically unable to care for themselves due to the crime may receive attendant services.

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(3) Is prior authorization required for attendant services?

Yes. To be covered by the crime victims compensation program, attendant services must be requested by the attending physician and authorized by the department before services begin.

(4) Am I required to use other insurance coverage before the crime victims compensation program will cover attendant services?

Yes, all other insurances both private and public must be used first.

(5) What attendant services does the crime victims program cover?

The program covers proper and necessary attendant services that are provided consistent with the victim's needs, abilities and safety. Only attendant services that are necessary due to the physical restrictions caused by the crime are covered.

The following are examples of attendant services that may be covered:

- Bathing and personal hygiene;
- Dressing;
- Administration of medications;
- Specialized skin care, including changing or caring for dressings or ostomies;
- Tube feeding;
- Feeding assistance (not meal preparation);
- Mobility assistance, including walking, toileting and other transfers;
- Turning and positioning;
- Bowel and incontinent care; and
- Assistance with basic range of motion exercises.

(6) What attendant services are not covered?

Services the department considers everyday environmental needs, unrelated to the medical needs of the victim, are not covered. The following are examples of some chore services that not covered:

- Housecleaning;
- Laundry;
- Shopping;
- Meal planning and preparation;
- Transportation of the victim;
- Errands for the victim;
- Recreational activities;
- Yard work;
- Child care.

(7) Will the crime victims compensation program review the attendant services being provided?

Yes. Periodic evaluations by the crime victims compensation program or its designee will be performed. Evaluations may include, but not be limited to, a medical records review and an on-site review of appropriate attendant services consistent with the victim's needs, ability, and safety.

(8) Who is eligible to become a provider of attendant services?

Any person eighteen years of age and over that maintains an active provider account with the crime victims compensation program. Attendant service providers can be family members or others who the victim hires to perform non-skilled home nursing services.

(9) Is my attendant service provider(s) an employee(s) of the crime victims compensation program?

No. Even though the crime victims compensation program is required by the federal government to withhold certain payroll taxes from moneys paid to some nonagency providers, the victim is the common law employer of attendant service provider(s).

(10) How can a provider obtain a provider account number from the department?

In order to receive a provider account number from the department, a provider must:

- Complete a provider application;
- Sign a provider agreement;
- Provide a copy of any practice or other license held;
- Complete, sign and return Form W-9; and
- Meet the department's provider eligibility requirements.

Note: A provider account number is required to receive payment from the department but is not a guarantee of payment for services.

(11) How many hours will be authorized for attendant services?

The crime victims compensation program will determine the maximum hours of authorized care based on an independent nursing assessment conducted in the victim's residence. More than one provider may be authorized, based on the victim's needs and the availability of providers. Attendant service providers are limited to a maximum of seventy hours per week per provider.

(12) What are the provider account status definitions?

- Active - account information is current and provider is eligible to receive payment.
- Inactive - account is not eligible to receive payment based on action by the department or at provider request. These accounts can be reactivated.
- Terminated - account is not eligible to receive payment based on action by the department or at provider request. These accounts cannot be reactivated.

(13) When may the department inactivate a provider account?

The department may inactivate a provider account when:

- There has been no billing activity on the account for thirty-six months; or
- The provider requests inactivation; or
- Provider communications are returned due to address changes; or
- The department changes the provider application or application procedures; or
- Provider does not comply with department request to update information.

(14) When may the department terminate a provider account?

The department may terminate a provider account when:

- The provider is found ineligible to treat per department rules; or
- The provider requests termination; or
- The provider dies or is no longer in active business status.

(15) How can a provider reactivate a provider account?

To reactivate a provider account, the provider may call or write the department. The department may require the provider to update the provider application and/or agreement or complete other needed forms prior to reactivation. Account reactivation is subject to department review. If a provider account has been terminated, a new provider application will be required.

[Statutory Authority: RCW 7.68.030. 02-06-024, § 296-33-010, filed 2/25/02, effective 3/28/02.]

Chapter 296-36 WAC**SAFETY STANDARDS—COMPRESSED AIR WORK****WAC**

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WAC 296-36-010 Definitions. As used herein, the following terms mean:

(1) **Approved.** In compliance with a subsisting resolution of approval adopted by the department of labor and industries, division of safety.

(2) **Adequate.** The term when applied to materials, devices, structures, methods and procedures is synonymous with effective, equal, equivalent, firm, necessary, proper, safe, secure, substantial, sufficient, suitable and shall denote such kind and quality as a reasonable and prudent man experienced in compressed air work would require in order to provide safe working conditions for himself in the performance of the work.

(3) **Bulkhead.** An upright partition in tunnels separating compartments; a structure or partition capable of resisting pressure and separating a high pressure compartment from a low pressure compartment.

(4) **Caisson.** A structure in or by means of which excavation in a predominantly vertical direction is carried on by persons working in a compressed air environment.

(5) **Compressed air worker.** A person performing any work or duty in compressed air. This term does not include divers.

(6) **Designated person.** A person selected and directed by an employer to perform a specified task or duty.

(7) **Director.** The director of the department of labor and industries, state of Washington.

(8) **Effective, equal, equivalent.** See (2), "adequate."

(9) **Firm.** See (2), "adequate."

(10) **Job.** The site, buildings, equipment and operations proximately associated with the work in compressed air.

(11) **Lock.** A chamber designed to facilitate the passage of men, materials and equipment from one ambient air pressure to another ambient air pressure.

(a) **Emergency lock.** A lock chamber designed to hold and to permit the quick passage of an entire shift of compressed air workers.

(b) **Man lock.** A lock chamber through which only men pass.

(c) **Materials lock.** A lock chamber designed and used normally for the passage of materials and equipment.

(d) **Medical lock.** A special lock chamber in which men suffering from decompression illness are placed for medical attention and treatment. Also used as a facility for preemployment physical examinations.

(12) **Necessary.** See (2), "adequate."

(13) **Owner.** The person, real or corporate, for whom the construction is being done.

(14) **Pressure.**

(a) **Absolute.** Gage pressure plus one atmosphere; viz, at sea level with a gage pressure of 30 pounds per square inch, the absolute pressure is $30 + 14.7 = 44.7$ pounds per square inch.

(b) **Ambient.** That which encompasses on all sides, surrounds. Usually taken as the gage pressure.

(c) **Atmospheric.** A pressure of one atmosphere at sea level; the pressure of air at sea level, used as a unit of measurement, equivalent to 14.7 pounds per square inch. One atmosphere of pressure is also zero pounds per square inch gage pressure.

(d) **Gage.** That pressure measured by gage and indicating the pressure in pounds per square inch exceeding one atmosphere.

(e) **Normal.** Atmospheric pressure of 14.7 pounds per square inch at sea level or zero gage pressure.

(f) **Total.** Total pressure is a pressure of one atmosphere plus gage pressure. See (14)(a), "absolute."

(15) **Safe, secure.** See (2), "adequate."

(16) **Shaft.** An excavation made from the surface of the ground the longer of axis of which forms an angle with the horizontal greater than twenty degrees.

(17) **Shafting.** An air and watertight enclosure built in the roof of a caisson and extended upward until above the ground or water level.

(18) **Shall.** The word "shall" is always mandatory.

(19) **Substantial, sufficient, suitable.** See (2), "adequate."

(20) **Supervisor.** The supervisor of safety, department of labor and industries, state of Washington.

(21) **Tunnel.** The underground excavation for a passageway including all shafts and other openings leading to or from such excavation, and all places, buildings and equipment used in connection therewith. Tunnels which are administered as distinct units constitute separate jobs.

(22) **Working chamber.** The space or compartment in which the excavating is being done in compressed air.

[Rule I, filed 12/28/62; Part One (Definitions), filed 3/23/60.]

WAC 296-36-020 Responsibility. (1) **The owner's responsibility.** There shall be on every job involving work in compressed air an owner's representative who shall be experienced in compressed air work and who shall represent the owner in all matters of joint responsibility under the Washington labor laws and the standards of safety for the work. The owner shall advise the director of the department of labor and industries in writing of the name and address of each such representative within 24 hours after starting work on the job.

(2) **The superintendent.** There shall be on every job, while work in compressed air is in progress, a superintendent experienced in compressed air work representing the employer of compressed air workers and who shall be in full charge of the job. The employer shall advise the director of the department of labor and industries in writing of the name and address of each such superintendent within 24 hours after starting work on the job.

(3) **Employees' responsibilities.** Every employee shall be responsible for carrying out all rules which immediately concern or affect his conduct and he shall use the safety devices and means furnished for his protection.

[Rules (Part II A, B, and C), filed 12/28/62; § 22, filed 3/23/60.]

WAC 296-36-030 General operating requirements—General duty to provide safety. Every reasonable precaution (2007 Ed.)

tion shall be taken to insure the safety of the workmen whether provided herein or not.

[Rules (Part III A), filed 12/28/62.]

WAC 296-36-035 General operating requirements—Safety miner. (1) A safety miner shall be selected by the crew on each shift. He shall have at least five years' experience as a practical miner and shall be the holder of an unexpired first-aid certificate from the Red Cross, U.S. Bureau of Mines, or the department of labor and industries. His duties shall be to check conditions to eliminate common work hazards such as loose rock, faulty timbers, poor rails, insufficient lighting, defective ladders and scaffolds, fan pipes, firing lines and other equipment directly related to the work of a miner. If such defects are found he shall immediately report the same to the superintendent.

(2) It shall be the duty of the superintendent, upon ascertaining such defects or hazards, to take immediate steps to remedy the same in compliance with the rules hereinafter set forth. A record of inspections made on each operation shall be kept on file and a copy thereof shall be submitted to the safety division of the department of labor and industries.

(3) In the event that disagreement arises out of the interpretation of these rules, then the question shall be referred to the division of safety of the department of labor and industries for its decision in accordance with the laws of the state, the safety standards, or rules and regulations issued hereunder, and a decision thus rendered shall be binding.

[Rules (Part III B), filed 12/28/62; § 15, filed 3/23/60.]

WAC 296-36-040 General operating requirements—Maintenance. All machinery, equipment, appliances, materials, structures and places on the job shall at all times be maintained in a safe condition and in good repair. Every person observing any defects shall immediately advise his immediate or higher superior.

[Rules (Part III C), filed 12/28/62; Rule 2203, § 22, filed 3/23/60.]

WAC 296-36-045 General operating requirements—Daily inspection. While work in compressed air is in progress, a competent person designated by the superintendent shall make a regular inspection at least once every day of all machinery, equipment, appliances, structures and places. Immediately upon discovery of any defect, he shall report the same in writing on forms provided by the state department of labor and industries to the person present in charge of the job. A copy of the report shall be sent immediately to the safety division of the department of labor and industries.

[Rules (Part III D), filed 12/28/62.]

WAC 296-36-050 General operating requirements—Maximum permissible pressure. No person shall be subjected to pressure exceeding 50 pounds per square inch gage except in case of emergency.

[Rules (Part III E), filed 12/28/62; § 1, filed 3/23/60.]

WAC 296-36-055 General operating requirements—Temperature in working chamber. Every effort shall be made by the best available means to prevent the wet bulb

temperature exceeding 80 degrees F. A wet bulb thermometer, in good working order, shall be provided in every working chamber.

[Rules (Part III F), filed 12/28/62; § 20, Rule 2006, filed 3/23/60.]

WAC 296-36-060 General operating requirements—Bracing of working chamber, shafts and passageways. The working chamber, shafts and passageways of tunnels and caissons shall be provided with bracing as may be necessary to safely resist any superimposed loads or any forces which may cause excessive deformation of the walls.

[Rules (Part III G), filed 12/28/62; § 19, filed 3/23/60.]

WAC 296-36-065 General operating requirements—Communication. A telephone intercommunication system ready for use at all times shall be maintained between the working chamber, the power house, the source of compressed air, the place of compressed air control, the first-aid room and the superintendent's office.

Exception: Where the working chamber of a caisson is less than 150 square feet in area, such system shall be maintained between the working chamber, outside the lock and the place of compressed air control or the superintendent's office.

[Rules (Part III H), filed 12/28/62; § 8, filed 3/23/60.]

WAC 296-36-070 General operating requirements—Liquor. No person under the influence of intoxicating liquor shall be permitted to enter upon the job; nor shall any person carry any liquor on the job.

[Rules (Part III I), filed 12/28/62; § 24, Rule 2402, filed 3/23/60.]

WAC 296-36-075 General operating requirements—Identification badge. Every compressed air worker employed in the work shall wear an identification badge furnished by the employer both on and off the job. The badge shall be of durable plastic designed to be worn next to the body. The badge shall state that the wearer is employed as a compressed air worker, shall bear the address and telephone number of the medical lock, and shall contain instructions that in case of an emergency of unknown or doubtful cause or illness, the wearer shall be rushed to the medical facilities and not to a hospital.

[Rules (Part III J), filed 12/28/62; § 24, Rule 2412, filed 3/23/60.]

WAC 296-36-080 General operating requirements—Notification of civil authorities, hospitals, etc. When workmen are employed in compressed air, the owner shall see that all general hospitals, city and county health departments, local medical societies, police and fire rescue, and the county sheriff in the locality are acquainted with the fact that such work is being undertaken. These authorities and organizations shall be furnished with the names, addresses and telephone numbers of the designated medical officers as well as the location and telephone number of the medical lock. The same civil authorities shall be further notified when compressed air operations on the site are completed.

[Rules (Part III K), filed 12/28/62.]

WAC 296-36-085 General operating requirements—Instructions to be posted. The following instructions as well

[Title 296 WAC—p. 924]

as supplemental instructions deemed advisable by the medical officer for the guidance of compressed air workers shall be printed and conspicuously posted in the change house and in the man locks:

- (1) Never go on shift with an empty stomach.
- (2) Avoid all alcoholic liquors.
- (3) Eat moderately.
- (4) Sleep at least seven hours daily.
- (5) Take extra outer clothing into the tunnel when going on shift and wear it during decompression to avoid chilling during that period.
- (6) Take a warm bath after each shift.
- (7) Do not give men, suffering from compressed air illness, any intoxicating liquor.
- (8) After you have had a cold, or if your ears are uncomfortable, or if you do not feel well for any reason, report at once to the medical lock for a checkup.
- (9) If you are taken sick away from the plant, communicate at once with the physician-in-charge, Dr. , telephone
- (10) Wear your identification badge so it will be known what to do with you in an emergency.
- (11) See that you are reexamined as required by the rules.

(12) Proper decompression means safety and freedom from compressed air illness.

(13) No person shall smoke or carry lighted smoking materials in compressed air. No matches, mechanical or chemical igniters will be permitted in the working chamber except those necessary for welding or flame cutting operations.

It shall be the duty and responsibility of each employee to observe and abide by the posted instructions and regulations.

[Rules (Part III L), filed 12/28/62; Rule 2204, filed 3/23/60.]

WAC 296-36-100 Compression and decompression of workmen—General. Subject to subsections 1-5 below, compression and decompression of workmen shall be carried out in accordance with the rules hereinafter prescribed:

(1) Compression or decompression may be carried out in accordance with such alternative regulations as are approved by the state department of labor and industries in writing.

(2) Except in an emergency, no workman shall be compressed to a pressure exceeding 50 pounds per square inch gage unless regulations for the decompression of such workman have been approved under the foregoing paragraph of this rule.

(3) The monograph "Decompression sickness and its prevention among compressed air workers" prepared by Gerald J. Duffner, M.D. (Captain, Medical Corps, U.S. Navy) and dated 6 November 1962, establishes the criteria for and shall be the guide in the determination of decompression methods and procedures and the preparation of decompression tables. Copies of the monograph are available from the supervisor of safety, department of labor and industries, state of Washington.

(4) A special low-pressure decompression chamber of sufficient size to accommodate the entire force of workmen

being decompressed at the end of a shift shall be provided under the following circumstances:

Excepting the infrequent, occasional or emergency condition, when any regularly established routine term or schedule of work includes a working period requiring a total time of decompression exceeding seventy-five minutes, the special low-pressure decompression chamber shall be provided and shall be used as a facility to accomplish the final stage or phase of decompression. The special chamber shall conform with and shall be operated in accordance with sections WAC 296-36-130 and 296-36-120(2) example No. 2 respectively.

(5) When a workman has, within the immediately preceding period of 8 hours, been exposed to a pressure greater than 13 pounds per square inch gage and has to be compressed in a man lock other than the lock in which he was last decompressed, he shall, before compression, produce to the lock attendant written particulars signed by the lock attendant of the lock where he was last decompressed indicating his last working period. For the purposes of these regulations, the term "working period" shall mean the period or the sum of the periods during which, since last subject to ordinary atmospheric pressure for at least 8 consecutive hours, a workman has been under pressure in a working chamber or chambers; the written particulars shall be specific in stating the length of time the workman was exposed to compressed air, the gage pressure to which he was subjected, the schedule of decompression used, the total length of time devoted to decompression procedures and the hour at which decompression was completed. As soon as practicable, all data shall be entered in the prescribed register or log at the lock where he is compressed and the data shall, as soon as practicable, be communicated to the attendant at any other lock from which the workman is liable to return to the open air.

[Rules (Part IV A), filed 12/28/62; § 2, filed 3/23/60.]

WAC 296-36-105 Compression and decompression of workmen—Compression. During the compression of workmen, the pressure shall not, in the first minute after starting compression, be increased to more than 3 pounds per square inch gage. When the pressure of 3 pounds per square inch gage is reached, the pressure shall not be further increased until after the lapse of a period sufficiently long to enable the lock attendant to ascertain whether any workman in the man lock complains of discomfort. After the lapse of that period, the pressure shall not be increased at a rate faster than 10 pounds per square inch gage per minute and a pause similar to that provided at 3 pounds per square inch gage shall also be provided at a pressure not exceeding 7 pounds per square inch gage. In all instances the pressure shall be increased gradually so as to insure, as far as practicable, that no workman suffers discomfort. If a workman complains of discomfort, and such complaint is signified to the lock attendant, any compression then proceeding shall be immediately stopped, and, unless the workman who has complained of the discomfort reports within 5 minutes that the discomfort has ceased and such report is conveyed to the lock attendant, the lock attendant shall without further delay gradually reduce the pressure in the lock until the workman reports that the discomfort has ceased; but, if he does not so report, the pressure

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shall be reduced gradually to atmospheric pressure and the workman released from the lock.

[Rules (Part IV B), filed 12/28/62.]

WAC 296-36-110 Compression and decompression of workmen—Decompression—General. (1) **Working period.** The "working period" shall include the time or period or the sum of periods during which, since last subject to ordinary atmospheric pressure for at least 8 consecutive hours, a workman has been under pressure in a working chamber or chambers.

(2) **Work pressure.** The "work pressure" means the highest pressure to which the workman has been exposed in the course of his working period: Provided, That,

(a) Sudden and exceptional variations of pressure involving excess pressure for not more than 15 minutes may be disregarded;

(b) Where, during the whole of his working period a workman about to be decompressed has been in a working chamber in which (as in tidal waters) the pressure has been gradually varied by more than 5 pounds per square inch in the course of that period, the work pressures shall be the mean of the pressures half way through that period and at the end of it.

(3) **Decompression required.** No person employed in compressed air shall be permitted to pass from the place in which the work is being done to atmospheric pressure, except after decompression in accordance with the procedures hereinafter established.

[Rules (Part IV C), filed 12/28/62; §§ 1 and 2, filed 3/23/60.]

WAC 296-36-115 Compression and decompression of workmen—Method and procedure. Decompressions shall be accomplished in accordance with the following methods and procedures:

(1) **Normal condition.** A normal condition is one during which exposure to compressed air is limited to a single continuous "working period" followed by a single decompression in any given 24 hour period; the total time of exposure to compressed air during the single continuous "working period" is not interrupted by exposure to normal atmospheric pressure; and a second exposure to compressed air does not occur until at least 8 consecutive hours of exposure to normal atmospheric pressure has elapsed since the workman has been under pressure in a working chamber. Decompression for normal condition shall be in accordance with the decompression tables.

(2) **Multiple exposures or emergency conditions.** The appointed physician shall be responsible for the preparation and establishment of methods and procedures of decompression applicable to multiple exposures and emergency conditions. The decompression times and stages shall be calculated and the methods and procedures determined and placed into effect in accordance with the instructions contained in the monograph "Decompression sickness and its prevention among compressed air workers" referred to in WAC 296-36-100(3).

[Rules (Part IV D), filed 12/28/62.]

WAC 296-36-120 Compression and decompression of workmen—Decompression tables. (1) **Explanation.**

[Title 296 WAC—p. 925]

(a) The decompression tables are computed for working chamber pressures from 14 to 50 pounds per square inch gage inclusive by 2 pound increments and for exposure times for each pressure extending from 1/2 to over 8 hours inclusive. Decompressions will be conducted by two or more stages with a maximum of 4 stages, the latter for a working chamber pressure of 40 pounds per square inch gage or over.

(b) Stage 1, consists of a reduction in ambient pressure ranging from 10 to a maximum of 16 pounds per square inch but in no instance will the pressure be reduced below 4 pounds at the end of stage 1. This reduction in pressure in stage 1 will always take place at a rate of 5 pounds per minute.

(c) Further reduction in pressure will take place during stage 2 and subsequent stages as required at a slower rate but in no event at a rate greater than one pound per minute.

(d) Decompression table No. 1 indicates in the body of the table the total decompression time in minutes for various combinations of working chamber pressure and exposure time.

(e) Decompression table No. 2 in several sheets indicates for the same various combinations of working chamber pressure and exposure time the following:

(i) The number of stages required;

(ii) The reduction in pressure and the terminal pressure for each required stage;

(iii) The time in minutes through which the reduction in pressure is accomplished for each required stage;

(iv) The pressure reduction rate in minutes per pound for each required stage;

Important note: The pressure reduction in each stage is accomplished at a uniform rate. Do not interpolate between values shown on the tables. Use the next higher value of working chamber pressure or exposure time should the actual working chamber pressure or the actual exposure time, respectively, fall between those for which calculated values are shown in the body of the tables.

(2) Examples.

(a) **Example No. 1.** 4 hour working period at 20 pounds gage.

Decompression table No. 1.

20 pounds for 4 hours,

Total decompression time 43 minutes

Decompression table No. 2.

Stage 1

Reduce pressure from 20 pounds to 4 pounds at the uniform rate of 5 pounds per minute. Elapsed time stage 1:

$$\frac{16}{5} = 3 \text{ minutes}$$

Stage 2 (final stage)

Reduce pressure at a uniform rate from 4 pounds to zero pounds gage over a period of 40 minutes.

Rate= 0.10 pounds per minute or 10.00 minutes per pound Stage 2 (final) elapsed time

Total time $\frac{40 \text{ minutes}}{43 \text{ minutes}}$

(b) **Example No. 2.** 5 hour working period at 24 pounds gage

Decompression table No. 1

24 pounds for 5 hours

Total decompression time 117 minutes

Decompression table No. 2

Stage 1

Reduce pressure from 24 pounds to 8 pounds at the uniform rate of 5 pounds per minute

Elapsed time stage 1,

$$\frac{16}{5} = 3 \text{ minutes}$$

Stage 2

Reduce pressure at a uniform rate from 8 pounds to 4 pounds over a period of 4 minutes.

Rate, 1 pound per minute

Elapsed time, stage 2 4 minutes

Transfer men to special decompression chamber maintaining the 4 pound pressure during the transfer operation

Stage 3 (Final stage)

In the special decompression chamber reduce the pressure at a uniform rate from 4 pounds to zero pounds gage over a period of 110 minutes.

Rate, 0.037 pounds per minute

or 27.5 minutes per pound

Stage 3 (final stage) $\frac{\text{Elapsed time } 110 \text{ minutes}}{\text{Total time } 117 \text{ minutes}}$

(3)

DECOMPRESSION TABLE NO. 1

Work Pressure	Total Decompression Time - Minutes											
	Working Period Hours											
psig	1/2	1	1-1/2	2	3	4	5	6	7	8	Over 8	
0-14	6	6	6	6	6	6	6	6	16	16	32	
16	7	7	7	7	7	7	17	33	48	48	63	
18	7	7	7	3	11	17	48	63	63	73	87	
20	7	7	8	15	15	43	63	73	83	103	113	
22	9	9	16	24	38	68	93	103	113	128	133	
24	11	12	23	27	52	92	117	122	127	137	151	
26	13	14	29	34	69	104	126	141	142	142	163	
28	15	23	31	41	98	127	143	153	153	165	183	
30	17	28	38	62	105	143	165	168	173	188	204	
32	19	35	43	85	126	163	178	193	203	213	226	
34	21	39	58	98	151	178	195	218	223	233	248	
36	24	44	63	113	170	198	223	233	243	253	273	
38	28	49	73	128	178	203	223	238	253	263	278	
40	31	49	84	143	183	213	233	248	258	268	288	
42	37	56	102	144	189	215	245	260	263	268	293	
44	43	64	118	154	199	234	254	264	269	269	293	
46	44	74	139	171	214	244	269	274	289	299	318	
48	51	89	144	189	229	269	299	309	319	319	-	
50	58	94	164	209	249	279	309	329	-	-	-	

(4)

DECOMPRESSION TABLE NO. 2

Decompression Data							
Working Chamber Pressure	Working Period	Stage No.	Pressure Reduction Psig		Time in Stage	Pressure Reduction Rate Min/Pound	Total Time Decompress
psig	Hours		From	To	Minutes		Minutes
14	1/2	1	14	4	2	0.20	
		2	4	0	4	1.00	6
	1	1	14	4	2	0.20	
		2	4	0	4	1.00	6
	1-1/2	1	14	4	2	0.20	
		2	4	0	4	1.00	6
	2	1	14	4	2	0.20	
		2	4	0	4	1.00	6
	3	1	14	4	2	0.20	
		2	4	0	4	1.00	6
	4	1	14	4	2	0.20	
		2	4	0	4	1.00	6
	5	1	14	4	2	0.20	
		2	4	0	4	1.00	6
	6	1	14	4	2	0.20	
		2	4	0	4	1.00	6
	7	1	14	4	2	0.20	
		2	4	0	14	3.50	16
	8	1	14	4	2	0.20	
		2	4	0	14	3.50	16
	Over 8	1	14	4	2	0.20	
		2	4	0	30	7.50	32
16	1/2	1	16	4	3	0.20	
		2	4	0	4	1.00	7
	1	1	16	4	3	0.20	
		2	4	0	4	1.00	7
	1-1/2	1	16	4	3	0.20	
		2	4	0	4	1.00	7
	2	1	16	4	3	0.20	
		2	4	0	4	1.00	7
	3	1	16	4	3	0.20	
		2	4	0	4	1.00	7
	4	1	14	4	3	0.20	
		2	4	0	4	1.00	7
	5	1	14	4	3	0.20	
		2	4	0	14	3.50	17
	6	1	14	4	3	0.20	
		2	4	0	30	7.50	33
	7	1	14	4	3	0.20	
		2	4	0	45	11.25	48
	8	1	14	4	3	0.20	
		2	4	0	45	11.25	48

Decompression Data							
Working Chamber Pressure	Working Period	Stage No.	Pressure Reduction Psig		Time in Stage	Pressure Reduction Rate Min/Pound	Total Time Decompress
psig	Hours		From	To	Minutes		Minutes
	Over 8	1	14	4	3	0.20	
		2	4	0	60	15.00	63
18	1/2	1	18	4	3	0.20	
		2	4	0	4	1.00	7
	1	1	18	4	3	0.20	
		2	4	0	4	1.00	7
	1-1/2	1	18	4	3	0.20	
		2	4	0	4	1.00	7
	2	1	18	4	3	0.20	
		2	4	0	5	1.25	8
	3	1	18	4	3	0.20	
		2	4	0	8	2.00	11
	4	1	18	4	3	0.20	
		2	4	0	14	3.50	17
	5	1	18	4	3	0.20	
		2	4	0	45	11.25	48
	6	1	18	4	3	0.20	
		2	4	0	60	15.00	63
	7	1	18	4	3	0.20	
		2	4	0	60	15.00	63
	8	1	18	4	3	0.20	
		2	4	0	70	17.50	73
	Over 8	1	18	4	3	0.20	
		2	4	0	84	21.00	87
20	1/2	1	20	4	3	0.20	
		2	4	0	4	1.00	7
	1	1	20	4	3	0.20	
		2	4	0	4	1.00	7
	1-1/2	1	20	4	3	0.20	
		2	4	0	5	1.25	8
	2	1	20	4	3	0.20	
		2	4	0	12	3.00	15
	3	1	20	4	3	0.20	
		2	4	0	12	3.00	15
	4	1	20	4	3	0.20	
		2	4	0	40	10.00	43
	5	1	20	4	3	0.20	
		2	4	0	60	15.00	63
	6	1	20	4	3	0.20	
		2	4	0	70	17.50	73
	7	1	20	4	3	0.20	
		2	4	0	80	20.00	83
	8	1	20	4	3	0.20	
		2	4	0	100	25.00	103
	Over 8	1	20	4	3	0.20	
		2	4	0	110	27.50	113

Decompression Data							
Working Chamber Pressure	Working Period	Stage No.	Pressure Reduction Psig		Time in Stage	Pressure Reduction Rate Min/Pound	Total Time Decompress
psig	Hours		From	To	Minutes		Minutes
22	1/2	1	22	6	3	0.20	
		2	6	0	6	1.00	9
1		1	22	6	3	0.20	
		2	6	0	6	1.00	9
1-1/2		1	22	6	3	0.20	
		2	6	0	13	2.20	16
2		1	22	6	3	0.20	
		2	6	0	21	3.50	24
3		1	22	6	3	0.20	
		2	6	0	35	5.85	38
4		1	22	6	3	0.20	
		2	6	0	65	10.83	68
5		1	22	6	3	0.20	
		2	6	0	90	15.00	93
6		1	22	6	3	0.20	
		2	6	0	100	16.67	103
7		1	22	6	3	0.20	
		2	6	0	110	18.35	113
8		1	22	6	3	0.20	
		2	6	0	125	20.80	128
Over 8		1	22	6	3	0.20	
		2	6	0	130	21.70	133
24	1/2	1	24	3	3	0.20	
		2	8	4	4	1.00	
		3	4	0	4	1.00	11
1		1	24	8	3	0.20	
		2	8	4	4	1.00	
		3	4	0	5	1.25	12
1-1/2		1	24	8	3	0.20	
		2	8	4	4	1.00	
		3	4	0	16	4.00	23
2		1	24	8	3	0.20	
		2	8	4	4	1.00	
		3	4	0	20	5.00	27
3		1	24	8	3	0.20	
		2	8	4	4	1.00	
		3	4	0	45	11.25	52
4		1	24	8	3	0.20	
		2	8	4	4	1.00	
		3	4	0	85	21.25	92
5		1	24	8	3	0.20	
		2	8	4	4	1.00	
		3	4	0	110	27.50	117
6		1	24	8	3	0.20	
		2	8	4	4	1.00	
		3	4	0	115	28.80	122
7		1	24	8	3	0.20	
		2	8	4	4	1.00	

Decompression Data							
Working Chamber Pressure	Working Period	Stage No.	Pressure Reduction Psig		Time in Stage	Pressure Reduction Rate Min/Pound	Total Time Decompress
psig	Hours		From	To	Minutes		Minutes
		3	4	0	120	30.00	127
8		1	24	8	3	0.20	
		2	8	4	4	1.00	
		3	4	0	130	32.50	137
Over 8		1	24	8	3	0.20	
		2	8	4	8	1.00	
		3	4	0	140	35.00	151
26	1/2	1	26	10	3	0.20	
		2	10	4	6	1.00	
		3	4	0	4	1.00	13
1		1	26	10	3	0.20	
		2	10	4	6	1.00	
		3	4	0	5	1.25	14
1-1/2		1	26	10	3	0.20	
		2	10	4	6	1.00	
		3	4	0	20	5.00	29
2		1	26	10	3	0.20	
		2	10	4	6	1.00	
		3	4	0	25	6.25	34
3		1	26	10	3	0.20	
		2	10	4	6	1.00	
		3	4	0	60	15.00	69
4		1	26	10	3	0.20	
		2	10	4	6	1.00	
		3	4	0	95	23.75	104
5		1	26	10	3	0.20	
		2	10	4	8	1.33	
		3	4	0	115	28.80	126
6		1	26	10	3	0.20	
		2	10	4	8	1.33	
		3	4	0	130	32.50	141
7		1	26	10	3	0.20	
		2	10	4	9	1.50	
		3	4	0	130	32.50	142
8		1	26	10	3	0.20	
		2	10	4	9	1.50	
		3	4	0	130	32.50	142
Over 8		1	26	10	3	0.20	
		2	10	4	30	5.00	
		3	4	0	130	32.50	163
28	1/2	1	28	12	3	0.20	
		2	12	4	8	1.00	
		3	4	0	4	1.00	15
1		1	28	12	3	0.20	
		2	12	4	8	1.00	
		3	4	0	12	3.00	23
1-1/2		1	28	12	3	0.20	
		2	12	4	8	1.00	
		3	4	0	20	5.00	31
2		1	28	12	3	0.20	
		2	12	4	8	1.00	

		Decompression Data					Total Time Decom- press
Working Chamber Pressure	Working Period	Stage No.	Pressure Reduction Psig		Time in Stage	Pressure Reduction Rate	
			From	To	Minutes	Min/ Pound	
psig	Hours						Minutes
		3	4	0	30	7.50	41
	3	1	28	12	3	0.20	
		2	12	4	10	1.25	
		3	4	0	85	21.20	98
	4	1	28	12	3	0.20	
		2	12	4	14	1.75	
		3	4	0	110	27.50	127
	5	1	28	12	3	0.20	
		2	12	4	20	2.50	
		3	4	0	120	30.00	143
	6	1	28	12	3	0.20	
		2	12	4	20	2.50	
		3	4	0	130	32.50	153
	7	1	28	12	3	0.20	
		2	12	4	20	2.50	
		3	4	0	130	32.50	153
	8	1	28	12	3	0.20	
		2	12	4	32	4.00	
		3	4	0	130	32.50	165
	Over 8	1	28	12	3	0.20	
		2	12	4	50	6.25	
		3	4	0	130	32.50	183
30	1/2	1	30	14	3	0.20	
		2	14	4	10	1.00	
		3	4	0	4	1.00	17
	1	1	30	14	3	0.20	
		2	14	4	10	1.00	
		3	4	0	15	3.75	28
	1-1/2	1	30	14	3	0.20	
		2	14	4	10	1.00	
		3	4	0	25	6.25	38
	2	1	30	14	3	0.20	
		2	14	4	14	1.40	
		3	4	0	45	11.25	62
	3	1	30	14	3	0.20	
		2	14	4	17	1.70	
		3	4	0	85	21.20	105
	4	1	30	14	3	0.20	
		2	14	4	30	3.00	
		3	4	0	110	27.50	143
	5	1	30	14	3	0.20	
		2	14	4	35	3.50	
		3	4	0	130	32.50	165
	6	1	30	14	3	0.20	
		2	14	4	35	3.50	
		3	4	0	130	32.50	168
	7	1	30	14	3	0.20	
		2	14	4	45	4.50	
		3	4	0	130	32.50	178
	8	1	30	14	3	0.20	
		2	14	4	55	5.50	

		Decompression Data					
Working Chamber Pressure	Working Period		Pressure Reduction Psig		Time in Stage	Pressure Reduction Rate Min/Pound	Total Time Decompress
		Stage No.	From	To	Minutes		Minutes
		3	4	0	130	32.50	188
	Over 8	1	30	14	3	0.20	
		2	14	4	71	7.10	
		3	4	0	130	32.50	204
32	1/2	1	32	16	3	0.20	
		2	16	4	12	1.00	
		3	4	0	4	1.00	19
	1	1	32	16	3	0.20	
2		16	4	12	1.00		
3		4	0	20	5.00	35	
	1-1/2	1	32	16	3	0.20	
		2	16	4	15	1.25	
		3	4	0	25	6.25	43
	2	1	32	16	3	0.20	
		2	16	4	22	1.83	
		3	4	0	60	15.00	85
	3	1	32	16	3	0.20	
		2	16	4	28	2.33	
		3	4	0	95	23.75	126
	4	1	32	16	3	0.20	
		2	16	4	40	3.33	
		3	4	0	120	30.00	163
	5	1	32	16	3	0.20	
		2	16	4	45	3.75	
		3	4	0	130	32.50	178
	6	1	32	16	3	0.20	
		2	16	4	60	5.00	
		3	4	0	130	32.50	193
	7	1	32	16	3	0.20	
		2	16	4	70	5.83	
		3	4	0	130	32.50	203
	8	1	32	16	3	0.20	
		2	16	4	80	6.67	
		3	4	0	130	32.50	213
	Over 8	1	32	16	3	0.20	
		2	16	4	93	7.75	
		3	4	0	130	32.50	226
34	1/2	1	34	18	3	0.20	
		2	18	4	14	1.00	
		3	4	0	4	1.00	21
	1	1	34	18	3	0.20	
2		18	4	14	1.00		
3		4	0	22	5.50	39	
	1-1/2	1	34	18	3	0.20	
		2	18	4	25	1.80	
		3	4	0	30	7.50	58
	2	1	34	18	3	0.20	
		2	18	4	35	2.50	
		3	4	0	60	15.00	98
	3	1	34	18	3	0.20	
		2	18	4	43	3.10	

Decompression Data							
Working Chamber Pressure	Working Period	Stage No.	Pressure Reduction Psig		Time in Stage	Pressure Reduction Rate Min/Pound	Total Time Decompress
psig	Hours		From	To	Minutes	Min/Pound	Minutes
		3	4	0	105	26.25	151
	4	1	34	18	3	0.20	
		2	18	4	55	3.93	
		3	4	0	120	30.00	178
	5	1	34	18	3	0.20	
		2	18	4	62	4.43	
		3	4	0	130	32.50	195
	6	1	34	18	3	0.20	
		2	18	4	85	6.07	
		3	4	0	130	32.50	218
	7	1	34	18	3	0.20	
		2	18	4	90	6.43	
		3	4	0	130	32.50	223
	8	1	34	18	3	0.20	
		2	18	4	100	7.15	
		3	4	0	130	32.50	233
	Over 8	1	34	18	3	0.20	
		2	18	4	115	8.23	
		3	4	0	130	32.50	248
36	1/2	1	36	20	3	0.20	
		2	20	4	16	1.00	
		3	4	0	5	1.25	24
	1	1	36	20	3	0.20	
		2	20	4	16	1.00	
		3	4	0	25	6.25	44
	1-1/2	1	36	20	3	0.20	
		2	20	4	30	1.88	
		3	4	0	30	7.50	63
	2	1	36	20	3	0.20	
		2	20	4	40	2.50	
		3	4	0	70	17.50	113
	3	1	36	20	3	0.20	
		2	20	4	52	3.25	
		3	4	0	115	28.75	170
	4	1	36	20	3	0.20	
		2	20	4	65	4.06	
		3	4	0	130	32.50	198
	5	1	36	20	3	0.20	
		2	20	4	90	5.63	
		3	4	0	130	32.50	223
	6	1	37	20	3	0.20	
		2	20	4	100	6.25	
		3	4	0	130	32.50	233
	7	1	36	20	3	0.20	
		2	20	4	110	6.88	
		3	4	0	130	32.50	243
	8	1	36	20	3	0.20	
		2	20	4	120	7.50	
		3	4	0	130	32.50	253
	Over 8	1	36	20	3	0.20	
		2	20	4	140	8.75	

Decompression Data							
Working Chamber Pressure	Working Period	Stage No.	Pressure Reduction Psig		Time in Stage	Pressure Reduction Rate Min/Pound	Total Time Decompress
psig	Hours		From	To	Minutes	Min/Pound	Minutes
		3	4	0	130	32.50	273
38	1/2	1	38	22	3	0.20	
		2	22	6	16	1.00	
		3	6	0	9	1.50	28
	1	1	38	22	3	0.20	
		2	22	6	16	1.00	
		3	6	0	30	5.00	49
	1-1/2	1	38	22	3	0.20	
		2	22	6	20	1.25	
		3	6	0	50	8.34	73
	2	1	38	22	3	0.20	
		2	22	6	30	1.88	
		3	6	0	95	15.83	128
	3	1	38	22	3	0.20	
		2	22	6	35	2.19	
		3	6	0	140	23.35	178
	4	1	38	22	3	0.20	
		2	22	6	50	3.12	
		3	6	0	150	25.00	203
	5	1	38	22	3	0.20	
		2	22	6	55	3.44	
		3	6	0	165	27.50	223
	6	1	38	22	3	0.20	
		2	22	6	70	4.38	
		3	6	0	165	27.50	238
	7	1	38	22	3	0.20	
		2	22	6	85	5.32	
		3	6	0	165	27.50	253
	8	1	38	22	3	0.20	
		2	22	6	95	5.93	
		3	6	0	165	27.50	263
	Over 8	1	38	22	3	0.20	
		2	22	6	110	6.88	
		3	6	0	165	27.50	278
40	1/2	1	40	24	3	0.20	
		2	24	8	16	1.00	
		3	8	4	4	1.00	
		4	4	0	8	2.00	31
	1	1	40	24	3	0.20	
		2	24	8	16	1.00	
		3	8	4	5	1.25	
		4	4	0	25	6.25	49
	1-1/2	1	40	24	3	0.20	
		2	24	8	16	1.00	
		3	8	4	20	5.00	
		4	4	0	45	11.25	84
	2	1	40	24	3	0.20	
		2	24	8	25	1.56	
		3	8	4	20	5.00	
		4	4	0	95	23.75	143
	3	1	40	24	3	0.20	
		2	24	8	30	1.88	

		Decompression Data					Total Time Decom- press
Working Chamber Pressure	Working Period	Stage No.	Pressure Reduction Psig		Time in Stage Minutes	Pressure Reduction Rate Min/ Pound	
			From	To			
psig	Hours						
		3	8	4	30	7.50	
		4	4	0	120	30.00	183
	4	1	40	24	3	0.20	
		2	24	8	45	2.81	
		3	8	4	35	8.75	
		4	4	0	130	32.50	213
	5	1	40	24	3	0.20	
		2	24	8	47	2.94	
		3	8	4	53	13.25	
		4	4	0	130	32.50	233
	6	1	40	24	3	0.20	
		2	24	8	55	3.44	
		3	8	4	60	15.00	
		4	4	0	130	32.50	248
	7	1	40	24	3	0.20	
		2	24	8	65	4.06	
		3	8	4	60	15.00	
		4	4	0	130	32.50	258
	8	1	40	24	3	0.20	
		2	24	8	75	4.70	
		3	8	4	60	15.00	
		4	4	0	130	32.50	268
	Over 8	1	40	24	3	0.20	
		2	24	8	95	5.93	
		3	8	4	60	15.00	
		4	4	0	130	32.50	288
42	1/2	1	42	26	3	0.20	
		2	26	10	16	1.00	
		3	10	4	6	1.00	
		4	4	0	12	3.00	37
	1	1	42	26	3	0.20	
		2	26	10	16	1.00	
		3	10	4	12	2.00	
		4	4	0	25	6.25	56
	1-1/2	1	42	26	3	0.20	
		2	26	10	16	1.00	
		3	10	4	23	3.83	
		4	4	0	60	15.00	102
	2	1	42	26	3	0.20	
		2	26	10	16	1.00	
		3	10	4	30	5.00	
		4	4	0	95	23.75	144
	3	1	42	26	3	0.20	
		2	26	10	16	1.00	
		3	10	4	50	8.34	
		4	4	0	120	30.00	189
	4	1	42	26	3	0.20	
		2	26	10	17	1.06	
		3	10	4	65	10.83	
		4	4	0	130	32.50	215
	5	1	42	26	3	0.20	
		2	26	10	27	1.69	
		3	10	4	85	14.18	
		4	4	0	130	32.50	245

Decompression Data							
Working Chamber Pressure	Working Period	Stage No.	Pressure Reduction Psig		Time in Stage Minutes	Pressure Reduction Rate Min/Pound	Total Time Decompress Minutes
			From	To			
	6	1	42	26	3	0.20	
		2	26	10	27	1.69	
		3	10	4	100	16.67	
		4	4	0	130	32.50	260
	7	1	42	26	3	0.20	
		2	26	10	30	1.88	
		3	10	4	100	16.67	
		4	4	0	130	32.50	263
	8	1	42	26	3	0.20	
		2	26	10	35	2.19	
		3	10	4	100	16.67	
		4	4	0	130	32.50	268
	Over 8	1	42	26	3	0.20	
		2	26	10	60	3.75	
		3	10	4	100	16.67	
		4	4	0	130	32.50	293
44	1/2	1	44	28	3	0.20	
		2	28	12	16	1.00	
		3	12	4	8	1.00	
		4	4	0	16	4.00	43
	1	1	44	28	3	0.20	
		2	28	12	16	1.00	
		3	12	4	20	2.50	
		4	4	0	25	6.25	64
	1-1/2	1	44	28	3	0.20	
		2	28	12	16	1.00	
		3	12	4	27	3.38	
		4	4	0	72	18.00	118
	2	1	44	28	3	0.20	
		2	28	12	16	1.00	
		3	12	4	40	5.00	
		4	4	0	95	23.75	154
	3	1	44	23	3	0.20	
		2	28	12	16	1.00	
		3	12	4	60	7.50	
		4	4	0	120	30.00	199
	4	1	44	28	3	0.20	
		2	28	12	16	1.00	
		3	12	4	85	10.62	
		4	4	0	130	32.50	234
	5	1	44	28	3	0.20	
		2	28	12	16	1.00	
		3	12	4	105	13.13	
		4	4	0	130	32.50	254
	6	1	44	28	3	0.20	
		2	28	12	16	1.00	
		3	12	4	115	14.38	
		4	4	0	130	32.50	264
	7	1	44	28	3	0.20	
		2	28	12	16	1.00	
		3	12	4	120	15.00	
		4	4	0	130	32.50	269
	8	1	44	28	3	0.20	
		2	28	12	16	1.00	
		3	12	4	120	15.00	

Decompression Data							
Working Chamber Pressure	Working Period	Stage No.	Pressure Reduction Psig		Time in Stage	Pressure Reduction Rate Min/Pound	Total Time Decompress
psig	Hours		From	To	Minutes		Minutes
		4	4	0	130	32.50	269
	Over 8	1	44	28	3	0.20	
		2	28	12	40	2.50	
		3	12	4	120	15.00	
		4	4	0	130	32.50	293
46	1/2	1	46	30	3	0.20	
		2	30	14	16	1.00	
		3	14	4	10	1.00	
		4	4	0	15	3.75	44
	1	1	46	30	3	0.20	
		2	30	14	16	1.00	
		3	14	4	25	2.50	
		4	4	0	30	7.50	74
	1-1/2	1	46	30	3	0.20	
		2	30	14	16	1.00	
		3	14	4	35	3.50	
		4	4	0	85	21.20	139
	2	1	46	30	3	0.20	
		2	30	14	16	1.00	
		3	14	4	47	4.70	
		4	4	0	105	26.25	171
	3	1	46	30	3	0.20	
		2	30	14	16	1.00	
		3	14	4	65	6.50	
		4	4	0	130	32.50	214
	4	1	46	30	3	0.20	
		2	30	14	16	1.00	
		3	14	4	95	9.50	
		4	4	0	130	32.50	244
	5	1	46	30	3	0.20	
		2	30	14	16	1.00	
		3	14	4	120	12.00	
		4	4	0	130	32.50	269
	6	1	46	30	3	0.20	
		2	30	14	16	1.00	
		3	14	4	125	12.50	
		4	4	0	130	32.50	274
	7	1	46	30	3	0.20	
		2	30	14	16	1.00	
		3	14	4	140	14.00	
		4	4	0	130	32.50	289
	8	1	46	30	3	0.20	
		2	30	14	16	1.00	
		3	14	4	150	15.00	
		4	4	0	130	32.50	299
	Over 8	1	46	30	3	0.20	
		2	30	14	25	1.56	
		3	14	4	160	16.00	
		4	4	0	130	32.50	318
48	1/2	1	48	32	3	0.20	
		2	32	16	16	1.00	
		3	16	4	12	1.00	
		4	4	0	20	5.00	51
	1	1	48	32	3	0.20	

Decompression Data							
Working Chamber Pressure	Working Period	Stage No.	Pressure Reduction Psig		Time in Stage	Pressure Reduction Rate Min/Pound	Total Time Decompress
psig	Hours		From	To	Minutes		Minutes
		2	32	16	16	1.00	
		3	16	4	35	2.92	
		4	4	0	35	8.75	89
	1-1/2	1	48	32	3	0.20	
		2	32	16	16	1.00	
		3	16	4	45	3.75	
		4	4	0	80	20.00	144
	2	1	48	32	3	0.20	
		2	32	16	16	1.00	
		3	16	4	60	5.00	
		4	4	0	110	27.50	189
	3	1	48	32	3	0.20	
		2	32	16	16	1.00	
		3	16	4	90	7.50	
		4	4	0	120	30.00	229
	4	1	48	32	3	0.20	
		2	32	16	16	1.00	
		3	16	4	120	10.00	
		4	4	0	130	32.50	269
	5	1	48	32	3	0.20	
		2	32	16	16	1.00	
		3	16	4	140	11.67	
		4	4	0	130	32.50	299
	6	1	48	32	3	0.20	
		2	32	16	16	1.00	
		3	16	4	160	13.33	
		4	4	0	130	32.50	309
	7	1	48	32	3	0.20	
		2	32	16	16	1.00	
		3	16	4	170	14.17	
		4	4	0	130	32.50	319
	8	1	48	32	3	0.20	
		2	32	16	16	1.00	
		3	16	4	170	14.17	
		4	4	0	130	32.50	319
50	1/2	1	50	34	3	0.20	
		2	34	18	16	1.00	
		3	18	4	14	1.00	
		4	4	0	25	6.25	58
	1	1	50	34	3	0.20	
		2	34	18	16	1.00	
		3	18	4	40	2.86	
		4	4	0	35	8.75	94
	1-1/2	1	50	34	3	0.20	
		2	34	18	16	1.00	
		3	18	4	55	3.93	
		4	4	0	90	22.50	164
	2	1	50	34	3	0.20	
		2	34	18	16	1.00	
		3	18	4	70	5.00	
		4	4	0	120	30.00	209
	3	1	50	34	3	0.20	
		2	34	18	16	1.00	
		3	18	4	100	7.15	

Decompression Data							
Working Chamber Pressure	Working Period	Stage No.	Pressure Reduction Psig		Time in Stage Minutes	Pressure Reduction Rate Min/Pound	Total Time Decompress Minutes
			From	To			
psig	Hours						
		4	4	0	130	32.50	249
	4	1	50	34	3	0.20	
		2	34	18	16	1.00	
		3	18	4	130	8.58	
		4	4	0	130	32.50	279
	5	1	50	34	3	0.20	
		2	34	18	16	1.00	
		3	18	4	160	11.42	
		4	4	0	130	32.50	309
	6	1	50	34	3	0.20	
		2	34	18	16	1.00	
		3	18	4	180	12.85	
		4	4	0	130	32.50	329

DO NOT INTERPOLATE, USE NEXT HIGHER VALUE FOR CONDITIONS NOT COMPUTED

[Rules (Part IV E), filed 12/28/62; § 2, filed 3/23/60.]

WAC 296-36-125 Man locks. (1) Use of man locks.

Except when prevented by an emergency, compressed air workers shall pass only through the man lock when passing into or out of a compressed air area. *Exception:* Caissons having a working area less than 150 square feet may use a combination material and man lock.

(2) **Size and capacity.** The head room in man locks shall be not less than 6 feet and their cubical content shall provide at least 30 cubic feet of air space for each person. The capacity shall be based upon such minimum space per person and shall be posted at the entrance to the lock. The posted capacity shall not be exceeded except in case of an emergency.

(3) **Equipment.** Each man lock shall be equipped with the following:

(a) A recording pressure gage, fixed to the exterior of the lock on the atmospheric pressure side, shall be installed for showing the rate of decompression. The gage dial and chart shall be of such size that the amount of rise or fall in air pressure within 5 minutes will be readily discernible. The gage shall be protected by a locked box from interference or damage. This requirement will not be necessary when working at pressures of 13 pounds per square inch or less.

(b) A clock or clocks suitably placed so that the man lock attendant and persons in the man lock can readily ascertain the time.

(c) A recording pressure gage whose chart shall be of sufficient size to register a legible record of variations in pressure within the working chamber. This gage shall be readily accessible to the lock attendant.

(d) Pressure gages which will indicate to the man lock attendant the pressure in the man lock and the pressure in each working chamber to which the man lock affords direct or indirect access and to persons in the man lock the pressure in the man lock.

(e) Valves to enable the lock attendant to reduce or cut off the supply of compressed air into the man lock.

(2007 Ed.)

(f) Valves and pipes in connection with the air supply and exhaust which shall be so arranged that the lock and pressure can be controlled from within and without.

(g) Effective means of verbal intercommunication between the man lock attendant and (1) persons in the man lock, (2) persons in any working chamber and (3) the air compressor plant, and also some means to enable persons in the lock to convey visible or other nonverbal signals to the lock attendant.

(h) A glass bulls-eye in each end of the lock to permit observation of the occupants.

(4) **Seating facilities.** The seating facilities in man locks shall be so arranged as to provide a normal sitting posture without cramping. Seating space not less than 22 inches in width shall be provided per occupant. *Exception:* In caissons having a working area less than 150 square feet, portable seats shall be provided in the combination material and man lock.

(5) **Lighting and heating.** Every man lock shall be lighted by electricity. The lighting intensity shall be a minimum of 30 foot-candles as currently recommended for waiting rooms by the illuminating engineers society. It shall also be provided with a system of radiant (infra-red) heating using electricity, steam or hot water for heating the radiant surface. The radiant surface shall be so located and protected as to prevent thermal burns. The chamber shall be heated to a minimum dry bulb temperature of 70 degrees F.

(6) **Ventilation.** A minimum ventilation rate of 20 cubic feet per minute of standard air at the prevailing ambient pressure in the lock shall be provided for each occupant. In no event shall the carbon dioxide concentration be permitted to rise above 0.5 percent by volume.

(7) **Record of decompression.** Where the pressure in the working chamber is 13 pounds or more, a record of all persons passing into or out of the working chamber shall be kept by a lock attendant who shall be stationed at the low pressure side of the man lock. Such record shall show the period of stay in the working chamber and the length of time of each decompression. Such record shall be signed by the medical officer and shall be kept on the job subject to inspection by the director of the state department of labor and industries or his authorized representative.

(8) **Automatic controls.** Each man lock shall be equipped with a suitable automatic control which through taped programs or cams or similar apparatus shall automatically regulate compressions and decompressions. It shall also be equipped with a timing device and such manual control as will enable the lock attendant to override the automatic mechanism in an emergency.

[Rules (Part V A), filed 12/28/62; §§ 3 and 4, filed 3/23/60.]

WAC 296-36-130 Special decompression chamber.

(1) **General.** The special low-pressure decompression chamber shall be provided for use when the nature of the work requires decompression times and procedures clearly within the scope of WAC 296-36-110(4).

(2) **Size and capacity.** The headroom in the special decompression chamber shall be not less than 7 feet and the cubical content shall provide at least 50 cubic feet of air space for each person. For each occupant there shall be provided 4

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square feet of free walking area and 3 square feet of seating space exclusive of area required for lavatory and toilet facilities. The rated capacity shall be based on the stated minimum space per person and shall be posted at the chamber entrance. The posted capacity shall not be exceeded except in case of emergency.

(3) **Equipment.** Each special decompression chamber shall be equipped with the following:

(a) A clock or clocks suitably placed so that the attendant and the chamber occupants can readily ascertain the time;

(b) Pressure gages which will indicate to the attendant and to the chamber occupants the pressure in the chamber;

(c) Valves to enable the attendant to reduce or cut off the supply of compressed air into the chamber;

(d) Valves and pipes in connection with the air supply and exhaust arranged that the chamber pressure can be controlled from within and without;

(e) Effective means of verbal intercommunication between the attendant, occupants of the chamber and the air compressor plant;

(f) A glass bulls-eye at the entrance to permit observation of the chamber occupants.

(4) **Seating facilities.** Seating facilities in special decompression chambers shall be so arranged as to permit a normal sitting posture without cramping. Seating space not less than 18 inches by 24 inches in width shall be provided per occupant. Seat and back shall be padded or cushioned with a one-inch thickness of foam rubber or its equivalent.

(5) **Lighting and heating.** Lighting and heating shall comply with that for man locks, WAC 296-36-125(5).

(6) **Ventilation.** Ventilation shall comply with that for man locks, WAC 296-36-125(6).

(7) **Record of decompression.** Final stage decompression in the special chamber shall be part of the records required by WAC 296-36-125(7).

(8) **Automatic controls.** Special decompression chambers shall be equipped with automatic controls complying with WAC 296-36-125(8), for man locks.

(9) **Sanitation.** One toilet and one wash basin with hot and cold water in a screened or enclosed recess shall be provided for each 10 units of rated capacity as defined in WAC 296-36-130(2). An adequate supply of disposable towels, drinking water and disposable cups shall be provided. No refuse or discarded material of any kind shall be permitted to accumulate and the chamber shall be kept clean.

(10) **Location.** Where practicable the special decompression chamber shall be situated adjacent to the man lock on the atmospheric pressure side of the bulkhead. When located adjacent to the man lock a passageway shall be provided connecting the special chamber with the man lock to permit workmen in the process of decompression to move from the man lock to the special chamber without a reduction in the ambient pressure from that designated for the initial pressure of the final stage of decompression. The passageway shall be so arranged as to not interfere with the normal operation of the man lock nor with the release of the occupants of the special chamber to atmospheric pressure upon the completion of the decompression procedure.

In event that the special chamber is located remote from the man lock a means of pressurized transport shall be provided to move the men from the man lock to the special

chamber without a reduction in the ambient pressure from that designated for the initial pressure of the final stage of decompression.

Under unusual circumstances or in an emergency and only with the express permission of the appointed physician, decanting procedures may be used to facilitate the movement of men at atmospheric pressure from the man lock to the special decompression chamber for the final stage of decompression. RECOMPRESSION OF THE MEN MUST TAKE PLACE WITHIN FIVE MINUTES IN THE SPECIAL CHAMBER. THE MEDICAL LOCK SHALL NOT BE USED FOR THE RECOMPRESSION.

(11) **Design.** The special decompression chamber and passageway or pressurized transport shall be designed for an operating pressure of 20 pounds per square inch gage pressure.

(12) **Fire protection.** All applicable provisions of WAC 296-36-190, fire prevention and fire fighting shall apply to special decompression chambers.

[Rules (Part V B), filed 12/28/62.]

WAC 296-36-132 Lock attendants. (1) Whenever any workman is in a man lock or in a working chamber to which the man lock affords direct or indirect access, each working man lock shall be in the charge of a competent lock attendant who shall perform no other duties except to operate the lock and shall be employed the same number of hours as the other employees working in compressed air. The lock attendant shall control the maximum rate of compressions and shall perform all decompressions except where such compressions and decompressions are automatically regulated, but in such case the lock attendant shall have means to determine the pressures within the lock and working chamber at any time, and shall have also a timing device and such manual controls as will enable him to override the automatic mechanism in an emergency.

(2) Subject to the overall control by the lock attendant of the admission of compressed air into the lock, he may, if so authorized by the appointed physician, allocate to a competent person who is to be compressed in the lock, the duty to regulate from inside the lock the admission of compressed air, and duty to communicate to the lock attendant any complaint of discomfort by a workman in the lock and any report by that workman that the discomfort has ceased.

(3) Man lock attendants shall be under the direct supervision, control, discipline and training of the appointed physician and each man lock attendant shall be the holder of an unexpired first-aid certificate from the Red Cross, U.S. Bureau of Mines, or the Department of Labor and Industries. Lock attendants shall receive their wage payments directly from the head office of the employer and shall not be carried on or subject to the payroll procedures of the local office. A lock attendant shall not be relieved of his duties or discharged without consulting the appointed physician nor without the physician's assent.

[Rules (Part VI), filed 12/28/62; § 4, filed 3/23/60.]

WAC 296-36-135 Regulation of pressure and air quality in working areas—Gage tender. There shall at all times be a thoroughly experienced competent and reliable person on duty at the air control valves as a gage tender who

shall regulate the pressure in the working areas. No gage tender shall be on duty more than 8 hours in any 24. During tunneling operations, one gage tender may regulate the pressure in not more than two headings provided that the gages and controls are all in one location. In caisson work there shall be a gage tender for each caisson.

[Rules (Part VII A), filed 12/28/62; Rule 303, filed 3/23/60.]

WAC 296-36-140 Regulation of pressure and air quality in working areas—Pressure monitoring. (1) **High pressure.** Every compressed air line used to maintain pressure in working areas shall have a pressure gage attached at a point in the immediate vicinity of the control valves to show the pressure on the high pressure side of the control valves. Such gages shall be so located and illuminated as to be easily read by the operator and shall be of such size and so graduated as to show clearly a change in pressure of one pound.

(2) **Back pressure.** Back pressure gages to show the pressure in the working areas shall be located on the low pressure side of the bulkhead, in the superintendent's office, at the air control valves and in the power house. Back pressure gages shall be maintained in accurate working order and shall be tested at least once every 24 hours and a record shall be kept of each such test. In addition to the foregoing back pressure gages, a continuous recording back pressure gage shall be installed to provide a record of variations and pressure in the working chamber. The record shall be kept in the superintendent's office and be available for inspection by the director of the state department of labor and industries. *Exception:* Caissons having a net working area less than 150 square feet shall have back pressure gages installed on the low pressure side of the caisson and at the air control valves.

[Rules (Part VII B), filed 12/28/62.]

WAC 296-36-145 Regulation of pressure and air quality in working areas—Air quality in working areas. (1) **Ventilation.** An automatic air quality monitoring system acceptable to the director, department of labor and industries, shall be installed in the pressurized working chamber and shall at all times be maintained in proper working condition. The system shall provide continuous sampling and monitoring of the air and shall indicate by visual and audible alarm the presence of dangerous air contaminants in excess of the following:

Carbon monoxide	0.01%	100 ppm
Carbon dioxide	0.50%	5000 ppm
Oxides of nitrogen	0.0005%	5 ppm
Methane	0.25%	2500 ppm
Hydrogen sulphide	0.002%	20 ppm

The director in his discretion may change these concentrations to conform with good practices as recommended by the American Conference of Governmental Industrial Hygienists.

The system shall also indicate and give alarm at any time the oxygen content is less than 19.5 percent.

The system shall be so arranged that the visual and audible alarm will give warning in the working chamber and at the lock tender's station at the low pressure side of the locks.

(2007 Ed.)

In addition to the specific requirements contained in these standards of safety chapter 296-62 WAC shall apply for rock dust and ventilation.

(2) **Protection against atmospheric containments:** The requirements of chapters 296-62 and 296-155 WAC, Part Q shall apply.

[Statutory Authority: Chapter 49.17 RCW. 90-17-051 (Order 90-10), § 296-36-145, filed 8/13/90, effective 9/24/90; Rules (Part VII C), filed 12/28/62; § 25, filed 3/23/60.]

WAC 296-36-150 Air supply. (1) **Clean air.** Compressed air supplied to working area shall not contain quantities of harmful or offensive air contaminants exceeding the limits set forth hereinbefore.

(2) **Amount.** Not less than 30 cubic feet per minute per man, measured at the prevailing working chamber pressure, of outside air shall be supplied to the working areas under pressure.

(3) **Supply lines.** In addition to the compressed air lines supplying working areas under pressure, there shall be a second such line of the same size and similarly equipped which shall be maintained ready for immediate use between the working chamber side of the bulkhead and the compressed air source in case of failure of the first line.

(4) **Point of discharge.** The point of discharge of the supply line in use shall be as close to the working face as is practicable and the discharge end of both supply lines shall be provided with a check valve.

(5) **Air outlet or exhaust line.** Air outlet lines from areas under pressure shall be properly located so that injurious gases may be promptly removed. Such lines shall be provided with suitable valves.

(6) **Air tools.** The high pressure air supplied for air-operated tools, equipment and appliances shall comply with the quality requirements contained in WAC 296-36-145, Air quality in working areas.

[Rules (Part VIII), filed 12/28/62; Rule 2009, filed 3/23/60.]

WAC 296-36-155 Compressor plant. (1) **Capacity.** The capacity, arrangement and number of compressors shall be sufficient to maintain the necessary pressure without overloading the equipment and to assure maintenance of such pressure in the working chamber during periods of breakdown or other emergency. The compressor installation shall be capable of delivering not less than 50 cubic feet per minute of ventilating air for each man in the working chamber at the prevailing working chamber pressure. Additional stand-by compressor units shall be installed in accordance with the following tabulation:

Normal installation at 50 C.F./Man/Min. units	Stand-by units	Total units	Percent rated total capacity of stand-by units divided by normal units
1	1	2	100
2	2	4	100
3	2	5	67
4	2	6	50
5	2	7	40

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(2) **Sources of power.** Where the power is generated on the job there shall be a sufficient number of power units to maintain the necessary compressor operation.

(3) **Power feeders.** Where power is obtained from a public utility there shall be at least two feeders to the compressor plant. Each feeder shall have a capacity sufficient to carry the entire load and normal overload. The feeders shall run over separate routes in such a way that a breakdown of one feeder will not cause any interruption of power from the other feeder. Each feeder or service extension shall enter the compressor plant through a separate and independent opening.

(4) **Bus bar connections.** There shall be duplicate feeder bus bars at the compressor plant. Feeder connections to the bus bar shall be such that either feeder can feed to each bus bar separately or simultaneously to both bus bars. The electrical connections from the bus bars to the compressor shall be arranged in such a way as to insure continuous operation of the compressor plant, in spite of any breakdown of an individual feeder, bus bar or compressor unit.

(5) **Alternate sources of power.** Any combination of power either generated at the job or generated off the job as set forth above, and which complies with the above requirements is permitted.

(6) **Maintenance.** All equipment including reserve sources of power and reserve compressor equipment used to maintain pressure in working areas shall at all times be maintained in good repair and ready for use. All reserve equipment shall be periodically inspected and shall be operated for a period of one hour or more at least once in every week, except where there is danger of sudden flooding, in which case reserve equipment shall be operated at least one hour in every 24 hours. An ample supply of spare parts shall be kept on hand.

[Rules (Part IX), filed 12/28/62; § 12, filed 3/23/60.]

WAC 296-36-160 Personnel facilities. (1) **General.** There shall be provided on every job a change house which shall have a dressing room and separate spaces for each of the following: drying clothes, shower baths, toilet facilities and rest room with seating facilities and tables.

(2) **Maintenance.** The change house shall be kept clean throughout.

(3) **Dressing room.** The dressing room shall be provided with benches and a full length metal or other approved non-combustible locker with facilities for locking for each compressed air worker.

(4) **Clothes drying.** Facilities for drying clothing shall be installed and sufficient heat shall be provided to dry the clothing within 12 hours.

(5) **Toilet facilities.** One toilet and one urinal shall be provided for every 8 men or part thereof employed on each shift.

(6) **Shower baths.** Shower baths with hot and cold water shall be installed in the change house in sufficient number to provide one unit for every 8 men coming off shift.

(7) **Wash basins.** At least one wash basin with hot and cold running water or equivalent facilities at wash fountains shall be provided for every 8 men coming off shift.

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(8) **Temperature.** A minimum temperature of 72 degrees F. shall be maintained in the dressing room, wash room and bathroom.

(9) **Coffee.** A sufficient supply of hot coffee, cream, milk and sugar shall be supplied to men working in compressed air at the termination of shifts and during rest periods. Coffee shall be heated by means other than direct steam. Coffee containers shall be kept clean and covered. Unless drinking cups are of the single service type, individual cups shall be sterilized after each use.

(10) **Eating space underground.**

(a) General. Suitable eating space shall be provided in the working chamber in the event that established working periods are of sufficient length to normally include a meal time interval. *Exception:* This requirement is not applicable to caisson work.

(b) Facilities.

(i) Space requirements. The space provided shall have a minimum head room of 6 feet 6 inches and a minimum area of 6 square feet shall be provided per person occupying the space at any one time.

The area shall be dry and clean, shall be lighted, heated and ventilated in accordance with WAC 296-36-125 (5) and (6), man locks.

(ii) Equipment. The space shall be equipped with tables and comfortable seating facilities providing seating space not less than 22 inches in width per occupant; disposable towels; washing facilities with hot and cold water or in lieu thereof acceptable dry-cleansing tissues; and space outside the immediate eating area for the removal and temporary storage of protective clothing. Portable equipment, acceptable to the supervisor of safety, department of labor and industries, which may be moved into the working chamber and removed therefrom, may be provided.

[Rules (Part X), filed 12/28/62; § 21, filed 3/23/60.]

WAC 296-36-165 Sanitation below ground. (1) **Toilet facilities.** At least one approved chemical toilet shall be provided in the working chamber. Such facilities shall be maintained in a sanitary condition and shall be used by the workers.

(2) **Housekeeping.** No refuse or discarded material of any kind shall be permitted to accumulate underground. The man lock shall be kept clean.

(3) **Drinking water.** An ample supply of clean and potable drinking water shall at all times be available in working areas. Where water is supplied in containers it shall be kept covered. The use of common drinking cups is prohibited.

[Rules (Part XI), filed 12/28/62; § 21, filed 3/23/60.]

WAC 296-36-170 Stairs and ladders. The requirements of chapter 296-155 WAC Parts K and J shall apply.

[Statutory Authority: Chapter 49.17 RCW. 90-17-051 (Order 90-10), § 296-36-170, filed 8/13/90, effective 9/24/90; Rules (Part XII), filed 12/28/62.]

WAC 296-36-175 Lighting and power equipment. (1) **All lighting underground shall be by electricity.**

(a) Lighting shall comply with chapter 296-155 WAC.

(b) Power equipment shall comply with chapter 296-155 WAC.

(2007 Ed.)

(2) **Emergency lighting.** The lighting circuits shall be connected to two independent sources of power supply. In addition to the lighting circuit, adequate and sufficient portable electric emergency lights shall be provided and maintained for immediate use. These shall be readily accessible to all employees working underground.

(3) **Lamp sockets.** The exterior of all lamp sockets shall be of nonmetallic material and all sockets shall be of the weatherproof type.

(4) **Location of lamps.** Lamps shall be so placed that they cannot come into contact with combustible materials and so that a clear space is provided all around.

(5) **Lamp guards.** All lamps shall be protected with wire cage guards.

[Statutory Authority: Chapter 49.17 RCW. 90-17-051 (Order 90-10), § 296-36-175, filed 8/13/90, effective 9/24/90; Rules (Part XIII), filed 12/28/62; § 6, filed 3/23/60.]

WAC 296-36-180 Signals and means of communication. (1) Effective and reliable signaling devices shall be maintained at all times to give instant communication between the bottom and top of shaft, and where considered necessary by the safety division, dual independent signal systems shall be installed.

(2) Special care shall be taken to keep the signaling apparatus in good order, and all proper precautions shall be taken to prevent electric signal and telephone wires from coming into contact with other electric conductors, whether insulated or not.

(3) Where it is necessary to use signals by means of bell or otherwise for hoisting or lowering, the following code shall be used:

Any code of signals used shall be printed and copies thereof shall be kept posted in a conspicuous place near entrances to work places and in such other places as may be necessary to bring them to the attention of all persons concerned.

- | | |
|---------------|---|
| 1 bell: | Stop immediately if in motion. |
| 2 bells: | Lower. |
| 3-1 bells: | Hoisting men, run slowly. |
| 3-2 bells: | Lowering men. |
| 1-1 bells: | To hoist muck. |
| 2-1-2 bells: | Release cage, skip, or bucket. |
| 4 slow bells: | Blasting signal. (This is a caution signal and if the hoist operator is prepared to accept it he must acknowledge it by raising cage, skip or bucket a few feet then lowering it again. After accepting this signal, hoist operator must be prepared to hoist men away from blast as soon as signal 3-1 bells are given and must accept no other signal in the meantime.) |
| 5 bells: | Water on or off. |
| 6 bells: | Air on or off. |
| 9 bells: | Danger signal (fire, accident or other danger), followed by station signal, calls cage, skip, or bucket to that station. This signal takes precedence over all others except an accepted blasting signal. |

(4) Where tunnels are driven from shafts more than two hundred fifty feet deep, a telephone system shall be established and maintained, communicating with the surface at each such shaft, and with a station or stations readily and quickly accessible to the men at the working level.

[Statutory Authority: Chapter 49.17 RCW. 90-17-051 (Order 90-10), § 296-36-180, filed 8/13/90, effective 9/24/90; Rules (Part XIV), filed 12/28/62.]

WAC 296-36-185 Explosives—Blasting. (1) **Storage and supply.** Explosives including detonators shall not be stored or kept underground. The supply for each blast shall be taken directly from above ground to the face and immediately loaded. All explosives remaining after loading a round shall be removed to the magazine before the leading wires are connected.

(2) **Explosives in air locks.** While explosives are being locked through a tunnel bulkhead, the detonators and explosives shall be placed at the opposite ends of the lock and no person, other than the lock tender and those persons necessary for carrying, shall be permitted in the lock. No other material or equipment shall be locked through with explosives.

Explosives and detonators shall be taken separately into caissons.

(3) **Carrying containers.** Explosives other than detonators shall be conveyed in a suitable covered wooden box painted red and provided with handles. Detonators shall be conveyed in a separate covered wooden box, painted red with a one-inch yellow stripe running horizontally entirely around the box. The box shall be provided with handles.

(4) **Blaster.** The blaster shall be a person designated by the superintendent and shall be in charge of all operations connected with preparations for blasting and shall fire all shots.

(5) **Duties of the blaster.** Before removing any explosives from the carrying containers, the blaster shall verify

(a) That the blasting switch is in "off" position and that its box is locked;

(b) That the "gap" in the blasting circuit is open; (Note: A gap of at least 5 feet on the incoming side of the switch, except during the firing operation, when connections at such gap are to be made by means of plugs, is required.)

(c) That the heading gang has been withdrawn to a safe distance or to a safe shelter, except such men from the gang as the blaster may direct to remain with him to assist in loading under his directions; and

(d) That all light and power circuits have been disconnected at a point not less than 100 feet from the place to be blasted. The blaster shall direct the loading of all holes and the making of the necessary connections in the blasting circuit; he shall sound a warning signal distinctly audible in any part of the working chamber, shield or any drift ahead of the shield where any person remaining would be exposed to injury from the blast.

(6) **Vacating blasting area.** All persons shall promptly vacate the blasting area when so directed by the blaster. When the blaster is satisfied that all persons have vacated the blasting area, he, alone, shall unlock the box that contains the blasting switch and fire the blast.

(7) **Return to blasting area.** No person shall return to the blasting area until the air in such area has been cleared of

injurious concentrations of toxic fumes. The blaster shall be the first to return to the heading. He shall examine the effects of the blast and investigate the matter of possible misfires and he, alone, shall give the signal for the return of the workmen to the heading and for the restoration of light and power in the blasted area.

(8) **Hand lamps and cap lamps.** Electric hand lamps and cap lamps used by the blaster or his helpers or by any other person in the working chamber during the blasting operation shall be approved.

(9) **Blasting circuits.** All circuits used for blasting shall be ungrounded circuits. Damaged leading wires shall not be used.

[Rules (Part XV), filed 12/28/62; § 14, filed 3/23/60.]

WAC 296-36-190 Fire prevention and fire fighting.

(1) **General.** Every building and every flammable structure above ground and all places underground shall be within easy range of fire fighting equipment, which shall at all times be maintained in proper working conditions and ready for use.

(2) **Smoking.** No person shall smoke or carry lighted smoking materials in compressed air. No matches, mechanical or chemical igniters will be permitted in the working chamber except those necessary for welding or flame cutting operations.

(3) **Welding or flame cutting.** While welding or flame cutting is being done in compressed air, a watchman with a fire hose or approved extinguisher shall stand by until such operation is completed. Acetylene shall not be used in compressed air at acetylene pressure exceeding 15 pounds per square inch gage, or 30 pounds per square inch absolute.

(4) **Fire hose.** Fire hose shall be at least 1-1/2 inches in nominal diameter; the water pressure shall at all times be adequate for efficient operation of the type of nozzle used; and the water supply shall be such as to insure an uninterrupted flow. Fire hose when not in use shall be so located or guarded to prevent injury thereto.

Every power house, compressor house and every building housing ventilating equipment shall be provided with at least one hose connection in the water line with the fire hose connected thereto. A fire hose shall be maintained within easy reach of structures of wood over or near shafts.

(5) **Shafts and caissons.** Every shaft and every caisson containing flammable material of any kind, either above or below ground, shall be provided with a water line and a fire hose connected thereto, so arranged that all points of the shaft or caisson are within easy reach of the hose stream.

(6) **Tunnels.** Every tunnel shall be provided with a water line extending into the working chamber and to within 100 feet of the working face. Such lines shall have hose outlets with 100 feet of fire hose properly attached and maintained as follows: One at the working face, one immediately inside of the bulkhead of the working chamber, and one immediately outside such bulkhead. In addition, hose outlets shall be provided at 200-foot intervals throughout the length of the tunnel and 100 feet of fire hose shall be attached to the outlet nearest to any location where flammable material is being kept or stored or where any flame is being used.

(7) **Fire extinguishers.** In addition to required fire hose protection, on every floor of every building used in connec-

tion with compressed air work, there shall be provided at least one extinguisher of adequate size approved for the class of hazard involved, except that extinguishers containing carbon tetrachloride or methyl bromide shall not be used. Extinguishers shall be so located as to be readily available and protected from damage.

Note: For additional requirements relating to portable fire extinguishers see WAC 296-800-300.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 01-17-033, § 296-36-190, filed 8/8/01, effective 9/1/01; Rules (Part XVI), filed 12/28/62; § 7, filed 3/23/60.]

WAC 296-36-195 Special provisions for tunnels. (1)

Bulkheads. The bulkheads separating the working chamber from areas of lower pressure shall be of sufficient strength to withstand safely the maximum pressure to which it may be subjected. Where there is a possibility of rapid flooding of the working chamber, such as might be present in subaqueous tunnels, the bulkhead shall be located sufficiently close to the face or shield to permit escape of the workers in case of an emergency. But in no case where there is such possibility shall such distance be more than 300 feet.

(2) **Safety curtain or screens.** Where danger of a blow or an in-rush of water exists in tunnels 12 feet or more in clear height, and the elevation of the top of the lining at the face and of the completed tunnel back to the emergency lock are such that a safety curtain will afford protection to the workman, a safety curtain shall be provided. It shall be located where it will afford the maximum of protection in case of an emergency but not impracticably close to the face.

Safety curtains shall be of incombustible material and shall be installed in the crown of the tunnel. They shall provide an airtight seal with the tunnel lining and shall be properly reinforced and braced as may be necessary. Curtains or screens shall be installed at right angles to the axis of the tunnel with the bottom edge horizontal. In tunnels up to and including 24 feet in inside clear height, the safety curtain shall extend down to the center line of the tunnel. In tunnels over 24 feet inside clear height, it shall extend at least 12 feet below the inside clearance line of the roof of the tunnel.

(3) **Walkways.** In tunnels 16 feet or more in diameter, containing safety curtains or screens, hanging walkways shall be provided from the face to the man lock and shall be installed as high in the tunnel as is practicable. Such walkway shall be installed above the tunnel floor and shall have at least 6 feet of head room above the walkway. A railing 42 inches high and a toe board shall be securely installed throughout the length of walkways on open sides. In areas under pressure, the walkways, stairways, and ladders including railings shall be of incombustible material.

(4) **Maintenance of walkways.** Walkways and the stairs or ladders leading thereto shall be at all times maintained clear, in good repair, and in a condition to carry safely the loads to which they may be subjected.

(5) **Ramps.** Walkways shall be provided with ramps under safety screens. Such ramps shall be provided with cleats.

(6) **Man lock and material lock.** Every tunnel shall have at least two locks in proper working condition, one of which shall be used as a material and equipment lock and the other used exclusively as a man lock.

(7) **Emergency man lock.** In subaqueous tunnels where space permits, there shall be in addition to the man lock and the material lock, an emergency man lock which shall be large enough to hold an entire heading shift and which shall be kept open toward the face and maintained ready for use at all times.

(8) **Location of locks.** Man locks and emergency locks shall be located as high in the tunnel as space will permit but the emergency lock shall be located in the crown of the tunnel.

(9) **Track safeties and brakes.** An automatic stop block or derailing device shall be provided at the top of every slope or incline greater than 3 percent. In addition, such a device shall be installed at a point not less than 150 feet nor more than 200 feet upgrade from any point where runaway cars may cause damage to the shield or air lock. A holding device shall be provided for cars used on inclines. Such device shall be set in the holding position during loading.

[Rules (Part XVII), filed 12/28/62; §§ 10 and 18, filed 3/23/60.]

WAC 296-36-200 Special provisions for caissons. (1) **Number of locks.** Every caisson shall have at least two locks, one of which shall be used exclusively as a man lock. *Exception:* Caissons having a working area less than 150 square feet may have a single or combined man and material lock.

(2) **Location of man locks.** The bottom of the lowest door opening of locks shall not be less than 3 feet above the water level being controlled by the use of compressed air.

(3) **Lock platforms.** All caisson locks located above ground shall be provided with an exterior platform not less than 42 inches wide with stairs or ladders leading thereto. The platform and stairs shall have a substantial handrail with midrail and the platform shall have toeboards at least 4 inches high.

(4) **Ladderways and stairways in man shafts or shaft-ing.** Ladderways or stairways shall be provided and shall be kept clear and in good condition. Stairways shall be lighted at every landing and ladderways shall be lighted at 10-foot intervals with guarded incandescent lamps. Ladders and landings shall be of incombustible material. Pockets in the wall of the shaft shall not be used in lieu of ladders. In caissons having a working area more than 150 square feet, the man shafts shall be separated from the hoisting shaft by a barrier. Where the man shaft is separated from the hoisting shaft, the ladderways shall be provided with platform landings at intervals not exceeding 15 feet. In caissons having a working area less than 150 square feet, the ladder shall be recessed to prevent interference between the bucket and the ladder.

(5) **Hoisting.** No person shall ride on a loaded car, cage or bucket. Where the ladderway and hoistway are not separated by a barrier, no hoisting shall be done while any person is ascending or descending the ladder, nor shall any person enter the shaft while the hoisting conveyance is in motion. Standard warning signals shall be provided and shall be given and acknowledged to affect compliance with this provision.

(6) **Shoring.** Where the bottom of the excavation is below the cutting edge of the caisson and there is danger of a cave-in, the sides of the excavation shall be securely shored.

[Rules (Part XVIII), filed 12/28/62; § 17, filed 3/23/60.]

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WAC 296-36-210 Medical supervision and medical and first-aid facilities—Medical supervision. (1) **Appointed physician.** Where workmen are employed in compressed air, their employer shall make arrangements for their medical supervision by one or more licensed physicians trained in the physical requirements and the medical aspects of compressed air work and the treatment of decompression illness. The employer shall arrange for medical examination of all workmen employed in compressed air at a suitable place or places by the appointed physician in accordance with these regulations. The appointed physician or physicians shall be immediately available in case of emergency or accident. Each appointed physician shall be physically qualified to subject himself to a compressed air environment.

(2) **Appointed physician's duties and responsibilities.**

(a) General. All matters on the job pertaining to the health of employees, treatment on the job of illness and injuries, special first-aid and nursing personnel or assistants, lock attendants, and medical and first-aid equipment shall be under the supervision of the appointed physician.

(b) He shall make all required physical examinations.

(c) He shall make and sign all required reports of such examinations using the forms provided by the department of labor and industries.

(d) He shall make at least one inspection on the job every day of all treatment records and the required decompression record and he shall inspect or inquire into conditions which may constitute a potential hazard to the health of any employee.

(3) **Certified medical attendant.** There shall be on every job a certified medical attendant trained to the satisfaction of the appointed physician in administering first aid on compressed air jobs, and who shall be in attendance in the first-aid room while work in compressed air is going on and at such other times as the physician may direct. The medical attendant shall be in personal charge of the administration of first aid and such other duties as physician may direct. Under no circumstances shall female medical attendants be subjected to a compressed air environment.

(4) **First-aid personnel.**

(a) The superintendent and every foreman and at least one additional designated person on each shift below ground shall be trained to the satisfaction of the appointed physician in administering first aid.

(b) Where more than 10 but less than 50 men are employed per shift underground, there shall be at least 2 such additional designated trained persons on the job and available on call.

(c) Where more than 50 men are employed per shift underground, the designated trained personnel shall include all shift bosses and time keepers in addition to those required in subsection (b) above.

(d) All designated first-aid personnel must have in their possession current first-aid certificates that meet certificate requirements stated in chapter 296-24 WAC, Part A-1.

(5) **First-aid meetings.** All designated first-aid personnel shall meet at least once in each 3 months or oftener if directed by the physician for further first-aid instruction by the physician.

(6) **First-aid room and equipment.** The employer must provide a first-aid room properly heated and maintained

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within 100 yards of the principal entrance to the underground work. It must be equipped with a first-aid kit, medical supplies and equipment consisting of not less than the minimum requirements listed in chapter 296-24 WAC, Part A-1.

(7) **First-aid equipment underground.** All the equipment and supplies which the appointed physician may deem necessary for first-aid underground shall be provided and maintained readily available in a suitable cabinet or cabinets. A list of the contents signed by the appointed physician shall be permanently attached to the inside of the cabinet door or cover. The cabinet shall be plainly marked with a red cross and the words "first aid."

In caissons, one such cabinet shall be conveniently located in the working chamber.

In tunnels where a bulkhead is installed, one such cabinet shall be located on each side of the bulkhead near the entrance to the man lock.

In tunnels having no bulkhead, one such cabinet shall be located within 100 yards of the working face.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 00-01-038, § 296-36-210, filed 12/7/99, effective 2/1/00. Statutory Authority: Chapter 49.17 RCW. 90-17-051 (Order 90-10), § 296-36-210, filed 8/13/90, effective 9/24/90; Rules (Part XIX A), filed 12/28/62; § 23, filed 3/23/60.]

WAC 296-36-215 Medical supervision and medical and first-aid facilities—Medical locks. (1) **Requirement and location.** When the pressure in a working chamber exceeds 13 pounds per square inch gage, a suitably constructed medical lock shall be provided and maintained and used solely for the treatment and examination of workmen working in compressed air. It shall be situated adjacent to a medical emergency room but separated therefrom to provide privacy for patient and doctor during treatment or examination.

(2) **Design and equipment.**

(a) The medical lock shall have not less than 6 feet of clear head room and shall consist of not less than two compartments so that the lock can be entered while under pressure. It shall be adequately ventilated, air conditioned, heated and lighted and be constructed and finished as to be readily kept in a clean and sanitary condition.

(b) The medical lock shall be designed for an operating pressure of 75 pounds per square inch gage pressure.

(c) It shall be equipped with pressure gages readily observed from inside and outside of the medical lock indicating the pressure on the inside of the lock.

(d) The air line supplying the medical lock shall be equipped with valves so arranged that the pressure may be controlled from inside or outside the lock.

(e) Oxygen inhalation apparatus shall at all times be maintained ready for use in the lock, but the source of supply shall be located outside of the lock. Oxygen and oxy-helium mixtures shall not be used until proper diagnosis is made by the appointed physician and shall be used only under his direction and supervision. The air compressing plant used for supplying compressed air to the medical lock shall have sufficient capacity to raise the pressure in the medical lock from zero pounds to 75 pounds per square inch gage within 5 minutes and shall be equipped to prevent excessively high temperature within the lock. The temperature within the lock

shall not exceed 90 degrees F. at 75 pounds per square inch gage pressure.

(f) The medical lock shall be provided with suitable equipment including a couch not less than 6 feet in length, blankets, food lock, efficient means of verbal communication and of giving nonverbal signals between the inside and outside of the lock, and between the two compartments, and a window or windows through which workmen in either compartment can be observed from outside. Telephone communications shall be provided between the inside and outside of the medical lock. The telephone circuits shall, however, be so arranged that completion of calls originating inside the lock and destined for subscribers of the commercial communication system or calls the origin of which is from a subscriber of the commercial communication system and destined for the medical lock, must be completed by the lock attendant.

(g) All necessary apparatus, instruments, medical supplies and equipment as required by the appointed physician shall be kept in the lock at all times.

(3) **Use of medical lock.**

(a) The medical lock shall be kept ready for immediate use and, when any workman is actually employed in compressed air, shall be constantly in charge of a person trained in the use of a medical lock and suitably instructed as to the steps to be taken in the event of any workman suffering ill effects from compressed air.

(b) No workman shall enter or be treated in the medical lock in which pressure exists except at the direction of the appointed physician for the purpose of examination as to medical fitness or for the purpose of diagnosis of a suspected illness, or for treatment of the condition diagnosed by the appointed physician.

[Rules (Part XIX B), filed 12/28/62; § 23, filed 3/23/60.]

WAC 296-36-220 Medical supervision and medical and first-aid facilities—Decompression illness—Symptoms and treatment. Every compressed air worker, upon noticing any symptom of decompression illness and wherever he may be, on the job or off the job, shall proceed immediately to the first-aid room for examination and treatment. Treatment shall be rendered promptly as directed by the appointed physician. Recompression, if prescribed by the appointed physician, shall be as the appointed physician may direct. After such treatment, the worker shall return to work only as and when directed by the physician.

[Rules (Part XIX C), filed 12/28/62; § 23, filed 3/23/60.]

WAC 296-36-225 Medical supervision and medical and first-aid facilities—Decompression illness to be reported. Every case of decompression illness shall be reported by the physician to the _____. Distribution of the report shall be as directed by the _____. Responsibility for supervision of treatment and accuracy of the report shall rest with the physician.

[Rules (Part XIX D), filed 12/28/62; § 23, filed 3/23/60.]

WAC 296-36-250 Routine examination of employees—Preemployment examinations and reports. (1) Every person considered for work in compressed air on any job and before starting work shall be given a thorough medical and

physical examination by the appointed physician who shall order special tests when deemed necessary. The physician's findings shall be entered on a form entitled "preemployment history" and a form entitled "physical examination" furnished by the department of labor and industries. A copy of his recommendation as to employability shall be submitted to the superintendent and shall be kept on the job. The physical examination shall include adequate X-rays to determine possible preexisting lung or bone disease, a test of the ability of the ear to adjust to pressure changes, an orthopedic examination, a clear tone audiogram, an inspection for gross obesity, a simple test for pulmonary and cardiac function, and an inquiry concerning metallic objects in the body.

(2) No workman shall be employed in compressed air unless he has been examined by the appointed physician and is certified by the physician, by a health certificate or a workman's compressed air health register, to be fit for such employment, and further that the date of such certificate is not more than 3 days earlier.

(3) Where work in compressed air is urgently required to be done, before it is reasonably practical, because of the inaccessibility of the appointed physician, to arrange for any examination to obtain any certificate required, an examination may be made by any duly qualified physician who may issue a temporary certificate of fitness. A reexamination of such a workman by the appointed physician shall be made as soon as practicable.

[Rules (Part XX A), filed 12/28/62; § 23, filed 3/23/60.]

WAC 296-36-255 Routine examination of employees—Beginners. Every person who has not previously worked in compressed air shall be tested in the medical lock as part of the preemployment examination before commencing such work. If he passes the test he shall not work more than 4 hours on his first day of work or not more than one-half the regular total work period whichever is the lesser in time, after which he shall be reexamined by the physician for physical fitness. The physician's recommendation shall be in writing and signed by him. A copy shall be submitted to the employer and shall be kept on the job.

[Rules (Part XX B), filed 12/28/62; § 23, filed 3/23/60.]

WAC 296-36-260 Routine examination of employees—Periodic examination. Every compressed air worker shall be examined at regular intervals to determine his fitness to continue work in compressed air. The interval between regular examinations shall not exceed 2 months when work pressures are 13 pounds or less. For pressures exceeding 13 pounds, the regular periodic examination shall be made at intervals not exceeding one month.

[Rules (Part XX C), filed 12/28/62; § 23, filed 3/23/60.]

WAC 296-36-265 Routine examination of employees—Resumption of work. (1) Every compressed air worker who has been absent from the job 10 days or more shall be examined by the physician before resuming work. The physician's findings shall be submitted in writing to the person in charge and shall be kept on the job.

(2) Any workman who is suffering from a cold in the head, a sore throat, ear ache, or any other ailment which is

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likely to render him unfit for employment in compressed air shall report the matter to his employer or to the person placed in charge of the operation or to the appointed physician, and he shall not be employed in compressed air until he has since, so reporting, been examined by the appointed physician and certified by him to be fit for such employment.

(3) The appointed physician may, on examining or reexamining a person who has been or who is proposed to be employed in compressed air, vary, qualify, or revoke, by written entry in the workman's certificate, any statement relative to his fitness for employment in compressed air. By the same process, the physician may limit the pressure to which the workman is to be subjected or restrict the hours of employment or exposure in compressed air.

[Rules (Part XX D), filed 12/28/62; § 23, filed 3/23/60.]

WAC 296-36-270 Routine examination of employees—Physical fitness requirements. (1) Only persons who are able to readily equalize the pressure in their ears shall be accepted for work in compressed air.

(2) Persons having chronic alcoholism shall not be permitted to work in compressed air.

(3) Persons having chronic systemic disease or any impairing physical deformity or abnormality including excessive obesity shall not be engaged for work in compressed air.

(4) Persons having any disease of the ear or any systemic disease including skeletal, cardio-vascular, respiratory, genital urinary, or gastrointestinal, which may be aggravated by work in compressed air or which may prevent safe performance of such work, shall not be permitted to work in compressed air.

(5) A person engaged for work in compressed air shall demonstrate his ability to read, speak and comprehend the English language.

[Rules (Part XX E), filed 12/28/62.]

WAC 296-36-990 Severability. If any provision of this safety standard or the application thereof to any person or circumstance is held invalid, such invalidity shall not affect other provisions or applications of this safety standard which can be given effect without the invalid provisions or applications and to this end the provision of this safety standard are declared to be severable.

[Rules (Part XXI), filed 12/28/62.]

Chapter 296-37 WAC STANDARDS FOR COMMERCIAL DIVING OPERATIONS

WAC

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296-37-010	Scope and application. [Section I, effective 2/1/64.] Repealed by 78-10-094 (Order 78-18), filed 10/2/78. Statutory Authority: RCW 49.17.040, 49.17.050, 49.17.240, and chapters 42.30 and 43.22 RCW.	296-37-340	Equipment requirements—Inspection. [Rule 106, filed 3/23/60.] Repealed by 78-10-094 (Order 78-18), filed 10/2/78. Statutory Authority: RCW 49.17.040, 49.17.050, 49.17.240, and chapters 42.30 and 43.22 RCW.
296-37-020	Purpose. [Section II, effective 2/1/64.] Repealed by 78-10-094 (Order 78-18), filed 10/2/78. Statutory Authority: RCW 49.17.040, 49.17.050, 49.17.240, and chapters 42.30 and 43.22 RCW.	296-37-350	Safety rules—Generally. [Rule 107, filed 3/23/60.] Repealed by 78-10-094 (Order 78-18), filed 10/2/78. Statutory Authority: RCW 49.17.040, 49.17.050, 49.17.240, and chapters 42.30 and 43.22 RCW.
296-37-030	Definitions. [Section III, effective 2/1/64.] Repealed by 78-10-094 (Order 78-18), filed 10/2/78. Statutory Authority: RCW 49.17.040, 49.17.050, 49.17.240, and chapters 42.30 and 43.22 RCW.	296-37-360	Safety rules—Suggestions made by diver considered rule to govern. [Rule 108, filed 3/23/60.] Repealed by 78-10-094 (Order 78-18), filed 10/2/78. Statutory Authority: RCW 49.17.040, 49.17.050, 49.17.240, and chapters 42.30 and 43.22 RCW.
296-37-040	Appointment and duties of committees. [Section IV, effective 2/1/64.] Repealed by 78-10-094 (Order 78-18), filed 10/2/78. Statutory Authority: RCW 49.17.040, 49.17.050, 49.17.240, and chapters 42.30 and 43.22 RCW.	296-37-370	Conditions on barge deck. [Rule 109, filed 3/23/60.] Repealed by 78-10-094 (Order 78-18), filed 10/2/78. Statutory Authority: RCW 49.17.040, 49.17.050, 49.17.240, and chapters 42.30 and 43.22 RCW.
296-37-050	Classification of apparatus permitted and air purity. [Section V, effective 2/1/64.] Repealed by 78-10-094 (Order 78-18), filed 10/2/78. Statutory Authority: RCW 49.17.040, 49.17.050, 49.17.240, and chapters 42.30 and 43.22 RCW.	296-37-380	Use of two-way telephones. [Rule 110, filed 3/23/60.] Repealed by 78-10-094 (Order 78-18), filed 10/2/78. Statutory Authority: RCW 49.17.040, 49.17.050, 49.17.240, and chapters 42.30 and 43.22 RCW.
296-37-060	Approval of equipment. [Section VI, effective 2/1/64.] Repealed by 78-10-094 (Order 78-18), filed 10/2/78. Statutory Authority: RCW 49.17.040, 49.17.050, 49.17.240, and chapters 42.30 and 43.22 RCW.	296-37-390	Decompression chamber—When used. [Rule 111, filed 3/23/60.] Repealed by 78-10-094 (Order 78-18), filed 10/2/78. Statutory Authority: RCW 49.17.040, 49.17.050, 49.17.240, and chapters 42.30 and 43.22 RCW.
296-37-070	Diver registration—Diver training or experience—Physical exam and medical history record. [Section VII, effective 2/1/64.] Repealed by 78-10-094 (Order 78-18), filed 10/2/78. Statutory Authority: RCW 49.17.040, 49.17.050, 49.17.240, and chapters 42.30 and 43.22 RCW.	296-37-395	Special stipulation regarding inexperienced divers and workmen. [Rule 112, filed 3/23/60.] Repealed by 78-10-094 (Order 78-18), filed 10/2/78. Statutory Authority: RCW 49.17.040, 49.17.050, 49.17.240, and chapters 42.30 and 43.22 RCW.
296-37-071	Form # 1. [Form # 1, effective 2/1/64.] Repealed by 78-10-094 (Order 78-18), filed 10/2/78. Statutory Authority: RCW 49.17.040, 49.17.050, 49.17.240, and chapters 42.30 and 43.22 RCW.	296-37-400	Special stipulation regarding inexperienced divers and workmen—Diver may choose tender. [Rule 113, filed 3/23/60.] Repealed by 78-10-094 (Order 78-18), filed 10/2/78. Statutory Authority: RCW 49.17.040, 49.17.050, 49.17.240, and chapters 42.30 and 43.22 RCW.
296-37-072	Form # 2. [Form # 2, effective 2/1/64.] Repealed by 78-10-094 (Order 78-18), filed 10/2/78. Statutory Authority: RCW 49.17.040, 49.17.050, 49.17.240, and chapters 42.30 and 43.22 RCW.	296-37-410	Judgment of diver to take precedent. [Rule 114, filed 3/23/60.] Repealed by 78-10-094 (Order 78-18), filed 10/2/78. Statutory Authority: RCW 49.17.040, 49.17.050, 49.17.240, and chapters 42.30 and 43.22 RCW.
296-37-080	General requirements, procedures and techniques. [Section VIII, effective 2/1/64.] Repealed by 78-10-094 (Order 78-18), filed 10/2/78. Statutory Authority: RCW 49.17.040, 49.17.050, 49.17.240, and chapters 42.30 and 43.22 RCW.	296-37-420	Requirement on all ship surveys. [Rule 115, filed 3/23/60.] Repealed by 78-10-094 (Order 78-18), filed 10/2/78. Statutory Authority: RCW 49.17.040, 49.17.050, 49.17.240, and chapters 42.30 and 43.22 RCW.
296-37-081	Form # 3. [Form # 3, effective 2/1/64.] Repealed by 78-10-094 (Order 78-18), filed 10/2/78. Statutory Authority: RCW 49.17.040, 49.17.050, 49.17.240, and chapters 42.30 and 43.22 RCW.	296-37-430	Use of flood lights. [Rule 116, filed 3/23/60.] Repealed by 78-10-094 (Order 78-18), filed 10/2/78. Statutory Authority: RCW 49.17.040, 49.17.050, 49.17.240, and chapters 42.30 and 43.22 RCW.
296-37-082	Illustrations of flags and shapes. [Illustrations, effective 2/1/64.] Repealed by 78-10-094 (Order 78-18), filed 10/2/78. Statutory Authority: RCW 49.17.040, 49.17.050, 49.17.240, and chapters 42.30 and 43.22 RCW.	296-37-440	Rules for compressed air operations applicable to diving operations. [Rule 117, filed 3/23/60.] Repealed by 78-10-094 (Order 78-18), filed 10/2/78. Statutory Authority: RCW 49.17.040, 49.17.050, 49.17.240, and chapters 42.30 and 43.22 RCW.
296-37-090	Recompression chamber—Tables—Attendant. [Section IX, effective 2/1/64.] Repealed by 78-10-094 (Order 78-18), filed 10/2/78. Statutory Authority: RCW 49.17.040, 49.17.050, 49.17.240, and chapters 42.30 and 43.22 RCW.	296-37-450	Availability of life preservers. [Rule 118, filed 3/23/60.] Repealed by 78-10-094 (Order 78-18), filed 10/2/78. Statutory Authority: RCW 49.17.040, 49.17.050, 49.17.240, and chapters 42.30 and 43.22 RCW.
296-37-100	Identification. [Section X, effective 2/1/64.] Repealed by 78-10-094 (Order 78-18), filed 10/2/78. Statutory Authority: RCW 49.17.040, 49.17.050, 49.17.240, and chapters 42.30 and 43.22 RCW.	296-37-460	Care and replacement of equipment. [Rules 119 and 120, filed 3/23/60.] Repealed by 78-10-094 (Order 78-18), filed 10/2/78. Statutory Authority: RCW 49.17.040, 49.17.050, 49.17.240, and chapters 42.30 and 43.22 RCW.
296-37-110	Waiver or variance. [Section XI, effective 2/1/64.] Repealed by 78-10-094 (Order 78-18), filed 10/2/78. Statutory Authority: RCW 49.17.040, 49.17.050, 49.17.240, and chapters 42.30 and 43.22 RCW.		
296-37-300	Use of compressors in diving operations. [Rule 101, filed 3/23/60.] Repealed by 78-10-094 (Order 78-18),		

WAC 296-37-510 Scope and application. (1) The requirements included in this vertical chapter shall apply throughout the state wherever diving takes place within the jurisdiction of the department of labor and industries. These requirements shall also be applicable to those diving related and supportive work activities not at the diving site but which have a direct effect on the safety of the diving operations. Examples may include but are not limited to: The supply of breathing air or gas; the supply of materials, equipment or supplies required by this chapter; the maintenance of diving equipment.

(2) This standard applies to diving and related support operations conducted in connection with all types of work and employments, including general industry, construction, ship repairing, shipbuilding, shipbreaking and longshoring. However, this standard does not apply to any diving operation:

(a) Performed solely for instructional purposes, using open-circuit, compressed-air SCUBA and conducted within the no-decompression limits;

(b) Performed solely for search, rescue, or related public safety purposes by or under the control of a governmental agency; or

(c) Governed by 45 CFR Part 46 (Protection of Human Subjects, United States Department of Health and Human Services) or equivalent rules or regulations established by another federal agency, which regulate research, development, or related purposes involving human subjects.

(d) Defined as scientific diving and which is under the direction and control of a diving program containing at least the following elements:

(i) Diving safety manual which includes at a minimum: Procedures covering all diving operations specific to the program; procedures for emergency care, including recompression and evacuation; and criteria for diver training and certification.

(ii) Diving control (safety) board, with the majority of its members being active divers, which shall at a minimum have the authority to: Approve and monitor diving projects; review and revise the diving safety manual; assure compliance with the manual; certify the depths to which a diver has been trained; take disciplinary action for unsafe practices; and, assure adherence to the buddy system (a diver is accompanied by and is in continuous contact with another diver in the water) for SCUBA diving.

(3) This chapter shall augment the requirements of the general safety and health standard, chapter 296-24 WAC, the general occupational health standard, chapter 296-62 WAC, and safety and health core rules, chapter 296-800 WAC. In instances where this chapter is in direct conflict with the requirements of any general horizontal standard, the requirements of this chapter shall apply.

(4) Hoisting gear used in diving operations shall be inspected and certified as required by chapter 296-56 WAC, safety standards for longshore, stevedore and related waterfront operations.

(5) Application in emergencies. An employer may deviate from the requirements of this standard to the extent necessary to prevent or minimize a situation which is likely to cause death, serious physical harm, or major environmental damage, provided that the employer:

(a) Notifies the assistant director of the department of labor and industries in Olympia or the regional administrator for the region within 48 hours of the onset of the emergency situation indicating the nature of the emergency and extent of the deviation from the prescribed regulations; and

(b) Upon request from the authority notified, submits such information in writing.

(6) Employer obligation. The employer shall be responsible for compliance with:

(a) All provisions of this standard of general applicability; and

(b) All requirements pertaining to specific diving modes to the extent diving operations in such modes are conducted.

(7) Alternative requirements for recreational diving instructors and diving guides. Employers of recreational diving instructors and diving guides are not required to comply with the decompression-chamber requirements specified by WAC 296-37-545 (2)(b) and (3)(c)(iii), and WAC 296-37-560 (2)(a) when they meet all of the following conditions:

(a) The instructor or guide is engaging solely in recreational diving instruction or dive-guiding operations;

(b) The instructor or guide is diving within the no-decompression limits in these operations;

(c) The instructor or guide is using a nitrox breathing-gas mixture consisting of a high percentage of oxygen (more than 22% by volume) mixed with nitrogen;

(d) The instructor or guide is using an open-circuit, semi-closed-circuit, or closed-circuit self-contained underwater breathing apparatus (SCUBA); and

(e) The employer of the instructor or guide is complying with all requirements of Appendix C of this subpart.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. 04-18-078, § 296-37-510, filed 8/31/04, effective 11/1/04. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 01-11-038, § 296-37-510, filed 5/9/01, effective 9/1/01. Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-37-510, filed 7/20/94, effective 9/20/94. Statutory Authority: Chapter 49.17 RCW and RCW 49.17.040, [49.17].050 and [49.17].060. 92-22-067 (Order 92-06), § 296-37-510, filed 10/30/92, effective 12/8/92. Statutory Authority: RCW 49.17.040 and 49.17.050. 87-02-002 (Order 86-44), § 296-37-510, filed 12/26/86; 81-07-048 (Order 81-4), § 296-37-510, filed 3/17/81. Statutory Authority: RCW 49.17.040, 49.17.050, 49.17.240, and chapters 42.30 and 43.22 RCW. 78-10-094 (Order 78-18), § 296-37-510, filed 10/2/78.]

WAC 296-37-512 Variance and procedure. Realizing that conditions may exist in operations under which certain state standards will not have practical application, the director of the department of labor and industries or his/her authorized representative may, pursuant to this section, RCW 49.17.080 and/or 49.17.090 and appropriate administrative rules of this state and the department of labor and industries and upon receipt of application and after adequate investigation by the department, permit a variation from these requirements when other means of providing an equivalent measure of protection are afforded. Such variation granted shall be limited to the particular case or cases covered in the application for variance and may be revoked for cause. The permit for variance shall be conspicuously posted on the premises and shall remain posted during the time it is in effect. All requests for variances from safety and health standards included in this or any other chapter of Title 296 WAC, shall be made in writing to the director of the department of labor and industries at Olympia, Washington, or his/her duly

authorized representative, or the assistant director, Department of Labor and Industries, P.O. Box 44600, Olympia, Washington 98504-4600. Variance application forms may be obtained from the department upon request.

[Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-37-512, filed 7/20/94, effective 9/20/94. Statutory Authority: RCW 49.17.040, 49.17.050, 49.17.240, and chapters 42.30 and 43.22 RCW. 78-10-094 (Order 78-18), § 296-37-512, filed 10/2/78.]

WAC 296-37-515 Definitions. As used in this standard, the listed terms are defined as follows:

- (1) "Acfm": Actual cubic feet per minute.
- (2) "ASME Code or equivalent": ASME (American Society of Mechanical Engineers) Boiler and Pressure Vessel Code, Section VIII, or an equivalent code which the employer can demonstrate to be equally effective.
- (3) "ATA": Atmosphere absolute.
- (4) "Bell": An enclosed compartment, pressurized (closed bell) or unpressurized (open bell), which allows the diver to be transported to and from the underwater work area and which may be used as a temporary refuge during diving operations.
- (5) "Bottom time": The total elapsed time measured in minutes from the time when the diver leaves the surface in descent to the time that the diver begins ascent.
- (6) "Bursting pressure": The pressure at which a pressure containment device would fail structurally.
- (7) "Cylinder": A pressure vessel for the storage of gases.
- (8) "Recompression/decompression chamber": A pressure vessel for human occupancy such as a surface decompression chamber, closed bell, or deep diving system used to decompress divers and to treat decompression sickness.
- (9) "Decompression sickness": A condition with a variety of symptoms which may result from gas or bubbles in the tissues of divers after pressure reduction.
- (10) "Recompression/decompression table": A profile or set of profiles of depth-time relationships for ascent rates and breathing mixtures to be followed after a specific depth-time exposure or exposures.
- (11) "Dive-guiding operations": The leading of groups of trained sports divers, who use open-circuit, semiclosed-circuit, or closed-circuit SCUBA, to local undersea diving locations for recreational purposes.
- (12) "Dive location": A surface or vessel from which a diving operation is conducted.
- (13) "Dive-location reserve breathing gas": A supply system of air or mixed-gas (as appropriate) at the dive location which is independent of the primary supply system and sufficient to support divers during the planned decompression.
- (14) "Dive team": Divers and support employees involved in a diving operation, including the designated person-in-charge.
- (15) "Diver": An employee working in water using underwater apparatus which supplies compressed breathing gas at the ambient pressure.
- (16) "Diver-carried reserve breathing gas": A diver-carried supply of air or mixed gas (as appropriate) sufficient under standard operating conditions to allow the diver to

reach the surface, or another source of breathing gas, or to be reached by a standby diver.

(17) "Diving mode": A type of diving requiring specific equipment, procedures and techniques (SCUBA, surface-supplied air, or mixed gas).

(18) "Fsw": Feet of seawater (or equivalent static pressure head).

(19) "Heavy gear": Diver-worn deep-sea dress including helmet, breastplate, dry suit, weighted shoes.

(20) "Hyperbaric conditions": Pressure conditions in excess of surface pressure.

(21) "Inwater stage": A suspended underwater platform which supports a diver in the water.

(22) "Liveboating": The practice of supporting a surfaced-supplied air or mixed gas diver from a vessel which is underway.

(23) "Mixed-gas diving": A diving mode in which the diver is supplied in the water with a breathing gas other than air.

(24) "No-decompression limits": The depth-time limits of the "no-decompression limits and repetitive dive group designation table for no-decompression air dives," U.S. Navy Diving Manual or equivalent limits which the employer can demonstrate to be equally effective.

(25) "Psi(g)": Pounds per square inch (gauge).

(26) "Recreational diving instruction": The training of diving students in the use of recreational diving procedures and the safe operation of diving equipment, including open-circuit, semiclosed-circuit, or closed-circuit SCUBA during dives.

(27) "Scientific diving" means diving performed solely as a necessary part of a scientific, research, or educational activity by employees whose sole purpose for diving is to perform scientific research tasks. Scientific diving does not include performing any tasks usually associated with commercial diving such as: Placing or removing heavy objects underwater; inspection of pipelines and similar objects; construction; demolition; cutting or welding; or the use of explosives.

(28) "SCUBA diving": A diving mode independent of surface supply in which the diver uses open circuit self-contained underwater breathing apparatus.

(29) "Standby diver": A diver at the dive location properly equipped and available to assist a diver in the water.

(30) "Surface-supplied air diving": A diving mode in which the diver in the water is supplied from the dive location with compressed air for breathing.

(31) "Treatment table": A depth-time and breathing gas profile designed to treat decompression sickness.

(32) "Umbilical": The composite hose bundle between a dive location and a diver or bell, or between a diver and a bell, which supplies the diver or bell with breathing gas, communications, power, or heat as appropriate to the diving mode or conditions, and includes a safety line between the diver and the dive location.

(33) "Volume tank": A pressure vessel connected to the outlet of a compressor and used as an air reservoir.

(34) "Working pressure": The maximum pressure to which a pressure containment device may be exposed under standard operating conditions.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. 04-18-078, § 296-37-515, filed 8/31/04, effective 11/1/04. Statutory Authority: Chapter 49.17 RCW and RCW 49.17.040, [49.17].050 and [49.17].060. 92-22-067 (Order 92-06), § 296-37-515, filed 10/30/92, effective 12/8/92. Statutory Authority: RCW 49.17.040 and 49.17.050. 87-02-002 (Order 86-44), § 296-37-515, filed 12/26/86. Statutory Authority: RCW 49.17.040, 49.17.050, 49.17.240, and chapters 42.30 and 43.22 RCW. 78-10-094 (Order 78-18), § 296-37-515, filed 10/2/78.]

WAC 296-37-520 Qualifications of dive team. (1)

General.

(a) Each dive team member shall have the experience or training necessary to perform assigned tasks in a safe and healthful manner.

(b) Each dive team member shall have experience or training in the following:

(i) The use of tools, equipment and systems relevant to assigned tasks;

(ii) Techniques of the assigned diving mode; and

(iii) Diving operations and emergency procedures.

(c) All dive team members shall be trained in cardiopulmonary resuscitation and first aid (American Red Cross standard course or equivalent).

(d) Dive team members who are exposed to or control the exposure of others to hyperbaric conditions shall be trained in diving-related physics and physiology.

(2) Assignments.

(a) Each dive team member shall be assigned tasks in accordance with the employee's experience or training, except that limited additional tasks may be assigned to an employee undergoing training provided that these tasks are performed under the direct supervision of an experienced dive team member.

(b) The employer shall not require a dive team member to be exposed to hyperbaric conditions against the employee's will, except when necessary to complete decompression or treatment procedures.

(c) The employer shall not permit a dive team member to dive or be otherwise exposed to hyperbaric conditions for the duration of any temporary physical impairment or condition which is known to the employer and is likely to affect adversely the safety or health of a dive team member.

(3) Designated person-in-charge.

(a) The employer or an employee designated by the employer shall be at the dive location in charge of all aspects of the diving operation affecting the safety and health of dive team members.

(b) The designated person-in-charge shall have experience and training in the conduct of the assigned diving operation.

[Statutory Authority: RCW 49.17.040, 49.17.050, 49.17.240, and chapters 42.30 and 43.22 RCW. 78-10-094 (Order 78-18), § 296-37-520, filed 10/2/78.]

WAC 296-37-525 Medical requirements. (1) General.

(a) The employer shall determine that dive team members who are, or are likely to be, exposed to hyperbaric conditions are medically fit to perform assigned tasks in a safe and healthful manner.

(b) The employer shall provide each dive team member who is, or is likely to be, exposed to hyperbaric conditions with all medical examinations required by this standard.

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(c) All medical examinations required by this standard shall be performed by, or under the direction of, a physician at no cost to the employee.

(2) Frequency of medical examinations. Medical examinations shall be provided:

(a) Prior to initial hyperbaric exposure with the employer, unless an equivalent medical examination has been given within the preceding 12 months and the employer has obtained the results of the examination and an opinion from the examining physician of the employee's medical fitness to dive or to be otherwise exposed to hyperbaric conditions;

(b) At one year intervals from the date of initial examination or last equivalent examination; and

(c) After an injury or illness requiring hospitalization of more than twenty-four hours.

(3) Information provided to examining physician. The employer shall provide the following information to the examining physician:

(a) A copy of the medical requirements of this standard; and

(b) A summary of the nature and extent of hyperbaric conditions to which the dive team member will be exposed, including diving modes and types of work to be assigned.

(4) Content of medical examinations.

(a) Medical examinations conducted initially and annually shall consist of the following:

(i) Medical history;

(ii) Diving-related work history;

(iii) Basic physical examination;

(iv) The tests required by Table I; and

(v) Any additional tests the physician considers necessary.

(b) Medical examinations conducted after an injury or illness requiring hospitalization of more than 24 hours shall be appropriate to the nature and extent of the injury or illness as determined by the examining physician.

TABLE I
TESTS FOR DIVING MEDICAL EXAMINATION

Test	Initial Examination	Annual Reexamination
Chest X ray	x	
Visual acuity	x	x
Color blindness	x	
EKG: Standard 12L ¹		
Hearing test	x	x
Hematocrit or	x	x
hemoglobin.		
Sickle cell index	x	
White blood count . . .	x	x
Urinalysis	x	x

¹To be given to the employee once, at age 35 or over.

(5) Physician's written report.

(a) After any medical examination required by this standard, the employer shall obtain a written report prepared by the examining physician containing:

(i) The results of the medical examination; and

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(ii) The examining physician's opinion of the employee's fitness to be exposed to hyperbaric conditions, including any recommended restrictions or limitations to such exposure (see WAC 296-37-585).

(b) The employer shall provide the employee with a copy of the physician's written report.

(6) Determination of employee fitness.

(a) The employer shall determine the extent and nature of the dive team member's fitness to engage in diving or be otherwise exposed to hyperbaric conditions consistent with the recommendations in the examining physician's report.

(b) If the examining physician has recommended a restriction or limitation on the dive team member's exposure to hyperbaric conditions, and the affected employee does not concur, a second physician selected by the employee shall render a medical opinion on the nature and extent of the restriction or limitation, if any.

(c) If the recommendation of the second opinion differs from that of the examining (first) physician, and if the employer and employee are unable to agree on the nature and extent of the restriction or limitation, an opinion from a third physician selected by the first two physicians shall be obtained. The employer's determination of the dive team member's fitness shall be consistent with the medical opinion of the third physician, unless the employer and employee reach an agreement which is otherwise consistent with the recommendation or opinion of at least two of the physicians involved.

(d) Nothing in this procedure shall be construed to prohibit either a dive team member from accepting, or an employer from offering, an assignment which is otherwise consistent with at least one medical opinion while a final determination on the employee's fitness is pending.

[Statutory Authority: RCW 49.17.040, 49.17.050, 49.17.240, and chapters 42.30 and 43.22 RCW. 78-10-094 (Order 78-18), § 296-37-525, filed 10/2/78.]

WAC 296-37-530 Safe practices manual. (1) General. The employer shall develop and maintain a safe practices manual which shall be made available at the dive location to each dive team member.

(2) Contents.

(a) The safe practices manual shall contain a copy of this standard and the employer's policies for implementing the requirements of this standard.

(b) For each diving mode engaged in, the safe practices manual shall include:

(i) Safety procedures and checklists for diving operations;

(ii) Assignments and responsibilities of the dive team members;

(iii) Equipment procedures and checklists; and

(iv) Emergency procedures for fire, equipment failure, adverse environmental conditions, and medical illness and injury.

[Statutory Authority: RCW 49.17.040, 49.17.050, 49.17.240, and chapters 42.30 and 43.22 RCW. 78-10-094 (Order 78-18), § 296-37-530, filed 10/2/78.]

WAC 296-37-535 Pre-dive procedures. (1) General. The employer shall comply with the following requirements prior to each diving operation, unless otherwise specified.

(2) Emergency aid. A list shall be kept at the dive location of the telephone or call numbers of the following:

(a) An operational decompression chamber (if not at the dive location);

(b) Accessible hospitals;

(c) Available physicians;

(d) Available means of transportation; and

(e) The nearest U.S. Coast Guard Rescue Coordination Center.

(3) First-aid supplies.

(a) A first-aid kit appropriate for the diving operation and approved by a physician shall be available at the dive location.

(b) When used in a decompression chamber or bell, the first-aid kit shall be suitable for use under hyperbaric conditions.

(c) In addition to any other first-aid supplies, an American Red Cross standard first-aid handbook or equivalent, and a bag-type manual resuscitator with transparent mask and tubing shall be available at the dive location.

(4) Planning and assessment. Planning of a diving operation shall include an assessment of the safety and health aspects of the following:

(a) Diving mode;

(b) Surface and underwater conditions and hazards;

(c) Breathing gas supply (including reserves);

(d) Thermal protection;

(e) Diving equipment and systems;

(f) Dive team assignments and physical fitness of dive team members (including any impairment known to the employer);

(g) Repetitive dive designation or residual inert gas status of dive team members;

(h) Decompression and treatment procedures (including altitude corrections); and

(i) Emergency procedures.

(5) Hazardous activities. To minimize hazards to the dive team, diving operations shall be coordinated with other activities in the vicinity which are likely to interfere with the diving operation.

(6) Employee briefing.

(a) Dive team members shall be briefed on:

(i) The tasks to be undertaken;

(ii) Safety procedures for the diving mode;

(iii) Any unusual hazards or environmental conditions likely to affect the safety of the diving operation; and

(iv) Any modifications to operating procedures necessitated by the specific diving operation.

(b) Prior to making individual dive team member assignments, the employer shall inquire into the dive team member's current state of physical fitness, and indicate to the dive team member the procedure for reporting physical problems or adverse physiological effects during and after the dive.

(7) Equipment inspection. The breathing gas supply system including reserve breathing gas supplies, masks, helmets, thermal protection, and bell handling mechanism (when appropriate) shall be inspected prior to each dive.

(8) Warning signal. When diving from surfaces other than vessels in areas capable of supporting marine traffic, a rigid replica of the international code flag "A" at least one meter in height shall be displayed at the dive location in a manner which allows all-round visibility, and shall be illuminated during night diving operations.

[Statutory Authority: RCW 49.17.040, 49.17.050, 49.17.240, and chapters 42.30 and 43.22 RCW. 78-10-094 (Order 78-18), § 296-37-535, filed 10/2/78.]

WAC 296-37-540 Procedures during dive. (1) General. The employer shall comply with the following requirements which are applicable to each diving operation unless otherwise specified.

(2) Water entry and exit.

(a) A means capable of supporting the diver shall be provided for entering and exiting the water.

(b) The means provided for exiting the water shall extend below the water surface.

(c) A means shall be provided to assist an injured diver from the water or into a bell.

(3) Communications.

(a) An operational two-way voice communication system shall be used between:

(i) Each surface-supplied air or mixed-gas diver and a dive team member at the dive location or bell (when provided or required); and

(ii) The bell and the dive location.

(b) An operational, two-way communication system shall be available at the dive location to obtain emergency assistance.

(4) Decompression tables. Decompression, repetitive, and no-decompression tables (as appropriate) shall be at the dive location.

(5) Dive profiles. A depth-time profile, including when appropriate any breathing gas changes, shall be maintained for each diver during the dive including decompression.

(6) Hand-held power tools and equipment.

(a) Hand-held electrical tools and equipment shall be deenergized before being placed into or retrieved from the water.

(b) Hand-held power tools shall not be supplied with power from the dive location until requested by the diver.

(7) Welding and burning.

(a) A current supply switch to interrupt the current flow to the welding or burning electrode shall be:

(i) Tended by a dive team member in voice communication with the diver performing the welding or burning; and

(ii) Kept in the open position except when the diver is welding or burning.

(b) The welding machine frame shall be grounded.

(c) Welding and burning cables, electrode holders, and connections shall be capable of carrying the maximum current required by the work, and shall be properly insulated.

(d) Insulated gloves shall be provided to divers performing welding and burning operations.

(e) Prior to welding or burning on closed compartments, structures or pipes, which contain a flammable vapor or in which a flammable vapor may be generated by the work, they shall be vented, flooded, or purged with a mixture of gases which will not support combustion.

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(8) Explosives.

(a) Employers shall transport, store, and use explosives in accordance with this section and applicable provisions of chapter 296-52 WAC.

(b) Electrical continuity of explosive circuits shall not be tested until the diver is out of the water.

(c) Explosives shall not be detonated while the diver is in the water.

(9) Termination of dive. The working interval of a dive shall be terminated when:

(a) A diver requests termination;

(b) A diver fails to respond correctly to communications or signals from a dive team member;

(c) Communications are lost and can not be quickly reestablished between the diver and a dive team member at the dive location, and between the designated person-in-charge and the person controlling the vessel in liveboating operations; or

(d) A diver begins to use diver-carried reserve breathing gas or the dive-location reserve breathing gas.

[Statutory Authority: RCW 49.17.040, 49.17.050, 49.17.240, and chapters 42.30 and 43.22 RCW. 78-10-094 (Order 78-18), § 296-37-540, filed 10/2/78.]

WAC 296-37-545 Postdive procedures. (1) General. The employer shall comply with the following requirements which are applicable after each diving operation, unless otherwise specified.

(2) Precautions.

(a) After the completion of any dive, the employer shall:

(i) Check the physical condition of the diver;

(ii) Instruct the diver to report any physical problems or adverse physiological effects including symptoms of decompression sickness;

(iii) Advise the diver of the location of a decompression chamber which is ready for use; and

(iv) Alert the diver to the potential hazards of flying after diving.

(b) For any dive outside the no-decompression limits, deeper than 100 fsw or using mixed gas as a breathing mixture, the employer shall instruct the diver to remain awake and in the vicinity of the decompression chamber which is at the dive location for at least one hour after the dive (including decompression or treatment as appropriate).

(3) Recompression capability.

(a) A decompression chamber capable of recompressing the diver at the surface to a minimum of 165 fsw (6 ATA) shall be available at the dive location for:

(i) Surface-supplied air diving to depths deeper than 100 fsw and shallower than 220 fsw;

(ii) Mixed gas diving shallower than 300 fsw; or

(iii) Diving outside the no-decompression limits shallower than 300 fsw.

(b) A decompression chamber capable of recompressing the diver at the surface to the maximum depth of the dive shall be available at the dive location for dives deeper than 300 fsw.

(c) The decompression chamber shall be:

(i) Dual-lock;

(ii) Multiplace; and

(iii) Located within five minutes of the dive location.

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- (d) The decompression chamber shall be equipped with:
 - (i) A pressure gauge for each pressurized compartment designed for human occupancy;
 - (ii) A built-in-breathing-system with a minimum of one mask per occupant;
 - (iii) A two-way voice communication system between occupants and a dive team member at the dive location;
 - (iv) A viewport; and
 - (v) Illumination capability to light the interior.
- (e) Treatment tables, treatment gas appropriate to the diving mode, and sufficient gas to conduct treatment shall be available at the dive location.

(f) A dive team member shall be available at the dive location during and for at least one hour after the dive to operate the decompression chamber (when required or provided).

(4) Record of dive.

(a) The following information shall be recorded and maintained for each diving operation:

- (i) Names of dive team members including designated person-in-charge;
- (ii) Date, time, and location;
- (iii) Diving modes used;
- (iv) General nature of work performed;
- (v) Approximate underwater and surface conditions (visibility, water temperature and current); and
- (vi) Maximum depth and bottom time for each diver.

(b) For each dive outside the no-decompression limits, deeper than 100 fsw or using mixed gas, the following additional information shall be recorded and maintained:

- (i) Depth-time and breathing gas profiles;
- (ii) Decompression table designation (including modification); and
- (iii) Elapsed time since last pressure exposure if less than 24 hours or repetitive dive designation for each diver.

(c) For each dive in which decompression sickness is suspected or symptoms are evident, the following additional information shall be recorded and maintained:

- (i) Description of decompression sickness symptoms (including depth and time of onset); and
- (ii) Description and results of treatment.

(5) Decompression procedure assessment. The employer shall:

(a) Investigate and evaluate each incident of decompression sickness based on the recorded information, consideration of the past performance of decompression table used, and individual susceptibility;

(b) Take appropriate corrective action to reduce the probability of recurrence of decompression sickness; and

(c) Prepare a written evaluation of the decompression procedure assessment, including any corrective action taken, within 45 days of the incident of decompression sickness.

[Statutory Authority: RCW 49.17.040, 49.17.050, 49.17.240, and chapters 42.30 and 43.22 RCW. 78-10-094 (Order 78-18), § 296-37-545, filed 10/2/78.]

WAC 296-37-550 Scuba diving. (1) General. Employers engaged in scuba diving shall comply with the following requirements, unless otherwise specified.

(2) Limits. SCUBA diving shall not be conducted:

- (a) At depths deeper than 130 fsw;

(b) At depths deeper than 100 fsw or outside the no-decompression limits unless a decompression chamber is ready for use;

(c) Against currents exceeding one knot unless line-tended; or

(d) In enclosed or physically confining spaces unless line-tended.

(3) Procedures.

(a) A standby diver shall be available while a diver is in the water.

(b) A diver shall be line-tended from the surface, or accompanied by another diver in the water in continuous visual contact during the diving operations.

(c) A diver shall be stationed at the underwater point of entry when diving is conducted in enclosed or physically confining spaces and shall have positive means of communication with the diver or divers within the space.

(d) A diver-carried reserve breathing gas supply shall be provided for each diver consisting of:

- (i) A manual reserve (J valve); or
- (ii) An independent reserve cylinder with a separate regulator or connected to the underwater breathing apparatus.

(e) The valve of the reserve breathing gas supply shall be in the closed position prior to the dive.

[Statutory Authority: Chapter 49.17 RCW and RCW 49.17.040, [49.17].050 and [49.17].060. 92-22-067 (Order 92-06), § 296-37-550, filed 10/30/92, effective 12/8/92. Statutory Authority: RCW 49.17.040 and 49.17.050. 81-07-048 (Order 81-4), § 296-37-550, filed 3/17/81. Statutory Authority: RCW 49.17.040, 49.17.050, 49.17.240, and chapters 42.30 and 43.22 RCW. 78-10-094 (Order 78-18), § 296-37-550, filed 10/2/78.]

WAC 296-37-555 Surface-supplied air diving. (1)

General. Employers engaged in surface-supplied air diving shall comply with the following requirements, unless otherwise specified.

(2) Limits.

(a) Surface-supplied air diving shall not be conducted at depths deeper than 190 fsw, except that dives with bottom times of 30 minutes or less may be conducted to depths of 220 fsw.

(b) A decompression chamber shall be ready for use at the dive location for any dive outside the no-decompression limits or deeper than 100 fsw.

(c) A bell shall be used for dives with an inwater decompression time greater than 120 minutes, except when heavy gear is worn or diving is conducted in physically confining spaces.

(3) Procedures.

(a) Each diver shall be continuously tended while in the water.

(b) A diver shall be stationed at the underwater point of entry when diving is conducted in enclosed or physically confining spaces.

(c) Each diving operation shall have a primary breathing gas supply sufficient to support divers for the duration of the planned dive including decompression.

(d) For dives deeper than 100 fsw or outside the no-decompression limits:

- (i) A separate dive team member shall tend each diver in the water;

(ii) A standby diver shall be available while a diver is in the water;

(iii) A diver-carried reserve breathing gas supply shall be provided for each diver except when heavy gear is worn; and

(iv) A dive-location reserve breathing gas supply shall be provided.

(e) For heavy-gear diving deeper than 100 fsw or outside the no-decompression limits:

(i) An extra breathing gas hose capable of supplying breathing gas to the diver in the water shall be available to the standby diver.

(ii) An inwater stage shall be provided to divers in the water.

(f) Except when heavy gear is worn or where physical space does not permit, a diver-carried reserve breathing gas supply shall be provided whenever the diver is prevented by the configuration of the dive area from ascending directly to the surface.

[Statutory Authority: RCW 49.17.040, 49.17.050, 49.17.240, and chapters 42.30 and 43.22 RCW. 78-10-094 (Order 78-18), § 296-37-555, filed 10/2/78.]

WAC 296-37-560 Mixed-gas diving. (1) General. Employers engaged in mixed-gas diving shall comply with the following requirements, unless otherwise specified.

(2) Limits. Mixed-gas diving shall be conducted only when:

(a) A decompression chamber is ready for use at the dive location; and

(b) A bell is used at depths greater than 220 fsw or when the dive involves inwater decompression time of greater than 120 minutes, except when heavy gear is worn or when diving in physically confining spaces; or

(c) A closed bell is used at depths greater than 300 fsw, except when diving is conducted in physically confining spaces.

(3) Procedures.

(a) A separate dive team member shall tend each diver in the water.

(b) A standby diver shall be available while a diver is in the water.

(c) A diver shall be stationed at the underwater point of entry when diving is conducted in enclosed or physically confining spaces.

(d) Each diving operation shall have a primary breathing gas supply sufficient to support divers for the duration of the planned dive including decompression.

(e) Each diving operation shall have a dive-location reserve breathing gas supply.

(f) When heavy gear is worn:

(i) An extra breathing gas hose capable of supplying breathing gas to the diver in the water shall be available to the standby diver; and

(ii) An inwater stage shall be provided to divers in the water.

(g) An inwater stage shall be provided for divers without access to a bell for dives deeper than 100 fsw or outside the no-decompression limits.

(h) When a closed bell is used, one dive team member in the bell shall be available and tend the diver in the water.

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(i) Except when heavy gear is worn or where physical space does not permit, a diver-carried reserve breathing gas supply shall be provided for each diver:

(i) Diving deeper than 100 fsw or outside the no-decompression limits; or

(ii) Prevented by the configuration of the dive area from directly ascending to the surface.

[Statutory Authority: Chapter 49.17 RCW and RCW 49.17.040, [49.17].050 and [49.17].060. 92-22-067 (Order 92-06), § 296-37-560, filed 10/30/92, effective 12/8/92. Statutory Authority: RCW 49.17.040, 49.17.050, 49.17.240, and chapters 42.30 and 43.22 RCW. 78-10-094 (Order 78-18), § 296-37-560, filed 10/2/78.]

WAC 296-37-565 Liveboating. (1) General. Employers engaged in diving operations involving liveboating shall comply with the following requirements.

(2) Limits. Diving operations involving liveboating shall not be conducted:

(a) With an inwater decompression time of greater than 120 minutes;

(b) Using surface-supplied air at depths deeper than 190 fsw, except that dives with bottom times of 30 minutes or less may be conducted to depths of 220 fsw;

(c) Using mixed gas at depths greater than 220 fsw;

(d) In rough seas which significantly impede diver mobility or work function; or

(e) In other than daylight hours.

(3) Procedures.

(a) The propeller of the vessel shall be stopped before the diver enters or exits the water.

(b) A device shall be used which minimizes the possibility of entanglement of the diver's hose in the propeller of the vessel.

(c) Two-way voice communication between the designated person-in-charge and the person controlling the vessel shall be available while the diver is in the water.

(d) A standby diver shall be available while a diver is in the water.

(e) A diver-carried reserve breathing gas supply shall be carried by each diver engaged in liveboating operations.

[Statutory Authority: Chapter 49.17 RCW and RCW 49.17.040, [49.17].050 and [49.17].060. 92-22-067 (Order 92-06), § 296-37-565, filed 10/30/92, effective 12/8/92. Statutory Authority: RCW 49.17.040 and 49.17.050. 87-02-002 (Order 86-44), § 296-37-565, filed 12/26/86. Statutory Authority: RCW 49.17.040, 49.17.050, 49.17.240, and chapters 42.30 and 43.22 RCW. 78-10-094 (Order 78-18), § 296-37-565, filed 10/2/78.]

WAC 296-37-570 Equipment. (1) General.

(a) All employers shall comply with the following requirements, unless otherwise specified.

(b) Each equipment modification, repair, test, calibration or maintenance service shall be recorded by means of a tagging or logging system, and include the date and nature of work performed, and the name or initials of the person performing the work.

(2) Air compressor system.

(a) Compressors used to supply air to the diver shall be equipped with a volume tank with a check valve on the inlet side, a pressure gauge, a relief valve, and a drain valve.

(b) A compressor shall be constructed and situated so as to avoid entry of contaminated air into the air-supply system and shall be equipped with a suitable in-line particulate filter

followed by a bed of activated charcoal and, if necessary, a moisture absorber to further assure breathing air quality. These filters should be placed before any receiver and after the discharge in the compressor. If an oil-lubricated compressor is used, it shall be equipped with a carbon monoxide alarm or an equally as effective alternative if approved by the department.

(i) If a carbon monoxide alarm is used, it shall be calibrated to activate at or below 10 parts per million carbon monoxide at least once per month. A calibration and maintenance log shall be kept and shall be available for review and copying by the director or his or her designee. The log shall identify the test method, date, time of test, results, and the name of the person performing the test. The log shall be retained for at least one year from the date of the test.

(ii) If the use of an alarm at the compressor will not effectively provide warning to the diver or tender of a carbon monoxide problem, a remote alarm or other means of warning the wearer shall be used.

(iii) Breathing air couplings shall be incompatible with outlets for nonrespirable plant air or other gas systems to prevent inadvertent servicing of air-line breathing apparatus with nonrespirable gases.

(c) Respirable air supplied to a diver shall not contain:

(i) A level of carbon monoxide (CO) greater than 10 ppm;

(ii) A level of carbon dioxide (CO₂) greater than 1,000 ppm;

(iii) A level of oil mist greater than 5 milligrams per cubic meter; or

(iv) A noxious or pronounced odor.

(d) Compressor systems providing surface air to divers must have a low pressure warning device installed at the air purification system inlet to alert dive tenders of low air pressure.

The minimum alarm setting shall be 45 psi plus an additional 15 psi for each working atmosphere.

1 ATM = 33 fsw or 15 psi

2 ATM = 66 fsw or 30 psi

3 ATM = 99 fsw or 45 psi

4 ATM = 132 fsw or 60 psi

5 ATM = 165 fsw or 75 psi

6 ATM = 198 fsw or 90 psi

(e) The output of air compressor systems shall be tested for air purity every six months by means of samples taken at the connection to the distribution system, except that nonoil lubricated compressors need not be tested for oil mist.

(3) Breathing gas supply hoses.

(a) Breathing gas supply hoses shall:

(i) Have a working pressure at least equal to the working pressure of the total breathing gas system;

(ii) Have a rated bursting pressure at least equal to four times the working pressure;

(iii) Be tested at least annually to 1.5 times their working pressure; and

(iv) Have their open ends taped, capped or plugged when not in use.

(b) Breathing gas supply hose connectors shall:

(i) Be made of corrosion-resistant materials;

(ii) Have a working pressure at least equal to the working pressure of the hose to which they are attached; and

(iii) Be resistant to accidental disengagement.

(c) Umbilicals shall:

(i) Include a safety line which shall be attached in a manner to remove strain from the air supply hose;

(ii) Be marked in 10-foot increments to 100 feet beginning at the diver's end, and in 50 foot increments thereafter;

(iii) Be made of kink-resistant materials; and

(iv) Have a working pressure greater than the pressure equivalent to the maximum depth of the dive (relative to the supply source) plus 100 psi.

(4) Buoyancy control.

(a) Helmets or masks connected directly to the dry suit or other buoyancy-changing equipment shall be equipped with an exhaust valve.

(b) A dry suit or other buoyancy-changing equipment not directly connected to the helmet or mask shall be equipped with an exhaust valve.

(c) When used for SCUBA diving, a buoyancy compensator shall have an inflation source separate from the breathing gas supply.

(d) An inflatable flotation device capable of maintaining the diver at the surface in a face-up position, having a manually activated inflation source independent of the breathing supply, an oral inflation device, and an exhaust valve shall be used for SCUBA diving.

(5) Compressed gas cylinders. Compressed gas cylinders shall:

(a) Be designed, constructed and maintained in accordance with the applicable provisions of WAC 296-24-295 and 296-24-940 of the General safety and health standards.

(b) Be stored in a ventilated area and protected from excessive heat;

(c) Be secured from falling; and

(d) Have shut-off valves recessed into the cylinder or protected by a cap, except when in use or manifolded, or when used for SCUBA diving.

(6) Recompression/decompression chambers.

(a) Each recompression/decompression chamber manufactured after the effective date of this standard, shall be built and maintained in accordance with the ASME Code or equivalent.

(b) Each recompression/decompression chamber manufactured prior to the effective date of this standard shall be maintained in conformity with the code requirements to which it was built, or equivalent.

(c) Each recompression/decompression chamber shall be equipped with:

(i) Means to maintain the atmosphere below a level of 25% oxygen by volume;

(ii) Mufflers on intake and exhaust lines, which shall be regularly inspected and maintained;

(iii) Suction guards on exhaust line openings; and

(iv) A means for extinguishing fire, and shall be maintained to minimize sources of ignition and combustible material.

(7) Gauges and timekeeping devices.

(a) Gauges indicating diver depth which can be read at the dive location shall be used for all dives except SCUBA.

(b) Each depth gauge shall be deadweight tested or calibrated against a master reference gauge every six months,

and when there is a discrepancy greater than two percent of full scale between any two equivalent gauges.

(c) A cylinder pressure gauge capable of being monitored by the diver during the dive shall be worn by each SCUBA diver.

(d) A timekeeping device shall be available at each dive location.

(8) Masks and helmets.

(a) Surface-supplied air and mixed-gas masks and helmets shall have:

(i) A nonreturn valve at the attachment point between helmet or mask and hose which shall close readily and positively; and

(ii) An exhaust valve.

(b) Surface-supplied air masks and helmets shall have a minimum ventilation rate capability of 4.5 acfm at any depth at which they are operated or the capability of maintaining the diver's inspired carbon dioxide partial pressure below 0.02 ATA when the diver is producing carbon dioxide at the rate of 1.6 standard liters per minute.

(9) Oxygen safety.

(a) Equipment used with oxygen or mixtures containing over forty percent by volume oxygen shall be designed for oxygen service.

(b) Components (except umbilicals) exposed to oxygen or mixtures containing over forty percent by volume oxygen shall be cleaned of flammable materials before use.

(c) Oxygen systems over 125 psig and compressed air systems over 500 psig shall have slow-opening shut-off valves.

(10) Weights and harnesses.

(a) Except when heavy gear is worn, divers shall be equipped with a weight belt or assembly capable of quick release.

(b) Except when heavy gear is worn or in SCUBA diving, each diver shall wear a safety harness with:

(i) A positive buckling device;

(ii) An attachment point for the umbilical to prevent strain on the mask or helmet; and

(iii) A lifting point to distribute the pull force of the line over the diver's body.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. 04-18-078, § 296-37-570, filed 8/31/04, effective 11/1/04. Statutory Authority: Chapter 49.17 RCW and RCW 49.17.040, [49.17].050 and [49.17].060. 92-22-067 (Order 92-06), § 296-37-570, filed 10/30/92, effective 12/8/92. Statutory Authority: RCW 49.17.040 and 49.17.050. 87-02-002 (Order 86-44), § 296-37-570, filed 12/26/86. Statutory Authority: RCW 49.17.040, 49.17.050, 49.17.240, and chapters 42.30 and 43.22 RCW. 78-10-094 (Order 78-18), § 296-37-570, filed 10/2/78.]

WAC 296-37-575 Recordkeeping requirements. (1) Recording and reporting.

(a) The employer shall comply with the requirements of chapters 296-27, 296-350, and 296-800 WAC.

(b) The employer shall record the occurrence of any diving-related injury or illness which requires any dive team member to be hospitalized for 24 hours or more, specifying the circumstances of the incident and the extent of any injuries or illnesses.

(2) Availability of records.

(a) Upon the request of the director of the department of labor and industries or his duly authorized designees, the

employer shall make available for inspection and copying any record or document required by this standard.

(b) Records and documents required by this standard shall be provided upon request to employees, designated representatives, and the assistant director in accordance with chapter 296-802 WAC. Safe practices manuals (WAC 296-37-530), depth-time profiles (WAC 296-37-540), recording of dives (WAC 296-37-545), decompression procedure assessment evaluations (WAC 296-37-545), and records of hospitalizations (WAC 296-37-575) shall be provided in the same manner as employee exposure records or analyses using exposure or medical records. Equipment inspections and testing records which pertain to employees (WAC 296-37-570) shall also be provided upon request to employees and their designated representatives.

(c) Records and documents required by this standard shall be retained by the employer for the following period:

(i) Dive team member medical records (physician's reports) (WAC 296-37-525) - five years;

(ii) Safe practices manual (WAC 296-37-530) - current document only;

(iii) Depth-time profile (WAC 296-37-540) - until completion of the recording of dive, or until completion of decompression procedure assessment where there has been an incident of decompression sickness;

(iv) Recording dive (WAC 296-37-545) one year, except five years where there has been an incident of decompression sickness;

(v) Decompression procedure assessment evaluations (WAC 296-37-545) - five years;

(vi) Equipment inspections and testing records (WAC 296-37-570) - current entry or tag, or until equipment is withdrawn from service;

(vii) Records of hospitalizations (WAC 296-37-575) - five years.

(d) After the expiration of the retention period of any record required to be kept for five years, the employer shall forward such records to the National Institute for Occupational Safety and Health, Department of Health and Human Services. The employer shall also comply with any additional requirements set forth in chapter 296-802 WAC.

(e) In the event the employer ceases to do business:

(i) The successor employer shall receive and retain all dive and employee medical records required by this standard; or

(ii) If there is no successor employer, dive and employee medical records shall be forwarded to the National Institute for Occupational Safety and Health, Department of Health and Human Services.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060. 04-10-026, § 296-37-575, filed 4/27/04, effective 8/1/04. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 01-11-038, § 296-37-575, filed 5/9/01, effective 9/1/01. Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-37-575, filed 7/20/94, effective 9/20/94. Statutory Authority: Chapter 49.17 RCW and RCW 49.17.040, [49.17].050 and [49.17].060. 92-22-067 (Order 92-06), § 296-37-575, filed 10/30/92, effective 12/8/92. Statutory Authority: RCW 49.17.040 and 49.17.050. 87-02-002 (Order 86-44), § 296-37-575, filed 12/26/86. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-18-029 (Order 81-21), § 296-37-575, filed 8/27/81. Statutory Authority: RCW 49.17.040, 49.17.050, 49.17.240, and chapters 42.30 and 43.22 RCW. 78-10-094 (Order 78-18), § 296-37-575, filed 10/2/78.]

WAC 296-37-580 Reserved.

[Statutory Authority: Chapter 49.17 RCW and RCW 49.17.040, [49.17].050 and [49.17].060. 92-22-067 (Order 92-06), § 296-37-580, filed 10/30/92, effective 12/8/92. Statutory Authority: RCW 49.17.040, 49.17.050, 49.17.240, and chapters 42.30 and 43.22 RCW. 78-10-094 (Order 78-18), § 296-37-580, filed 10/2/78.]

WAC 296-37-585 Appendix A to chapter 296-37 WAC—Examples of conditions which may restrict or limit exposure to hyperbaric conditions. (1) The following disorders may restrict or limit occupational exposure to hyperbaric conditions depending on severity, presence of residual effects, response to therapy, number of occurrences, diving mode, or degree and duration of isolation.

- (a) History of seizure disorder other than early febrile convulsions.
- (b) Malignancies (active) unless treated and without recurrence for five years.
- (c) Chronic inability to equalize sinus and/or middle ear pressure.
- (d) Cystic or cavitory disease of the lungs.
- (e) Impaired organ function caused by alcohol or drug use.
- (f) Conditions requiring continuous medication for control (e.g., antihistamines, steroids, barbiturates, mood altering drugs, or insulin).
 - (i) Meniere's disease.
 - (ii) Hemoglobinopathies.
 - (iii) Obstructive or restrictive lung disease.
 - (iv) Vestibular end organ destruction.
 - (v) Pneumothorax.
 - (vi) Cardiac abnormalities (e.g., pathological heart block, valvular disease, intraventricular conduction defects other than isolated right bundle branch block, angina pectoris, arrhythmia, coronary artery disease).
 - (vii) Juxta-articular osteonecrosis.

[Statutory Authority: Chapter 49.17 RCW and RCW 49.17.040, [49.17].050 and [49.17].060. 92-22-067 (Order 92-06), § 296-37-585, filed 10/30/92, effective 12/8/92. Statutory Authority: RCW 49.17.040, 49.17.050, 49.17.240, and chapters 42.30 and 43.22 RCW. 78-10-094 (Order 78-18), § 296-37-585, filed 10/2/78.]

WAC 296-37-590 Appendix B to chapter 296-37 WAC—Guidelines for scientific diving. This appendix contains guidelines that will be used in conjunction with WAC 296-37-510 (2)(e) to determine those scientific diving programs which are exempt from the requirements for commercial diving. The guidelines are as follows:

- (1) The diving control board consists of a majority of active scientific divers and has autonomous and absolute authority over scientific diving program's operations.
- (2) The purpose of the project using scientific diving is the advancement of science; therefore, information and data resulting from the project are nonproprietary.
- (3) The tasks of a scientific diver are those of an observer and data gatherer. Construction and trouble-shooting tasks traditionally associated with commercial diving are not included within scientific diving.
- (4) Scientific divers, based on the nature of their activities, must use scientific expertise in studying the underwater environment and, therefore, are scientists or scientists in training.

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[Statutory Authority: Chapter 49.17 RCW and RCW 49.17.040, [49.17].050 and [49.17].060. 92-22-067 (Order 92-06), § 296-37-590, filed 10/30/92, effective 12/8/92.]

WAC 296-37-595 Appendix C to chapter 296-37 WAC—Alternative conditions under WAC 296-37-510(7) for recreational diving instructors and diving guides. (Mandatory)

WAC 296-37-510(7) specifies that an employer of recreational diving instructors and diving guides (hereafter, "divers" or "employees") who complies with all of the conditions of this appendix need not provide a decompression chamber for these divers as required under WAC 296-37-545 (2)(b) and (3)(c) or WAC 296-37-560 (2)(a).

(1) Equipment requirements for rebreathers.

(a) The employer must ensure that each employee operates the rebreather (i.e., semiclosed-circuit and closed-circuit self-contained underwater breathing apparatuses (hereafter, "SCUBAs")) according to the rebreather manufacturer's instructions.

(b) The employer must ensure that each rebreather has a counterlung that supplies a sufficient volume of breathing gas to their divers to sustain the divers' respiration rates, and contains a baffle system and/or other moisture separating system that keeps moisture from entering the scrubber.

(c) The employer must place a moisture trap in the breathing loop of the rebreather, and ensure that:

(i) The rebreather manufacturer approves both the moisture trap and its location in the breathing loop; and

(ii) Each employee uses the moisture trap according to the rebreather manufacturer's instructions.

(d) The employer must ensure that each rebreather has a continuously functioning moisture sensor, and that:

(i) The moisture sensor connects to a visual (e.g., digital, graphic, analog) or auditory (e.g., voice, pure tone) alarm that is readily detectable by the diver under the diving conditions in which the diver operates, and warns the diver of moisture in the breathing loop in sufficient time to terminate the dive and return safely to the surface; and

(ii) Each diver uses the moisture sensor according to the rebreather manufacturer's instructions.

(e) The employer must ensure that each rebreather contains a continuously functioning CO₂ sensor in the breathing loop, and that:

(i) The rebreather manufacturer approves the location of the CO₂ sensor in the breathing loop;

(ii) The CO₂ sensor is integrated with an alarm that operates in a visual (e.g., digital, graphic, analog) or auditory (e.g., voice, pure tone) mode that is readily detectable by each diver under the diving conditions in which the diver operates; and

(iii) The CO₂ alarm remains continuously activated when the inhaled CO₂ level reaches and exceeds 0.005 atmospheres absolute (ATA).

(f) Before each day's diving operations, and more often when necessary, the employer must calibrate the CO₂ sensor according to the sensor manufacturer's instructions, and ensure that:

(i) The equipment and procedures used to perform this calibration are accurate to within 10% of a CO₂ concentration of 0.005 ATA or less;

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(ii) The equipment and procedures maintain this accuracy as required by the sensor manufacturer's instructions; and

(iii) The calibration of the CO₂ sensor is accurate to within 10% of a CO₂ concentration of 0.005 ATA or less.

(g) The employer must replace the CO₂ sensor when it fails to meet the accuracy requirements specified in (f)(iii) of this subsection, and ensure that the replacement CO₂ sensor meets the accuracy requirements specified in (f)(iii) of this subsection before placing the rebreather in operation.

(h) As an alternative to using a continuously functioning CO₂ sensor, the employer may use a schedule for replacing CO₂-sorbent material provided by the rebreather manufacturer. The employer may use such a schedule only when the rebreather manufacturer has developed it according to the canister-testing protocol specified below in Condition 11, and must use the canister within the temperature range for which the manufacturer conducted its scrubber canister tests following that protocol. Variations above or below the range are acceptable only after the manufacturer adds that lower or higher temperature to the protocol.

(i) When using CO₂-sorbent replacement schedules, the employer must ensure that each rebreather uses a manufactured (i.e., commercially prepacked), disposable scrubber cartridge containing a CO₂-sorbent material that:

(i) Is approved by the rebreather manufacturer;

(ii) Removes CO₂ from the diver's exhaled gas; and

(iii) Maintains the CO₂ level in the breathable gas (i.e., the gas that a diver inhales directly from the regulator) below a partial pressure of 0.01 ATA.

(j) As an alternative to manufactured, disposable scrubber cartridges, the employer may fill CO₂ scrubber cartridges manually with CO₂-sorbent material when:

(i) The rebreather manufacturer permits manual filling of scrubber cartridges;

(ii) The employer fills the scrubber cartridges according to the rebreather manufacturer's instructions;

(iii) The employer replaces the CO₂-sorbent material using a replacement schedule developed under (h) of this subsection; and

(iv) The employer demonstrates that manual filling meets the requirements specified in (i) of this subsection.

(k) The employer must ensure that each rebreather has an information module that provides:

(i) A visual (e.g., digital, graphic, analog) or auditory (e.g., voice, pure tone) display that effectively warns the diver of solenoid failure (when the rebreather uses solenoids) and other electrical weaknesses or failures (e.g., low battery voltage);

(ii) For a semiclosed-circuit rebreather, a visual display for the partial pressure of CO₂, or deviations above and below a preset CO₂ partial pressure of 0.005 ATA; and

(iii) For a closed-circuit rebreather, a visual display for: Partial pressures of O₂ and CO₂, or deviations above and below a preset CO₂ partial pressure of 0.005 ATA and a preset O₂ partial pressure of 1.40 ATA or lower; gas temperature in the breathing loop; and water temperature.

(l) Before each day's diving operations, and more often when necessary, the employer must ensure that the electrical

power supply and electrical and electronic circuits in each rebreather are operating as required by the rebreather manufacturer's instructions.

(2) Special requirements for closed-circuit rebreathers.

(a) The employer must ensure that each closed-circuit rebreather uses supply-pressure sensors for the O₂ and diluent (i.e., air or nitrogen) gases and continuously functioning sensors for detecting temperature in the inhalation side of the gas-loop and the ambient water.

(b) The employer must ensure that:

(i) At least two O₂ sensors are located in the inhalation side of the breathing loop; and

(ii) The O₂ sensors are: Functioning continuously; temperature compensated; and approved by the rebreather manufacturer.

(c) Before each day's diving operations, and more often when necessary, the employer must calibrate O₂ sensors as required by the sensor manufacturer's instructions. In doing so, the employer must:

(i) Ensure that the equipment and procedures used to perform the calibration are accurate to within 1% of the O₂ fraction by volume;

(ii) Maintain this accuracy as required by the manufacturer of the calibration equipment;

(iii) Ensure that the sensors are accurate to within 1% of the O₂ fraction by volume;

(iv) Replace O₂ sensors when they fail to meet the accuracy requirements specified in (c)(iii) of this subsection; and

(v) Ensure that the replacement O₂ sensors meet the accuracy requirements specified in (c)(iii) of this subsection before placing a rebreather in operation.

(d) The employer must ensure that each closed-circuit rebreather has:

(i) A gas-controller package with electrically operated solenoid O₂-supply valves;

(ii) A pressure-activated regulator with a second-stage diluent-gas addition valve;

(iii) A manually operated gas-supply bypass valve to add O₂ or diluent gas to the breathing loop; and

(iv) Separate O₂ and diluent-gas cylinders to supply the breathing-gas mixture.

(3) O₂ concentration in the breathing gas.

The employer must ensure that the fraction of O₂ in the nitrox breathing-gas mixture:

(a) Is greater than the fraction of O₂ in compressed air (i.e., exceeds 22% by volume);

(b) For open-circuit SCUBA, never exceeds a maximum fraction of breathable O₂ of 40% by volume or a maximum O₂ partial pressure of 1.40 ATA, whichever exposes divers to less O₂; and

(c) For a rebreather, never exceeds a maximum O₂ partial pressure of 1.40 ATA.

(4) Regulating O₂ exposures and diving depth.

(a) Regarding O₂ exposure, the employer must:

(i) Ensure that the exposure of each diver to partial pressures of O₂ between 0.60 and 1.40 ATA does not exceed the 24-hour single-exposure time limits specified either by the *2001 National Oceanic and Atmospheric Administration Diving Manual* (the 2001 NOAA Diving Manual), or by the

report entitled *Enriched Air Operations and Resource Guide* published in 1995 by the Professional Association of Diving Instructors (known commonly as the "1995 DSAT Oxygen Exposure Table"); and

(ii) Determine a diver's O₂-exposure duration using the diver's maximum O₂ exposure (partial pressure of O₂) during the dive and the total dive time (i.e., from the time the diver leaves the surface until the diver returns to the surface).

(b) Regardless of the diving equipment used, the employer must ensure that no diver exceeds a depth of 130 feet of sea water (fsw) or a maximum O₂ partial pressure of 1.40 ATA, whichever exposes the diver to less O₂.

(5) Use of no-decompression limits.

(a) For diving conducted while using nitrox breathing-gas mixtures, the employer must ensure that each diver remains within the no-decompression limits specified for single and repetitive air diving and published in the 2001 NOAA Diving Manual or the report entitled "Development and Validation of No-Stop Decompression Procedures for Recreational Diving: The DSAT Recreational Dive Planner," published in 1994 by Hamilton Research Ltd. (known commonly as the "1994 DSAT No-Decompression Tables").

(b) An employer may permit a diver to use a dive-decompression computer designed to regulate decompression when the dive-decompression computer uses the no-decompression limits specified in (a) of this subsection, and provides output that reliably represents those limits.

(6) Mixing and analyzing the breathing gas.

(a) The employer must ensure that:

(i) Properly trained personnel mix nitrox-breathing gases, and that nitrogen is the only inert gas used in the breathing-gas mixture; and

(ii) When mixing nitrox-breathing gases, they mix the appropriate breathing gas before delivering the mixture to the breathing-gas cylinders, using the continuous-flow or partial-pressure mixing techniques specified in the 2001 NOAA Diving Manual, or using a filter-membrane system.

(b) Before the start of each day's diving operations, the employer must determine the O₂ fraction of the breathing-gas mixture using an O₂ analyzer. In doing so, the employer must:

(i) Ensure that the O₂ analyzer is accurate to within 1% of the O₂ fraction by volume.

(ii) Maintain this accuracy as required by the manufacturer of the analyzer.

(c) When the breathing gas is a commercially supplied nitrox breathing-gas mixture, the employer must ensure that the O₂ meets the medical USP specifications (Type I, Quality Verification Level A) or aviator's breathing-oxygen specifications (Type I, Quality Verification Level E) of CGA G-4.3-2000 (Commodity Specification for Oxygen). In addition, the commercial supplier must:

(i) Determine the O₂ fraction in the breathing-gas mixture using an analytic method that is accurate to within 1% of the O₂ fraction by volume;

(ii) Make this determination when the mixture is in the charged tank and after disconnecting the charged tank from the charging apparatus;

(iii) Include documentation of the O₂-analysis procedures and the O₂ fraction when delivering the charged tanks to the employer.

(d) Before producing nitrox breathing-gas mixtures using a compressor in which the gas pressure in any system component exceeds 125 pounds per square inch (psi), the:

(i) Compressor manufacturer must provide the employer with documentation that the compressor is suitable for mixing high-pressure air with the highest O₂ fraction used in the nitrox breathing-gas mixture when operated according to the manufacturer's operating and maintenance specifications;

(ii) Employer must comply with (e) of this subsection, unless the compressor is rated for O₂ service and is oil-less or oil-free; and

(iii) Employer must ensure that the compressor meets the requirements specified in paragraphs (i)(1) and (i)(2) of § 1910.430 whenever the highest O₂ fraction used in the mixing process exceeds 40%.

(e) Before producing nitrox breathing-gas mixtures using an oil-lubricated compressor to mix high-pressure air with O₂, and regardless of the gas pressure in any system component, the:

(i) Employer must use only uncontaminated air (i.e., air containing no hydrocarbon particulates) for the nitrox breathing-gas mixture;

(ii) Compressor manufacturer must provide the employer with documentation that the compressor is suitable for mixing the high-pressure air with the highest O₂ fraction used in the nitrox breathing-gas mixture when operated according to the manufacturer's operating and maintenance specifications;

(iii) Employer must filter the high-pressure air to produce O₂-compatible air;

(iv) The filter-system manufacturer must provide the employer with documentation that the filter system used for this purpose is suitable for producing O₂-compatible air when operated according to the manufacturer's operating and maintenance specifications; and

(v) Employer must continuously monitor the air downstream from the filter for hydrocarbon contamination.

(f) The employer must ensure that diving equipment using nitrox breathing-gas mixtures or pure O₂ under high pressure (i.e., exceeding 125 psi) conforms to the O₂-service requirements specified in paragraphs (i)(1) and (i)(2) of § 1910.430.

(7) Emergency egress.

(a) Regardless of the type of diving equipment used by a diver (i.e., open-circuit SCUBA or rebreathers), the employer must ensure that the equipment contains (or incorporates) an open-circuit emergency-egress system (a "bail-out" system) in which the second stage of the regulator connects to a separate supply of emergency breathing gas, and the emergency breathing gas consists of air or the same nitrox breathing-gas mixture used during the dive.

(b) As an alternative to the "bail-out" system specified in (a) of this subsection, the employer may use:

(i) For open-circuit SCUBA, an emergency-egress system as specified in § 1910.424 (c)(4); or

(ii) For a semiclosed-circuit and closed-circuit rebreather, a system configured so that the second stage of the regulator connects to a reserve supply of emergency breathing gas.

(c) The employer must obtain from the rebreather manufacturer sufficient information to ensure that the bail-out system performs reliably and has sufficient capacity to enable the diver to terminate the dive and return safely to the surface.

(8) Treating diving-related medical emergencies.

(a) Before each day's diving operations, the employer must:

(i) Verify that a hospital, qualified health care professionals, and the nearest Coast Guard Coordination Center (or an equivalent rescue service operated by a state, county, or municipal agency) are available to treat diving-related medical emergencies;

(ii) Ensure that each dive site has a means to alert these treatment resources in a timely manner when a diving-related medical emergency occurs; and

(iii) Ensure that transportation to a suitable decompression chamber is readily available when no decompression chamber is at the dive site, and that this transportation can deliver the injured diver to the decompression chamber within four hours travel time from the dive site.

(b) The employer must ensure that portable O₂ equipment is available at the dive site to treat injured divers. In doing so, the employer must ensure that:

(i) The equipment delivers medical-grade O₂ that meets the requirements for medical USP oxygen (Type I, Quality Verification Level A) of CGA G-4.3-2000 (Commodity Specification for Oxygen);

(ii) The equipment delivers this O₂ to a transparent mask that covers the injured diver's nose and mouth; and

(iii) Sufficient O₂ is available for administration to the injured diver from the time the employer recognizes the symptoms of a diving-related medical emergency until the injured diver reaches a decompression chamber for treatment.

(c) Before each day's diving operations, the employer must:

(i) Ensure that at least two attendants, either employees or nonemployees, qualified in first-aid and administering O₂ treatment, are available at the dive site to treat diving-related medical emergencies; and

(ii) Verify their qualifications for this task.

(9) Diving logs and no-decompression table.

(a) Before starting each day's diving operations, the employer must:

(i) Designate an employee or a nonemployee to make entries in a diving log; and

(ii) Verify that this designee understands the diving and medical terminology, and proper procedures, for making correct entries in the diving log.

(b) The employer must:

(i) Ensure that the diving log conforms to the requirements specified by paragraph (d) (Record of dive) of § 1910.423; and

(ii) Maintain a record of the dive according to § 1910.440 (Recordkeeping requirements).

(c) The employer must ensure that a hard copy of the no-decompression tables used for the dives (as specified in subsection (6)(a) of this section) is readily available at the dive site, whether or not the divers use dive-decompression computers.

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(10) Diver training.

The employer must ensure that each diver receives training that enables the diver to perform work safely and effectively while using open-circuit SCUBAs or rebreathers supplied with nitrox breathing-gas mixtures. Accordingly, each diver must be able to demonstrate the ability to perform critical tasks safely and effectively, including, but not limited to: Recognizing the effects of breathing excessive CO₂ and O₂; taking appropriate action after detecting excessive levels of CO₂ and O₂; and properly evaluating, operating, and maintaining their diving equipment under the diving conditions they encounter.

(11) Testing protocol for determining the CO₂ limits of rebreather canisters.

(a) The employer must ensure that the rebreather manufacturer has used the following procedures for determining that the CO₂-sorbent material meets the specifications of the sorbent material's manufacturer:

(i) The North Atlantic Treating Organization CO₂ absorbent-activity test;

(ii) The RoTap shaker and nested-sieves test;

(iii) The Navy Experimental Diving Unit (NEDU)-derived Schlegel test; and

(iv) The NEDU MeshFit software.

(b) The employer must ensure that the rebreather manufacturer has applied the following canister-testing materials, methods, procedures, and statistical analyses:

(i) Use of a nitrox breathing-gas mixture that has an O₂ fraction maintained at 0.28 (equivalent to 1.4 ATA of O₂ at 130 fsw, the maximum O₂ concentration permitted at this depth);

(ii) While operating the rebreather at a maximum depth of 130 fsw, use of a breathing machine to continuously ventilate the rebreather with breathing gas that is at 100% humidity and warmed to a temperature of 98.6 degrees F (37 degrees C) in the heating-humidification chamber;

(iii) Measurement of the O₂ concentration of the inhalation breathing gas delivered to the mouthpiece;

(iv) Testing of the canisters using the three ventilation rates listed in Table I below (with the required breathing-machine tidal volumes and frequencies, and CO₂-injection rates, provided for each ventilation rate):

Table I — Canister Testing Parameters

Ventilation rates (Lpm, ATPS ⁽¹⁾)	Breathing machine tidal volumes (L)	Breathing machine frequencies (breaths per min.)	CO ₂ injection rates (Lpm, STPD ⁽²⁾)
22.5	1.5	15	0.90
40.0	2.0	20	1.35
62.5	2.5	25	2.25

(1) ATPS means ambient temperature and pressure, saturated with water.

(2) STPD means standard temperature and pressure, dry; the standard temperature is 32 degrees F (0 degrees C).

(v) When using a work rate (i.e., breathing-machine tidal volume and frequency) other than the work rates listed in the table above, addition of the appropriate combinations of ventilation rates and CO₂-injection rates;

(vi) Performance of the CO₂ injection at a constant (steady) and continuous rate during each testing trial;

(vii) Determination of canister duration using a minimum of four water temperatures, including 40, 50, 70, and 90 degrees F (4.4, 10.0, 21.1, and 32.2 degrees C, respectively);

(viii) Monitoring of the breathing-gas temperature at the rebreather mouthpiece (at the "chrome T" connector), and ensuring that this temperature conforms to the temperature of a diver's exhaled breath at the water temperature and ventilation rate used during the testing trial;⁽¹⁾

(ix) Implementation of at least eight testing trials for each combination of temperature and ventilation-CO₂-injection rates (for example, eight testing trials at 40 degrees F using a ventilation rate of 22.5 Lpm at a CO₂-injection rate of 0.90 Lpm);

(x) Allowing the water temperature to vary no more than 2.0 degrees F (1.0 degree C) *between* each of the eight testing trials, and no more than 1.0 degree F (0.5 degree C) within each testing trial;

(xi) Use of the average temperature for each set of eight testing trials in the statistical analysis of the testing-trial results, with the testing-trial results being the time taken for the inhaled breathing gas to reach 0.005 ATA of CO₂ (i.e., the canister-duration results);

(xii) Analysis of the canister-duration results using the repeated-measures statistics described in NEDU Report 2-99;

(xiii) Specification of the replacement schedule for the CO₂-sorbent materials in terms of the lower prediction line (or limit) of the 95% confidence interval; and

(xiv) Derivation of replacement schedules only by interpolating among, but not by extrapolating beyond, the depth, water temperatures, and exercise levels used during canister testing.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. 04-18-078, § 296-37-595, filed 8/31/04, effective 11/1/04.]

Chapter 296-43 WAC

HEATING INSTALLATIONS—CABLE, RADIANT, SOIL, ETC.

WAC

296-43-010	Heating cables—General.
296-43-020	Heating cables—Maximum wattage and temperature.
296-43-030	Heating cables—Permissible installation methods in buildings.
296-43-040	Heating cables—Thermal insulation.
296-43-050	Heating cables—Elements installed in tanks, troughs, or pipe lines containing liquids.
296-43-060	Heating element in soil or sand.
296-43-070	Heating element imbedded in driveways.

WAC 296-43-010 Heating cables—General. Heating cables or wires designed for use in low temperature heating applications, i.e., soil, water, plaster, walls and ceilings, floors, etc., shall conform to the provisions of the N.E.C. Article 422 as applicable and to the following specifications:

(1) The units shall be manufactured in such continuous lengths that the maximum temperature of the element does not exceed 100 degrees C. or the maximum safe working temperature of the insulating material covering the element. Whichever is the lower temperature shall be considered the maximum permissible working temperature of the element.

[Title 296 WAC—p. 956]

(2) The insulation on the element shall equal that specified for equivalent 600 v. combined Type TW and TH or RW and RH conductor insulation and, in addition, shall meet the following requirements:

(a) Permissible maximum water absorption shall not exceed .015 grams per sq. in. of surface in distilled water at 70 degree C. in 7 days.

(b) Maximum safe operating temperature of the insulation shall not be less than 70 degrees C.

(c) It shall be suitable for the purpose intended and approved by the Washington state electrical inspection department as such.

(d) Samples for testing: The manufacturer shall submit suitable samples to the Washington state inspection department for inspection and testing as required.

(e) Marking: Each unit shall be provided with permanent labels or markings at the factory.

(i) These labels shall be placed not more than 3 in. from the terminal on each end and shall include the makers' name and the normal rating in volts and amperes; or, volts and watts.

(ii) 120 volt labels shall be bright metal or white in color. 240 v. labels shall be colored red.

(f) Units shall be installed in their complete lengths as supplied by the factory. Units from which a label or labels are missing will be considered shortened and will not be approved until such time as the installing contractor shall provide proof, by connecting suitable test meters into the circuits with which the inspector, at his convenience, may satisfy himself that the element is suitable for the purpose intended.

(g) Heating element units shall not be covered until clearance has been received from the local inspecting authority.

(h) Lead covered heating elements shall not be permitted in direct contact with plaster, concrete or similar materials capable of causing crystallization and/or checking of the lead sheath, unless protected by a suitable covering of chemically inert material.

(i) All control equipment must be of approved type and of suitable rating for the use intended.

[Rules (part), filed 4/3/61.]

WAC 296-43-020 Heating cables—Maximum wattage and temperature. (1) In contact with combustible material. Maximum wattage of the element shall not exceed 3 watts per lineal foot or maximum temperature of 60 degrees C. (140 degrees F.) when in direct contact with combustible material or applied over existing ceilings.

(2) Imbedded in cement. Maximum wattage of the element shall not exceed 4 watts per lineal foot or maximum temperature of 80 degrees C. (194 degrees F.) when imbedded in cement, plaster or similar noncombustible, heat-diffusing material.

[Rules (part), filed 4/3/61.]

WAC 296-43-030 Heating cables—Permissible installation methods in buildings. Wiring to the elements shall conform to the National Electrical Code and to the following conditions:

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(1) Terminals.

(a) Termination of radiant heating elements shall be with solderless lugs, binding posts, or similar compression terminals.

(b) Terminal boxes for radiant heating elements, where they are terminated in junction boxes and also for the circuit wires with which they are connected, shall be protected by asbestos, glass, or similar noncombustible sleeving to a point at least 18 in. from the terminal.

(c) Not more than 3 in. of element per lead shall be permitted inside the terminal box and not more than two heating element leads shall be terminated in any 1-gang terminal box.

(d) The use of metal raceways for terminating radiant heating cables is permissible providing 6 in. clearance is maintained between points where elements enter the raceways, and, that the elements are terminated as provided in subsections (1)(b) and (1)(c) above.

(e) Where nonheating leads, at least 2 ft. in length, from the element are provided by the factory requirements of subsections (1)(b), (1)(c) and (1)(d) above may be waived, providing that the number of wires per box shall comply with section 3705 of the N.E.C.

(2) Imbedded in plaster. Heating elements, when imbedded in plaster, shall conform to the following provisions:

(a) Adjacent turns shall be not less than 1 in. apart and secured suitably by insulated staples, adhesive tape, patching plaster, plaster of paris, or other suitable means of attachment, as approved by the local inspecting authority, on not less than 2 ft. centers.

(b) Nonmetallic insulating tape shall be used where the element crosses metal reinforcing on rock plaster board and similar lath substitutes, when the heating element is applied directly to the lath base. (Where possible, nonmetallic reinforcing should be substituted to avoid the hum that is occasionally generated in the reinforcing while the current is on.)

(c) When heating element is used on a surface employing metal lath base, a brown coat shall be applied sufficient to completely cover the metal lath before the element is applied; and, adhesive tape, patching plaster, plaster of paris, or other suitable means of attachment be used to secure the element in place.

(d) Heating element shall only be applied to fire resistant plaster bases.

(3) Imbedded in concrete floors. Heating elements imbedded in concrete floors shall conform to the following provisions:

(a) Adjacent turns shall not be less than 1 in. apart and shall be held securely in place by suitable frames or spreaders while the concrete topping is applied.

(b) Heating cables shall maintain at least 1 in. clearance between the element and adjacent metallic pipe or similar conductors imbedded in the slab.

(c) Suitable rigid conduit risers shall be provided for terminating elements imbedded in concrete floors unless raceways or other adequate means are provided for protecting the elements where they leave the slab.

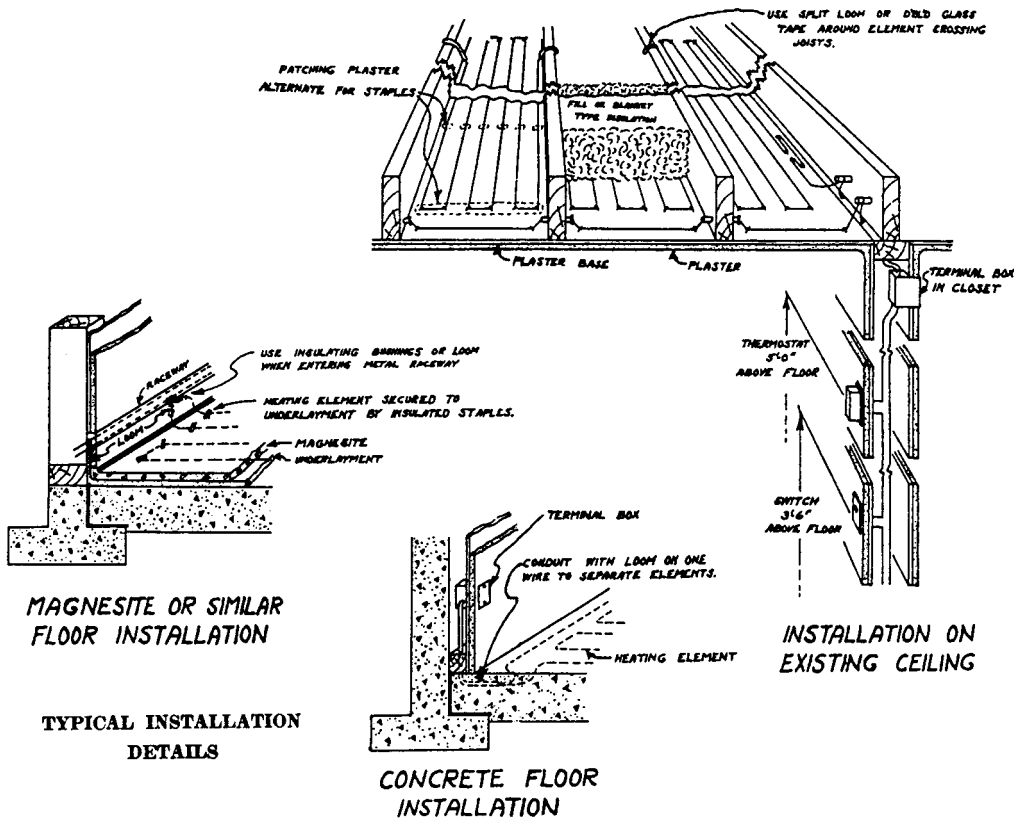
(d) Insulating sleeves shall be placed over the element from the point where it enters the slab through the conduit to the terminating box, unless nonheating leads, not less than 2 ft. long, are provided with the element by the factory.

(e) Suitable insulating bushings shall be used to separate the leads or elements where they enter the conduit in the slab.

(4) Magnesite, terrazzo, tile and similar floors and walls.

(a) Shall conform to the provisions of sections 1, 2, and 3 as applicable.

(b) Heating cables may be attached to the surface of the underlayment where magnesite or terrazzo floors are installed.



Upper: Heating cable applied to plaster board ceiling ready for plaster. Note clearance between metal lath and heating cable.

Lower: Heating cable applied to plaster board wall. Note that elements run vertically to allow plasterer to apply the brown coat parallel to the cable.

(5) Linoleum, asphalt tile and similar floor coverings may be placed over heating elements on wood floors providing the element is first covered with 3/8 in. of magnesium oxychloride or equal fire resistant underlayment.

(6) Existing ceilings.

(a) Heating elements placed over existing ceilings shall be suitably secured thereto conforming to the provisions of WAC 296-43-020(1), and 296-43-030 (1), (2), and (3) as applicable.

(b) Wood lath shall be covered with asbestos paper, gypsum board or similar fire resistant material before the element is applied to the ceiling.

(c) Heating elements shall not be applied over insulating board type of lath such as celotex, insulite, firtex, and similar materials. Where this type of material is used, the element should be secured to the under face of the ceiling and covered with plaster or fire resistant board of a noninsulating type.

(d) Elements crossing ceiling joints shall be enclosed in split loom or folded glass tape to protect the element.

(7) Gypsum board, plaster lath and similar heat conducting fire resistant materials may have the heating element applied directly thereto.

(8) Ceilings of combustible material; i.e., wood veneer, tempered hardboard and similar heat conducting materials

shall first be covered by asbestos paper, gypsum board, or similar fire resistant material.

(9) Pads containing heating elements for placing heating elements in spaces over existing ceilings or in walls or floors which are otherwise inaccessible, shall conform to the provisions of WAC 296-43-010 (1), (2), 296-43-020(1), 296-43-030 (6), (7), (8), and 296-43-040 as applicable, and the following specifications:

(a) The pads shall be of fire resistant, nonconducting material.

(b) The pads shall rigidly secure the element in such a manner that it will be impossible for the adjacent turns of the element to touch.

(i) The leads shall be suitably secured to the pad in a manner which provides permanent adequate separation between the leads.

(ii) The leads shall be covered with an insulating sleeve from the pad to the termination of the heating part of the element.

(iii) All connections must be accessible.

[Rules (part), filed 4/3/61.]

WAC 296-43-040 Heating cables—Thermal insulation. Thermal insulation placed over heating elements or in contact therewith shall be noncorrosive, noncombustible, nonconducting material as provided in section 3249 of the N.E.C.

[Rules (part), filed 4/3/61.]

WAC 296-43-050 Heating cables—Elements installed in tanks, troughs, or pipe lines containing liquids. Elements installed in tanks, troughs or pipe lines containing liquids shall be provided with suitable insulating terminating bushings and terminal boxes at the points where the element enters and leaves the tank, trough, or pipe line. Elements so installed shall be secured in a manner maintaining at least 1 in. clearance between turns.

[Rules (part), filed 4/3/61.]

WAC 296-43-060 Heating element in soil or sand. (1) Heating element in soil or sand shall be so spaced that the minimum distance between adjacent turns is not less than 1 in.

(2) Heating elements shall never be placed directly in peat moss or similar material of an insulating nature. Where peat moss or similar material is used, the element shall be protected by a layer of at least 1 in. over and 1 in. under the element, of a heat conducting material such as sand.

(3) Suitable drains for condensation shall be provided at the bottom of all boxes used in greenhouse or hotbed wiring.

(4) Where open wiring is used in greenhouses and hotbeds, the use of nonmetallic boxes and covers is recommended as provided in section 3716 of the N.E.C.

[Rules (part), filed 4/3/61.]

WAC 296-43-070 Heating element imbedded in driveways. Heating elements imbedded in driveways shall conform to the provisions of WAC 296-43-010, 296-43-020 and 296-43-030(3), as applicable.

(2007 Ed.)

[Rules (part), filed 4/3/61.]

Chapter 296-45 WAC SAFETY STANDARDS FOR ELECTRICAL WORKERS

WAC

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296-45-035	Definitions.
296-45-045	NESC applicable.
296-45-055	Employer's responsibility.
296-45-065	Training.
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296-45-085	Leadworker's responsibility.
296-45-095	Leadworker-employee responsibility.
296-45-105	Work required of leadworkers.
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296-45-25505	Personal protective equipment.
296-45-25510	Fall protection.
296-45-275	Ladders, platforms, and manhole steps.
296-45-285	Hand, and portable powered tools.
296-45-295	Gasoline engine power chain saws.
296-45-305	Live-line tools.
296-45-315	Materials handling and storage.
296-45-325	Working on or near exposed energized parts.
296-45-335	De-energizing lines and equipment for employee protection.
296-45-345	Grounding for the protection of employees.
296-45-355	Underground grounding.
296-45-365	Testing and test facilities.
296-45-375	Mechanical equipment, including aerial manlift equipment.
296-45-385	Overhead lines.
296-45-455	Line-clearance tree-trimming operations.
296-45-45505	Brush chippers.
296-45-45510	Sprayers and related equipment.
296-45-45515	Stump cutters.
296-45-45520	Backpack power units for use in pruning and clearing.
296-45-45525	Rope.
296-45-45530	Fall protection.
296-45-465	Communication facilities.
296-45-475	Substations.
296-45-485	Power generation.
296-45-48505	Interlocks and other safety devices.
296-45-48510	Changing brushes.
296-45-48515	Access and working space.
296-45-48520	Guarding of rooms containing electric supply equipment.
296-45-48525	Guarding of energized parts.
296-45-48530	Water or steam spaces.
296-45-48535	Chemical cleaning of boilers and pressure vessels.
296-45-48540	Chlorine systems.
296-45-48545	Boilers.
296-45-48550	Turbine generators.
296-45-48555	Coal and ash handling.
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296-45-52510	Current transformer secondaries.
296-45-52515	Series streetlighting.
296-45-52520	Illumination.
296-45-52525	Protection against drowning.
296-45-52530	Employee protection in public work areas.
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296-45-52550	Foreign attachments and placards.
296-45-545	Trolley maintenance, jumpering or bypassing.
296-45-675	Rotorcraft/helicopter for power distribution and transmission line installation, construction and repair—Scope.
296-45-67503	Definitions.
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296-45-67509	Slings and tag lines.
296-45-67511	Cargo hooks.
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296-45-67515	Wearing apparel.
296-45-67517	Loose gear and objects.
296-45-67519	Housekeeping.
296-45-67521	Operator's responsibility.
296-45-67523	Hooking and unhooking loads.
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296-45-67529	Visibility.
296-45-67531	Signal systems.
296-45-67533	Approaching the helicopter.
296-45-67535	In helicopter.
296-45-67537	Sling and rigging.
296-45-67539	Personnel.
296-45-67541	Fires.
296-45-67543	General.
296-45-67545	Refueling operations.
296-45-900	Appendices.
296-45-901	Appendix A—Nonmandatory.
296-45-903	Appendix B—Protection from step and touch potentials—Nonmandatory.
296-45-905	Appendix C—Methods of inspecting and testing wood poles—Nonmandatory.

Reviser's note: Chapter 296-44 WAC Safety Standards—Electrical Construction code was absorbed into this chapter with the filing of WSR 98-07-009, filed 3/6/98, effective 5/6/98.

DISPOSITION OF SECTIONS FORMERLY CODIFIED IN THIS CHAPTER

296-45-010	General. [§ 296-45-010, filed 1/3/68; § I, Rules 1.1 through 1.9, filed 3/23/60, effective 2/3/56.] Repealed by Order 76-38, filed 12/30/76.
296-45-020	Causes of accident. [§ I, Rule 1.10, filed 3/23/60, effective 2/3/56.] Repealed by Order 76-38, filed 12/30/76.
296-45-030	Safety. [§ I, Rule 1.11, filed 3/23/60, effective 2/3/56.] Repealed by Order 76-38, filed 12/30/76.
296-45-040	Definitions. [§ I, Rules 1.12 through 1.29, filed 3/23/60, effective 2/3/56.] Repealed by Order 76-38, filed 12/30/76.
296-45-050	Employer's responsibility. [§ II, Rules 2.1 through 2.11, filed 3/23/60, effective 2/3/56.] Repealed by Order 76-38, filed 12/30/76.
296-45-060	Foreman's responsibility. [§ II, Rules 2.12 through 2.23, filed 3/23/60, effective 2/3/56.] Repealed by Order 76-38, filed 12/30/76.
296-45-070	Employees' responsibility. [§ II, Rules 2.24 through 2.31, filed 3/23/60, effective 2/3/56.] Repealed by Order 76-38, filed 12/30/76.
296-45-080	First aid. [§ III, Rules 3.1 through 3.4, filed 3/23/60, effective 2/3/56.] Repealed by Order 76-38, filed 12/30/76.
296-45-090	Industrial hygiene. [§ III, Rules 3.5 through 3.7, filed 3/23/60, effective 2/3/56.] Repealed by Order 76-38, filed 12/30/76.
296-45-110	Tools—General. [§ IV, Rules 4.1 through 4.7, filed 3/23/60, effective 2/3/56.] Repealed by Order 76-38, filed 12/30/76.
296-45-120	Tools—Inspection of tools. [§ IV, Rules 4.8 and 4.9, filed 3/23/60, effective 2/3/56.] Repealed by Order 76-38, filed 12/30/76.
296-45-130	Tools—Storage of tools and materials. [§ IV, Rule 4.10, filed 3/23/60, effective 2/3/56.] Repealed by Order 76-38, filed 12/30/76.

296-45-140	Tools—Hand tools—Using metal objects. [§ IV, Rules 4.11 and 4.12, filed 3/23/60, effective 2/3/56.] Repealed by Order 76-38, filed 12/30/76.
296-45-150	Tools—Ladders. [§ IV, Rules 4.13 through 4.27, filed 3/23/60, effective 2/3/56.] Repealed by Order 76-38, filed 12/30/76.
296-45-160	Tools—Scaffolds. [§ IV, Rule 4.28, filed 3/23/60, effective 2/3/56.] Repealed by Order 76-38, filed 12/30/76.
296-45-170	Tools—Guards and barriers. [§ IV, Rule 4.29, filed 3/23/60, effective 2/3/56.] Repealed by Order 76-38, filed 12/30/76.
296-45-180	Tools—Grounding equipment. [§ IV, Rules 4.30 and 4.31, filed 3/23/60, effective 2/3/56.] Repealed by Order 76-38, filed 12/30/76.
296-45-190	Tools—Hot line tools. [§ IV, Rules 4.32 and 4.33, filed 3/23/60, effective 2/3/56.] Repealed by Order 76-38, filed 12/30/76.
296-45-200	Tools—Switch stick. [§ IV, Rules 4.34 and 4.35, filed 3/23/60, effective 2/3/56.] Repealed by Order 76-38, filed 12/30/76.
296-45-210	Tools—Climbing equipment. [§ IV, Rules 4.36 through 4.39, filed 3/23/60, effective 2/3/56.] Repealed by Order 76-38, filed 12/30/76.
296-45-220	Protective devices—Rubber protective equipment. [§ IV, Rules 4.40 through 4.51, filed 3/23/60, effective 2/3/56.] Repealed by Order 76-38, filed 12/30/76.
296-45-230	Equipment—Soldering equipment. [§ IV, Rules 4.52 through 4.55, filed 3/23/60, effective 2/3/56.] Repealed by Order 76-38, filed 12/30/76.
296-45-240	Equipment—Fire extinguishers. [§ IV, Rule 4.56, filed 3/23/60, effective 2/3/56.] Repealed by Order 76-38, filed 12/30/76.
296-45-250	Wearing apparel. [§ 296-45-250, filed 1/3/68; § IV, Rules 4.57 through 4.61, filed 3/23/60, effective 2/3/56.] Repealed by Order 76-38, filed 12/30/76.
296-45-260	Transportation—Motor vehicle and trailer operations law. [§ IV, Rule 4.62, filed 3/23/60, effective 2/3/56.] Repealed by Order 76-38, filed 12/30/76.
296-45-270	Transportation—Safety practices. [§ 296-45-270, filed 1/3/68; § IV, Rules 4.63 through 4.69, filed 3/23/60, effective 2/3/56.] Repealed by Order 76-38, filed 12/30/76.
296-45-280	Employee qualifications. [§ V, Rule 5.1, filed 3/23/60, effective 2/3/56.] Repealed by Order 76-38, filed 12/30/76.
296-45-290	Work required of foreman. [§ V, Rule 5.2, filed 3/23/60, effective 2/3/56.] Repealed by Order 76-38, filed 12/30/76.
296-45-300	Number of men required to do work safely. [§ V, Rules 5.3 through 5.5, filed 3/23/60, effective 2/3/56.] Repealed by Order 76-38, filed 12/30/76.
296-45-310	Replacing or pulling fuses. [§ V, Rules 5.6 through 5.8, filed 3/23/60, effective 2/3/56.] Repealed by Order 76-38, filed 12/30/76.
296-45-320	Electric utility employee operated motor cranes, "A" frames, aerial lift equipment, hole digger, winches, etc. [§ V, Rule 5.9, filed 3/23/60, effective 2/3/56.] Repealed by Order 76-38, filed 12/30/76.
296-45-330	Working on or near energized lines or equipment. [§ V, Rules 5.10 through 5.15, filed 3/23/60, effective 2/3/56.] Repealed by Order 76-38, filed 12/30/76.
296-45-340	Stringing or removing wires. [§ V, Rule 5.16, filed 3/23/60, effective 2/3/56.] Repealed by Order 76-38, filed 12/30/76.
296-45-350	Temporary guard poles and structures. [§ V, Rule 5.17, filed 3/23/60, effective 2/3/56.] Repealed by Order 76-38, filed 12/30/76.
296-45-360	Safe working practices. [§ V, Rules 5.18 through 5.46, filed 3/23/60, effective 2/3/56.] Repealed by Order 76-38, filed 12/30/76.
296-45-370	Overhead lines—Working above energized circuits over 5 KV. [§ V, Rules 5.47 through 5.50, filed 3/23/60, effective 2/3/56.] Repealed by Order 76-38, filed 12/30/76.
296-45-380	Overhead lines—Using hot line tools. [§ V, Rules 5.51 through 5.54, filed 3/23/60, effective 2/3/56.] Repealed by Order 76-38, filed 12/30/76.
296-45-390	Overhead lines—Strength of spans and their supports. [§ V, Rules 5.55 and 5.56, filed 3/23/60, effective 2/3/56.] Repealed by Order 76-38, filed 12/30/76.
296-45-400	Overhead lines—Foreign operations. [§ V, Rule 5.57, filed 3/23/60, effective 2/3/56.] Repealed by Order 76-38, filed 12/30/76.

296-45-410	Overhead lines—Tree trimming. [§ V, Rule 5.58, filed 3/23/60, effective 2/3/56.] Repealed by Order 76-38, filed 12/30/76.	
296-45-420	Overhead lines—Foreign attachments and placards. [§ V, Rule 5.59, filed 3/23/60, effective 2/3/56.] Repealed by Order 76-38, filed 12/30/76.	296-45-65009
296-45-430	Substations and generating plants—General. [§ V, Rules 5.60 through 5.64, filed 3/23/60, effective 2/3/56.] Repealed by Order 76-38, filed 12/30/76.	
296-45-440	Maintenance of clearance. [§ V, Rule 5.65, filed 3/23/60, effective 2/3/56.] Repealed by Order 76-38, filed 12/30/76.	
296-45-450	Number of men required to work safely. [§ V, Rule 5.66, filed 3/23/60, effective 2/3/56.] Repealed by Order 76-38, filed 12/30/76.	296-45-65011
296-45-460	Safe working practices. [§ V, Rules 5.67 through 5.78, filed 3/23/60, effective 2/3/56.] Repealed by Order 76-38, filed 12/30/76.	
296-45-470	Clearances. [§ VI, Rules 6.1 through 6.13, filed 3/23/60, effective 2/3/56.] Repealed by Order 76-38, filed 12/30/76.	296-45-65013
296-45-480	Grounding. [§ VI, Rules 6.14 through 6.25, filed 3/23/60, effective 2/3/56.] Repealed by Order 76-38, filed 12/30/76.	
296-45-490	Underground maintenance—General. [§ VII, Rule 7.1, filed 3/23/60, effective 2/3/56.] Repealed by Order 76-38, filed 12/30/76.	
296-45-500	Underground maintenance—Working in manholes. [§ VII, Rules 7.2 through 7.7, filed 3/23/60, effective 2/3/56.] Repealed by Order 76-38, filed 12/30/76.	296-45-65015
296-45-510	Underground maintenance—Guarding manholes and street openings. [§ VII, Rules 7.8 through 7.12, filed 3/23/60, effective 2/3/56.] Repealed by Order 76-38, filed 12/30/76.	
296-45-520	Underground maintenance—Use of tools and equipment. [§ VII, Rules 7.13 through 7.17, filed 3/23/60, effective 2/3/56.] Repealed by Order 76-38, filed 12/30/76.	296-45-65017
296-45-530	Underground maintenance—Pulling U.G. cable. [§ VII, Rule 7.18, filed 3/23/60, effective 2/3/56.] Repealed by Order 76-38, filed 12/30/76.	
296-45-540	Underground maintenance—Testing. [§ VII, Rules 7.19 through 7.21, filed 3/23/60, effective 2/3/56.] Repealed by Order 76-38, filed 12/30/76.	296-45-65019
296-45-550	Underground maintenance—Fishing conduit or ducts. [§ VII, Rule 7.22, filed 3/23/60, effective 2/3/56.] Repealed by Order 76-38, filed 12/30/76.	
296-45-560	Underground maintenance—Working in elevated position. [§ VII, Rule 7.23, filed 3/23/60, effective 2/3/56.] Repealed by Order 76-38, filed 12/30/76.	296-45-65021
296-45-570	Underground maintenance—Grounding U.G. power conductors and equipment. [§ VII, Rules 7.24 through 7.27, filed 3/23/60, effective 2/3/56.] Repealed by Order 76-38, filed 12/30/76.	
296-45-580	Trolley maintenance. [§ VII, Rules 7.28 through 7.40, filed 3/23/60, effective 2/3/56.] Repealed by Order 76-38, filed 12/30/76.	296-45-65023
296-45-590	Aerial manlift equipment. [§ 296-45-590, filed 1/3/68; § VIII, Rules 8.1 through 8.10, filed 3/23/60, effective 2/3/56.] Repealed by Order 76-38, filed 12/30/76.	
296-45-600	Conclusion. [Matter following Rule 8.10, filed 3/23/60, effective 2/3/56.] Repealed by Order 76-38, filed 12/30/76.	296-45-65025
296-45-60013	Hand and portable powered tools. [Statutory Authority: RCW 49.17.040, [49.17].050 and [49.17].060. 96-22-013, § 296-45-60013, filed 10/28/96, effective 1/1/97.] Repealed by 98-07-009, filed 3/6/98, effective 5/6/98. Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050 and [49.17].060.	296-45-65026
296-45-650	Electrical workers safety rules—Foreword. [Statutory Authority: Chapter 49.17 RCW. 94-20-057 (Order 94-16), § 296-45-650, filed 9/30/94, effective 11/20/94; Order 76-38, § 296-45-650, filed 12/30/76.] Repealed by 98-07-009, filed 3/6/98, effective 5/6/98. Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050 and [49.17].060.	296-45-65027
296-45-65003	Scope and application. [Statutory Authority: Chapter 49.17 RCW. 94-20-057 (Order 94-16), § 296-45-65003, filed 9/30/94, effective 11/20/94; Order 76-38, § 296-45-65003, filed 12/30/76.] Repealed by 98-07-009, filed 3/6/98, effective 5/6/98. Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050 and [49.17].060.	296-45-65029
296-45-65005	Definitions. [Statutory Authority: Chapter 49.17 RCW. 94-20-057 (Order 94-16), § 296-45-65005, filed 9/30/94, effective 11/20/94; Order 76-38, § 296-45-65005, filed 12/30/76.] Repealed by 98-07-009, filed 3/6/98, effective 5/6/98. Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050 and [49.17].060.	

296-45-65031	Poles and pole settings. [Order 76-38, § 296-45-65031, filed 12/30/76.] Repealed by 98-07-009, filed 3/6/98, effective 5/6/98. Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050 and [49.17].060.	296-45-66003	Tools and protective equipment. [Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-13-053 (Order 81-9), § 296-45-66003, filed 6/17/81.] Repealed by 98-07-009, filed 3/6/98, effective 5/6/98. Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050 and [49.17].060.
296-45-65033	Transmission line construction. [Statutory Authority: Chapter 49.17 RCW. 94-20-057 (Order 94-16), § 296-45-65033, filed 9/30/94, effective 11/20/94; Order 76-38, § 296-45-65033, filed 12/30/76.] Repealed by 98-07-009, filed 3/6/98, effective 5/6/98. Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050 and [49.17].060.	296-45-66005	Insulated tools used for tree trimming. [Statutory Authority: Chapter 49.17 RCW. 94-20-057 (Order 94-16), § 296-45-66005, filed 9/30/94, effective 11/20/94. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-13-053 (Order 81-9), § 296-45-66005, filed 6/17/81.] Repealed by 98-07-009, filed 3/6/98, effective 5/6/98. Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050 and [49.17].060.
296-45-65035	Substations. [Statutory Authority: Chapter 49.17 RCW. 94-20-057 (Order 94-16), § 296-45-65035, filed 9/30/94, effective 11/20/94; Order 76-38, § 296-45-65035, filed 12/30/76.] Repealed by 98-07-009, filed 3/6/98, effective 5/6/98. Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050 and [49.17].060.	296-45-66007	Aerial manlift equipment. [Statutory Authority: Chapter 49.17 RCW. 94-20-057 (Order 94-16), § 296-45-66007, filed 9/30/94, effective 11/20/94. Statutory Authority: RCW 49.17.040 and 49.17.050. 82-13-045 (Order 82-22), § 296-45-66007, filed 6/11/82. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-13-053 (Order 81-9), § 296-45-66007, filed 6/17/81.] Repealed by 98-07-009, filed 3/6/98, effective 5/6/98. Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050 and [49.17].060.
296-45-65037	Underground. [Statutory Authority: Chapter 49.17 RCW. 94-20-057 (Order 94-16), § 296-45-65037, filed 9/30/94, effective 11/20/94; 88-11-021 (Order 88-04), § 296-45-65037, filed 5/11/88; Order 76-38, § 296-45-65037, filed 12/30/76.] Repealed by 98-07-009, filed 3/6/98, effective 5/6/98. Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050 and [49.17].060.	296-45-66009	All motor vehicle and trailer operations. [Statutory Authority: Chapter 49.17 RCW. 94-20-057 (Order 94-16), § 296-45-66009, filed 9/30/94, effective 11/20/94. Statutory Authority: RCW 49.17.040 and 49.17.050. 83-24-013 (Order 83-34), § 296-45-66009, filed 11/30/83; 83-15-017 (Order 83-19), § 296-45-66009, filed 7/13/83, effective 9/12/83.] Repealed by 98-07-009, filed 3/6/98, effective 5/6/98. Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050 and [49.17].060.
296-45-65038	Underground residential distribution (URD). [Statutory Authority: Chapter 49.17 RCW. 94-20-057 (Order 94-16), § 296-45-65038, filed 9/30/94, effective 11/20/94. Statutory Authority: RCW 49.17.040 and 49.17.050. 83-24-013 (Order 83-34), § 296-45-65038, filed 11/30/83; 83-15-017 (Order 83-19), § 296-45-65038, filed 7/13/83, effective 9/12/83.] Repealed by 98-07-009, filed 3/6/98, effective 5/6/98. Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050 and [49.17].060.	296-45-66011	Working in proximity to electrical hazards. [Statutory Authority: Chapter 49.17 RCW. 94-20-057 (Order 94-16), § 296-45-66011, filed 9/30/94, effective 11/20/94. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-13-053 (Order 81-9), § 296-45-66011, filed 6/17/81.] Repealed by 98-07-009, filed 3/6/98, effective 5/6/98. Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050 and [49.17].060.
296-45-65039	Trolley maintenance, jumpering or bypassing. [Statutory Authority: Chapter 49.17 RCW. 94-20-057 (Order 94-16), § 296-45-65039, filed 9/30/94, effective 11/20/94; Order 76-38, § 296-45-65039, filed 12/30/76.] Repealed by 98-07-009, filed 3/6/98, effective 5/6/98. Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050 and [49.17].060.	296-45-680	Communication facilities. [Statutory Authority: Chapter 49.17 RCW. 94-20-057 (Order 94-16), § 296-45-680, filed 9/30/94, effective 11/20/94.] Repealed by 98-07-009, filed 3/6/98, effective 5/6/98. Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050 and [49.17].060.
296-45-65041	Aerial manlift equipment. [Statutory Authority: Chapter 49.17 RCW. 94-20-057 (Order 94-16), § 296-45-65041, filed 9/30/94, effective 11/20/94; 89-11-035 (Order 89-03), § 296-45-65041, filed 5/15/89, effective 6/30/89; Order 76-38, § 296-45-65041, filed 12/30/76.] Repealed by 98-07-009, filed 3/6/98, effective 5/6/98. Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050 and [49.17].060.	296-45-690	Power generation. [Statutory Authority: Chapter 49.17 RCW. 94-20-057 (Order 94-16), § 296-45-690, filed 9/30/94, effective 11/20/94.] Repealed by 98-07-009, filed 3/6/98, effective 5/6/98. Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050 and [49.17].060.
296-45-65043	All motor vehicle and trailer operations. [Statutory Authority: RCW 49.17.040 and 49.17.050. 82-08-026 (Order 82-10), § 296-45-65043, filed 3/30/82; Order 76-38, § 296-45-65043, filed 12/30/76.] Repealed by 98-07-009, filed 3/6/98, effective 5/6/98. Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050 and [49.17].060.	296-45-695	Hazardous energy control (lockout/tagout) procedures. [Statutory Authority: Chapter 49.17 RCW. 94-20-057 (Order 94-16), § 296-45-695, filed 9/30/94, effective 11/20/94.] Repealed by 98-07-009, filed 3/6/98, effective 5/6/98. Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050 and [49.17].060.
296-45-65045	Material handling. [Statutory Authority: Chapter 49.17 RCW. 94-20-057 (Order 94-16), § 296-45-65045, filed 9/30/94, effective 11/20/94; Order 76-38, § 296-45-65045, filed 12/30/76.] Repealed by 98-07-009, filed 3/6/98, effective 5/6/98. Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050 and [49.17].060.	296-45-700	Testing and test facilities. [Statutory Authority: Chapter 49.17 RCW. 94-20-057 (Order 94-16), § 296-45-700, filed 9/30/94, effective 11/20/94.] Repealed by 98-07-009, filed 3/6/98, effective 5/6/98. Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050 and [49.17].060.
296-45-65047	Specification for lineworker's belts and similar equipment. [Statutory Authority: Chapter 49.17 RCW. 95-10-016, § 296-45-65047, filed 4/25/95, effective 10/1/95; 94-20-057 (Order 94-16), § 296-45-65047, filed 9/30/94, effective 11/20/94; Order 76-38, § 296-45-65047, filed 12/30/76.] Repealed by 98-07-009, filed 3/6/98, effective 5/6/98. Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050 and [49.17].060.		
296-45-660	Tree trimming. [Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-13-053 (Order 81-9), § 296-45-660, filed 6/17/81.] Repealed by 98-07-009, filed 3/6/98, effective 5/6/98. Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050 and [49.17].060.		
296-45-66001	Electrical hazards. [Statutory Authority: Chapter 49.17 RCW. 94-20-057 (Order 94-16), § 296-45-66001, filed 9/30/94, effective 11/20/94. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-13-053 (Order 81-9), § 296-45-66001, filed 6/17/81.] Repealed by 98-07-009, filed 3/6/98, effective 5/6/98. Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050 and [49.17].060.		

WAC 296-45-005 Electrical workers safety rules—

Foreword. The purpose of this chapter is to make the workplace of electrical employees as free from recognized hazards as reasonably possible. Following these rules may sometimes require that employee safety receive a higher priority than speed and work performance. These rules exist to provide employee safety, so employees are expected, in good faith, to follow the provisions of this chapter. This chapter is not intended to be a complete job description nor is it expected that the chapter covers every hazard that an employee may encounter. When a hazard exists that is not covered by this chapter, the leadworker and employees are expected, in good

faith, to mutually discuss the hazard and agree how to perform the work with the greatest degree of safety.

The department of labor and industries is the sole and paramount administrative agency responsible for the administration and interpretation of this chapter and the Washington Industrial Safety and Health Act of 1973. If there exists a question as to the meaning of any provision of this chapter, such question must first be directed to the department of labor and industries and its authorized representatives.

Experience has proven that the majority of injuries and deaths are preventable. Most injuries and deaths are not due to defective equipment but are due to failure on the part of the employees and those in authority to observe safety rules and failure to use safety devices. In the last analysis, this chapter is a compilation of experience and common sense. Electrical safety requires that the work be properly planned, executed by the use of good judgment and under the direction of intelligent supervision.

[Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050 and [49.17].060. 98-07-009, § 296-45-005, filed 3/6/98, effective 5/6/98.]

WAC 296-45-015 Scope and application. (1) This chapter covers the operation and maintenance of electric power generation, control, transformation, transmission, and distribution lines and equipment. These provisions apply to:

(a) Power generation, transmission, and distribution installations, including related equipment for the purpose of communication or metering, which are accessible only to qualified employees;

Note: The types of installations covered by this chapter include the generation, transmission, and distribution installations of electric utilities, as well as equivalent installations of industrial establishments. Trolley maintenance, jumpering, and bypass is also covered by this chapter. Supplementary electric generating equipment that is used to supply a workplace for emergency, standby, or similar purposes only is covered under Part L of chapter 296-24 WAC and WAC 296-800-280.

(b) Other installations at an electric power generating station, as follows:

(i) Fuel and ash handling and processing installations, such as coal conveyors;

(ii) Water and steam installations, such as penstocks, pipelines, and tanks, providing a source of energy for electric generators; and

(iii) Chlorine and hydrogen systems.

(c) Test sites where electrical testing involving temporary measurements associated with electric power generation, transmission, and distribution is performed in laboratories, in the field, in substations, and on lines, as opposed to metering, relaying, and routine line work;

(d) Work on or directly associated with the installations covered in subsections (1)(a) through (c) of this section; and

(e) Line-clearance tree-trimming operations, as follows:

(i) This chapter except WAC 296-45-455, applies to line-clearance tree-trimming operations performed by qualified employees (those who are knowledgeable in the construction and operation of electric power generation, transmission, or distribution equipment involved, along with the associated hazards).

(ii) WAC 296-45-065, 296-45-125, 296-45-135, 296-45-255, 296-45-315, 296-45-375, and 296-45-455 through 296-45-45530 apply to line-clearance tree-trimming operations performed by line-clearance tree trimmers who are not qualified employees.

(2) Notwithstanding subsection (1) of this section, this chapter does not apply to electrical installations, electrical safety-related work practices, or electrical maintenance considerations covered by Part L of chapter 296-24 WAC and WAC 296-800-280.

Note 1: Work practices conforming to WAC 296-24-970 through 296-24-985 are considered as complying with the electrical safety-related work practice requirements of this chapter, provided the work is being performed on a generation or distribution installation meeting WAC 296-24-95601 through 296-24-95699. This chapter also applies to work by qualified persons directly on or associated with installations of electric power generation, transmission, and distribution lines or equipment, regardless of compliance with WAC 296-24-970 through 296-24-985.

Note 2: Work practices performed by qualified persons and conforming to this chapter are considered as complying with WAC 296-24-95601 through 296-24-95699.

(3) This section applies in addition to all other applicable safety and health standards administered by the department. Specific references in this section to other standards are provided for emphasis only.

(4) Operation, conditions, work methods and other work related situations or activities not specifically covered by this chapter are subject to the rules and regulations of chapter 296-24 WAC, General safety and health standards; chapter 296-62 WAC, General occupational health standards; chapter 296-155 WAC, Safety standards for construction work; chapter 296-800 WAC, Safety and health core rules; and, insofar as applicable to employee safety and health, chapter 19.29 RCW. Additionally, operations, conditions, work methods and other work related situations or activities may be subject to additional rules and regulations depending upon the nature of the work being performed.

(5) These rules shall not apply to the use of existing electrical installations during their lifetime, provided they are maintained in good condition and in accordance with the applicable safety factor requirements and the rules in effect at the time they were installed, and provided that reconstruction shall conform to the rules as herein provided.

(6) Any rule, regulation or standard contained within this chapter, if subject to interpretation, shall be interpreted so as to achieve employee safety, which is the ultimate purpose of this chapter.

(7) Should a rule or standard contained within this chapter conflict, in any manner, with a standard or rule contained within any other chapter of Title 296 WAC the standard or rule contained herein shall apply so long as the work being done is power generation, transmission, and distribution installations, including related equipment for the purpose of communication or metering, which are accessible only to qualified employees. If there are rules within this chapter that conflict, the rule that provides the greatest employee safety will apply.

(8) Neither the promulgation of these rules, nor anything contained in these rules shall be construed as affecting the relative status or civil rights or liabilities between employers and their employees and/or the employees of others and/or

the public generally; nor shall the use herein of the words "duty" and "responsibility" or either, import or imply liability other than provided for in the industrial insurance and safety laws of the state of Washington, to any person for injuries due to negligence predicated upon failure to perform or discharge any such "duty" or "responsibility," but failure on the part of the employees, leadworker, or employer to comply with any compulsory rule may be cause for the department of labor and industries to take action in accordance with the industrial insurance and safety laws.

(9) "Shall" and "must" as used in this chapter make the provisions mandatory. "Should," "may," or "it is recommended" are used to indicate the provisions are not mandatory but are recommended.

(10) If any section, subsection, phrase, or provisions of this chapter or part thereof should be held invalid by any court for any reason, such invalidity shall not in any way affect the validity of the remainder of this chapter, unless such decision renders the remainder of the provision unintelligible, or changes the meaning of such other provision or provisions.

(11) When the language used in this chapter indicates that it is the responsibility, duty, or obligation of the leadworker or other employee, it shall also be the employer's responsibility, obligation, and duty.

Whenever this chapter refers to the provisions of another safety and health standard or statute affecting safety and health, such reference refers to the statute or code in effect at the time the work is being performed.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 01-11-038, § 296-45-015, filed 5/9/01, effective 9/1/01. Statutory Authority: RCW 49.17.040. 99-09-080, § 296-45-015, filed 4/20/99, effective 8/1/99. Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050 and [49.17].060. 98-07-009, § 296-45-015, filed 3/6/98, effective 5/6/98.]

WAC 296-45-025 Variances. Under certain circumstances, an employer may obtain a variance from the director of the department of labor and industries or an authorized representative. Until such time as a variance is granted, the employer and employees must comply with the mandatory provisions of this chapter. The procedure and requirements for variances are found in chapter 296-350 WAC.

[Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050 and [49.17].060. 98-07-009, § 296-45-025, filed 3/6/98, effective 5/6/98.]

WAC 296-45-035 Definitions. These definitions apply to chapter 296-45 WAC.

"Aerial manlift equipment" - Equipment such as extended towers, boom-mounted cages or baskets, and truck-mounted ladders, that is primarily designed to place personnel and equipment aloft to work on elevated structures and equipment.

"Affected employee" - An employee whose job requires him or her to operate or use a machine or equipment on which servicing or maintenance is being performed under lockout or tagout, or whose job requires him or her to work in an area in which such servicing or maintenance is being performed.

"Apprentice" - An employee who is being trained to be journey level.

"Approved" - Meets or exceeds the recognized standards of safety within the industry.

"Approved protectors" - Gloves worn over rubber insulating gloves which are of such material or substance and so constructed as to protect the rubber gloves from abrasions, lacerations, or other physical damage which might otherwise occur to rubber gloves. Approved protectors must conform to the standards which are recognized by the industry.

"Attendant" - An employee assigned to remain immediately outside the entrance to an enclosed or other space to render assistance as needed to employees inside the space.

"Authorized employee" - An employee who locks out or tags out machines or equipment in order to perform servicing or maintenance on that machine or equipment. An affected employee becomes an authorized employee when that employee's duties include performing servicing or maintenance covered under this section.

"Automatic circuit recloser" - A self-controlled device for interrupting and reclosing an alternating current circuit with a predetermined sequence of opening and reclosing followed by resetting, hold-closed, or lockout operation.

"Barricade" - A physical obstruction such as tapes, cones, or A-frame type wood or metal structures intended to provide a warning about and to limit access to a hazardous area.

"Barrier" - A physical obstruction which is intended to prevent contact with energized lines or equipment or to prevent unauthorized access to a work area.

"Bond" - The electrical interconnection of conductive parts designed to maintain a common electrical potential.

"Bus" - A conductor or a group of conductors that serve as a common connection for two or more circuits.

"Bushing" - An insulating structure, including a through conductor or providing a passageway for such a conductor, with provision for mounting on a barrier, conducting or otherwise, for the purposes of insulating the conductor from the barrier and conducting current from one side of the barrier to the other.

"Cable" - A conductor with insulation, or a stranded conductor with or without insulation and other coverings (single-conductor cable), or a combination of conductors insulated from one another (multiple-conductor cable).

"Cable sheath" - A conductive protective covering applied to cables.

Note: A cable sheath may consist of multiple layers of which one or more is conductive.

"Circuit" - A conductor or system of conductors through which an electric current is intended to flow.

"Clearance (between objects)" - The clear distance between two objects measured surface to surface.

"Clearance (for work)" - Authorization to perform specified work or permission to enter a restricted area.

"Communication lines." (See "Lines, communication.")

"Conductor" - A material, usually in the form of a wire, cable, or bus bar, used for carrying an electric current.

"Covered conductor" - A conductor covered with a dielectric having no rated insulating strength or having a rated insulating strength less than the voltage of the circuit in which the conductor is used.

"Current-carrying part" - A conducting part intended to be connected in an electric circuit to a source of voltage. Noncurrent-carrying parts are those not intended to be so connected.

"Deenergized" - Free from any electrical connection to a source of potential difference and from electric charge; not having a potential difference from that of the earth.

Note: The term is used only with reference to current-carrying parts, which are sometimes energized (alive).

"Designated employee/person" - An employee/person who is designated by the employer to perform specific duties under the terms of this section and who is knowledgeable in the construction and operation of the equipment and the hazards involved.

"Electric line truck" - Any vehicle used to transport employees, tools, and material, which serves as a traveling workshop for electric power line construction and maintenance work. It may be equipped with a boom and auxiliary equipment for setting poles, digging holes, and elevating material and/or workers.

"Electric supply equipment" - Equipment that produces, modifies, regulates, controls, or safeguards a supply of electric energy.

"Electric supply lines." (See "Lines, electric supply.")

"Electric utility" - An organization responsible for the installation, operation, or maintenance of an electric supply system.

"Emergency" - An unforeseen occurrence endangering life, limb, or property.

"Enclosed" - Surrounded by a case, cage, fence or otherwise which will protect the contained equipment and prevent accidental contact of a person with live parts.

"Enclosed space" - A working space, such as a man-hole, vault, tunnel, or shaft, that has a limited means of egress or entry, that is designed for periodic employee entry under normal operating conditions, and that under normal conditions does not contain a hazardous atmosphere, but that may contain a hazardous atmosphere under abnormal conditions.

Note: Spaces that are enclosed but not designed for employee entry under normal operating conditions are not considered to be enclosed spaces for the purposes of this section. Similarly, spaces that are enclosed and that are expected to contain a hazardous atmosphere are not considered to be enclosed spaces for the purposes of this section. Such spaces meet the definition of permit spaces in WAC 296-62-145, and entry into them must be performed in accordance with that standard.

"Energized" (alive, live) - Electrically connected to a source of potential difference, or electrically charged so as to have a potential significantly different from that of earth in the vicinity.

"Energy isolating device" - A physical device that prevents the transmission or release of energy, including, but not limited to, the following: A manually operated electric circuit breaker, a disconnect switch, a manually operated switch, a slide gate, a slip blind, a line valve, blocks, and any similar device with a visible indication of the position of the device. (Push buttons, selector switches, and other control-circuit-type devices are not energy isolating devices.)

"Energy source" - Any electrical, mechanical, hydraulic, pneumatic, chemical, nuclear, thermal, or other energy source that could cause injury to personnel.

"Equipment" (electric) - A general term including material, fittings, devices, appliances, fixtures, apparatus, and the like used as part of or in connection with an electrical installation.

"Exposed" - Not isolated or guarded.

"Fault current" - The current that flows in an electrical system because of a defect in the circuit induced accidentally or otherwise.

"Fixed ladder" - A ladder that is permanently secured to a structure.

"Ground" - A conducting connection, whether intentional or accidental, between an electric circuit or equipment and the earth, or to some conducting body that serves in place of the earth.

"Grounded" - Connected to earth or to some conducting body that serves in place of the earth.

"Grounded system" - A system of conductors in which at least one conductor or point (usually the middle wire, or neutral point of transformer or generator windings) is intentionally grounded either solidly or through a current-limiting device (not a current-interrupting device).

"Groundperson" - A member of crew working on ground under direction of a leadworker.

"Guarded" - Covered, fenced, enclosed, or otherwise protected, by means of suitable covers or casings, barrier rails or screens, mats, or platforms, designed to prevent the possibility, under normal conditions, of dangerous approach or accidental contact by persons or objects.

Note: Wires which are insulated, but not otherwise protected, are not considered as guarded.

"Hazardous atmosphere" - An atmosphere that may expose employees to the risk of death, incapacitation, impairment of ability to self-rescue (that is, escape unaided from an enclosed space), injury, or acute illness from one or more of the following causes:

- Flammable gas, vapor, or mist in excess of 10 percent of its lower flammable limit (LFL);
- Airborne combustible dust at a concentration that meets or exceeds its LFL;

Note: This concentration may be approximated as a condition in which the dust obscures vision at a distance of 5 feet (1.52 m) or less;

- Atmospheric oxygen concentration below 19.5 percent or above 23.5 percent;

- Atmospheric concentration of any substance for which a dose or a permissible exposure limit is published in chapter 296-62 WAC, Part L, or in chapter 296-62 WAC, toxic and hazardous substances, and which could result in employee exposure in excess of its dose or permissible exposure limit;

Note: An atmospheric concentration of any substance that is not capable of causing death, incapacitation, impairment of ability to self-rescue, injury, or acute illness due to its health effects is not covered by this provision.

- Any other atmospheric condition that is "immediately dangerous to life or health" (IDLH).

"IDLH" - Any condition that poses an immediate or delayed threat to life or that would cause irreversible adverse

health effects or that would interfere with an individual's ability to escape unaided from a permit space.

Note: Some materials (hydrogen fluoride gas and cadmium vapor, for example) may produce immediate transient effects that, even if severe, may pass without medical attention, but are followed by sudden, possibly fatal collapse 12-72 hours after exposure. The victim "feels normal" from recovery from transient effects until collapse. Such materials in hazardous quantities are considered to be "immediately" dangerous to life or health.

Note: For air contaminants for which WISHA has not determined a dose or permissible exposure limit, other sources of information, such as Material Safety Data Sheets that comply with the Chemical Hazard Communication Program, WAC 296-800-170, published information, and internal documents can provide guidance in establishing acceptable atmospheric conditions.

"High-power tests" - Tests in which fault currents, load currents, magnetizing currents, and line-dropping currents are used to test equipment, either at the equipment's rated voltage or at lower voltages.

"High-voltage tests" - Tests in which voltages of approximately 1000 volts are used as a practical minimum and in which the voltage source has sufficient energy to cause injury.

"High wind" - A wind of such velocity that the following hazards would be present:

- An employee would be exposed to being blown from elevated locations; or
- An employee or material handling equipment could lose control of material being handled; or
- An employee would be exposed to other hazards not controlled by the standard involved.

Note: Winds exceeding 40 miles per hour (64.4 kilometers per hour), or 30 miles per hour (48.3 kilometers per hour) if material handling is involved, are normally considered as meeting this criteria unless precautions are taken to protect employees from the hazardous effects of the wind.

"Insulated" - Separated from other conducting surfaces by a dielectric (including air space) offering a high resistance to the passage of current.

Note: When any object is said to be insulated, it is understood to be insulated for the conditions to which it is normally subjected. Otherwise, it is, within the purpose of this section, uninsulated.

"Insulation (cable)" - That which is relied upon to insulate the conductor from other conductors or conducting parts or from ground.

"Insulation shielding" - An envelope which encloses the insulation of a cable and provides an equipotential surface in contact with cable insulation.

"Isolated" - An object that is not readily accessible to persons unless special means of access are used.

"Leadworker" - The person directly in charge of workers doing the work, regardless of title.

"Line-clearance tree trimmer" - An employee who, through related training or on-the-job experience or both, is familiar with the special techniques and hazards involved in line-clearance tree trimming.

Note 1: An employee who is regularly assigned to a line-clearance tree-trimming crew and who is undergoing on-the-job training and who, in the course of such training, has demonstrated an ability to perform duties safely at his or her level of training and who is under the direct supervision of a line-clearance tree trimmer is considered to be a line-clearance tree trimmer.

Note 2: A line-clearance tree trimmer is not considered to be a "qualified employee" under this section unless he or she has the training required for a qualified employee under WAC 296-45-065. However, under the electrical safety-related work practices standard, a line-clearance tree trimmer is considered to be a "qualified employee." Tree trimming performed by such "qualified employees" is not subject to the electrical safety-related work practice requirements contained in WAC 296-24-970. (See also the note following WAC 296-24-970 for information regarding the training an employee must have to be considered a qualified employee.)

"Line-clearance tree trimming" - The pruning, trimming, repairing, maintaining, removing, or clearing of trees or the cutting of brush that is within 10 feet (305 cm) of electric supply lines and equipment.

"Lines" -

• **"Communication lines"** - The conductors and their supporting or containing structures which are used for public or private signal or communication service, and which operate at potentials not exceeding 400 volts to ground or 750 volts between any two points of the circuit, and the transmitted power of which does not exceed 150 watts. If the lines are operating at less than 150 volts, no limit is placed on the transmitted power of the system. Under certain conditions, communication cables may include communication circuits exceeding these limitations where such circuits are also used to supply power solely to communication equipment.

Note: Telephone, telegraph, railroad signal, data, clock, fire, police alarm, cable television, and other systems conforming with this definition are included. Lines used for signaling purposes, but not included under this definition, are considered as electric supply lines of the same voltage.

• **"Electric supply lines"** - Conductors used to transmit electric energy and their necessary supporting or containing structures. Signal lines of more than 400 volts are always supply lines within this section, and those of less than 400 volts are considered as supply lines, if so run and operated throughout.

"Live-line tools and ropes" - Tools and ropes specifically designed for work on energized high voltage lines and equipment.

"Load-break elbow" - A connector designed to close and interrupt current on energized circuits within the design current and voltage rating.

"Manhole" - A subsurface enclosure which personnel may enter and which is used for the purpose of installing, operating, and maintaining submersible equipment or cable.

"Manhole steps" - A series of steps individually attached to or set into the walls of a manhole structure.

"Minimum approach distance" - The closest distance an employee is permitted to approach an energized or a grounded object.

"Neutral" - A system in which one conductor is used as the neutral for one or more circuits; one conductor may be used as the neutral for both primary and secondary circuits of a distribution system.

"Pole" - Any device used to support a power distribution or transmission line. The pole may be made of any substance including wood, concrete, metal, is usually cylindrical in shape and comparatively slender. It is the upright standard to which is affixed part of the power distribution and transmission line system as defined in this chapter.

"Power dispatcher" (load dispatcher or system operator) - A person who has been designated by the employer as having authority over switching and clearances of high voltage lines and station equipment.

"Protective devices" - Devices such as rubber gloves, rubber blankets, line hose, rubber boots, or other insulating devices, which are specifically designed for the protection of employees.

"Public highway" - Every way, land, road, street, boulevard, and every other way or place in the state open as a matter of right to public vehicular travel, both inside and outside the limits of cities and towns, regardless of ownership.

"Qualified person or qualified employee" - A person who is familiar with the construction of, or operation of such lines and/or equipment that concerns his/her position and who is fully aware of the hazards connected therewith, or, one who has passed a journey status examination for the particular branch of the electrical trades with which he/she may be connected.

Note 1: An employee must have the training required by WAC 296-45-065(1) in order to be considered a qualified employee.

Note 2: (Apprentice) Except under WAC 296-45-25510(12), an employee who is undergoing on-the-job training and who, in the course of such training, has demonstrated an ability to perform duties safely at his or her level of training and who is under the direct supervision of a qualified person is considered to be a qualified person for the performance of those duties.

"Rubber" - Any goods, equipment, or tool made out of either natural or synthetic rubber.

"Secured ladder" - A ladder which is not capable of being dislodged from the top by lateral, or jerking motion(s).

"Sheath" - As applied to tools carried in a lineman's tool belt, a sheath that effectively covers the tool and prevents such tool from falling from the belt.

"Step bolt" - A bolt or rung attached at intervals along a structural member and used for foot placement during climbing or standing.

"Supporting structure" - The main supporting unit (usually a pole or tower).

"Switch" - A device for opening and closing or for changing the connection of a circuit. In these rules, a switch is understood to be manually operable, unless otherwise stated.

"System operator or power dispatcher" - A qualified person who has been designated by the employer and having authority over switching, clearances, and operation of the system and its parts.

"Tag" - A system or method of identifying circuits, systems, or equipment for the purpose of alerting employees and others that the circuit, system, or equipment is being worked on.

"Underground network" - An underground electrical installation fed from multiple primary sources directly associated with area-wide secondary network connected into a common grid.

"Underground residential distribution system" (URD) - An electrical installation normally fed from a single primary source which may feed one or more transformers with secondaries not connected to a common grid.

"Utility" - An organization responsible for the installation, operation, or maintenance of electric supply or communications systems.

"Vault" - An enclosure, above or below ground, which personnel may enter and which is used for the purpose of installing, operating, or maintaining equipment or cable.

"Vented vault" - A vault that has provision for air changes using exhaust flue stacks and low level air intakes operating on differentials of pressure and temperature providing for airflow which precludes a hazardous atmosphere from developing.

"Voltage" - The effective (rms) potential difference between any two conductors or between a conductor and ground. Voltages are expressed in nominal values unless otherwise indicated. The nominal voltage of a system or circuit is the value assigned to a system or circuit of a given voltage class for the purpose of convenient designation. The operating voltage of the system may vary above or below this value.

Note: Low voltage includes voltages from 50 to 600 volts. High voltage shall mean those voltages of 601 volts to 230,000. Extra high voltage means any voltage over 230,000 volts. Where the words "high voltage" are used in this chapter it shall include extra high voltage, unless otherwise specified.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 01-11-038, § 296-45-035, filed 5/9/01, effective 9/1/01. Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050 and [49.17].060. 98-07-009, § 296-45-035, filed 3/6/98, effective 5/6/98.]

WAC 296-45-045 NESC applicable. (1) All electric utilities and entities operating transmission and distribution facilities within the state of Washington must design, construct, operate, and maintain their lines and equipment according to the requirements of the 2002 National Electrical Safety Code (NESC) (ANSI-C2), parts (1), (2), and (3).

Note: The department has copies of the NESC available for review at each service location across the state. To purchase a copy, write to:
The Institute of Electrical and Electronics Engineers, Inc. (IEEE, Inc.)
445 Hoes Lane
Piscataway, NJ 08855-1331

(2) The employer must ensure that climbing space is provided on all poles and structures. The climbing space must meet the requirements of the 2002 National Electrical Safety Code (NESC) (ANSI-C2), except that Rule 236H does not apply.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060. 03-17-071, § 296-45-045, filed 8/19/03, effective 11/1/03. Statutory Authority: RCW 49.17.040. 99-09-080, § 296-45-045, filed 4/20/99, effective 8/1/99. Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050 and [49.17].060. 98-07-009, § 296-45-045, filed 3/6/98, effective 5/6/98.]

WAC 296-45-055 Employer's responsibility. (1) The employer shall provide and maintain the necessary protective devices specified in these rules and require the employees to use them properly.

(2) The employer shall develop and maintain a chemical hazard communication program as required by WAC 296-800-170, which will provide information to all employees relative to hazardous chemicals or substances to which they are exposed, or may become exposed, in the course of their employment.

(3) There shall be installed and maintained in every fixed establishment employing eight or more persons a safety bulletin board of a size to display and post safety bulletins, newsletters, posters, accident statistics and other safety educational material. It is recommended that safety bulletin boards be painted green and white.

(4) The employer shall require the leadworker to observe and enforce all safety rules and shall furnish a copy of the electrical workers' safety rules to each employee who is covered by these rules.

(5) The employer shall appoint only competent workers to supervise other employees and those appointed shall be responsible for the safety of the employees under their supervision.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 01-11-038, § 296-45-055, filed 5/9/01, effective 9/1/01. Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050 and [49.17].060. 98-07-009, § 296-45-055, filed 3/6/98, effective 5/6/98.]

WAC 296-45-065 Training. Employees shall be trained and proficient in the safety-related work practices, safety procedures, and other safety requirements in this section that pertain to their respective job assignments. Employees shall also be trained in and proficient with any other safety practices, including applicable emergency procedures (such as pole top, aerial, manhole, and tree rescue), that are not specifically addressed by this section but that are related to their work and are necessary for their safety.

(1) Qualified employees shall also be trained and competent in:

(a) The skills and techniques necessary to distinguish exposed live parts from other parts of electric equipment;

(b) The skills and techniques necessary to determine the nominal voltage of exposed live parts;

(c) The minimum approach distances specified in this section corresponding to the voltages to which the qualified employee will be exposed; and

(d) The proper use of the special precautionary techniques, personal protective equipment, insulating and shielding materials, and insulated tools for working on or near exposed energized parts of electric equipment.

Note: For the purposes of this section, a person must have this training in order to be considered a qualified person.

(2) The employer shall determine, through regular supervision and through inspections conducted on at least an annual basis, that each employee is complying with the safety-related work practices required by this section.

(3) An employee shall receive additional training (or retraining) under any of the following conditions:

(a) If the supervision and annual inspections required by subsection (2) of this section indicate that the employee is not complying with the safety-related work practices required by this section; or

(b) If new technology, new types of equipment, or changes in procedures necessitate the use of safety-related work practices that are different from those which the employee would normally use; or

(c) If he or she must employ safety related work practices that are not normally used during his or her regular job duties.

Note: WISHA would consider tasks that are performed less often than once per year to necessitate retraining before the performance of the work practices involved.

(4) The training required by WAC 296-45-065 shall be of the classroom or on-the-job type.

(5) The training shall establish employee proficiency in the work practices required by this section and shall introduce the procedures necessary for compliance with this section.

(6) The employer shall certify that each employee has received the training required by WAC 296-45-065. This certification shall be made when the employee demonstrates proficiency in the work practices involved and shall be maintained for the duration of the employee's employment.

Note: Employment records that indicate that an employee has received the required training are an acceptable means of meeting this requirement.

[Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050 and [49.17].060. 98-07-009, § 296-45-065, filed 3/6/98, effective 5/6/98.]

WAC 296-45-075 Employer's safety program. (1) The employer shall hold safety meetings at least once a month, which meetings shall be held at a reasonable time and place as selected by the employer. The employer shall require all employees subject to provisions of this chapter to attend said meetings: Provided, That employees whose presence is otherwise required by reason of an emergency or whose function is such that they cannot leave their station or cease their work without serious detriment to the service provided, such as dispatcher, may be excused from such meeting under those circumstances. Minutes shall be kept of each safety meeting and retained for a period of one year.

(2) The employer or a representative(s) designated shall investigate all accidents or injuries of a serious nature and, where possible, take the proper remedial steps to prevent the occurrence of similar accidents.

(3) The employer shall furnish instructions stating the proper procedure in event of an emergency, which shall include the names of those individuals to be notified and methods of contacting them.

(4) The employer shall provide and make available to all employees accident report and safety suggestion forms or other approved methods. Safety suggestion forms should, where possible, be used for suggesting the elimination of hazardous conditions and such reported suggestions shall be retained (for one year) by the employer or an authorized representative.

(5) The employer must notify the department of employee fatalities or catastrophes according to the requirements of WAC 296-800-320.

(6) Nothing contained within this chapter shall prohibit an employer or an authorized representative from disciplining employees for failure to comply with the provisions of this or any other safety code.

(7) Existing conditions related to the safety of the work to be performed shall be determined before work on or near electric lines or equipment is started. Such conditions include, but are not limited to, the nominal voltages of lines and equipment, the maximum switching transient voltages, the presence of hazardous induced voltages, the presence and condition of protective grounds and equipment grounding

conductors, the condition of poles, environmental conditions relative to safety, and the locations of circuits and equipment, including power and communication lines and fire protective signaling circuits.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 01-11-038, § 296-45-075, filed 5/9/01, effective 9/1/01. Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050 and [49.17].060. 98-07-009, § 296-45-075, filed 3/6/98, effective 5/6/98.]

WAC 296-45-085 Leadworker's responsibility. (1)

Every leadworker shall understand these and any other applicable safety rules and comply therewith. Leadworkers shall require all employees under their direction or supervision to read this chapter and the provisions contained therein and require every employee subject to this chapter to be able to apply this chapter and any provision of this chapter on a day-to-day basis.

(2) Leadworkers shall inform employees under their supervision or direction of the type and voltage of circuits on or near which the employees are to work.

(3) Leadworkers shall require all employees under their supervision to properly use safety devices and equipment, including barricades, warning flags or signs, or any other device called for to protect employees.

[Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050 and [49.17].060. 98-07-009, § 296-45-085, filed 3/6/98, effective 5/6/98.]

WAC 296-45-095 Leadworker-employee responsibility. (1) An employee shall protect his/her climbing and working space at all times if the conductors are so spaced that in climbing or working he/she will be, or where it is possible to come within, the minimum required distances specified in these rules.

(2) Leadworkers or supervisors shall in good faith consider verbal or written reports of hazardous conditions and shall, as soon as practicable, investigate and remedy same if warranted.

(3) When hazards are reported by employees, leadworkers and others having authority shall accept the report in a cooperative manner, and in no case shall an employee be reprimanded or penalized for reporting hazards or potential hazards.

(4) Leadworkers shall require all employees under their supervision to keep their belts, spurs, and straps in good working condition. When straps and belts are in poor condition or defective, they shall not be used.

(5) Before leaving a job site, leadworkers shall correct or arrange to give warning of any condition which might result in injury to employees.

(6) No employee shall be permitted or allowed to remain on the job site when under the influence of any intoxicating beverage or controlled substance or substances: Provided, That if an employee is taking prescription medication under the direction of a practicing physician and such prescription does not interfere with the safe performance of the work assigned, such employee may be permitted to work.

(7) No intoxicating beverages or controlled substances shall be consumed on the job site other than prescription medication as set forth above.

[Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050 and [49.17].060. 98-07-009, § 296-45-095, filed 3/6/98, effective 5/6/98.]

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WAC 296-45-105 Work required of leadworkers. (1)

A leadworker cannot properly supervise the work and look out for the safety of employees under their direction if required to work as a leadworker and a lineworker at the same time.

(2) Leadworkers should be constantly alert and shall not be required to serve in such dual capacity, except in crews of not more than two lineworkers, in which case they may work as one of the lineworkers.

(3) In crews of two lineworkers or less, each lineworker may have a groundworker but, if additional lineworkers or groundworkers are added to the crew, the leadworker shall confine his/her activities to supervising the work, as exhibited below:

Type of Crew	Minimum Requirements
2 lineworkers	One lineworker as person-in-charge.
2 lineworkers plus 1 groundworker	One lineworker as person-in-charge or climbing leadworker.
2 lineworkers plus 2 groundworkers	One lineworker as person-in-charge or climbing leadworker.
2 lineworkers plus any combination of 3 lineworkers or groundworkers	One nonclimbing leadworker.

[Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050 and [49.17].060. 98-07-009, § 296-45-105, filed 3/6/98, effective 5/6/98.]

WAC 296-45-115 Employee's responsibility. (1)

Employees shall not engage in horseplay or scuffling while on the job or job site and the employer shall not permit horseplay or scuffling while on the job site or otherwise in the course of employment.

(2) During such time as any employee is working on or near any energized line or energized equipment in excess of 600 volts there shall be no talking or communication other than that which is absolutely necessary and essential for the safe and proper performance of the work. Should there be communication or talk from a person other than an employee, the work shall stop until such time as the distraction ceases.

(3) Employees shall report any hazardous or potentially hazardous condition, operation, means, or work in a constructive manner and shall not engage in personality conflicts.

(4) Neither the employer nor the employees shall throw or permit anything to be thrown from elevated position(s) or poles to the ground or lower level, nor shall anything be thrown from the ground or lower level to an elevated position, whether that elevated position is on a pole, aerial manlift or otherwise. Tools and loose materials shall not be left on poles, crossarms, ladders or other elevated structures or positions.

(5) Employees shall report all injuries, regardless of severity, to the employer or designated representative. Report forms furnished by the employer should be used.

[Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050 and [49.17].060. 98-07-009, § 296-45-115, filed 3/6/98, effective 5/6/98.]

WAC 296-45-125 Medical services and first aid. The employer shall provide medical services and first aid as required in WAC 296-800-150. The following requirements also apply:

(1) Cardiopulmonary resuscitation and first-aid training. When employees are performing work on or associated with exposed lines or equipment energized at 50 volts or more, persons trained in first aid including cardiopulmonary resuscitation (CPR) shall be available as follows:

(a) For field work involving two or more employees at a work location, at least two trained persons shall be available. However, only one trained person need be available if all new employees are trained in first aid, including CPR, within 3 months of their hiring dates.

(b) For fixed work locations such as generating stations, the number of trained persons available shall be sufficient to ensure that each employee exposed to electric shock can be reached within 4 minutes by a trained person. However, where the existing number of employees is insufficient to meet this requirement (at a remote substation, for example), all employees at the work location shall be trained.

(2) First-aid supplies. First-aid supplies required by WAC 296-800-150 shall be placed in weatherproof containers if the supplies could be exposed to the weather.

(3) First-aid kits. Each first-aid kit shall be maintained, shall be readily available for use, and shall be inspected frequently enough to ensure that expended items are replaced but at least once per year.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060. 04-07-160, § 296-45-125, filed 3/23/04, effective 5/1/04. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 01-11-038, § 296-45-125, filed 5/9/01, effective 9/1/01. Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050 and [49.17].060. 98-07-009, § 296-45-125, filed 3/6/98, effective 5/6/98.]

WAC 296-45-135 Job briefing. The employer shall ensure that the leadworker conducts a job briefing with the employees involved before they start each job. The briefing shall cover at least the following subjects: Hazards associated with the job, work procedures involved, special precautions, energy source controls, and personal protective equipment requirements.

(1) Number of briefings. If the work or operations to be performed during the work day or shift are repetitive and similar, at least one job briefing shall be conducted before the start of the first job of each day or shift. Additional job briefings shall be held if significant changes, which might affect the safety of the employees, occur during the course of the work.

(2) Extent of briefing. A brief discussion is satisfactory if the work involved is routine and if the employee, by virtue of training and experience, can reasonably be expected to recognize and avoid the hazards involved in the job. A more extensive discussion shall be conducted:

(a) If the work is complicated or particularly hazardous; or

(b) If the employee cannot be expected to recognize and avoid the hazards involved in the job.

Note: The briefing is always required to touch on all the subjects listed in the introductory text to this section.

(3) Working alone. An employee working alone need not conduct a job briefing. However, the employer shall ensure that the tasks to be performed are planned as if a briefing were required.

[Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050 and [49.17].060. 98-07-009, § 296-45-135, filed 3/6/98, effective 5/6/98.]

WAC 296-45-175 Hazardous energy control (lockout/tagout) procedures. The provisions of this section apply to the use of lockout/tagout procedures for the control of energy sources in installations for the purpose of electric power generation, including related equipment for communication or metering. Locking and tagging procedures for the de-energizing of electric energy sources which are used exclusively for purposes of transmission and distribution are addressed by WAC 296-45-335.

Note 1: Installations in electric power generation facilities that are not an integral part of, or inextricably commingled with, power generation processes or equipment are covered under chapter 296-24 WAC.

Note 2: Lockout and tagging procedures that comply with chapter 296-803 WAC will also be deemed to comply with this section if the procedures address the hazards covered by this section.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060. 04-15-105, § 296-45-175, filed 7/20/04, effective 11/1/04; 98-07-009, § 296-45-175, filed 3/6/98, effective 5/6/98.]

WAC 296-45-17505 Lockout/tagout (hazardous control) program. (1) The employer shall establish a program consisting of energy control procedures, employee training, and periodic inspections to ensure that, before any employee performs any servicing or maintenance on a machine or equipment where the unexpected energizing, start up, or release of stored energy could occur and cause injury, the machine or equipment is isolated from the energy source and rendered inoperative.

(2) The employer's energy control program under this section shall meet the following requirements:

(a) If an energy isolating device is not capable of being locked out, the employer's program shall use a tagout system.

(b) If an energy isolating device is capable of being locked out, the employer's program shall use lockout, unless the employer can demonstrate that the use of a tagout system will provide full employee protection as follows:

(i) When a tagout device is used on an energy isolating device which is capable of being locked out, the tagout device shall be attached at the same location that the lockout device would have been attached, and the employer shall demonstrate that the tagout program will provide a level of safety equivalent to that obtained by the use of a lockout program.

(ii) In demonstrating that a level of safety is achieved in the tagout program equivalent to the level of safety obtained by the use of a lockout program, the employer shall demonstrate full compliance with all tagout-related provisions of this standard together with such additional elements as are necessary to provide the equivalent safety available from the use of a lockout device. Additional means to be considered as part of the demonstration of full employee protection shall include the implementation of additional safety measures such as the removal of an isolating circuit element, blocking of a controlling switch, opening of an extra disconnecting device, or the removal of a valve handle to reduce the likelihood of inadvertent energizing.

(3) Whenever replacement or major repair, renovation, or modification of a machine or equipment is performed, and

whenever new machines or equipment are installed, energy isolating devices for such machines or equipment shall be designed to accept a lockout device.

(4) Procedures shall be developed, documented, and used for the control of potentially hazardous energy covered by this section.

(5) The procedure shall clearly and specifically outline the scope, purpose, responsibility, authorization, rules, and techniques to be applied to the control of hazardous energy, and the measures to enforce compliance including, but not limited to, the following:

(a) A specific statement of the intended use of this procedure;

(b) Specific procedural steps for shutting down, isolating, blocking and securing machines or equipment to control hazardous energy;

(c) Specific procedural steps for the placement, removal, and transfer of lockout devices or tagout devices and the responsibility for them; and

(d) Specific requirements for testing a machine or equipment to determine and verify the effectiveness of lockout devices, tagout devices, and other energy control measures.

(6) The employer shall conduct a periodic inspection of the energy control procedure at least annually to ensure that the procedure and the provisions of this section are being followed.

(a) The periodic inspection shall be performed by an authorized employee who is not using the energy control procedure being inspected.

(b) The periodic inspection shall be designed to identify and correct any deviations or inadequacies.

(c) If lockout is used for energy control, the periodic inspection shall include a review, between the inspector and each authorized employee, of that employee's responsibilities under the energy control procedure being inspected.

(d) Where tagout is used for energy control, the periodic inspection shall include a review, between the inspector and each authorized and affected employee, of that employee's responsibilities under the energy control procedure being inspected, and the elements set forth in this section.

(e) The employer shall certify that the inspections required by this section have been accomplished. The certification shall identify the machine or equipment on which the energy control procedure was being used, the date of the inspection, the employees included in the inspection, and the person performing the inspection.

Note: If normal work schedule and operation records demonstrate adequate inspection activity and contain the required information, no additional certification is required.

(7) The employer shall provide training to ensure that the purpose and function of the energy control program are understood by employees and that the knowledge and skills required for the safe application, usage, and removal of energy controls are acquired by employees. The training shall include the following:

(a) Each authorized employee shall receive training in the recognition of applicable hazardous energy sources, the type and magnitude of energy available in the workplace, and in the methods and means necessary for energy isolation and control.

(b) Each affected employee shall be instructed in the purpose and use of the energy control procedure.

(c) All other employees whose work operations are or may be in an area where energy control procedures may be used shall be instructed about the procedures and about the prohibition relating to attempts to restart or reenergize machines or equipment that are locked out or tagged out.

(8) When tagout systems are used, employees shall also be trained in the following limitations of tags:

(a) Tags are essentially warning devices affixed to energy isolating devices and do not provide the physical restraint on those devices that is provided by a lock.

(b) When a tag is attached to an energy isolating means, it is not to be removed without authorization of the authorized person responsible for it, and it is never to be bypassed, ignored, or otherwise defeated.

(c) Tags must be legible and understandable by all authorized employees, affected employees, and all other employees whose work operations are or may be in the area, in order to be effective.

(d) Tags and their means of attachment must be made of materials which will withstand the environmental conditions encountered in the workplace.

(e) Tags may evoke a false sense of security, and their meaning needs to be understood as part of the overall energy control program.

(f) Tags must be securely attached to energy isolating devices so that they cannot be inadvertently or accidentally detached during use.

[Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050 and [49.17].060. 98-07-009, § 296-45-17505, filed 3/6/98, effective 5/6/98.]

WAC 296-45-17510 Retraining. (1) Retraining shall be provided for all authorized and affected employees whenever there is a change in their job assignments, a change in machines, equipment, or processes that present a new hazard or whenever there is a change in the energy control procedures.

(2) Retraining shall also be conducted whenever a periodic inspection reveals, or whenever the employer has reason to believe, that there are deviations from or inadequacies in an employee's knowledge or use of the energy control procedures.

(3) The retraining shall reestablish employee proficiency and shall introduce new or revised control methods and procedures, as necessary.

(4) The employer shall certify that employee training has been accomplished and is being kept up to date. The certification shall contain each employee's name and dates of training.

[Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050 and [49.17].060. 98-07-009, § 296-45-17510, filed 3/6/98, effective 5/6/98.]

WAC 296-45-17515 Protective materials and hardware. (1) Locks, tags, chains, wedges, key blocks, adapter pins, self-locking fasteners, or other hardware shall be provided by the employer for isolating, securing, or blocking of machines or equipment from energy sources.

(2) Lockout devices and tagout devices shall be singularly identified; shall be the only devices used for controlling

energy; may not be used for other purposes; and shall meet the following requirements:

(a) Lockout devices and tagout devices shall be capable of withstanding the environment to which they are exposed for the maximum period of time that exposure is expected.

(b) Tagout devices shall be constructed and printed so that exposure to weather conditions or wet and damp locations will not cause the tag to deteriorate or the message on the tag to become illegible.

(c) Tagout devices shall be so constructed as not to deteriorate when used in corrosive environments.

(3) Lockout devices and tagout devices shall be standardized within the facility in at least one of the following criteria: Color, shape, size. Additionally, in the case of tagout devices, print and format shall be standardized.

(4) Lockout devices shall be substantial enough to prevent removal without the use of excessive force or unusual techniques, such as with the use of bolt cutters or metal cutting tools.

(5) Tagout devices, including their means of attachment, shall be substantial enough to prevent inadvertent or accidental removal. Tagout device attachment means shall be of a nonreusable type, attachable by hand, self-locking, and non-releasable with a minimum unlocking strength of no less than fifty pounds and shall have the general design and basic characteristics of being at least equivalent to a one-piece, all-environment-tolerant nylon cable tie.

(6) Each lockout device or tagout device shall include provisions for the identification of the employee applying the device.

(7) Tagout devices shall warn against hazardous conditions if the machine or equipment is energized and shall include a legend such as the following: Do Not Start, Do Not Open, Do Not Close, Do Not Energize, Do Not Operate.

Note: For specific provisions covering accident prevention tags, see chapter 296-24 WAC.

[Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050 and [49.17].060. 98-07-009, § 296-45-17515, filed 3/6/98, effective 5/6/98.]

WAC 296-45-17520 Energy isolation. Lockout and tagout device application and removal may only be performed by the authorized employees who are performing the servicing or maintenance.

[Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050 and [49.17].060. 98-07-009, § 296-45-17520, filed 3/6/98, effective 5/6/98.]

WAC 296-45-17525 Notification. Affected employees shall be notified by the employer or authorized employee of the application and removal of lockout or tagout devices. Notification shall be given before the controls are applied and after they are removed from the machine or equipment.

Note: This section requires that the second notification take place before the machine or equipment is reenergized.

[Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050 and [49.17].060. 98-07-009, § 296-45-17525, filed 3/6/98, effective 5/6/98.]

WAC 296-45-17530 Lockout/tagout application. The established procedures for the application of energy control (the lockout or tagout procedures) shall include the following

elements and actions, and these procedures shall be performed in the following sequence:

(1) Before an authorized or affected employee turns off a machine or equipment, the authorized employee shall have knowledge of the type and magnitude of the energy, the hazards of the energy to be controlled, and the method or means to control the energy.

(2) The machine or equipment shall be turned off or shut down using the procedures established for the machine or equipment. An orderly shutdown shall be used to avoid any additional or increased hazards to employees as a result of the equipment stoppage.

(3) All energy isolating devices that are needed to control the energy to the machine or equipment shall be physically located and operated in such a manner as to isolate the machine or equipment from energy sources.

(4) Lockout or tagout devices shall be affixed to each energy isolating device by authorized employees.

(a) Lockout devices shall be attached in a manner that will hold the energy isolating devices in a "safe" or "off" position.

(b) Tagout devices shall be affixed in such a manner as will clearly indicate that the operation or movement of energy isolating devices from the "safe" or "off" position is prohibited.

(5) Where tagout devices are used with energy isolating devices designed with the capability of being locked out, the tag attachment shall be fastened at the same point at which the lock would have been attached.

(6) Where a tag cannot be affixed directly to the energy isolating device, the tag shall be located as close as safely possible to the device, in a position that will be immediately obvious to anyone attempting to operate the device.

[Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050 and [49.17].060. 98-07-009, § 296-45-17530, filed 3/6/98, effective 5/6/98.]

WAC 296-45-17535 Releasing stored energy. Following the application of lockout or tagout devices to energy isolating devices, all potentially hazardous stored or residual energy shall be relieved, disconnected, restrained, or otherwise rendered safe.

(1) If there is a possibility of reaccumulation of stored energy to a hazardous level, verification of isolation shall be continued until the servicing or maintenance is completed or until the possibility of such accumulation no longer exists.

(2) Before starting work on machines or equipment that have been locked out or tagged out, the authorized employee shall verify that isolation and de-energizing of the machine or equipment have been accomplished. If normally energized parts will be exposed to contact by an employee while the machine or equipment is deenergized, a test shall be performed to ensure that these parts are deenergized.

[Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050 and [49.17].060. 98-07-009, § 296-45-17535, filed 3/6/98, effective 5/6/98.]

WAC 296-45-17540 Release from lockout/tagout. Before lockout or tagout devices are removed and energy is restored to the machine or equipment, procedures shall be followed and actions taken by the authorized employees to ensure the following:

(1) The work area shall be inspected to ensure that non-essential items have been removed and that machine or equipment components are operationally intact.

(2) The work area shall be checked to ensure that all employees have been safely positioned or removed.

(3) After lockout or tagout devices have been removed and before a machine or equipment is started, affected employees shall be notified that the lockout or tagout devices have been removed.

(4) Each lockout or tagout device shall be removed from each energy isolating device by the authorized employee who applied the lockout or tagout device. However, if that employee is not available to remove it, the device may be removed under the direction of the employer, provided that specific procedures and training for such removal have been developed, documented, and incorporated into the employer's energy control program. The employer shall demonstrate that the specific procedure provides a degree of safety equivalent to that provided by the removal of the device by the authorized employee who applied it. The specific procedure shall include at least the following elements:

(a) Verification by the employer that the authorized employee who applied the device is not at the facility;

(b) Making all reasonable efforts to contact the authorized employee to inform him or her that his or her lockout or tagout device has been removed; and

(c) Ensuring that the authorized employee has this knowledge before he or she resumes work at that facility.

[Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050 and [49.17].060. 98-07-009, § 296-45-17540, filed 3/6/98, effective 5/6/98.]

WAC 296-45-17545 Temporary removal of lockout/tagout. If the lockout or tagout devices must be temporarily removed from energy isolating devices and the machine or equipment must be energized to test or position the machine, equipment, or component thereof, the following sequence of actions shall be followed:

(1) Clear the machine or equipment of tools and materials in accordance with this section;

(2) Remove employees from the machine or equipment area in accordance with this section;

(3) Remove the lockout or tagout devices as specified in this section;

(4) Energize and proceed with the testing or positioning; and

(5) De-energize all systems and reapply energy control measures in accordance with this section to continue the servicing or maintenance.

[Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050 and [49.17].060. 98-07-009, § 296-45-17545, filed 3/6/98, effective 5/6/98.]

WAC 296-45-17550 Group lockout/tagout. When servicing or maintenance is performed by a crew, craft, department, or other group, they shall use a procedure which affords the employees a level of protection equivalent to that provided by the implementation of a personal lockout or tagout device. Group lockout or tagout devices shall be used in accordance with the procedures required by the following specific requirements:

(1) Primary responsibility shall be vested in an authorized employee for a set number of employees working under

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the protection of a group lockout or tagout device (such as an operations lock);

(2) Provision shall be made for the authorized employee to ascertain the exposure status of all individual group members with regard to the lockout or tagout of the machine or equipment;

(3) When more than one crew, craft, department, or other group is involved, assignment of overall job-associated lockout or tagout control responsibility shall be given to an authorized employee designated to coordinate affected work forces and ensure continuity of protection; and

(4) Each authorized employee shall affix a personal lockout or tagout device to the group lockout device, group lockbox, or comparable mechanism when he or she begins work and shall remove those devices when he or she stops working on the machine or equipment being serviced or maintained.

[Statutory Authority: RCW 49.17.040. 99-09-080, § 296-45-17550, filed 4/20/99, effective 8/1/99. Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050 and [49.17].060. 98-07-009, § 296-45-17550, filed 3/6/98, effective 5/6/98.]

WAC 296-45-17555 Shift changes. Procedures shall be used during shift or personnel changes to ensure the continuity of lockout or tagout protection, including provision for the orderly transfer of lockout or tagout device protection between off-going and on-coming employees, to minimize their exposure to hazards from the unexpected energizing or start up of the machine or equipment or from the release of stored energy.

[Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050 and [49.17].060. 98-07-009, § 296-45-17555, filed 3/6/98, effective 5/6/98.]

WAC 296-45-17560 Outside servicing personnel. Whenever outside servicing personnel are to be engaged in activities covered by this section, the on-site employer and the outside employer shall inform each other of their respective lockout or tagout procedures, and each employer shall ensure that his or her personnel understand and comply with restrictions and prohibitions of the energy control procedures being used.

[Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050 and [49.17].060. 98-07-009, § 296-45-17560, filed 3/6/98, effective 5/6/98.]

WAC 296-45-17565 Central system operator. If energy isolating devices are installed in a central location under the exclusive control of a system operator, the following requirements apply:

(1) The employer shall use a procedure that affords employees a level of protection equivalent to that provided by the implementation of a personal lockout or tagout device.

(2) The system operator shall place and remove lockout and tagout devices in place of the authorized employee.

(3) Provisions shall be made to identify the authorized employee who is responsible for (that is, being protected by) the lockout or tagout device, to transfer responsibility for lockout and tagout devices, and to ensure that an authorized employee requesting removal or transfer of a lockout or tagout device is the one responsible for it before the device is removed or transferred.

[Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050 and [49.17].060. 98-07-009, § 296-45-17565, filed 3/6/98, effective 5/6/98.]

WAC 296-45-195 Trenching and excavation. (1) During excavation or trenching, in order to prevent exposure of employees to the hazards created by damage to dangerous underground facilities, efforts shall be made to determine the location of such facilities and work conducted in a manner designed to avoid damage.

(2) Trenching and excavation operations shall comply with the provisions of Part N, chapter 296-155 WAC.

[Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050 and [49.17].060. 98-07-009, § 296-45-195, filed 3/6/98, effective 5/6/98.]

WAC 296-45-205 Enclosed spaces. This section covers enclosed spaces that may be entered by employees. It does not apply to vented vaults if a determination is made that the ventilation system is operating to protect employees before they enter the space. This paragraph applies to routine entry into enclosed spaces in lieu of the permit-space entry requirements contained in WAC 296-62-145. If, after the precautions given in WAC 296-45-205, 296-45-215, and 296-45-225 are taken, the hazards remaining in the enclosed space endanger the life of an entrant or could interfere with escape from the space, then entry into the enclosed space shall meet the permit-space entry requirements of WAC 296-62-145.

Note: Entries into enclosed spaces conducted in accordance with the permit-space entry requirements of WAC 296-62-145 are considered as complying with this section.

(1) "Safe work practices." The employer shall ensure the use of safe work practices for entry into and work in enclosed spaces and for rescue of employees from such spaces.

(2) "Training." Employees who enter enclosed spaces or who serve as attendants shall be trained in the hazards of enclosed space entry, in enclosed space entry procedures, and in enclosed space rescue procedures.

(3) "Rescue equipment." Employers shall provide equipment to ensure the prompt and safe rescue of employees from the enclosed space.

(4) "Evaluation of potential hazards." Before any entrance cover to an enclosed space is removed, the employer shall determine whether it is safe to do so by checking for the presence of any atmospheric pressure or temperature differences and by evaluating whether there might be a hazardous atmosphere in the space. Any conditions making it unsafe to remove the cover shall be eliminated before the cover is removed.

Note: The evaluation called for in this subsection may take the form of a check of the conditions expected to be in the enclosed space. For example, the cover could be checked to see if it is hot and, if it is fastened in place, could be loosened gradually to release any residual pressure. A determination must also be made of whether conditions at the site could cause a hazardous atmosphere, such as an oxygen deficient or flammable atmosphere, to develop within the space.

(5) "Removal of covers." When covers are removed from enclosed spaces, the opening shall be promptly guarded by a railing, temporary cover, or other barrier intended to prevent an accidental fall through the opening and to protect employees working in the space from objects entering the space.

(6) "Hazardous atmosphere." Employees may not enter any enclosed space while it contains a hazardous atmosphere, unless the entry conforms to the generic permit-required con-

finied spaces standard in WAC 296-62-145 through 296-62-14543.

Note: The term "entry" is defined in WAC 296-62-14501.

(7) "Attendants." While work is being performed in the enclosed space, a person with first-aid training meeting WAC 296-45-125 shall be immediately available outside the enclosed space to render emergency assistance if there is reason to believe that a hazard may exist in the space or if a hazard exists because of traffic patterns in the area of the opening used for entry. That person is not precluded from performing other duties outside the enclosed space if these duties do not distract the attendant from monitoring employees within the space.

Note: See WAC 296-45-215(12) for additional requirements on attendants for work in manholes.

(8) "Calibration of test instruments." Test instruments used to monitor atmospheres in enclosed spaces shall be kept in calibration, with a minimum accuracy of + or - 10 percent.

(9) "Testing for oxygen deficiency." Before an employee enters an enclosed space, the internal atmosphere shall be tested for oxygen deficiency with a direct-reading meter or similar instrument, capable of collection and immediate analysis of data samples without the need for off-site evaluation. If continuous forced air ventilation is provided, testing is not required provided that the procedures used ensure that employees are not exposed to the hazards posed by oxygen deficiency.

(10) "Testing for flammable gases and vapors." Before an employee enters an enclosed space, the internal atmosphere shall be tested for flammable gases and vapors with a direct-reading meter or similar instrument capable of collection and immediate analysis of data samples without the need for off-site evaluation. This test shall be performed after the oxygen testing and ventilation required by subsection (9) of this section demonstrate that there is sufficient oxygen to ensure the accuracy of the test for flammability.

(11) "Ventilation and monitoring." If flammable gases or vapors are detected or if an oxygen deficiency is found, forced air ventilation shall be used to maintain oxygen at a safe level and to prevent a hazardous concentration of flammable gases and vapors from accumulating. A continuous monitoring program to ensure that no increase in flammable gas or vapor concentration occurs may be followed in lieu of ventilation, if flammable gases or vapors are detected at safe levels.

Note: See the definition of hazardous atmosphere for guidance in determining whether or not a given concentration of a substance is considered to be hazardous.

(12) "Specific ventilation requirements." If continuous forced air ventilation is used, it shall begin before entry is made and shall be maintained long enough to ensure that a safe atmosphere exists before employees are allowed to enter the work area. The forced air ventilation shall be so directed as to ventilate the immediate area where employees are present within the enclosed space and shall continue until all employees leave the enclosed space.

(13) "Air supply." The air supply for the continuous forced air ventilation shall be from a clean source and may not increase the hazards in the enclosed space.

(14) "Open flames." If open flames are used in enclosed spaces, a test for flammable gases and vapors shall be made immediately before the open flame device is used and at least once per hour while the device is used in the space. Testing shall be conducted more frequently if conditions present in the enclosed space indicate that once per hour is insufficient to detect hazardous accumulations of flammable gases or vapors.

Note: See the definition of hazardous atmosphere for guidance in determining whether or not a given concentration of a substance is considered to be hazardous.

[Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050 and [49.17].060. 98-07-009, § 296-45-205, filed 3/6/98, effective 5/6/98.]

WAC 296-45-215 Underground electrical installations. This section provides additional requirements for work on underground electrical installations.

(1) Protective barriers, or approved guards and warning signs must be erected before removing manhole covers or making excavations in places accessible to vehicular or pedestrian traffic.

(2) Whenever an opening is made in the street, it shall be properly guarded or covered until same is closed and whenever an obstruction is left in the roadway after dark, it shall be marked with approved lights, flares or similar devices.

(3) Access. A ladder or other climbing device shall be used to enter and exit a manhole or subsurface vault exceeding 4 feet (122 cm) in depth. No employee may climb into or out of a manhole or vault by stepping on cables or hangers.

(4) When work is to be performed in a manhole or unvented vault:

(a) No entry shall be permitted unless the atmosphere is found to be safe by testing for the presence of explosive or potentially hazardous gases or fumes.

(b) No entry shall be permitted unless the atmosphere has been found safe by testing for oxygen deficiency or forced ventilation is provided.

(c) When unsafe conditions are detected, by testing or other means, the work area shall be ventilated and otherwise made safe before entry.

(d) Provisions shall be made for a continuous supply of air as provided for in Part L, chapter 296-62 WAC.

(e) When forced ventilation is not used a method of monitoring said manhole or vault so as to prevent the occurrence of oxygen deficiency due to work being performed in said manhole or vault, and to detect the presence of any explosive gases or fumes which may occur while the employees are working in said manhole or vault.

(5) When open flames are used or smoking is permitted in manholes, adequate mechanical forced air ventilation shall be used.

(6) Before using open flames in a manhole or excavation in an area where combustible gases or liquids may be present, such as near a gasoline service station, the atmosphere of the manhole or excavation shall be tested and found safe or cleared of the combustible gases or liquids prior to the entry.

(7) When work is to be performed in manholes containing any wires or appliances carrying electrical current, they shall be in a sanitary condition.

(8) Care shall be taken to prevent the possibility of vehicles or pedestrians coming in contact with the wires and equipment.

(9) Lowering equipment into manholes. Equipment used to lower materials and tools into manholes or vaults shall be capable of supporting the weight to be lowered and shall be checked for defects before use. Before tools or materials are lowered into the opening for a manhole or vault, each employee working in the manhole or vault shall be clear of the area directly under the opening.

(10) Materials shall not be thrown into or out of manholes but shall be placed in the proper receptacle and hoisted in and out by means of a rope.

(11) Tools and materials shall not be left on the ground around or near the manhole opening where they might be pushed or otherwise fall into the hole.

(12) Attendants for manholes.

(a) An attendant shall be kept at the surface when there is any hazard to the employees in the manhole and the attendant should not leave the manhole unwatched until such time as all employees are out and the cover has been replaced.

(b) While work is being performed in a manhole containing energized electric equipment, an employee with first aid and CPR training meeting WAC 296-45-125(1) shall be available on the surface in the immediate vicinity to render emergency assistance.

Note 1: An attendant may also be required under WAC 296-45-205(7). One person may serve to fulfill both requirements. However, attendants required under WAC 296-45-205(7) are not permitted to enter the manhole.

Note 2: Employees entering manholes containing unguarded, un-insulated energized lines or parts of electric equipment operating at 50 volts or more are required to be qualified under WAC 296-45-325 (1) through (4).

(c) No work shall be permitted to be done in any manhole or subway on any energized wire, cable or appliance carrying more than 300 volts of electricity by less than two qualified persons who shall at all times, while performing such work, be in the same manhole or subway in which work is being done. This rule shall not apply to work on telephone, telegraph or signal wires or cables.

(d) For the purpose of inspection, housekeeping, taking readings, or similar work, an employee working alone may enter, for brief periods of time, a manhole where energized cables or equipment are in service, if the employer can demonstrate that the employee will be protected from all electrical hazards.

(e) Reliable communications, through two-way radios or other equivalent means, shall be maintained among all employees involved in the job.

(13) Cable in manholes or underground vaults shall be accessible to employees and a clear working space shall be maintained at all times; and/or approved protective guards, barriers, etc., when installed shall be considered as providing adequate working clearance for cables over 5 k.v. If a manhole and/or underground vault is determined to have an electrical or structural hazard, no work shall be done in the manhole and/or vault until the unsafe condition is corrected or deenergized.

(14) No work shall be performed on cables or equipment unless they have been properly identified by an approved method.

(15) Duct rods. If duct rods are used, they shall be installed in the direction presenting the least hazard to employees. An employee shall be stationed at the far end of the duct line being rodged to ensure that the required minimum approach distances are maintained.

(16) Multiple cables. When multiple cables are present in a work area, the cable to be worked shall be identified by electrical means, unless its identity is obvious by reason of distinctive appearance or location or by other readily apparent means of identification. Cables other than the one being worked shall be protected from damage.

(17) Before cutting into a high voltage cable or opening a high voltage splice, the cable shall be deenergized then clearance obtained, tested and then grounded in an approved manner. The cable to be worked on shall be identified by tags or equivalent means.

(18) Moving cables. Energized cables that are to be moved shall be inspected for defects.

(19) Insulated platforms or other protective devices shall be provided when work is to be done on energized wires or equipment in manholes.

(20) Furnaces shall always be placed in a secure, level position on the downhill side of the manhole to avoid spillage of hot metals or compounds into the manhole.

(21) Pulling underground cable. When pulling cable(s) all employees shall be made aware of the hazard of being caught in the sheaves, lashings or winch gears. All employees shall stand clear of the pulling line when the pull is begun or when the line is under tension. This rule applies to all work performed by means of a winch.

(22) Fishing conduit or ducts. When fishing conduit or ducts, it shall first be determined that the fish tape or wires will not contact any energized line or equipment.

(23) WAC 296-45-335 on clearances shall be complied with. Also WAC 296-45-345 and/or WAC 296-45-355 on grounding shall be complied with.

(24) Defective cables. Where a cable in a manhole has one or more abnormalities that could lead to or be an indication of an impending fault, the defective cable shall be deenergized before any employee may work in the manhole, except when service load conditions and a lack of feasible alternatives require that the cable remain energized. In that case, employees may enter the manhole provided they are protected from the possible effects of a failure by shields or other devices that are capable of containing the adverse effects of a fault in the joint.

Note: Abnormalities such as oil or compound leaking from cables or joints, broken cable sheaths or joint sleeves, hot localized surface temperatures of cables or joints, or joints that are swollen beyond normal tolerance are presumed to lead to or be an indication of an impending fault.

(25) Sheath continuity. When work is performed on buried cable or on cable in manholes, metallic sheath continuity shall be maintained by bonding across the opening (or by equivalent means), or the cable sheath shall be treated as energized.

[Statutory Authority: RCW 49.17.040, 99-09-080, § 296-45-215, filed 4/20/99, effective 8/1/99. Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050 and [49.17].060. 98-07-009, § 296-45-215, filed 3/6/98, effective 5/6/98.]

WAC 296-45-225 Underground residential distribution (URD). (1) General.

(a) Each employee shall be knowledgeable of the equipment provided for their use and shall at all times use this equipment only for the purpose intended.

(b) U.R.D. cables which are properly insulated for the voltages to which they are energized shall be considered as an effective barrier to protect the employees and table one need not apply.

(i) Workers will take adequate precautions to avoid physical contact with energized U.R.D. cable by using approved procedures and/or protective devices.

(ii) When handling energized U.R.D. primary cables, the work shall be done with approved tools and/or procedures by two qualified employees. Switching is exempt from this rule.

(iii) When energized terminators or load-break elbows are handled by a hot stick, there shall be two qualified employees at the scene.

(c) When energized pad-mounted transformers or similar equipment are to be left unlocked and open, they shall be attended by a qualified employee.

(d) Approved tools and procedures shall be used to remove any debris, vines, weeds, etc., from an underground system.

(e) A primary and secondary system neutral on any energized circuit shall not be opened under any circumstances except for testing.

(f) Primary and secondary neutrals shall be firmly connected and grounded before the circuit or equipment is energized.

(g) Where different phases are in the same vault, enclosures, or parked in some manner that they could be looped, these phases shall be marked or identified.

(h) Bayonet fuses:

(i) Bayonet fuses shall not be closed into suspected faults or overloads.

(ii) Submersible U.G. transformer installations will require other methods of energizing or de-energizing and bayonet fuses shall not be used for this purpose.

(iii) Bayonet fuses shall only be operated after pad-mount transformers have been properly vented.

(iv) Bayonet fuses shall only be operated in accordance with manufacturing design and rating capabilities.

(2) Working on cables.

(a) Before any work is to be performed on underground cables and apparatus carrying high voltage, they shall be deenergized with the following exceptions:

(i) Replacing fuses, operating switches, closing or opening load-break elbows, when approved protective devices are used.

(ii) Work in the high-voltage compartment of pad-mounted transformers and similar equipment installed above ground, provided the work is done by approved methods.

(b) Only one energized conductor shall be worked on at any one time, and protective means shall be used to insulate or isolate it from all others.

(c) When work is to be performed in manholes containing any wires or appliances carrying electrical current, they shall be in a sanitary condition.

[Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050 and [49.17].060. 98-07-009, § 296-45-225, filed 3/6/98, effective 5/6/98.]

WAC 296-45-255 Protective equipment. (1) Rubber protective equipment must be in accordance with and tested as follows:

Item	Standard
Rubber Insulating Gloves	(ASTM) D 120-2002
Rubber Matting for Use Around Electrical Apparatus	(ASTM) D 178-2001
Rubber Insulating Blankets	(ASTM) D 1048-1999
Rubber Insulating Hoods	(ASTM) D 1049-2002
Rubber Insulating Line Hose	(ASTM) D 1050-1999
Rubber Insulating Sleeves	(ASTM) D 1051-2002

(2) No protective equipment or material other than rubber shall be used: Provided, That such other nonconductive equipment may be used if it provides equal or better (dielectric) electrical and mechanical protection than rubber protective equipment: Provided, That the employer obtain before placing in service, manufacturer's data or other data to demonstrate that such nonrubber protective equipment provided equal or better electrical and mechanical protection than approved rubber equipment.

(3) Protective equipment shall not be used at voltages in excess of that for which the manufacturer has supplied data to the employer demonstrating that it is fit for such voltages.

(4) No protective equipment shall be modified, altered, or used for purposes other than those for which it is designed unless and until the manufacturer has, in writing, agreed or suggested that there be such modification, alteration, or use.

(5) Each rubber glove before it is used shall be inspected for defects and an approved air test performed. If, upon inspection, rubber gloves are either defective or appear to be defective, they shall not be used.

(6) Before being placed in service, all rubber protective equipment shall be numbered and records kept for test purposes and assignment.

(7) Rubber protective equipment shall not be used unless it has been dielectrically tested within six months and bears marking or identification of the date of the test or the expiration date.

(8) Protector gloves must be worn over insulating gloves.

Exception: Protector gloves need not be used with Class 0 gloves, under limited-use conditions, where small equipment and parts manipulation necessitate unusually high finger dexterity.

Note: Extra care is needed in the visual examination of the glove and in the avoidance of handling sharp objects.

(9) Rubber gloves when not in use shall be carried in an approved bag provided and designed for that purpose. It shall be provided by the employer and made available to the employees.

(10) Approved rubber gloves and carrying bag shall be assigned to each employee who works with, or is exposed to energized parts.

(11) Rubber protective equipment shall not be vulcanized or patched.

(12) A compartment or box shall be provided on each electric line truck, which box or compartment shall be used for storing rubber protective equipment. No equipment shall be stored in said compartment or box which can or could cause damage to the rubber equipment or goods placed in the

compartment or box. Additionally, a separate container or compartment shall be provided for rubber blankets.

(13) Line hose shall not be doubled on themselves at any time. All blankets before storage must be wiped clean and rolled, not folded, before being placed in the container or box.

(14) Protective line equipment of material other than rubber shall be kept clean and visually inspected before each use.

(15) If protective line equipment of material other than rubber is found to be substantially defective or unsuitable for the purpose for which it is designed and intended, said protective line equipment shall not be used for personal protection of employees as may be required in Table 1 of this chapter. Said protective line equipment shall be marked defective but may be otherwise used unless the defect or damage to said protective line equipment creates additional safety hazards.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060. 03-17-071, § 296-45-255, filed 8/19/03, effective 11/1/03; 98-07-009, § 296-45-255, filed 3/6/98, effective 5/6/98.]

WAC 296-45-25505 Personal protective equipment.

(1) General. Personal protective equipment shall meet the requirements of chapter 296-24 WAC, Part L and WAC 296-800-150.

(2) All protective hats shall be in accordance with the specifications of ANSI Z89.2-1971 Edition Industrial Protective Helmets for Electrical Workers, Class B, and shall be worn at the job site by employees who are exposed to overhead or electrical hazards.

(3) Wearing apparel. Goggles, hearing protection, respirators, rubber gloves, and other such personal protective devices shall not be interchanged among employees unless they have been sanitized.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 01-11-038, § 296-45-25505, filed 5/9/01, effective 9/1/01. Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050 and [49.17].060. 98-07-009, § 296-45-25505, filed 3/6/98, effective 5/6/98.]

WAC 296-45-25510 Fall protection. (1) Personal fall arrest equipment shall meet the requirements of WAC 296-155-245.

(2) Specific requirements for lineman's belts, safety straps and lanyards.

(a) All fabric used for safety straps must withstand an A.C. dielectric test of not less than 25,000 volts per foot "dry" for 3 minutes, without visible deterioration.

(b) All fabric and leather used must be tested for leakage current and must not exceed 1 milliamperes when a potential of 3,000 volts is applied to the electrodes positioned 12 inches apart.

(c) Direct current tests may be permitted in lieu of alternating current tests.

(d) The cushion part of the body belt must:

(i) Contain no exposed rivets on the inside;

(ii) Be at least three (3) inches in width;

(iii) Be at least five thirty-seconds (5/32) inch thick, if made of leather; and

(iv) Have pocket tabs that extended at least 1 1/2 inches down and three (3) inches back of the inside of circle of each

D ring for riveting on plier or tool pockets. On shifting D belts, this measurement for pocket tabs must be taken when the D ring section is centered.

(e) A maximum of four (4) tool loops must be so situated on the body belt that four (4) inches of the body belt in the center of the back, measuring from D ring to D ring, must be free of tool loops, and any other attachments.

(f) Suitable copper, steel, or equivalent liners must be used around bar of D rings to prevent wear between these members and the leather or fabric enclosing them.

(g) All stitching must be of a minimum 42-pound weight nylon or equivalent thread and must be lock stitched. Stitching parallel to an edge must not be less than three-sixteenths (3/16) inch from edge of narrowest member caught by the thread. The use of cross stitching on leather is prohibited.

(h) The keeper of snaphooks must have a spring tension that will not allow the keeper to begin to open with a weight of 2 1/2 pounds or less, but the keeper of snaphooks must begin to open with a weight of four (4) pounds, when the weight is supported on the keeper against the end of the nose.

(i) Testing of lineman's safety straps, body belts and lanyards must be in accordance with the following procedure:

(i) Attach one end of the safety strap or lanyard to a rigid support, the other end must be attached to a 250-pound canvas bag of sand;

(ii) Allow the 250-pound canvas bag of sand to free fall 4 feet for (safety strap test) and 6 feet for (lanyard test); in each case stopping the fall of the 250-pound bag;

(iii) Failure of the strap or lanyard must be indicated by any breakage, or slippage sufficient to permit the bag to fall free of the strap or lanyard. The entire "body belt assembly" must be tested using one D ring. A safety strap or lanyard must be used that is capable of passing the "impact loading test" and attached as required in (i)(i) of this subsection. The body belt must be secured to the 250-pound bag of sand at a point to simulate the waist of a man and allowed to drop as stated in (i)(ii) of this subsection. Failure of the body belt must be indicated by any breakage, or slippage sufficient to permit the bag to fall free of the body belt.

(3) Body belts, safety straps, lanyards, lifelines, and body harnesses shall be inspected before use each day to determine that the equipment is in safe working condition. Defective equipment may not be used.

(4) Employees shall not wear climbers while doing work where they are not required. Employees shall not continue to wear their climbers while working on the ground; except for momentary or short periods of time on the ground.

(5) Employees, when working from a hook ladder, must either belt themselves securely to the ladder, attach themselves to the structures by means of a safety line, or belt themselves to ladder safety equipment, which shall consist of a safety rope or belting threaded through the rungs or secured to the ladder at intervals of not more than three feet.

(6) Before an employee throws his/her weight on a belt, the employee shall determine that the snap or fasteners are properly engaged.

(7) Safety straps shall not be placed around poles above the cross-arm except where it is not possible for the strap to slide or be slipped over the top of the pole by inadvertence of the employee. Neither end of the strap shall be allowed to

hang loose or dangle while the employee is ascending or descending poles or other structures.

(8) Body belts and safety straps shall not be stored with sharp-edged tools or near sharp objects. When a body belt, safety strap and climbers are kept in the same container, they shall be stored in such a manner as to avoid cutting or puncturing the material of the body belt or safety strap with the gaffs or climbers.

(9) Employees shall not attach metal hooks or other metal devices to body belts. Leather straps or rawhide thongs shall have hardwood or fibre crossbars. Leather straps and rawhide thongs shall not have metal or other conductive crossbars on them.

(10) Climbing gaffs shall be kept properly sharpened and shall be at least 1-1/8 inches in length.

(11) Lifelines shall be protected against being cut or abraded.

(12) Fall arrest equipment, work positioning equipment, or travel restricting equipment shall be used by employees working at elevated locations more than 4 feet (1.2 m) above the ground on poles, towers, or similar structures if other fall protection has not been provided. Fall protection equipment is not required to be used by a qualified employee climbing or changing location on poles, towers, or similar structures, unless conditions, such as, but not limited to, ice, high winds, the design of the structure (for example, no provision for holding on with hands), or the presence of contaminants on the structure, could cause the employee to lose his or her grip or footing.

Note 1: This subsection applies to structures that support overhead electric power generation, transmission, and distribution lines and equipment. It does not apply to portions of buildings, such as loading docks, to electric equipment, such as transformers and capacitors, nor to aerial lifts. Requirements for fall protection associated with walking and working surfaces are contained in WAC 296-155-245; requirements for fall protection associated with aerial lifts are contained in chapter 296-155 WAC, Part J-1.

Note 2: Employees undergoing training are not considered "qualified employees" for the purposes of this provision. Unqualified employees (including trainees) are required to use fall protection any time they are more than 4 feet (1.2 m) above the ground.

(13) The following requirements apply to personal fall arrest systems:

(a) When stopping or arresting a fall, personal fall arrest systems shall limit the maximum arresting force on an employee to 1800 pounds (8 kN) if used with a body harness.

(b) Personal fall arrest systems shall be rigged such that an employee can neither free fall more than 6 feet (1.8 m) nor contact any lower level.

(14) If vertical lifelines or droplines are used, not more than one employee may be attached to any one lifeline.

(15) Snaphooks may not be connected to loops made in webbing-type lanyards.

(16) Snaphooks may not be connected to each other.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060, 05-17-038, § 296-45-25510, filed 8/9/05, effective 10/1/05; 98-07-009, § 296-45-25510, filed 3/6/98, effective 5/6/98.]

WAC 296-45-275 Ladders, platforms, and manhole steps. (1) General. Requirements for ladders contained in chapter 296-24 WAC, Part J-1, and WAC 296-800-290

apply, except as specifically noted in subsection (2) of this section.

(2) Special ladders and platforms. Portable ladders and platforms used on structures or conductors in conjunction with overhead line work need not meet chapter 296-24 WAC, Part J-1, chapter 296-155 WAC, Part J or WAC 296-800-290. However, these ladders and platforms shall meet the following requirements:

(a) Ladders and platforms shall be secured to prevent their becoming accidentally dislodged.

(b) Ladders and platforms may not be loaded in excess of the working loads for which they are designed.

(c) Ladders and platforms may be used only in applications for which they were designed.

(d) In the configurations in which they are used, ladders and platforms shall be capable of supporting without failure at least 2.5 times the maximum intended load.

(e) All ladders shall be handled and stored in such a manner as to prevent damage to the ladder.

(f) When ascending or descending a ladder, the employee shall face the ladder and have free use of both hands.

(g) All defective ladders shall be taken out of service and labeled as defective.

(h) When a ladder is being used which is not fixed or otherwise secured, there shall be an attendant to hold the ladder and watch traffic when the work is being done on streets, alleys, sidewalks, or in industrial plants or other places where there exists the possibility of accidental contact with the ladder by third persons or vehicles.

(i) When working on the ladder, employees shall, where possible, tie the top of the ladder to a substantial object to prevent falling unless the ladder is equipped with approved hooks which may be used for the same purpose.

(j) Portable ladders shall not be moved with employees on the ladder.

(k) No employee shall ascend or descend a rolling ladder while it is moving.

(l) No employee shall stand on the top two steps of a step ladder.

(m) No employee shall use a step ladder as a straight ladder.

(n) Ladders shall always be placed on a secure footing with both legs resting firmly on the lower surface.

(o) Ladders made by fastening cleats or similar devices across a single rail shall not be used.

(3) Conductive ladders. Portable metal ladders and other portable conductive ladders may not be used near exposed energized lines or equipment. However, in specialized high-voltage work, conductive ladders shall be used where the employer can demonstrate that nonconductive ladders would present a greater hazard than conductive ladders.

Note: A greater electrical hazard would be static electricity such as might be found in extra high voltage substations.

(4) All conductive or metal ladders shall be prominently marked and identified as being conductive and shall be grounded when used near energized lines or equipment.

Note: See chapter 296-24 WAC for additional ladder requirements.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 01-11-038, § 296-45-275, filed 5/9/01, effective 9/1/01. Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050 and [49.17].060. 98-07-009, § 296-45-275, filed 3/6/98, effective 5/6/98.]

WAC 296-45-285 Hand, and portable powered tools.

(1) General requirements.

(a) The employer shall assure that each hand and portable powered tool, including any tool provided by an employee, is maintained in serviceable condition.

(b) The employer shall assure that each tool, including any tool provided by an employee, is inspected before initial use during each workshift. At a minimum, the inspection shall include the following:

(i) Handles and guards, to assure that they are sound, tight-fitting, properly shaped, free of splinters and sharp edges, and in place;

(ii) Controls, to assure proper function;

(iii) Heads of shock, impact-driven and driving tools, to assure that there is no mushrooming;

(iv) Cutting edges, to assure that they are sharp and properly shaped; and

(v) All other safety devices, to assure that they are in place and function properly.

(c) The employer shall assure that each tool is used only for purposes for which it has been designed.

(d) When the head of any shock, impact-driven or driving tool begins to chip, it shall be repaired or removed from service.

(e) The cutting edge of each tool shall be sharpened in accordance with manufacturer's specifications whenever it becomes dull during the workshift.

(f) Each tool shall be stored in the provided location when not being used at a work site.

(g) Racks, boxes, holsters or other means shall be provided, arranged and used for the transportation of tools so that a hazard is not created for any vehicle operator or passenger.

(2) Electric equipment connected by cord and plug must meet the following requirements:

(a) Cord- and plug-connected equipment supplied by premises wiring is covered by chapter 296-24 WAC, Part L and WAC 296-800-280.

(b) Any cord- and plug-connected equipment supplied by other than premises wiring shall comply with one of the following instead of chapter 296-24 WAC, Part L and WAC 296-800-280:

(i) It shall be equipped with a cord containing an equipment grounding conductor connected to the tool frame and to a means for grounding the other end (however, this option may not be used where the introduction of the ground into the work environment increases the hazard to an employee); or

(ii) It shall be of the double-insulated type conforming to chapter 296-24 WAC, Part L and WAC 296-800-280; or

(iii) It shall be connected to the power supply through an isolating transformer with an ungrounded secondary.

(3) Portable and vehicle-mounted generators. Portable and vehicle-mounted generators used to supply cord- and plug-connected equipment shall meet the following requirements:

(a) The generator may only supply equipment located on the generator or the vehicle and cord- and plug-connected equipment through receptacles mounted on the generator or the vehicle.

(b) The noncurrent-carrying metal parts of equipment and the equipment grounding conductor terminals of the receptacles shall be bonded to the generator frame.

(c) In the case of vehicle-mounted generators, the frame of the generator shall be bonded to the vehicle frame.

(d) Any neutral conductor shall be bonded to the generator frame.

(4) Hydraulic and pneumatic tools must meet the following requirements:

(a) Safe operating pressures for hydraulic and pneumatic tools, hoses, valves, pipes, filters, and fittings may not be exceeded.

Note: If any hazardous defects are present, no operating pressure would be safe, and the hydraulic or pneumatic equipment involved may not be used. In the absence of defects, the maximum rated operating pressure is the maximum safe pressure.

(b) A hydraulic or pneumatic tool used where it may contact exposed live parts shall (use nonconductive hoses and) be designed and maintained for such use.

(c) The hydraulic system supplying a hydraulic tool used where it may contact exposed live parts shall provide protection against loss of insulating value for the voltage involved due to the formation of a partial vacuum in the hydraulic line.

Note: Hydraulic lines without check valves having a separation of more than 35 feet (10.7 m) between the oil reservoir and the upper end of the hydraulic system promote the formation of a partial vacuum.

(d) A pneumatic tool used on energized electric lines or equipment or used where it may contact exposed live parts shall provide protection against the accumulation of moisture in the air supply.

(e) Pressure shall be released before connections are broken, unless quick acting, self-closing connectors are used. Hoses may not be kinked.

(f) Employees may not use any part of their bodies to locate or attempt to stop a hydraulic leak.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 01-11-038, § 296-45-285, filed 5/9/01, effective 9/1/01. Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050 and [49.17].060. 98-07-009, § 296-45-285, filed 3/6/98, effective 5/6/98.]

WAC 296-45-295 Gasoline engine power chain saws.

(1) Each chain saw placed into initial service after February 9, 1995, shall be equipped with a chain brake and shall otherwise meet the requirements of the ANSI B175.1-1991 "Safety Requirements for Gasoline-Powered Chain Saws." Each chain saw placed into service before February 9, 1995, shall be equipped with a protective device that minimizes chain saw kickback, i.e., reduced kickback bar, chains, bar tip guard or chain brake. No chain-saw kickback device shall be removed or otherwise disabled.

(2) Gasoline-engine power saw operations shall meet the requirements of WAC 296-54-515(10).

(3) The chain saw shall be operated and adjusted in accordance with the manufacturer's instructions.

(4) The employer must ensure that each chain saw, including any chain saw provided by an employee, is inspected before initial use during each workshift. At a minimum, the inspection shall include the following:

(a) Chain-saw chains, to assure proper adjustment;

(b) Chain-saw mufflers, to assure that they are operational and in place;

(c) Chain brakes and nose shielding devices, to assure that they are in place and function properly;

(5) The chain saw shall be fueled at least 10 feet (3 m) from any open flame or other source of ignition.

(6) The chain saw shall be started at least 10 feet (3 m) from the fueling area.

(7) The chain saw shall be started on the ground or where otherwise firmly supported. Drop-starting a chain saw is prohibited.

(8) The chain saw shall be started with the chain brake engaged.

(9) The chain saw shall be held with the thumbs and fingers of both hands encircling the handles during operation unless the employer demonstrates that a greater hazard is posed by keeping both hands on the chain saw in that particular situation.

(10) The chain-saw operator shall be certain of footing before starting to cut. The chain saw shall not be used in a position or at a distance that could cause the operator to become off-balance, to have insecure footing, or to relinquish a firm grip on the saw.

(11) Prior to felling any tree, the chain saw operator shall clear away brush or other potential obstacles which might interfere with cutting the tree or using the retreat path.

(12) The chain saw shall not be used to cut directly overhead.

(13) The chain saw shall be carried in a manner that will prevent operator contact with the cutting chain and muffler.

(14) The chain saw shall be shut off or at idle before the feller starts their retreat.

(15) The chain saw shall be shut down or the chain brake shall be engaged whenever a saw is carried further than 50 feet (15.2 m). The chain saw shall be shut down or the chain brake shall be engaged when a saw is carried less than 50 feet if conditions such as, but not limited to, the terrain, underbrush and slippery surfaces, may create a hazard for an employee.

(16) Each power saw weighing more than 15 pounds (6.8 kilograms, service weight) that is used in trees shall be supported by a separate line, except when work is performed from an aerial lift and except during topping or removing operations where no supporting limb will be available, and the following:

(a) Each power saw shall be equipped with a control that will return the saw to idling speed when released;

(b) Each power saw shall be equipped with a clutch and shall be so adjusted that the clutch will not engage the chain drive at idling speed;

(c) Drop starting of saws over 15 pounds (6.8 kg) is permitted outside of the bucket of an aerial lift only if the area below the lift is clear of personnel;

(d) A power saw engine may be started and operated only when all employees other than the operator are clear of the saw;

(e) A power saw may not be running when the saw is being carried up into a tree by an employee; and

(f) Power saw engines shall be stopped for all cleaning, refueling, adjustments, and repairs to the saw or motor, except as the manufacturer's servicing procedures require otherwise.

[Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050 and [49.17].060. 98-07-009, § 296-45-295, filed 3/6/98, effective 5/6/98.]

WAC 296-45-305 Live-line tools. (1) Design of tools. Live-line tool rods, tubes, and poles shall be designed and constructed to withstand the following minimum tests:

(a) 100,000 volts per foot (3281 volts per centimeter) of length for 5 minutes if the tool is made of fiberglass-reinforced plastic (FRP); or

(b) 75,000 volts per foot (2461 volts per centimeter) of length for 3 minutes if the tool is made of wood; or

(c) Other tests that the employer can demonstrate are equivalent.

Note: Live-line tools using rod and tube that meet ASTM F711-89, Standard Specification for Fiberglass-Reinforced Plastic (FRP) Rod and Tube Used in Live-Line Tools, conform to subsection (1)(a) of this section.

(2) Condition of tools.

(a) Each live-line tool shall be wiped clean and visually inspected for defects before use each day.

(b) If any defect or contamination that could adversely affect the insulating qualities or mechanical integrity of the live-line tool is present after wiping, the tool shall be removed from service and examined and tested according to this section before being returned to service.

(c) Live-line tools used for primary employee protection shall be removed from service every two years and whenever required under this subsection for examination, cleaning, repair, and testing as follows:

(i) Each tool shall be thoroughly examined for defects.

(ii) If a defect or contamination that could adversely affect the insulating qualities or mechanical integrity of the live-line tool is found, the tool shall be repaired and refinished or shall be permanently removed from service. If no such defect or contamination is found, the tool shall be cleaned and waxed.

(iii) The tool shall be tested in accordance with this section under the following conditions:

(A) After the tool has been repaired or refinished; and

(B) After the examination if repair or refinishing is not performed, unless the tool is made of FRP rod or foam-filled FRP tube and the employer can demonstrate that the tool has no defects that could cause it to fail in use.

(iv) The test method used shall be designed to verify the tool's integrity along its entire working length and, if the tool is made of fiberglass-reinforced plastic, its integrity under wet conditions.

(v) The voltage applied during the tests shall be as follows:

(A) 75,000 volts per foot (2461 volts per centimeter) of length for one minute if the tool is made of fiberglass; or

(B) 50,000 volts per foot (1640 volts per centimeter) of length for one minute if the tool is made of wood; or

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(C) Other tests that the employer can demonstrate are equivalent.

Note: Guidelines for the examination, cleaning, repairing, and in-service testing of live-line tools are contained in the Institute of Electrical and Electronics Engineers Guide for In-Service Maintenance and Electrical Testing of Live-Line Tools, IEEE Std. 978-1984.

(d) Live-line tools and rope shall be stored and maintained and used in such a manner as to prevent damage. Live-line tools and ropes shall not be used for purposes other than line work.

[Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050 and [49.17].060. 98-07-009, § 296-45-305, filed 3/6/98, effective 5/6/98.]

WAC 296-45-315 Materials handling and storage. (1) General. Material handling and storage shall conform to the requirements of chapter 296-24 WAC, Part D.

(2) Materials storage near energized lines or equipment. In areas not restricted to qualified persons only, materials or equipment may not be stored closer to energized lines or exposed energized parts of equipment than the following distances plus an amount providing for the maximum sag and side swing of all conductors and providing for the height and movement of material handling equipment:

(a) For lines and equipment energized at 50 kV or less, the distance is 10 feet (305 cm).

(b) For lines and equipment energized at more than 50 kV, the distance is 10 feet (305 cm) plus 4 inches (10 cm) for every 10 kV over 50 kV.

(c) In areas restricted to qualified employees, material may not be stored within the working space about energized lines or equipment.

Note: Requirements for the size of the working space are contained in WAC 296-45-475(1) and 296-45-48515.

(3) Prior to unloading steel, poles, crossarms and similar materials, the load shall be thoroughly examined to determine if the load has shifted, binders or stakes have broken or the load is otherwise hazardous to employees. The hoist rope shall not be wrapped around the load. This provision shall not apply to electric construction crews when setting or removing poles.

(4) Pole handling.

(a) During pole hauling operations, all loads shall be secured to prevent displacement, and a red flag shall be displayed at the trailing end of the longest pole.

(b) While loading and unloading materials, roadways shall not be blocked unless approved traffic control is used.

(c) When hauling poles during darkness, illuminated warning devices shall be attached to the trailing end of the longest pole in accordance with the state of Washington motor vehicle code.

(d) Framing. During framing operations, employees must not work under a pole or a structure suspended by a crane, A-frame or similar equipment unless the pole or structure is adequately supported.

(5) Tag lines. When necessary to control loads, tag lines or other approved devices shall be used.

(6) Oil filled equipment. During construction or repair of oil filled equipment, the oil may be stored in temporary containers other than those required by WAC 296-155-270, such as pillow tanks.

(7) Storage of tools and materials. All tools and materials shall be stored in a safe and orderly manner in yards for equipment and other areas.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060, 05-17-038, § 296-45-315, filed 8/9/05, effective 10/1/05; 98-07-009, § 296-45-315, filed 3/6/98, effective 5/6/98.]

WAC 296-45-325 Working on or near exposed energized parts. This section applies to work on exposed live parts, or near enough to them, to expose the employee to any hazard they present.

(1) General. Only qualified employees may work on or with exposed energized lines or parts of equipment. Only qualified employees may work in areas containing unguarded, uninsulated energized lines or parts of equipment operating at 50 volts or more. Electric lines and equipment shall be considered and treated as energized unless the provisions of WAC 296-45-175 through 296-45-17565 or 296-45-335 have been followed.

(2) Except as provided in subsection (3) of this section, at least two qualified employees shall be present while the following types of work are being performed:

(a) Installation, removal, or repair of lines that are energized at more than 600 volts;

(b) Installation, removal, or repair of deenergized lines if an employee is exposed to contact with other parts energized at more than 600 volts;

(c) Installation, removal, or repair of equipment, such as transformers, capacitors, and regulators, if an employee is exposed to contact with parts energized at more than 600 volts;

(d) Work involving the use of mechanical equipment, other than insulated aerial lifts, near parts energized at more than 600 volts; and

(e) Other work that exposes an employee to electrical hazards greater than or equal to those posed by operations that are specifically listed in subsection (2)(a) through (d) of this section.

Note 1: One employee will serve principally as a standby person who must be so located that they may physically reach the other employee in the event of an accident either with their hand or with a hot stick twelve feet or less in length. The standby will be so positioned as to be able to observe the other employee, their bodily movements, and verbally warn of any impending dangers. In no case when working in pairs will employees work simultaneously on energized wires or parts of different phases or polarity;

Note 2: When installing or removing a hot line clamp connection on a multiphase system, it is permissible for the second employee to stand by at the lower controls of the aerial lift provided the connection or disconnection does not interrupt or pick up load. The hot line clamp and connecting jumper must be constructed so it cannot make contact with any other energized parts. The work must not be performed above lines or apparatus energized at more than 600 V.

Note 3: In cases of necessity the standby person may temporarily assist the other employee provided that they both work on wires or parts of the same phase or polarity. Both employees shall so position themselves so that the presence of the second person does not increase the hazard.

(3) The provisions of WAC 296-45-325(2) do not apply to (a) through (e) of this subsection. In addition to the requirements of subsection (4) of this section, a qualified employee working under this subsection (3), must position themselves so that he/she is neither within reach of nor otherwise exposed to contact with energized parts.

(a) When re-fusing circuits or equipment with a hot stick.

(b) When operating switches by means of operating handle or switch sticks.

(c) When installing or removing a hot line clamp connection with an approved hot stick on a single-phase line or apparatus, providing that the connection or disconnection does not interrupt or pick up a load.

Note 1: The hot line clamp and connecting jumper must be constructed so that it cannot make contact with any other energized parts.

Note 2: On a multiphase feed this applies only when one single-phase line or apparatus is present on the load side.

(d) When installing or removing by hot stick simple load metering devices provided the connection does not interrupt or pickup load.

(e) Emergency repairs to the extent necessary to safeguard the general public.

(4) "Minimum approach distances." The employer shall ensure that no employee approaches or takes any conductive object closer to exposed energized parts than set forth in Table 1 through Table 4, unless:

The employee is insulated from the energized part (insulating gloves or insulating gloves and sleeves worn in accordance with subsection (6) of this section are considered insulation of the employee only with regard to the energized part upon which work is being performed); or

The energized part is insulated from the employee and from any other conductive object at a different potential.

Note 1: WAC 296-45-475 (5)(a) and 296-45-48525(1) contain requirements for the guarding and isolation of live parts. Parts of electric circuits that meet these two provisions are not considered as "exposed" unless a guard is removed or an employee enters the space intended to provide isolation from the live parts.

Note 2: When an employee is required to work on or within reach of any unprotected conductors that are or may become energized at more than 50 volts and less than 600 volts between phases, they shall take the following precautions:

- 1: They shall wear approved insulating gloves or insulating gloves and sleeves during the time they are working on such conductor, or
- 2: They shall cover, with approved devices, any adjacent unprotected conductor that could be touched by any part of their body, and use insulated tools.
- 3: Cables which are properly insulated for the voltages to which they are energized, shall be considered as an effective barrier to protect the employees and Table 1 need not apply.

(5) Initial determination.

(a) Before any work is performed, the location of energized lines and their condition, the location and condition of energized equipment, the condition of the poles, the location of circuits and equipment including power communication lines, CATV and fire alarm circuits, shall be determined as shall any other particular hazard of a particular work site.

(b) No work shall be performed on energized lines or parts until the voltage of such equipment and lines is determined.

(6) Type of insulation. If the employee is to be insulated from energized parts by the use of insulating gloves (under subsection (4) of this section), insulating sleeves shall also be used. However, insulating sleeves need not be used under the following conditions:

(a) If exposed energized parts on which work is not being performed are insulated from the employee; and

(b) If such insulation is placed from a position not exposing the employee's upper arm to contact with other energized parts.

(7) Working position. The employer shall ensure that each employee, to the extent that other safety-related conditions at the worksite permit, works in a position from which a slip or shock will not bring the employee's body into contact with exposed, uninsulated parts energized at a potential different from the employee.

(8) Making connections. The employer shall ensure that connections are made as follows:

(a) In connecting deenergized equipment or lines to an energized circuit by means of a conducting wire or device, an employee shall first attach the wire to the deenergized part;

(b) When disconnecting equipment or lines from an energized circuit by means of a conducting wire or device, an employee shall remove the source end first; and

(c) When lines or equipment are connected to or disconnected from energized circuits, loose conductors shall be kept away from exposed energized parts.

(9) Rubber gloves can only be used on 5,000 volts or less between phases.

(10) It shall not be permissible to consider one part of a high voltage switch or disconnect as deenergized for the purpose of doing work on it if the remainder of the switch or disconnect remains energized unless approved barriers are erected which will prevent employees who are doing the work on such equipment from coming in direct contact with the energized parts.

(11) Conductor support tools such as link sticks, strain carriers, and insulator cradles may be used: Provided, That the clear insulation is at least as long as the insulator string or the minimum distance specified in Table 1 for the operating voltage.

(12) Apparel.

(a) When work is performed within reaching distance of exposed energized parts of equipment, the employer shall ensure that each employee removes or renders nonconductive all exposed conductive articles, such as key or watch chains, rings, or wrist watches or bands, unless such articles do not increase the hazards associated with contact with the energized parts.

(b) The employer shall train each employee who is exposed to the hazards of flames or electric arcs in the hazards involved.

(c) The employer shall ensure that each employee who is exposed to the hazards of flames or electric arcs does not wear clothing that, when exposed to flames or electric arcs, could increase the extent of injury that would be sustained by the employee.

Note: Clothing made from the following types of fabrics, either alone or in blends, is prohibited by this subsection, unless the employer can demonstrate that the fabric has been treated to withstand the conditions that may be encountered or that the clothing is worn in such a manner as to eliminate the hazard involved: Acetate, nylon, polyester, rayon.

(d) Workers shall wear clothing appropriate to the season and the kind of work being performed. Shirts or jumpers must have full length sleeves that are rolled down. Protective hard hats and eye protection shall be worn when working on or near live parts or while climbing poles.

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(13) Fuse handling. When fuses must be installed or removed with one or both terminals energized at more than 300 volts or with exposed parts energized at more than 50 volts, the employer shall ensure that tools or gloves rated for the voltage are used. When expulsion-type fuses are installed with one or both terminals energized at more than 300 volts, the employer shall ensure that each employee wears eye protection meeting the requirements of WAC 296-45-25505(1), uses a tool rated for the voltage, and is clear of the exhaust path of the fuse barrel.

(14) Covered (noninsulated) conductors. The requirements of this section which pertain to the hazards of exposed live parts also apply when work is performed in the proximity of covered (noninsulated) wires.

(15) Noncurrent-carrying metal parts. Noncurrent-carrying metal parts of equipment or devices, such as transformer cases and circuit breaker housings, shall be treated as energized at the highest voltage to which they are exposed, unless the employer inspects the installation and determines that these parts are grounded before work is performed.

(16) Opening circuits under load. Devices used to open circuits under load conditions shall be designed to interrupt the current involved.

Table 1: AC Live Work Minimum Approach Distance
Distance to employee

Voltage in kilovolts phase to phase*	Phase to ground		Phase to Phase	
	(m)	(ft-in)	(m)	(ft-in)
0 to 0.050	not specified		not specified	
0.051 to 0.300	avoid contact		avoid contact	
0.301 to 0.750	0.31	1-0	0.31	1-0
0.751 to 15	0.65	2-2	0.67	2-3
15.1 to 36.0	0.77	2-7	0.86	2-10
36.1 to 46.0	0.84	2-9	0.96	3-2
46.1 to 72.5	1.00**	3-3**	1.20	3-11
72.6 to 121	0.95**	3-2**	1.29	4-3
138 to 145	1.09	3-7	1.50	4-11
161 to 169	1.22	4-0	1.71	5-8
230 to 242	1.59	5-3	2.27	7-6
345 to 362	2.59	8-6	3.80	12-6
500 to 550	3.42	11-3	5.50	18-1
765 to 800	4.53	14-11	7.91	26-0

*For single-phase systems, use the highest voltage available.

For single-phase lines off three phase systems, use the phase-to-phase voltage of the system.

**The 46.1 to 72.5 kV phase-to-ground 3-3 distance contains a 1-3 electrical component and a 2-0 inadvertent movement component while the 72.6 to 121 kV phase-to-ground 3-2 distance contains a 2-2 electrical component and a 1-0 inadvertent movement component.

Note 1: These distances take into consideration the highest switching surge an employee will be exposed to on any system with air as the insulating medium and the maximum voltages shown.

Note 2: The clear live-line tool distance shall equal or exceed the values for the indicated voltage ranges.

Note 3: See Appendix B to this section for information on how the minimum approach distances listed in the tables were derived.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. 05-17-038, § 296-45-325, filed 8/9/05, effective 10/1/05; 03-17-071, § 296-45-325, filed 8/19/03, effective 11/1/03. Statutory Authority: RCW 49.17.040. 99-09-080, § 296-45-325, filed 4/20/99, effective 8/1/99. Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050 and [49.17].060. 98-07-009, § 296-45-325, filed 3/6/98, effective 5/6/98.]

WAC 296-45-335 De-energizing lines and equipment for employee protection. (1) Application. This section applies to the de-energizing of transmission and distribution

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lines and equipment for the purpose of protecting employees. Control of hazardous energy sources used in the generation of electric energy is covered in WAC 296-45-175. Conductors and parts of electric equipment that have been deenergized under procedures other than those required by WAC 296-45-175 or 296-45-335, as applicable, shall be treated as energized.

(2) "General."

(a) If a system operator is in charge of the lines or equipment and their means of disconnection, all of the requirements of subsection (3) of this section shall be observed, in the order given.

(b) If no system operator is in charge of the lines or equipment and their means of disconnection, one employee in the crew shall be designated as being in charge of the clearance. All of the requirements of subsection (3) of this section apply, in the order given, except as provided in subsection (2)(c) of this section. The employee in charge of the clearance shall take the place of the system operator, as necessary.

(c) If only one crew will be working on the lines or equipment and if the means of disconnection is accessible and visible to and under the sole control of the employee in charge of the clearance, subsection (3)(a), (c), and (d) of this section do not apply. Additionally, tags required by the remaining provisions of subsection (3) of this section need not be used.

(d) Any disconnecting means that are accessible to persons outside the employer's control (for example, the general public) shall be rendered inoperable while they are open for the purpose of protecting employees.

(3) Deenergizing lines and equipment.

(a) In all cases, switching orders must be given directly to the employees in charge of operating the switches by the system operator who has jurisdiction and such communications must be repeated back word for word to the speaker. When requesting clearance on lines under the control of the system operator, a person requesting the clearance shall obtain the name of the system operator to whom the request was made and the system operator shall obtain the name of the person requesting the clearance; and assure that the person is qualified to receive such a clearance. A designated employee shall make a request of the system operator to have the particular section of line or equipment deenergized. The designated employee becomes the employee in charge (as this term is used in subsection (2)(b) of this section) and is responsible for the clearance. In giving a clearance, the system operator shall make certain that the person to whom the clearance is given is fully aware of the extent or the limits of the clearance.

(b) All switches, disconnectors, jumpers, taps, and other means through which known sources of electric energy may be supplied to the particular lines and equipment to be deenergized shall be opened. Such means shall be rendered inoperable, unless its design does not so permit, and tagged to indicate that employees are at work.

(c) Automatically and remotely controlled switches that could cause the opened disconnecting means to close shall also be tagged at the point of control. The automatic or remote control feature shall be rendered inoperable, unless its design does not so permit.

(d) Tags shall prohibit operation of the disconnecting means and shall indicate that employees are at work.

(e) After the applicable requirements in subsection (3)(a) through (d) of this section have been followed and the employee in charge of the work has been given a clearance by the system operator, the lines and equipment to be worked shall be tested to ensure that they are deenergized.

(4) The system operator shall order clearance tags printed on red cardboard, or equivalent, not less than 2-1/4 inches by 4-1/2 inches, attached to all switches opened or checked open to provide clearance on any line or equipment for employees to work thereon.

(5) Clearance tags attached to substation control devices and to line switches beyond the switchyard of any substation; indicating the limits of the clearance involved; shall state the designation of the switch opened or checked open and tagged; the name of the person to whom the clearance is to be issued; the date and time the switch was opened or checked open; the name of the dispatcher ordering the switching and tagging; and the name of the person doing the switching and tagging.

(6) Protective grounds shall be installed as required by WAC 296-45-345.

(7) After the applicable requirements of subsection (3)(a) through (d) of this section have been followed, the lines and equipment involved may be worked as deenergized.

(8) If two or more independent crews will be working on the same lines or equipment, each crew shall independently comply with the requirements in subsection (3) of this section.

(9) To transfer the clearance, the employee in charge (or, if the employee in charge is forced to leave the worksite due to illness or other emergency, the employee's supervisor) shall inform the system operator; employees in the crew shall be informed of the transfer; and the new employee in charge shall be responsible for the clearance.

(10) To release a clearance, the employee in charge shall:

(a) Notify employees under his or her direction that the clearance is to be released;

(b) Determine that all employees in the crew are clear of the lines and equipment;

(c) Determine that all protective grounds installed by the crew have been removed; and

(d) Report this information to the system operator and release the clearance.

(11) The person releasing a clearance shall be the same person that requested the clearance, unless responsibility has been transferred under subsection (9) of this section.

(12) Tags may not be removed unless the associated clearance has been released under subsection (10) of this section.

(13) Only after all protective grounds have been removed, after all crews working on the lines or equipment have released their clearances, after all employees are clear of the lines and equipment, and after all protective tags have been removed from a given point of disconnection, may action be initiated to reenergize the lines or equipment at that point of disconnection.

(14) To meet unforeseen conditions, it will be permissible to tag isolated switches for the system operator and issue clearances against this tag. In tagging out inter-utility tie

lines, the open switches on the foreign end of the line shall be tagged for the foreign system operator requesting the outage who will issue clearances to individuals of the organization against this tag.

(15) Metal-clad, draw-out switchgear of over 600 volts in which the physical separation of the disconnecting parts is not visible may be used to clear a line or equipment, provided the switchgear is equipped with:

(a) A positive positioning means to insure that the disconnecting contacts are separated;

(b) An isolating shutter which moves into place between the separated contact for circuit isolation; and

(c) A mechanically-connected indicating means to show that the shutter is in place.

(16) In all other cases, only a visible break of all phases shall be regarded as clearing a line or equipment.

(17) No person shall make contact with a circuit or equipment that has not been taken out of service to be worked on until he/she has the circuit or equipment cleared and tagged for themselves or is working directly under the supervision of one who has the circuit or equipment cleared and tagged for themselves.

[Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050 and [49.17].060. 98-07-009, § 296-45-335, filed 3/6/98, effective 5/6/98.]

WAC 296-45-345 Grounding for the protection of employees. (1) Application. This section applies to the grounding of transmission and distribution lines and equipment for the purpose of protecting employees. Subsection (4) of this section also applies to the protective grounding of other equipment as required elsewhere in this section.

(2) General. For the employee to work lines or equipment as deenergized, the lines or equipment shall be deenergized under the provisions of WAC 296-45-335 and shall be grounded as specified in subsections (3) through (9) of this section. However, if the employer can demonstrate that installation of a ground is impracticable or that the conditions resulting from the installation of a ground would present greater hazards than working without grounds, the lines and equipment may be treated as deenergized provided all of the following conditions are met:

(a) The lines and equipment have been deenergized under the provisions of WAC 296-45-335.

(b) There is no possibility of contact with another energized source.

(c) The hazard of induced voltage is not present.

(3) Equipotential zone. Temporary protective grounds shall be placed at such locations and arranged in such a manner as to prevent each employee from being exposed to hazardous differences in electrical potential.

(4) Protective grounding equipment.

(a) Protective grounding equipment shall be capable of conducting the maximum fault current that could flow at the point of grounding for the time necessary to clear the fault. This equipment shall have an ampacity greater than or equal to that of No. 2 AWG copper.

(b) Grounding jumpers shall have approved ferrules and grounding clamps that provide mechanical support for jumper cables independent of the electrical connection.

(2007 Ed.)

Note: Guidelines for protective grounding equipment are contained in American Society for Testing and Materials Standard Specifications for Temporary Grounding Systems to be Used on Deenergized Electric Power Lines and Equipment, ASTM F855-1990.

(c) Protective grounds shall have an impedance low enough to cause immediate operation of protective devices in case of accidental energizing of the lines or equipment.

(5) Testing. Before any ground is installed, lines and equipment shall be tested and found absent of nominal voltage, unless a previously installed ground is present.

(a) Inspection before use: Grounding equipment shall be given a visual inspection and all mechanical connections shall be checked for tightness before each use.

(b) Ground surface cleaning: The surface to which the ground is to be attached shall be clean before the grounding clamp is installed; otherwise, a self-cleaning clamp shall be used.

(6) Order of connection. When a ground is to be attached to a line or to equipment, the ground-end connection shall be attached first, and then the other end shall be attached by means of a live-line tool.

(7) "Order of removal." When a ground is to be removed, the grounding device shall be removed from the line or equipment using a live-line tool before the ground-end connection is removed.

(8) "Additional precautions." When work is performed on a cable at a location remote from the cable terminal, the cable may not be grounded at the cable terminal if there is a possibility of hazardous transfer of potential should a fault occur.

(9) Removal of grounds for test. Grounds may be removed temporarily during tests. During the test procedure, the employer shall ensure that each employee uses insulating equipment and is isolated from any hazards involved, and the employer shall institute any additional measures as may be necessary to protect each exposed employee in case the previously grounded lines and equipment become energized.

(10) Conductor separation: In cases where the conductor separation at any pole or structure is so great as to make it impractical to apply shorts on all conductors, and where only one conductor is to be worked on, only that conductor which is to be worked on needs to be grounded.

(11) Ground personnel: In cases where ground rods or pole grounds are utilized for personal protective grounding, personnel working on the ground should maintain sufficient distance from such equipment or utilize other approved procedures designed to prevent "touch-and step potential" hazards.

Note: See the Appendix for tables.

[Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050 and [49.17].060. 98-07-009, § 296-45-345, filed 3/6/98, effective 5/6/98.]

WAC 296-45-355 Underground grounding. (1) Grounding. A capacitance charge can remain in the high voltage cables after it has been disconnected from the circuit and a static-type arc can occur when grounds are applied to such cables.

(2) When work is to be done on cables or equipment of a high-voltage underground system, precautions to prevent

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back-feed shall be taken. This shall include either isolating or grounding of the secondary conductors.

(3) After grounding the cable, if the worker is to work on cable between terminations, he/she must first spike the cable or use other approved methods of testing. If the cable is to be cut, it shall be cut only with approved hot cutters.

(4) Additional precautions. When work is performed on a cable at a location remote from the cable terminal, the cable may not be grounded at the cable terminal if there is a possibility of hazardous transfer of potential should a fault occur.

[Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050 and [49.17].060. 98-07-009, § 296-45-355, filed 3/6/98, effective 5/6/98.]

WAC 296-45-365 Testing and test facilities. (1)

Application. This section provides for safe work practices for high-voltage and high-power testing performed in laboratories, shops, and substations, and in the field and on electric transmission and distribution lines and equipment. It applies only to testing involving interim measurements utilizing high voltage, high power, or combinations of both, and not to testing involving continuous measurements as in routine metering, relaying, and normal line work.

Note: Routine inspection and maintenance measurements made by qualified employees are considered to be routine line work and are not included in the scope of this section, as long as the hazards related to the use of intrinsic high-voltage or high-power sources require only the normal precautions associated with routine operation and maintenance work required in the other subsections of this section. Two typical examples of such excluded test work procedures are "phasing-out" testing and testing for a "no-voltage" condition.

(2) General requirements.

(a) The employer shall establish and enforce work practices for the protection of each worker from the hazards of high-voltage or high-power testing at all test areas, temporary and permanent. Such work practices shall include, as a minimum, test area guarding, grounding, and the safe use of measuring and control circuits. A means providing for periodic safety checks of field test areas shall also be included.

(b) Employees shall be trained in safe work practices upon their initial assignment to the test area, with periodic reviews and updates provided as required by subsections of this section.

(3) Guarding of test areas.

(a) Permanent test areas shall be guarded by walls, fences, or barriers designed to keep employees out of the test areas.

(b) In field testing, or at a temporary test site where permanent fences and gates are not provided, one of the following means shall be used to prevent unauthorized employees from entering:

(i) The test area shall be guarded by the use of distinctively colored safety tape that is supported approximately waist high and to which safety signs are attached;

(ii) The test area shall be guarded by a barrier or barricade that limits access to the test area to a degree equivalent, physically and visually, to the barricade specified in this section; or

(iii) The test area shall be guarded by one or more test observers stationed so that the entire area can be monitored.

(c) The barriers required by this section shall be removed when the protection they provide is no longer needed.

(d) Guarding shall be provided within test areas to control access to test equipment or to apparatus under test that may become energized as part of the testing by either direct or inductive coupling, in order to prevent accidental employee contact with energized parts.

(4) Grounding practices.

(a) The employer shall establish and implement safe grounding practices for the test facility.

(i) All conductive parts accessible to the test operator during the time the equipment is operating at high voltage shall be maintained at ground potential except for portions of the equipment that are isolated from the test operator by guarding.

(ii) Wherever ungrounded terminals of test equipment or apparatus under test may be present, they shall be treated as energized until determined by tests to be deenergized.

(b) Visible grounds shall be applied, either automatically or manually with properly insulated tools, to the high-voltage circuits after they are deenergized and before work is performed on the circuit or item or apparatus under test. Common ground connections shall be solidly connected to the test equipment and the apparatus under test.

(c) In high-power testing, an isolated ground-return conductor system shall be provided so that no intentional passage of current, with its attendant voltage rise, can occur in the ground grid or in the earth. However, an isolated ground-return conductor need not be provided if the employer can demonstrate that both the following conditions are met:

(i) An isolated ground-return conductor cannot be provided due to the distance of the test site from the electric energy source; and

(ii) Employees are protected from any hazardous step and touch potentials that may develop during the test.

Note: See Appendix B for information on measures that can be taken to protect employees from hazardous step and touch potentials.

(d) In tests in which grounding of test equipment by means of the equipment grounding conductor located in the equipment power cord cannot be used due to increased hazards to test personnel or the prevention of satisfactory measurements, a ground that the employer can demonstrate affords equivalent safety shall be provided, and the safety ground shall be clearly indicated in the test set up.

(e) When the test area is entered after equipment is deenergized, a ground shall be placed on the high-voltage terminal and any other exposed terminals.

(i) High capacitance equipment or apparatus shall be discharged through a resistor rated for the available energy.

(ii) A direct ground shall be applied to the exposed terminals when the stored energy drops to a level at which it is safe to do so.

(f) If a test trailer or test vehicle is used in field testing, its chassis shall be grounded. Protection against hazardous touch potentials with respect to the vehicle, instrument panels, and other conductive parts accessible to employees shall be provided by bonding, insulation, or isolation.

(5) Control and measuring circuits.

(a) Control wiring, meter connections, test leads and cables may not be run from a test area unless they are contained in a grounded metallic sheath and terminated in a grounded metallic enclosure or unless other precautions are taken that the employer can demonstrate as ensuring equivalent safety.

(b) Meters and other instruments with accessible terminals or parts shall be isolated from test personnel to protect against hazards arising from such terminals and parts becoming energized during testing. If this isolation is provided by locating test equipment in metal compartments with viewing windows, interlocks shall be provided to interrupt the power supply if the compartment cover is opened.

(c) The routing and connections of temporary wiring shall be made secure against damage, accidental interruptions and other hazards. To the maximum extent possible, signal, control, ground, and power cables shall be kept separate.

(d) If employees will be present in the test area during testing, a test observer shall be present. The test observer shall be capable of implementing the immediate de-energizing of test circuits for safety purposes.

(6) Safety check.

(a) Safety practices governing employee work at temporary or field test areas shall provide for a routine check of such test areas for safety at the beginning of each series of tests.

(b) The test operator in charge shall conduct these routine safety checks before each series of tests and shall verify at least the following conditions:

(i) That barriers and guards are in workable condition and are properly placed to isolate hazardous areas;

(ii) That system test status signals, if used, are in operable condition;

(iii) That test power disconnects are clearly marked and readily available in an emergency;

(iv) That ground connections are clearly identifiable;

(v) That personal protective equipment is provided and used;

(vi) That signal, ground, and power cables are properly separated.

[Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050 and [49.17].060. 98-07-009, § 296-45-365, filed 3/6/98, effective 5/6/98.]

WAC 296-45-375 Mechanical equipment, including aerial manlift equipment. (1) General requirements.

(a) The critical safety components of mechanical elevating and rotating equipment shall receive a thorough visual inspection and operational test before use on each shift.

Note: Critical safety components of mechanical elevating and rotating equipment are components whose failure would result in a free fall or free rotation of the boom.

(b) No vehicular equipment having an obstructed view to the rear may be operated on off-highway jobsites where any employee is exposed to the hazards created by the moving vehicle, unless:

(i) The vehicle has a reverse signal alarm audible above the surrounding noise level; or

(ii) The vehicle is backed up only when a designated employee signals that it is safe to do so.

(2007 Ed.)

(c) The operator of an electric line truck may not leave his or her position at the controls while a load is suspended, unless the employer can demonstrate that no employee (including the operator) might be endangered.

(d) Rubber-tired, self-propelled scrapers, rubber-tired front-end loaders, rubber-tired dozers, wheel-type agricultural and industrial tractors, crawler-type tractors, crawler-type loaders, and motor graders, with or without attachments, shall have rollover protective structures that meet the requirements of chapter 296-155 WAC, Part V.

(2) Outriggers.

(a) Vehicular equipment, if provided with outriggers, shall be operated with the outriggers extended and firmly set as necessary for the stability of the specific configuration of the equipment. Outriggers may not be extended or retracted outside of clear view of the operator unless all employees are outside the range of possible equipment motion.

(b) If the work area or the terrain precludes the use of outriggers, the equipment may be operated only within its maximum load ratings for the particular configuration of the equipment without outriggers.

(3) Applied loads. Mechanical equipment used to lift or move lines or other material shall be used within its maximum load rating and other design limitations for the conditions under which the work is being performed.

(4) Hydraulic fluids. All hydraulic fluids used for the insulated section of derrick trucks, aerial lifts, and hydraulic tools which are used on or around energized lines or equipment shall be of the insulating type.

(5) Mechanical adjustment or repairs shall not be attempted or performed in the field except by a person qualified to perform such work.

(6) Malfunction or needed repairs of manlift equipment shall be reported to the employee responsible for such repairs as soon as is reasonably possible. Use of equipment which is known to be in need of repairs or is malfunctioning is prohibited when such deficiency creates an unsafe operating condition.

(7) When any aerial manlift equipment is parked for operation at the job site, the brakes shall be set. Wheel chocks shall be used to prevent accidental movement while parked on an incline.

(8) Employees shall not sit or stand on the basket edge, stand on materials placed in or across the basket, or work from a ladder set inside the basket.

(9) The basket shall not be rested on a fixed object(s) so that the weight of the boom is either totally or partially supported by the basket.

(10) Operations near energized lines or equipment.

(a) Mechanical equipment shall be operated so that the minimum approach distances of Table 1 through Table 4 are maintained from exposed energized lines and equipment. However, the insulated upper portion excluding the basket/bucket of an aerial lift operated by a qualified employee in the lift is exempt from this requirement.

(b) A designated employee other than the equipment operator shall observe the approach distance to exposed lines and equipment and give timely warnings before the minimum approach distance required by subsection (10)(a) of this section is reached, unless the employer can demonstrate that the

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operator can accurately determine that the minimum approach distance is being maintained.

(c) If, during operation of the mechanical equipment, the equipment could become energized, the operation shall also comply with at least one of the following:

(i) The energized lines exposed to contact shall be covered with insulating protective material that will withstand the type of contact that might be made during the operation.

(ii) The equipment shall be insulated for the voltage involved. The equipment shall be positioned so that its uninsulated portions cannot approach the lines or equipment any closer than the minimum approach distances specified in Table 1 through 4.

(iii) Each employee shall be protected from hazards that might arise from equipment contact with the energized lines. The measures used shall ensure that employees will not be exposed to hazardous differences in potential. Unless the employer can demonstrate that the methods in use protect each employee from the hazards that might arise if the equipment contacts the energized line, the measures used shall include all of the following techniques:

(A) Using the best available ground to minimize the time the lines remain energized;

(B) Bonding equipment together to minimize potential differences;

(C) Providing ground mats to extend areas of equipotential; and

(D) Employing insulating protective equipment or barricades to guard against any remaining hazardous potential differences.

Note: Appendix B contains information on hazardous step and touch potentials and on methods of protecting employees from hazards resulting from such potentials.

(11) While working in aerial equipment, employees shall wear a full body harness and a lanyard attached to the boom or basket, in a secure manner.

(12) No component of aerial devices shall be operated from the ground without permission from the employee in the basket except in case of emergency.

(13) Operating levers or controls shall be kept clear of tools, materials or obstructions.

(14) Employees shall not climb into or out of the basket or platform while it is elevated or change from one basket to another on dual basket equipment, except in case of emergency or when the employees involved agree that this is the safest way to perform the work. This exception shall not be used to circumvent safety rules.

(15) Existing safety rules governing the use of hot line tools, rubber and other protective equipment and safe work practices while performing work from poles or structures shall also apply to work done from aerial manlift equipment.

(16) The basket shall be kept clean and all tools not in use shall be secured or removed.

(17) Approved warning light shall be operating when the boom leaves the cradle. This light shall be visible to approaching traffic when the boom is in position over any traveled area.

(18) All aerial manlift equipment shall have both upper and lower controls (except ladder trucks need not have upper controls). The upper controls shall not be capable of render-

ing the lower controls inoperative. The lower controls should be located at or near the base of the aerial structure. If the lower controls are used, the operator shall have a view of the elevated employee(s) or there shall be communication between the operator and the employee in the elevated aerial structure: Provided, That no employee shall be raised, lowered, or moved into or from the elevated position in any aerial manlift equipment unless there is another employee, not in the elevated aerial structure, available at the site to operate the lower controls, except as follows:

(a) Where there is a fixed method permanently attached to or part of the equipment which will permit an employee to descend from the elevated position without lowering the elevated structure; or

(b) Where there is a system which will provide operation from the elevated position in the event of failure or malfunction of the primary system.

Note: This section shall not be interpreted as an exception to any other rule in this chapter.

(19) Controls in aerial manlift equipment shall be protected from accidental operation. Controls of the outriggers shall also be protected from accidental operation. Such protection may be by guarding or equivalent means.

(20) The manufacturer's recommended maximum load limit shall be posted at a conspicuous place near each set of controls and shall be kept in a legible condition.

(21) The manufacturer's operator's instructional manual shall be kept on the vehicle.

(22) Operating instructions, proper sequence and maintenance procedures prescribed by the manufacturer for operation of the equipment shall be followed.

[Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050 and [49.17].060. 98-07-009, § 296-45-375, filed 3/6/98, effective 5/6/98.]

WAC 296-45-385 Overhead lines. This section provides additional requirements for work performed on or near overhead lines and equipment.

(1) General.

(a) Before elevated structures and adjacent structures, such as poles or towers of the adjacent supporting poles, structures, and conductor supporting hardware, are subjected to such stresses as climbing or the installation or removal of equipment may impose, the employer shall ascertain that the structures are capable of sustaining the additional or unbalanced stresses. If the pole or other structure cannot withstand the loads which will be imposed, it shall be braced or otherwise supported so as to prevent failure.

Note: Appendix C contains test methods that can be used in ascertaining whether a wood pole is capable of sustaining the forces that would be imposed by an employee climbing the pole. This paragraph also requires the employer to ascertain that the pole can sustain all other forces that will be imposed by the work to be performed.

(b) When poles are set, moved, or removed near exposed energized overhead conductors, the pole may not contact the conductors.

(c) When a pole is set, moved, or removed near an exposed energized overhead conductor, the employer shall ensure that each employee wears electrical protective equipment or uses insulated devices when handling the pole and

that no employee contacts the pole with uninsulated parts of his or her body.

(d) To protect employees from falling into holes into which poles are to be placed, the holes shall be attended by employees or physically guarded whenever anyone is working nearby.

(2) Installing and removing overhead lines. The following provisions apply to the installation and removal of overhead conductors or cable.

(a) The employer shall use the tension stringing method, barriers, or other equivalent measures to minimize the possibility that conductors and cables being installed or removed will contact energized power lines or equipment.

(b) When conductors are being strung in or removed, they shall be kept under positive control to prevent accidental contact with energized circuit.

(c) The protective measures required by WAC 296-45-375 (10)(c) for mechanical equipment shall also be provided for conductors, cables, and pulling and tensioning equipment when the conductor or cable is being installed or removed close enough to energized conductors that any of the following failures could energize the pulling or tensioning equipment or the wire or cable being installed or removed:

- (i) Failure of the pulling or tensioning equipment;
- (ii) Failure of the wire or cable being pulled; or
- (iii) Failure of the previously installed lines or equipment.

(d) When conductors being installed or removed cross over energized conductors in excess of 600 volts, rope nets or guard structures must be installed unless provision is made to isolate or insulate the worker or the energized conductor. Where the design of the circuit-interrupting devices protecting the lines so permits, the automatic-reclosing feature of these devices must be made inoperative. In addition, the line being strung must be grounded on either side of the crossover or considered and worked as energized.

(e) Before lines are installed parallel to existing energized lines, the employer shall make a determination of the approximate voltage to be induced in the new lines, or work shall proceed on the assumption that the induced voltage is hazardous. Unless the employer can demonstrate that the lines being installed are not subject to the induction of a hazardous voltage or unless the lines are treated as energized, the following requirements also apply:

(i) Each bare conductor shall be grounded in increments so that no point along the conductor is more than 2 miles (3.22 km) from a ground.

(ii) The grounds required in subsection (2)(e)(i) of this section shall be left in place until the conductor installation is completed between dead ends.

(iii) The grounds required in subsection (2)(e)(i) of this section shall be removed as the last phase of aerial cleanup.

(iv) If employees are working on bare conductors, grounds shall also be installed at each location where these employees are working, and grounds shall be installed at all open dead-end or catch-off points or the next adjacent structure.

(v) If two bare conductors are to be spliced, the conductors shall be bonded and grounded before being spliced.

(f) Reel handling equipment, including pulling and tensioning devices, shall be in safe operating condition and shall be leveled and aligned.

(g) Load ratings of stringing lines, pulling lines, conductor grips, load-bearing hardware and accessories, rigging, and hoists may not be exceeded.

(h) Each pull must be snubbed or dead ended at both ends before subsequent pulls.

(3) Pulling lines and accessories shall be inspected prior to each use and replaced or repaired when damaged or when there is a reasonable basis to doubt the dependability of such lines or accessories.

(4) Conductor grips may not be used on wire rope, unless the grip is specifically designed for this application.

(5) Reliable communications, through two-way radios or other equivalent means, shall be maintained between the reel tender and the pulling rig operator.

(6) The pulling rig may only be operated when it is safe to do so.

Note: Examples of unsafe conditions include employees in locations prohibited by subsection (7) of this section, conductor and pulling line hang-ups, and slipping of the conductor grip.

(7) While the conductor or pulling line is being pulled (in motion) with a power-driven device, employees are not permitted directly under overhead operations or on the cross arm, except as necessary to guide the stringing sock or board over or through the stringing sheave.

(8) Live-line bare-hand work is prohibited.

(9) When winches, trucks, or tractors are being used to raise poles, materials, to pull in wires, to pull slack or in any other operation, there shall be an operator at the controls unless the machinery or process is stopped.

(10) Leadworkers shall designate an employee to give signals when required.

(11) Raising poles, towers or fixtures in the close proximity of high voltage conductors shall be done under the supervision of a qualified employee.

(12) Employees shall not crawl over insulator strings but shall use a platform or other approved device to work from when making dead ends or doing other work beyond strings of insulators, at such distance that they cannot reach the work from the pole or fixture. While working on the platform or other device, they shall be secured with safety straps or a rope to prevent falling. The provision of this subsection does not apply to extra high voltage bundle conductors when the use of such equipment may produce additional hazard. Climbing over dead end assemblies is permissible only after they have been completed and pinned in the final position.

(13) Towers and structures. The following requirements apply to work performed on towers or other structures which support overhead lines.

(a) The employer shall ensure that no employee is under a tower or structure while work is in progress, except where the employer can demonstrate that such a working position is necessary to assist employees working above.

(b) Tag lines or other similar devices shall be used to maintain control of tower sections being raised or positioned, unless the employer can demonstrate that the use of such devices would create a greater hazard.

(c) The loadline may not be detached from a member or section until the load is safely secured.

(d) No one must be permitted to remain in the footing while equipment is being spotted for placement.

(e) A designated employee must be utilized to determine that required clearance is maintained in moving equipment under or near energized lines.

(14) All conductors, subconductors, and overhead ground conductors must be bonded to the tower at any isolated tower where it may be necessary to complete work on the transmission line.

(15) A transmission clipping crew shall have a minimum of two structures clipped in between the crew and the conductor being sagged.

(16) While on patrol at night and operating a motor vehicle on public highways, there shall be two employees, at least one of whom shall be a journey level lineworker or otherwise qualified employee. If repair to line or equipment is found to be of such nature as to require two lineworkers, work shall not proceed until additional help has been obtained provided that in cases of emergency where delay would increase the danger to life, limb, or substantial property, one employee may clear the hazard without assistance.

(17) Except during emergency restoration procedures, work shall be discontinued when adverse weather conditions would make the work hazardous in spite of the work practices required by this section.

Note: Thunderstorms in the immediate vicinity, high winds, snow storms, and ice storms are examples of adverse weather conditions that are presumed to make this work too hazardous to perform, except under emergency conditions.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060, 05-17-038, § 296-45-385, filed 8/9/05, effective 10/1/05; 98-07-009, § 296-45-385, filed 3/6/98, effective 5/6/98.]

WAC 296-45-455 Line-clearance tree-trimming operations. This section provides additional requirements for line-clearance tree-trimming operations and for equipment used in these operations.

This section does not apply to qualified employees.

(1) Before an employee climbs, enters, or works around any tree, a determination shall be made of the nominal voltage of electric power lines posing a hazard to employees. However, a determination of the maximum nominal voltage to which an employee will be exposed may be made instead, if all lines are considered as energized at this maximum voltage.

(2) There shall be a second line-clearance tree trimmer within normal (that is, unassisted) voice communication under any of the following conditions:

(a) If a line-clearance tree trimmer is to approach more closely than 10 feet (305 cm) any conductor or electrical apparatus energized at more than 600 volts; or

(b) If branches or limbs being removed are closer to lines energized at more than 600 volts than the distances listed in Table 1, Table 4, and Table 5; or

(c) If roping is necessary to remove branches or limbs from such conductors or apparatus.

(3) Line-clearance tree trimmers shall maintain the minimum approach distances from energized conductors given in Table 1, Table 4, and Table 5.

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(4) Branches that are contacting exposed energized conductors or equipment or that are within the distances specified in Table 1, Table 4, and Table 5 may be removed only through the use of insulating equipment.

Note: A tool constructed of a material that the employer can demonstrate has insulating qualities meeting WAC 296-45-305(1) are considered as insulated under this section if the tool is clean and dry.

(5) Ladders, platforms, and aerial devices may not be brought closer to an energized part than the distances listed in Table 1, Table 4, and Table 5.

(6) Line-clearance tree-trimming work may not be performed when adverse weather conditions make the work hazardous in spite of the work practices required by this section. Each employee performing line-clearance tree-trimming work in the aftermath of a storm or under similar emergency conditions shall be trained in the special hazards related to this type of work.

Note: Thunderstorms in the immediate vicinity, high winds, snow storms, and ice storms are examples of adverse weather conditions that are presumed to make line-clearance tree-trimming work too hazardous to perform safely.

(7) A tree trimmer may climb out of a basket into a tree or from a tree back into the basket so long as he is properly tied into the tree during the entire maneuver and the employer can demonstrate that this is the safest way to perform the work.

[Statutory Authority: RCW 49.17.040, 99-09-080, § 296-45-455, filed 4/20/99, effective 8/1/99. Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050 and [49.17].060, 98-07-009, § 296-45-455, filed 3/6/98, effective 5/6/98.]

WAC 296-45-45505 Brush chippers. (1) Brush chippers shall be equipped with a locking device in the ignition system.

(2) Access panels for maintenance and adjustment of the chipper blades and associated drive train shall be in place and secure during operation of the equipment.

(3) Brush chippers not equipped with a mechanical infeed system shall be equipped with an infeed hopper of length sufficient to prevent employees from contacting the blades or knives of the machine during operation.

(4) Trailer chippers detached from trucks shall be chocked or otherwise secured.

(5) Each employee in the immediate area of an operating chipper feed table shall wear personal protective equipment as required by Subpart I of this Part.

[Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050 and [49.17].060, 98-07-009, § 296-45-45505, filed 3/6/98, effective 5/6/98.]

WAC 296-45-45510 Sprayers and related equipment. (1) Walking and working surfaces of sprayers and related equipment shall be covered with slip-resistant material. If slipping hazards cannot be eliminated, slip-resistant footwear or handrails and stair rails meeting the requirements of chapter 296-24 WAC, Part J-1, and WAC 296-800-260 may be used instead of slip-resistant material.

(2) Equipment on which employees stand to spray while the vehicle is in motion shall be equipped with guardrails around the working area. The guardrail shall be constructed

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in accordance with chapter 296-24 WAC, Part J-1 and WAC 296-800-260.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 01-11-038, § 296-45-45510, filed 5/9/01, effective 9/1/01. Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050 and [49.17].060. 98-07-009, § 296-45-45510, filed 3/6/98, effective 5/6/98.]

WAC 296-45-45515 Stump cutters. (1) Stump cutters shall be equipped with enclosures or guards to protect employees.

(2) Each employee in the immediate area of stump grinding operations (including the stump cutter operator) shall wear personal protective equipment as required by WAC 296-45-25505.

[Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050 and [49.17].060. 98-07-009, § 296-45-45515, filed 3/6/98, effective 5/6/98.]

WAC 296-45-45520 Backpack power units for use in pruning and clearing. (1) While a backpack power unit is running, no one other than the operator may be within 10 feet (305 cm) of the cutting head of a brush saw.

(2) A backpack power unit shall be equipped with a quick shutoff switch readily accessible to the operator.

(3) Backpack power unit engines shall be stopped for all cleaning, refueling, adjustments, and repairs to the saw or motor, except as the manufacturer's servicing procedures require otherwise.

[Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050 and [49.17].060. 98-07-009, § 296-45-45520, filed 3/6/98, effective 5/6/98.]

WAC 296-45-45525 Rope. (1) Climbing ropes shall be used by employees working aloft in trees. These ropes shall have a minimum diameter of 0.5 inch (1.2 cm) with a minimum breaking strength of 2300 pounds (10.2 kN). Synthetic rope shall have elasticity of not more than 7 percent.

(2) Rope shall be inspected before each use and, if unsafe (for example, because of damage or defect), may not be used.

(3) Rope shall be stored away from cutting edges and sharp tools. Rope contact with corrosive chemicals, gas, and oil shall be avoided.

(4) When stored, rope shall be coiled and piled, or shall be suspended, so that air can circulate through the coils.

(5) Rope ends shall be secured to prevent their unraveling.

(6) Climbing rope may not be spliced to effect repair.

(7) A rope that is wet, that is contaminated to the extent that its insulating capacity is impaired, or that is otherwise not considered to be insulated for the voltage involved may not be used near exposed energized lines.

[Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050 and [49.17].060. 98-07-009, § 296-45-45525, filed 3/6/98, effective 5/6/98.]

WAC 296-45-45530 Fall protection. Each employee shall be tied in with a climbing rope and safety saddle when the employee is working above the ground in a tree, unless he or she is ascending into the tree.

[Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050 and [49.17].060. 98-07-009, § 296-45-45530, filed 3/6/98, effective 5/6/98.]

WAC 296-45-465 Communication facilities. (1) Microwave transmission. The employer shall ensure that no (2007 Ed.)

employee looks into an open waveguide or antenna that is connected to an energized microwave source.

(2) If the electromagnetic radiation level within an accessible area associated with microwave communications systems exceeds the radiation protection guide given in chapter 296-62 WAC, Part J-1. The area shall be posted with the warning symbol described in chapter 296-62 WAC, Part J-1. The lower half of the warning symbol shall include the following statements or ones that the employer can demonstrate are equivalent:

Radiation in this area may exceed hazard limitations and special precautions are required. Obtain specific instruction before entering.

(3) When an employee works in an area where the electromagnetic radiation could exceed the radiation protection guide, the employer shall institute measures that ensure that the employee's exposure is not greater than that permitted by that guide. Such measures may include administrative and engineering controls and personal protective equipment.

(4) Power line carrier. Power line carrier work, including work on equipment used for coupling carrier current to power line conductors, shall be performed in accordance with the requirements of this section pertaining to work on energized lines.

[Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050 and [49.17].060. 98-07-009, § 296-45-465, filed 3/6/98, effective 5/6/98.]

WAC 296-45-475 Substations. This section provides additional requirements for substations and for work performed in them.

(1) Access and working space. Sufficient access and working space shall be provided and maintained about electric equipment to permit ready and safe operation and maintenance of such equipment.

Note: Guidelines for the dimensions of access and working space about electric equipment in substations are contained in American National Standard-National Electrical Safety Code, ANSI C2-1997. Installations meeting the ANSI provisions comply with WAC 296-45-475(1). An installation that does not conform to this ANSI standard will, nonetheless, be considered as complying with WAC 296-45-475(1) if the employer can demonstrate that the installation provides ready and safe access based on the following evidence:

(a) That the installation conforms to the edition of ANSI C2 that was in effect at the time the installation was made;

(b) That the configuration of the installation enables employees to maintain the minimum approach distances required by WAC 296-45-325(5) while they are working on exposed, energized parts; and

(c) That the precautions taken when work is performed on the installation provide protection equivalent to the protection that would be provided by access and working space meeting ANSI C2-1997.

(d) Precaution must be taken to prevent accidental operation of relays or other protective devices due to jarring, vibration, or improper wiring.

(2) Draw-out-type circuit breakers. When draw-out-type circuit breakers are removed or inserted, the breaker shall be in the open position. The control circuit shall also be rendered inoperative, if the design of the equipment permits.

(3) Substation fences. Conductive fences around substations must be grounded. When a substation fence must be

expanded or removed fence continuity must be maintained and bonding must be used to prevent electrical discontinuity. A temporary fence affording similar protection when the site is unattended, must be provided. Adequate interconnection with ground must be maintained between temporary fence and permanent fence.

(4) Guarding of rooms containing electric supply equipment.

(a) Rooms and spaces in which electric supply lines or equipment are installed shall meet the requirements of subsection (4)(b) through (e) of this section under the following conditions:

(i) If exposed live parts operating at 50 to 150 volts to ground are located within 8 feet of the ground or other working surface inside the room or space;

(ii) If live parts operating at 151 to 600 volts and located within 8 feet of the ground or other working surface inside the room or space are guarded only by location, as permitted under subsection (5)(a) of this section; or

(iii) If live parts operating at more than 600 volts are located within the room or space, unless:

(A) The live parts are enclosed within grounded, metal-enclosed equipment whose only openings are designed so that foreign objects inserted in these openings will be deflected from energized parts; or

(B) The live parts are installed at a height above ground and any other working surface that provides protection at the voltage to which they are energized corresponding to the protection provided by an 8-foot height at 50 volts.

(b) The rooms and spaces shall be so enclosed within fences, screens, partitions, or walls as to minimize the possibility that unqualified persons will enter.

(c) Signs warning unqualified persons to keep out shall be displayed at entrances to the rooms and spaces.

(d) Entrances to rooms and spaces that are not under the observation of an attendant shall be kept locked.

(e) Unqualified persons may not enter the rooms or spaces while the electric supply lines or equipment are energized.

(5) Guarding of energized parts.

(a) Guards shall be provided around all live parts operating at more than 150 volts to ground without an insulating covering, unless the location of the live parts gives sufficient horizontal or vertical or a combination of these clearances to minimize the possibility of accidental employee contact.

Note: Guidelines for the dimensions of clearance distances about electric equipment in substations are contained in American National Standard-National Electrical Safety Code, ANSI C2-1997. Installations meeting the ANSI provisions comply with subsection (5)(a) of this section. An installation that does not conform to this ANSI standard will, nonetheless, be considered as complying with subsection (5)(a) of this section if the employer can demonstrate that the installation provides sufficient clearance based on the following evidence:

(i) That the installation conforms to the edition of ANSI C2 that was in effect at the time the installation was made;

(ii) That each employee is isolated from energized parts at the point of closest approach; and

(iii) That the precautions taken when work is performed on the installation provide protection equivalent to the protection that would be provided by horizontal and vertical clearances meeting ANSI C2-1997.

(b) Except for fuse replacement and other necessary access by qualified persons, the guarding of energized parts within a compartment shall be maintained during operation and maintenance functions to prevent accidental contact with energized parts and to prevent tools or other equipment from being dropped on energized parts.

(c) When guards are removed from energized equipment, barriers shall be installed around the work area to prevent employees who are not working on the equipment, but who are in the area, from contacting the exposed live parts.

(6) Substation entry.

(a) Upon entering an attended substation, each employee other than those regularly working in the station shall report his or her presence to the employee in charge in order to receive information on special system conditions affecting employee safety.

(b) The job briefing required by WAC 296-45-135 shall cover such additional subjects as the location of energized equipment in or adjacent to the work area and the limits of any deenergized work area.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. 05-17-038, § 296-45-475, filed 8/9/05, effective 10/1/05; 98-07-009, § 296-45-475, filed 3/6/98, effective 5/6/98.]

WAC 296-45-485 Power generation. This section provides additional requirements and related work practices for power generating plants.

[Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050 and [49.17].060. 98-07-009, § 296-45-485, filed 3/6/98, effective 5/6/98.]

WAC 296-45-48505 Interlocks and other safety devices. (1) Interlocks and other safety devices shall be maintained in a safe, operable condition.

(2) No interlock or other safety device may be modified to defeat its function, except for test, repair, or adjustment of the device.

[Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050 and [49.17].060. 98-07-009, § 296-45-48505, filed 3/6/98, effective 5/6/98.]

WAC 296-45-48510 Changing brushes. Before exciter or generator brushes are changed while the generator is in service, the exciter or generator field shall be checked to determine whether a ground condition exists. The brushes may not be changed while the generator is energized if a ground condition exists.

[Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050 and [49.17].060. 98-07-009, § 296-45-48510, filed 3/6/98, effective 5/6/98.]

WAC 296-45-48515 Access and working space. Sufficient access and working space shall be provided and maintained about electric equipment to permit ready and safe operation and maintenance of such equipment.

Note: Guidelines for the dimensions of access and workspace about electric equipment in generating stations are contained in American National Standard-National Electrical Safety Code, ANSI C2-1997. Installations meeting the ANSI provisions comply with this section. An installation that does not conform to this ANSI standard will, nonetheless, be considered as complying with this section if the employer can demonstrate that the installation provides ready and safe access based on the following evidence:

(1) That the installation conforms to the edition of ANSI C2 that was in effect at the time the installation was made;

(2) That the configuration of the installation enables employees to maintain the minimum approach distances required by this section while they work on exposed, energized parts; and

(3) That the precautions taken when work is performed on the installation provide protection equivalent to the protection that would be provided by access and working space meeting ANSI C2-1997.

[Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050 and [49.17].060. 98-07-009, § 296-45-48515, filed 3/6/98, effective 5/6/98.]

WAC 296-45-48520 Guarding of rooms containing electric supply equipment. (1) Rooms and spaces in which electric supply lines or equipment are installed shall meet the requirements of this section under the following conditions:

(a) If exposed live parts operating at 50 to 150 volts to ground are located within eight feet of the ground or other working surface inside the room or space;

(b) If live parts operating at 151 to 600 volts and located within eight feet of the ground or other working surface inside the room or space are guarded only by location, as permitted under this section; or

(c) If live parts operating at more than 600 volts are located within the room or space; unless:

(i) The live parts are enclosed within grounded, metal-enclosed equipment whose only openings are designed so that foreign objects inserted in these openings will be deflected from energized parts; or

(ii) The live parts are installed at a height above ground and any other working surface that provides protection at the voltage to which they are energized corresponding to the protection provided by an eight-foot height at 50 volts.

(2) The rooms and spaces shall be so enclosed within fences, screens, partitions, or walls as to minimize the possibility that unqualified persons will enter.

(3) Signs warning unqualified persons to keep out shall be displayed at entrances to the rooms and spaces.

(4) Entrances to rooms and spaces that are not under the observation of an attendant shall be kept locked.

(5) Unqualified persons may not enter the rooms or spaces while the electric supply lines or equipment are energized.

[Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050 and [49.17].060. 98-07-009, § 296-45-48520, filed 3/6/98, effective 5/6/98.]

WAC 296-45-48525 Guarding of energized parts. (1) Guards shall be provided around all live parts operating at more than 150 volts to ground without an insulating covering, unless the location of the live parts gives sufficient horizontal or vertical or a combination of these clearances to minimize the possibility of accidental employee contact.

Note: Guidelines for the dimensions of clearance distances about electric equipment in generating stations are contained in American National Standard-National Electrical Safety Code, ANSI C2-1997. Installations meeting the ANSI provisions comply with this section. An installation that does not conform to this ANSI standard will, nonetheless, be considered as complying with this section if the employer can demonstrate that the installation provides sufficient clearance based on the following evidence:

(a) That the installation conforms to the edition of ANSI C2 that was in effect at the time the installation was made;

(b) That each employee is isolated from energized parts at the point of closest approach; and

(c) That the precautions taken when work is performed on the installation provide protection equivalent to the protection that would be provided by horizontal and vertical clearances meeting ANSI C2-1997.

(2) Except for fuse replacement or other necessary access by qualified persons, the guarding of energized parts within a compartment shall be maintained during operation and maintenance functions to prevent accidental contact with energized parts and to prevent tools or other equipment from being dropped on energized parts.

(3) When guards are removed from energized equipment, barriers shall be installed around the work area to prevent employees who are not working on the equipment, but who are in the area, from contacting the exposed live parts.

[Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050 and [49.17].060. 98-07-009, § 296-45-48525, filed 3/6/98, effective 5/6/98.]

WAC 296-45-48530 Water or steam spaces. The following requirements apply to work in water and steam spaces associated with boilers:

(1) A designated employee shall inspect conditions before work is permitted and after its completion. Eye protection, or full face protection if necessary, shall be worn at all times when condenser, heater, or boiler tubes are being cleaned.

(2) Where it is necessary for employees to work near tube ends during cleaning, shielding shall be installed at the tube ends.

[Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050 and [49.17].060. 98-07-009, § 296-45-48530, filed 3/6/98, effective 5/6/98.]

WAC 296-45-48535 Chemical cleaning of boilers and pressure vessels. The following requirements apply to chemical cleaning of boilers and pressure vessels:

(1) Areas where chemical cleaning is in progress shall be cordoned off to restrict access during cleaning. If flammable liquids, gases, or vapors or combustible materials will be used or might be produced during the cleaning process, the following requirements also apply:

(a) The area shall be posted with signs restricting entry and warning of the hazards of fire and explosion; and

(b) Smoking, welding, and other possible ignition sources are prohibited in these restricted areas.

(2) The number of personnel in the restricted area shall be limited to those necessary to accomplish the task safely.

(3) There shall be ready access to water or showers for emergency use.

Note: See WAC 296-800-230, of the safety and health core rules, for requirements that apply to the water supply and to washing facilities.

(4) Employees in restricted areas shall wear protective equipment meeting the requirements of this chapter and including, but not limited to, protective clothing, boots, goggles, and gloves.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060. 03-18-090, § 296-45-48535, filed 9/2/03, effective 11/1/03. Stat-

utory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 01-11-038, § 296-45-48535, filed 5/9/01, effective 9/1/01. Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050 and [49.17].060. 98-07-009, § 296-45-48535, filed 3/6/98, effective 5/6/98.]

WAC 296-45-48540 Chlorine systems. (1) Chlorine system enclosures shall be posted with signs restricting entry and warning of the hazard to health and the hazards of fire and explosion.

Note: See chapter 296-62 WAC for requirements necessary to protect the health of employees from the effects of chlorine.

(2) Only designated employees may enter the restricted area. Additionally, the number of personnel shall be limited to those necessary to accomplish the task safely.

(3) Emergency repair kits shall be available near the shelter or enclosure to allow for the prompt repair of leaks in chlorine lines, equipment, or containers.

(4) Before repair procedures are started, chlorine tanks, pipes, and equipment shall be purged with dry air and isolated from other sources of chlorine.

(5) The employer shall ensure that chlorine is not mixed with materials that would react with the chlorine in a dangerously exothermic or other hazardous manner.

[Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050 and [49.17].060. 98-07-009, § 296-45-48540, filed 3/6/98, effective 5/6/98.]

WAC 296-45-48545 Boilers. (1) Before internal furnace or ash hopper repair work is started, overhead areas shall be inspected for possible falling objects. If the hazard of falling objects exists, overhead protection such as planking or nets shall be provided.

(2) When opening an operating boiler door, employees shall stand clear of the opening of the door to avoid the heat blast and gases which may escape from the boiler.

[Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050 and [49.17].060. 98-07-009, § 296-45-48545, filed 3/6/98, effective 5/6/98.]

WAC 296-45-48550 Turbine generators. (1) Smoking and other ignition sources are prohibited near hydrogen or hydrogen sealing systems, and signs warning of the danger of explosion and fire shall be posted.

(2) Excessive hydrogen makeup or abnormal loss of pressure shall be considered as an emergency and shall be corrected immediately.

(3) A sufficient quantity of inert gas shall be available to purge the hydrogen from the largest generator.

[Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050 and [49.17].060. 98-07-009, § 296-45-48550, filed 3/6/98, effective 5/6/98.]

WAC 296-45-48555 Coal and ash handling. (1) Only designated persons may operate railroad equipment.

(2) Before a locomotive or locomotive crane is moved, a warning shall be given to employees in the area.

(3) Employees engaged in switching or dumping cars may not use their feet to line up drawheads.

(4) Drawheads and knuckles may not be shifted while locomotives or cars are in motion.

(5) When a railroad car is stopped for unloading, the car shall be secured from displacement that could endanger employees.

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(6) An emergency means of stopping dump operations shall be provided at railcar dumps.

(7) The employer shall ensure that employees who work in coal- or ash-handling conveyor areas are trained and knowledgeable in conveyor operation and in the requirements of this section.

(8) Employees may not ride a coal- or ash-handling conveyor belt at any time. Employees may not cross over the conveyor belt, except at walkways, unless the conveyor's energy source has been deenergized and has been locked out or tagged in accordance with WAC 296-45-175.

(9) A conveyor that could cause injury when started may not be started until personnel in the area are alerted by a signal or by a designated person that the conveyor is about to start.

(10) If a conveyor that could cause injury when started is automatically controlled or is controlled from a remote location, an audible device shall be provided that sounds an alarm that will be recognized by each employee as a warning that the conveyor will start and that can be clearly heard at all points along the conveyor where personnel may be present. The warning device shall be actuated by the device starting the conveyor and shall continue for a period of time before the conveyor starts that is long enough to allow employees to move clear of the conveyor system. A visual warning may be used in place of the audible device if the employer can demonstrate that it will provide an equally effective warning in the particular circumstances involved.

Exception: If the employer can demonstrate that the system's function would be seriously hindered by the required time delay, warning signs may be provided in place of the audible warning device. If the system was installed before November 20, 1995, warning signs may be provided in place of the audible warning device until such time as the conveyor or its control system is rebuilt or rewired. These warning signs shall be clear, concise, and legible and shall indicate that conveyors and allied equipment may be started at any time, that danger exists, and that personnel must keep clear. These warning signs shall be provided along the conveyor at areas not guarded by position or location.

(11) Remotely and automatically controlled conveyors, and conveyors that have operating stations which are not manned or which are beyond voice and visual contact from drive areas, loading areas, transfer points, and other locations on the conveyor path not guarded by location, position, or guards shall be furnished with emergency stop buttons, pull cords, limit switches, or similar emergency stop devices. However, if the employer can demonstrate that the design, function, and operation of the conveyor do not expose an employee to hazards, an emergency stop device is not required.

(a) Emergency stop devices shall be easily identifiable in the immediate vicinity of such locations.

(b) An emergency stop device shall act directly on the control of the conveyor involved and may not depend on the stopping of any other equipment.

(c) Emergency stop devices shall be installed so that they cannot be overridden from other locations.

(12) Where coal-handling operations may produce a combustible atmosphere from fuel sources or from flammable gases or dust, sources of ignition shall be eliminated or

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safely controlled to prevent ignition of the combustible atmosphere.

Note: Locations that are hazardous because of the presence of combustible dust are classified as Class II hazardous locations. See chapter 296-24 WAC, Part L.

(13) An employee may not work on or beneath overhanging coal in coal bunkers, coal silos, or coal storage areas, unless the employee is protected from all hazards posed by shifting coal.

(14) An employee entering a bunker or silo to dislodge the contents shall wear a body harness with lifeline attached. The lifeline shall be secured to a fixed support outside the bunker and shall be attended at all times by an employee located outside the bunker or facility.

[Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050 and [49.17].060. 98-07-009, § 296-45-48555, filed 3/6/98, effective 5/6/98.]

WAC 296-45-48560 Hydroplants and equipment.

Employees working on or close to water gates, valves, intakes, forebays, flumes, or other locations where increased or decreased water flow or levels may pose a significant hazard shall be warned and shall vacate such dangerous areas before water flow changes are made.

[Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050 and [49.17].060. 98-07-009, § 296-45-48560, filed 3/6/98, effective 5/6/98.]

WAC 296-45-525 Special conditions.

[Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050 and [49.17].060. 98-07-009, § 296-45-525, filed 3/6/98, effective 5/6/98.]

WAC 296-45-52505 Capacitors. The following additional requirements apply to work on capacitors and on lines connected to capacitors.

Note: See WAC 296-45-335 through 296-45-345 for requirements pertaining to the de-energizing and grounding of capacitor installations.

(1) Before employees work on capacitors, the capacitors shall be disconnected from energized sources and, after a wait of at least 5 minutes from the time of disconnection, short-circuited.

(2) Before the units are handled, each unit in series-parallel capacitor banks shall be short-circuited between all terminals and the capacitor case or its rack. If the cases of capacitors are on ungrounded substation racks, the racks shall be bonded to ground.

(3) Any line to which capacitors are connected shall be short-circuited before it is considered deenergized.

(4) After removal from service, short circuits shall remain on capacitors in storage until returned to service.

[Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050 and [49.17].060. 98-07-009, § 296-45-52505, filed 3/6/98, effective 5/6/98.]

WAC 296-45-52510 Current transformer secondaries. The secondary of a current transformer may not be opened while the transformer is energized. If the primary of the current transformer cannot be deenergized before work is performed on an instrument, a relay, or other section of a current transformer secondary circuit, the circuit shall be bridged so that the current transformer secondary will not be opened.

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[Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050 and [49.17].060. 98-07-009, § 296-45-52510, filed 3/6/98, effective 5/6/98.]

WAC 296-45-52515 Series streetlighting. (1) If the open-circuit voltage exceeds 600 volts, the series streetlighting circuit shall be worked in accordance with WAC 296-45-215 or 296-45-385, as appropriate.

(2) A series loop may only be opened after the streetlighting transformer has been deenergized and isolated from the source of supply or after the loop is bridged to avoid an open-circuit condition.

[Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050 and [49.17].060. 98-07-009, § 296-45-52515, filed 3/6/98, effective 5/6/98.]

WAC 296-45-52520 Illumination. Sufficient illumination shall be provided to enable the employee to perform the work safely.

[Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050 and [49.17].060. 98-07-009, § 296-45-52520, filed 3/6/98, effective 5/6/98.]

WAC 296-45-52525 Protection against drowning. (1) Whenever an employee may be pulled or pushed or may fall into water where the danger of drowning exists, the employee shall be provided with and shall use U.S. Coast Guard approved personal flotation devices.

(2) Each personal flotation device shall be maintained in safe condition and shall be inspected frequently enough to ensure that it does not have rot, mildew, water saturation, or any other condition that could render the device unsuitable for use.

(3) An employee may cross streams or other bodies of water only if a safe means of passage, such as a bridge, is provided.

[Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050 and [49.17].060. 98-07-009, § 296-45-52525, filed 3/6/98, effective 5/6/98.]

WAC 296-45-52530 Employee protection in public work areas. (1)(a) Before work begins in the vicinity of vehicular or pedestrian traffic that may endanger employees, traffic control signs, devices, and barriers must be positioned and used according to the requirements of chapter 296-155 WAC, Part E.

(b) When flaggers are used, employers, responsible contractors and/or project owners must comply with the requirements of WAC 296-155-305.

(2) During hours of darkness, warning lights must be prominently displayed.

(3) Excavated areas must be protected with barricades.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050, 2000 c 239, and chapter 34.05 RCW. 01-07-075, § 296-45-52530, filed 3/20/01, effective 4/20/01. Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050 and [49.17].060. 98-07-009, § 296-45-52530, filed 3/6/98, effective 5/6/98.]

WAC 296-45-52535 Backfeed. If there is a possibility of voltage backfeed from sources of cogeneration or from the secondary system (for example, backfeed from more than one energized phase feeding a common load), the requirements of WAC 296-45-325 apply if the lines or equipment are to be worked as energized, and the requirements of WAC 296-45-

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335 and 296-45-345 apply if the lines or equipment are to be worked as deenergized.

[Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050 and [49.17].060. 98-07-009, § 296-45-52535, filed 3/6/98, effective 5/6/98.]

WAC 296-45-52540 Lasers. Laser equipment shall be installed, adjusted, and operated in accordance with WAC 296-155-155.

[Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050 and [49.17].060. 98-07-009, § 296-45-52540, filed 3/6/98, effective 5/6/98.]

WAC 296-45-52545 Hydraulic fluids. Hydraulic fluids used for the insulated sections of equipment shall provide insulation for the voltage involved.

[Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050 and [49.17].060. 98-07-009, § 296-45-52545, filed 3/6/98, effective 5/6/98.]

WAC 296-45-52550 Foreign attachments and placards. Nails and unauthorized attachments should be removed before climbing above such attachments. When through bolts present a hazard to climbing, they shall be trimmed to a safe length.

[Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050 and [49.17].060. 98-07-009, § 296-45-52550, filed 3/6/98, effective 5/6/98.]

WAC 296-45-545 Trolley maintenance, jumpering or bypassing. (1) Energized trolley wire shall be jumpered when it is to be opened or cut.

(2) Reaching over trolley wire(s) or system(s). Lineworkers shall not reach over trolley wire(s) unless properly protected by line hose or rubber blanket.

(3) Reaching across sectional insulators. Lineworkers shall not reach across section insulator(s), insulated spacer(s) or insulated approach.

(4) Polarity on either side of sectionalizing breakers. Since the polarity on both sides of a sectionalizing insulator may be different, it is required that prior to performance of work, tests be performed with approved testing equipment to determine whether or not the polarity is the same or different on one side of the sectional insulator as compared with the other.

(5) Working on hangers. More than one truck crew shall not work on hangers attached to the same span at the same time, without rubber protection.

(6) Workers on hangers of opposite polarity. Trolley hangers and ears of opposite polarity shall not be worked on at the same time when trolley wire is energized.

(7) Checking electric switches. When electric switches are checked for operation, making it necessary to short circuit the contactor to each trolley wire, tools with insulated handles shall be used.

(8) Short circuit due to use of noninsulated or conductive long handled tools. When a hazard of short circuit exists, due to use of noninsulated or conductive long handled tools, approved protective rubber equipment shall be used as provided in this chapter.

(9) Trolley feeders. When work is to be performed on street railway trolley feeders where it is necessary for workers to work from metal or other grounded poles or fixtures or on poles or fixtures on which grounds are maintained, the

feeders shall be deenergized unless the poles or fixtures are insulated before the work is started with approved protective devices in such manner that employees cannot become grounded while working on the feeders, and employees shall wear approved rubber gloves.

(10) Truck driver shall remain at tower controls while workers are working on towers except when the aerial manlift equipment has been properly choked to prevent uncontrolled movement. Tower trucks shall be equipped with a reliable signaling device between the employees working on the tower and the truck driver.

(11) Working on truck towers. Employees shall not stand on tower gates or railings. Work shall not be done from plank(s) placed on tower railings.

(12) Tower truck railings. Towers shall have standard railings and toeboards around the tower and all railings shall be constructed of wood, fiberglass or other nonmetallic material. All railings shall be a vertical height of not less than 36 inches or more than 42 inches from the floor of the platform to the upper surface of the top rail. Intermediate railings shall be midway between the floor and the underside of the top rail. Tower gates shall be so constructed as to prevent accidental opening.

(13) Tower truck decks shall be kept clear of tools, wire and other materials and tools shall be kept in proper storage area when not in use.

(14) Lineworkers shall not wear climbers or spurs while working on a tower truck.

[Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050 and [49.17].060. 98-07-009, § 296-45-545, filed 3/6/98, effective 5/6/98.]

WAC 296-45-675 Rotorcraft/helicopter for power distribution and transmission line installation, construction and repair—Scope. (1) These standards which include WAC 296-45-675 shall apply to work being done on or near any rotorcraft, helicopter crane, or similar device when such device is for power distribution and transmission line construction, alteration, repair or similar work. These standards include work practices when such equipment is being or is about to be used and shall apply to the exclusion of any other standard should such other standard be in conflict with the standards contained herein.

(2) These rules shall be interpreted where necessary to achieve the protection of employees affected by the hazards particular to the helicopter operation and shall be so interpreted as not to conflict with any federal law or regulation governing the operation or maintenance of such craft.

[Order 76-38, § 296-45-675, filed 12/30/76.]

WAC 296-45-67503 Definitions. (1) "Cargo hooks." A device attached or suspended from an aircraft which is used to connect an external load to the aircraft through direct couplings or by lead lines. This unit has both mechanical and electrical locking/unlocking means.

(2) "Designated employees." Those employees selected or designated by the employer to work under or near helicopters who have first been instructed in hooking, unhooking, guiding and securing the load, including the signalperson, all of whom have been instructed in the hazards of helicopter work and who know the provisions of this section.

(3) "Downwash." A down and outward air column from the main rotor system.

(4) "Ground personnel or crew." Those employees who are physically and mentally capable, who are familiar with the hazards of helicopter use in power distribution and transmission line work, and who know these rules and the methods of operation.

(5) "Helicopter," "helicopter crane," and "rotorcraft." Those aircraft whose support in the air is derived solely from the reaction of a stream of air driven downward by propellers revolving around a vertical axis, which are designed for and capable of carrying external loads. The use of the word helicopter in these rules shall also mean helicopter crane, rotorcraft, or similar device.

(6) "Hooking and unhooking." That process by which an external load is either attached to or released from the cargo hook.

(7) "Positive guide system." A system or method of installing a load into position so that the load is capable of being released from the helicopter without being otherwise secured so that the load will remain in position permanently or until otherwise secured by physical means.

(8) "Rotors." That system of blades which rotates or revolves to supply lift or direction to the rotorcraft.

(9) "Approved rubber gloves." Rubber insulating gloves used for protection of electrical workers from electric shock while working on energized conductors and equipment.

(10) "Signalperson." That member of the ground crew that is designated by an employer to direct, signal and otherwise communicate with the operator of the helicopter.

(11) "Sling line." A strap, chain, rope or the like used to securely hold something being lifted, lowered, carried or otherwise suspended.

(12) "Sock line." A rope(s), cable(s) or similar line(s) which is used to pull a conductor line from a reel or to remove existing strung conductors from poles or towers.

(13) "Static charge." A stationary charge of electricity.

(14) "Tag line." A rope or similar device used to guide or control the direction or movement of a load.

[Statutory Authority: Chapter 49.17 RCW. 94-20-057 (Order 94-16), § 296-45-67503, filed 9/30/94, effective 11/20/94; Order 76-38, § 296-45-67503, filed 12/30/76.]

WAC 296-45-67505 Briefing. (1) Before work or a job involving helicopters begins, there shall be a discussion between all affected employees which shall include the ground crew, signalperson and pilot or operator of the helicopter. The discussion shall cover the particular hazards of the job, the methods of performing the work and the signals to be used. All employees shall, before the beginning of such work or job, understand in detail the hazards, the methods and the signals to be used and these regulations.

(2) Every employee before being allowed to work on or near helicopter(s) operating with or without load shall be advised and understand the hazards involved, the methods of performing the work, the signals being used and these regulations.

[Statutory Authority: Chapter 49.17 RCW. 94-20-057 (Order 94-16), § 296-45-67505, filed 9/30/94, effective 11/20/94; Order 76-38, § 296-45-67505, filed 12/30/76.]

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WAC 296-45-67507 Signals. (1) The signals between the signalperson and the operator of the helicopter shall be those submitted to the Federal Aviation Agency for the particular procedure or job. In the event no signals have been submitted to the Federal Aviation Administration, a system of signaling shall be used which has been reduced to writing and which is capable of being clearly understood by all employees and others involved in the job.

(2) Should there occur a change in the hazards, method of performing the job, signals to be used, or other operating conditions during the course of any particular job, a conference shall immediately be held at which time all affected employees and others, including signalpersons, groundworkers, pilot(s), will be advised of such hazards or change of operation. No employee shall be permitted to work unless such employee and others fully understand the change(s) which have taken place.

[Statutory Authority: Chapter 49.17 RCW. 94-20-057 (Order 94-16), § 296-45-67507, filed 9/30/94, effective 11/20/94; Order 76-38, § 296-45-67507, filed 12/30/76.]

WAC 296-45-67509 Slings and tag lines. (1) Loads shall be properly slung so that there will be no slippage or shifting of the load and so that the load will not accidentally be dislodged from the helicopter.

(2) Tag lines shall be of such length as not to be capable of being accidentally drawn into or otherwise entering into the rotors.

(3) Pressed sleeves, wedged eyes, or equivalent means shall be used for all suspended loads.

[Order 76-38, § 296-45-67509, filed 12/30/76.]

WAC 296-45-67511 Cargo hooks. (1) All electrically operated cargo hooks shall have the electrical activating device which is so designed and installed as to prevent inadvertent or accidental operation. Such cargo hooks shall be equipped with an emergency mechanical or manual control for releasing the load. The electrical control shall be a double button single hand control.

(2) No electrical cargo hook shall be used unless, prior to that day's operation, the releases are tested and functioning properly, both electrically and mechanically (manually).

(3) No employee shall be permitted to work under a hovering helicopter(s) unless the cargo hooks used comply with Federal Aviation Administration regulations governing such hooks.

[Order 76-38, § 296-45-67511, filed 12/30/76.]

WAC 296-45-67513 Personal protective equipment. Personal protective equipment when working on, under or in the near vicinity of helicopters:

(1) All employees shall wear eye protection of such design as to prevent the likelihood of dust or other substances from contacting the eye(s) of employees.

(2) All employees shall wear hard hats which shall be secured on the employee's head by a chinstrap.

[Order 76-38, § 296-45-67513, filed 12/30/76.]

WAC 296-45-67515 Wearing apparel. No employee shall wear clothing or apparel which is either designed to or

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in fact can reasonably be expected to flap or otherwise react in a similar fashion in the downwash or air disturbance of a helicopter(s). No employee shall work on, under or in the near vicinity of a helicopter while wearing such apparel or clothing which flaps or moves to the extent that it presents a hazard in that it could be caught in the moving equipment, the hoist line, or otherwise interfere with the safe performance of the work.

[Order 76-38, § 296-45-67515, filed 12/30/76.]

WAC 296-45-67517 Loose gear and objects. All loose gear, including lunch boxes, rope, cardboard, wire covers and similar items shall be removed or secured or otherwise made fast before the helicopter is started or allowed to approach such area. In the event the gear is not secured or fastened, it shall be removed and located outside the downwash at least 100 feet from the helicopter.

[Order 76-38, § 296-45-67517, filed 12/30/76.]

WAC 296-45-67519 Housekeeping. All helicopter landing, loading and unloading areas shall be maintained in a neat and orderly fashion so as to reduce the likelihood of flying materials, tripping, or other hazards attendant to the work being performed.

[Order 76-38, § 296-45-67519, filed 12/30/76.]

WAC 296-45-67521 Operator's responsibility. (1) The helicopter operator shall be responsible for the size, weight and manner in which loads are connected to the helicopter.

(2) No load shall be made if the helicopter operator believes the lift cannot safely be performed. The employer shall make certain that the operator of the helicopter is able to freely exercise their prerogative and judgment as to safe operation of the helicopter itself concerning size, weight and manner by which loads are connected.

(3) No employee shall work on, under, near or in conjunction with a helicopter whose operation does not correspond with the foregoing provisions.

[Statutory Authority: Chapter 49.17 RCW. 94-20-057 (Order 94-16), § 296-45-67521, filed 9/30/94, effective 11/20/94; Order 76-38, § 296-45-67521, filed 12/30/76.]

WAC 296-45-67523 Hooking and unhooking loads. No employee shall perform work under hovering helicopters: Provided, That qualified and capable employees may function under such craft for that limited period of time necessary to guide, secure, hook or unhook the loads. When guiding, securing, hooking or unhooking the load at elevated positions, employees shall be assisted by and use a positive positioning guide system. When under hovering helicopters at any other location, the employee shall have a safe means of ingress and egress, including readily available escape route or routes in the event of an emergency. No other work or work-related activity other than the aforementioned shall be permitted under hovering helicopters. Bolting of or otherwise permanently securing the structures is prohibited under hovering helicopters except that in the event of an unforeseen contingency of an emergency nature which represents a substantial hazard to life or property, an employee may do such

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work as is necessary to preserve life or protect substantial property.

[Order 76-38, § 296-45-67523, filed 12/30/76.]

WAC 296-45-67525 Static charge. All loads shall be grounded with a grounding device capable of discharging either the actual or potential static charge before ground personnel either touch or come close enough to touch the suspended load, or protective rubber gloves shall be worn by all ground personnel either touching the suspended load or who are likely to touch the load.

[Order 76-38, § 296-45-67525, filed 12/30/76.]

WAC 296-45-67527 Load permitted. (1) Weight of the external load shall not exceed the manufacturer's load limit.

(2) A helicopter shall not pull any cable, rope or similar line which is at any point attached to a fixed object other than the helicopter itself. Helicopters may pull a free-wheeling sock line so long as the end of the sock line is not tied to a reel, truck, or other fixed object. Such line cannot be tied to or otherwise secured to the roll-off reel other than by having been wrapped around such reel.

[Statutory Authority: Chapter 49.17 RCW. 94-20-057 (Order 94-16), § 296-45-67527, filed 9/30/94, effective 11/20/94; Order 76-38, § 296-45-67527, filed 12/30/76.]

WAC 296-45-67529 Visibility. Employees shall keep clear of and outside the downwash of the helicopters except as necessary to perform a permitted activity. Where reasonably practicable, reduced vision of the operator and ground crew shall be eliminated.

[Order 76-38, § 296-45-67529, filed 12/30/76.]

WAC 296-45-67531 Signal systems. (1) Communication shall be maintained between the air crew and ground personnel at all times. Such signal systems shall be understood by the air crew and the ground crew, including signalpersons, prior to the hoisting of any load. There shall be constant radio and hand signals used. The signalperson shall have the sole and exclusive function during periods of loading and unloading of signaling and maintaining communications with the pilot. The signalperson shall be so dressed as to make their appearance distinguishable from other members of the ground crew by the operator of the craft. This may be by way of orange-colored gloves, vest, or other wearing apparel. In addition, the leadworker and one top person shall also have an operating transmitter and receiver.

(2) Designated employees may come within 50 feet of the helicopter when the rotor blades are turning, but no closer, other than to enter the craft or to hook or unhook the load or do other essential functions. Other employee(s) shall not come closer than 100 feet of the craft when it is operating.

[Statutory Authority: Chapter 49.17 RCW. 94-20-057 (Order 94-16), § 296-45-67531, filed 9/30/94, effective 11/20/94; Order 76-38, § 296-45-67531, filed 12/30/76.]

WAC 296-45-67533 Approaching the helicopter. Whenever approaching or leaving a helicopter with blades rotating, all employees shall remain in full view of pilot or

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operator and remain in a crouched position if within 50 feet of the helicopter. No employee shall approach the rear of the helicopter unless directly authorized and directed by the operator of such craft to be there at that time. All employees when operating or working within 50 feet of the helicopter with blades turning are subject to the direction of the helicopter operator. No employee shall enter or leave the helicopter unless and until the place at which they enter or leave such craft is large enough for the helicopter itself to land.

[Order 76-38, § 296-45-67533, filed 12/30/76.]

WAC 296-45-67535 In helicopter. (1) While in the helicopter, safety belts will remain fastened at all times except when pilot or operator instructs otherwise or while entering or leaving the helicopter.

(2) No smoking in the helicopter unless otherwise permitted by the pilot.

(3) All rack cargo will be secured prior to and during takeoff and flight.

(4) All internal cargo will be secured or otherwise held.

(5) No gear shall be thrown toward or placed in front of the cockpit on or near plexiglass enclosure.

(6) No employee shall lean against or rub the plexiglass.

(7) No employee shall ride in or work under or near a helicopter with less than 15 minutes reserve fuel.

(8) No employee shall have sharp objects in their pocket while sitting in or on the helicopter.

(9) No employee shall touch any switch, knob, instrument, or other control or device in the cockpit unless specifically directed by the operator.

(10) No cargo shall be thrown into pans or cargo rack.

(11) No employee shall obscure or otherwise obstruct the pilot's ability to visually see the instruments or flight path during flight or operation.

(12) No employee shall attempt to slow or stop the rotorcraft blades by hand unless directed or instructed to do so and aided by the pilot.

[Statutory Authority: Chapter 49.17 RCW. 94-20-057 (Order 94-16), § 296-45-67535, filed 9/30/94, effective 11/20/94; Order 76-38, § 296-45-67535, filed 12/30/76.]

WAC 296-45-67537 Sling and rigging. (1) The sling used for the external load shall be inspected each day before use. An employee designated as rigger, who shall be capable of properly inspecting the rigging, shall inspect the sling.

(2) No sling shall be used unless it has a minimum tensile strength of four times the load which will be carried or is being carried.

(3) No sling shall be used unless upon inspection it is determined to be in good condition and capable of the work which is to be performed.

[Order 76-38, § 296-45-67537, filed 12/30/76.]

WAC 296-45-67539 Personnel. All ground personnel shall be physically and mentally able to perform the work to which they are assigned, including being knowledgeable in these rules. There shall be a sufficient number of ground personnel so as to be able to safely guide, secure, hook and unhook the load.

[Order 76-38, § 296-45-67539, filed 12/30/76.]

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WAC 296-45-67541 Fires. Open fires shall not be permitted in any area in which said fires will be affected by the downwash of the rotors, nor shall any employee smoke in an area subject to the downdraft of the rotor.

[Order 76-38, § 296-45-67541, filed 12/30/76.]

WAC 296-45-67543 General. No employee shall work under or in the near vicinity of helicopters unless the operator has a valid license for operating the craft, knows the signals to be used, has been present at the last briefing held and knows these rules. No employee shall work under or near such craft if the operator is under the influence of intoxicating beverages or prescription medications which affect his/her ability, nor shall any employee work under or near such craft if the operator is careless or engages in any negligent or reckless operation of the helicopter.

[Statutory Authority: Chapter 49.17 RCW. 94-20-057 (Order 94-16), § 296-45-67543, filed 9/30/94, effective 11/20/94; Order 76-38, § 296-45-67543, filed 12/30/76.]

WAC 296-45-67545 Refueling operations. (1) Under no circumstances shall the refueling of any type helicopter with either aviation gasoline or Jet B (Turbine) type fuel be permitted while the engines are running.

(2) Helicopters using Jet A (Turbine-Kerosene) type fuel may be refueled with engines running provided the following criteria is met:

(a) No unauthorized persons shall be allowed within fifty feet of the refueling operation or fueling equipment.

(b) A minimum of one thirty-pound fire extinguisher, or a combination of same, good for class A, B and C fires, shall be provided within one hundred feet on the upwind side of the refueling operation.

Note: For additional requirements relating to portable fire extinguishers see WAC 296-800-300.

(c) All fueling personnel shall be thoroughly trained in the refueling operation and in the use of the available fire extinguishing equipment they may be expected to utilize.

(d) There shall be no smoking, open flames, exposed flame heaters, flare pots, or open flame lights within fifty feet of the refueling area or fueling equipment. All entrances to the refueling area shall be posted with "NO SMOKING" signs.

(e) Due to the numerous causes of static electricity, it shall be considered present at all times. Prior to starting refueling operations, the fueling equipment and the helicopter shall be grounded and the fueling nozzle shall be electrically bonded to the helicopter. The use of conductive hose shall not be accepted to accomplish this bonding. All grounding and bonding connections shall be electrically and mechanically firm, to clean unpainted metal parts.

(f) To control spills, fuel shall be pumped either by hand or power. Pouring or gravity flow shall not be permitted. Self-closing nozzles or deadman controls shall be used and shall not be blocked open. Nozzles shall not be dragged along the ground.

(g) In case of a spill, the fueling operation shall be immediately stopped until such time as the person-in-charge determines that it is safe to resume the refueling operation.

(h) When ambient temperatures have been in the one hundred degrees Fahrenheit range for an extended period of

time, all refueling of helicopters with the engines running shall be suspended until such time as conditions become suitable to resume refueling with the engines running.

(3) Helicopters with their engines stopped being refueled with aviation gasoline or Jet B (Turbine) type fuel, shall also comply with subsection (2)(a) through (g) of this section.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 01-17-033, § 296-45-67545, filed 8/8/01, effective 9/1/01. Statutory Authority: Chapter 49.17 RCW. 89-11-035 (Order 89-03), § 296-45-67545, filed 5/15/89, effective 6/30/89.]

WAC 296-45-900 Appendices. Nonmandatory.

[Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050 and [49.17].060. 98-07-009, § 296-45-900, filed 3/6/98, effective 5/6/98.]

WAC 296-45-901 Appendix A—Nonmandatory.

Appendix A—Tables

TABLE 2 AC Live Work Minimum Approach Distance With Transient Overvoltage Factor								
Maximum anticipated per-unit transient over-voltage	Distance to employee in feet-inches, phase to ground							
	Air and clear live-line tool							
	Maximum phase-to-phase voltage in kilovolts							
	121	145	169	242	362	550	800	
1.5						6-0	9-8	
1.6						6-6	10-8	
1.7						7-0	11-8	
1.8						7-7	12-8	
1.9						8-1	13-9	
2.0	2-5	2-9	3-0	3-10	5-3	8-9	14-11	
2.1	2-6	2-10	3-2	4-0	5-5	9-4		
2.2	2-7	2-11	3-3	4-1	5-9	9-11		
2.3	2-8	3-0	3-4	4-3	6-1	10-6		
2.4	2-9	3-1	3-5	4-5	6-4	11-3		
2.5	2-9	3-2	3-6	4-6	6-8			
2.6	2-10	3-3	3-8	4-8	7-1			
2.7	2-11	3-4	3-9	4-10	7-5			
2.8	3-0	3-5	3-10	4-11	7-9			
2.9	3-1	3-6	3-11	5-1	8-2			
3.0	3-2	3-7	4-0	5-3	8-6			

Note 1: The distances specified in this table may be applied only where the maximum anticipated per-unit transient overvoltage has been determined by engineering analysis and has been supplied by the employer. Table 1 applies otherwise.

Note 2: The distances specified in this table are the air, and live-line tool distances.

TABLE 3 AC Live Work Minimum Approach Distance With Transient Overvoltage Factor								
Maximum anticipated per-unit transient over-voltage	Distance to employee in feet-inches, phase to ground							
	Air and clear live-line tool							
	Maximum phase-to-phase voltage in kilovolts							
	121	145	169	242	362	550	800	
1.5						7-4	12-1	
1.6						8-9	14-6	
1.7						10-2	17-2	
1.8						11-7	19-11	
1.9						13-2	22-11	
2.0	3-7	4-1	4-8	6-1	8-7	14-10	26-0	
2.1	3-7	4-2	4-9	6-3	8-10	15-7		
2.2	3-8	4-3	4-10	6-4	9-2	16-4		
2.3	3-9	4-4	4-11	6-6	9-6	17-2		
2.4	3-10	4-5	5-0	6-7	9-11	18-1		
2.5	3-11	4-6	5-2	6-9	10-4			
2.6	4-0	4-7	5-3	6-11	10-9			
2.7	4-1	4-8	5-4	7-0	11-2			

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TABLE 3 AC Live Work Minimum Approach Distance With Transient Overvoltage Factor							
Maximum anticipated per-unit transient over-voltage	Distance to employee in feet-inches, phase to ground						
	Air and clear live-line tool						
	Maximum phase-to-phase voltage in kilovolts						
2.8	4-1	4-9	5-5	7-2	11-7		
2.9	4-2	4-10	5-6	7-4	12-1		
3.0	4-3	4-11	5-8	7-6	12-6		

Note 1: The distances specified in this table may be applied only where the maximum anticipated per-unit transient overvoltage has been determined by engineering analysis and has been supplied by the employer. Table 1 applies otherwise.

Note 2: The distances specified in this table are the air, and live-line tool distances.

TABLE 4 DC Live Work Minimum Approach Distance With Transient Overvoltage Factor						
Maximum anticipated per-unit transient overvoltage	Distance to employee in feet-inches, conductor to ground					
	Air and clear live-line tool					
	Maximum phase-to-phase voltage in kilovolts					
	250	400	500	600	750	
1.5 or lower	3-8	5-3	6-9	8-7	11-10	
1.6	3-10	5-7	7-4	9-5	13-1	
1.7	4-1	6-0	7-11	10-3	14-4	
1.8	4-3	6-5	8-7	11-2	15-9	

Note 1: The distances specified in this table may be applied only where the maximum anticipated per-unit transient overvoltage has been determined by engineering analysis and has been supplied by the employer. However, if the transient overvoltage factor is not known, a factor of 1.8 shall be assumed.

Note 2: The distances specified in this table are the air, and live-line tool distances.

TABLE 5 Altitude Correction Factor		
Altitude		Correction factor
(m)	(ft)	
900	3000	1.00
1200	4000	1.02
1500	5000	1.05
1800	6000	1.08
2100	7000	1.11
2400	8000	1.14
2700	9000	1.17
3000	10,000	1.20
3600	12,000	1.25
4200	14,000	1.30
4800	16,000	1.35
5400	18,000	1.39
6000	20,000	1.44

Note: If the work is performed at elevations greater than 3000 ft (900 m) above mean sea level, the minimum approach distance shall be determined by multiplying the distances in Table 1 through Table 4 by the correction factor corresponding to the altitude at which work is performed.

[Statutory Authority: RCW 49.17.040. 99-09-080, § 296-45-901, filed 4/20/99, effective 8/1/99. Statutory Authority: RCW 49.17.010, [49.17].-040, [49.17].050 and [49.17].060. 98-07-009, § 296-45-901, filed 3/6/98, effective 5/6/98.]

WAC 296-45-903 Appendix B—Protection from step and touch potentials—Nonmandatory.

I. "Introduction"

When a ground fault occurs on a power line, voltage is impressed on the "grounded" object faulting the line. The voltage to which this object rises depends largely on the volt-

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age on the line, on the impedance of the faulted conductor, and on the impedance to "true," or "absolute," ground represented by the object. If the object causing the fault represents a relatively large impedance, the voltage impressed on it is essentially the phase-to-ground system voltage. However, even faults to well grounded transmission towers or substation structures can result in hazardous voltages.⁽¹⁾ The degree of the hazard depends upon the magnitude of the fault current and the time of exposure.

Footnote⁽¹⁾ This appendix provides information primarily with respect to employee protection from contact between equipment being used and an energized power line. The information presented is also relevant to ground faults to transmission towers and substation structures; however, grounding sys-

tems for these structures should be designed to minimize the step and touch potentials involved.

II. "Voltage-gradient distribution"

A. Voltage-gradient distribution curve

The dissipation of voltage from a grounding electrode (or from the grounded end of an energized grounded object) is called the ground potential gradient. Voltage drops associated with this dissipation of voltage are called ground potentials. Figure A is a typical voltage-gradient distribution curve (assuming a uniform soil texture). This graph shows that voltage decreases rapidly with increasing distance from the grounding electrode.

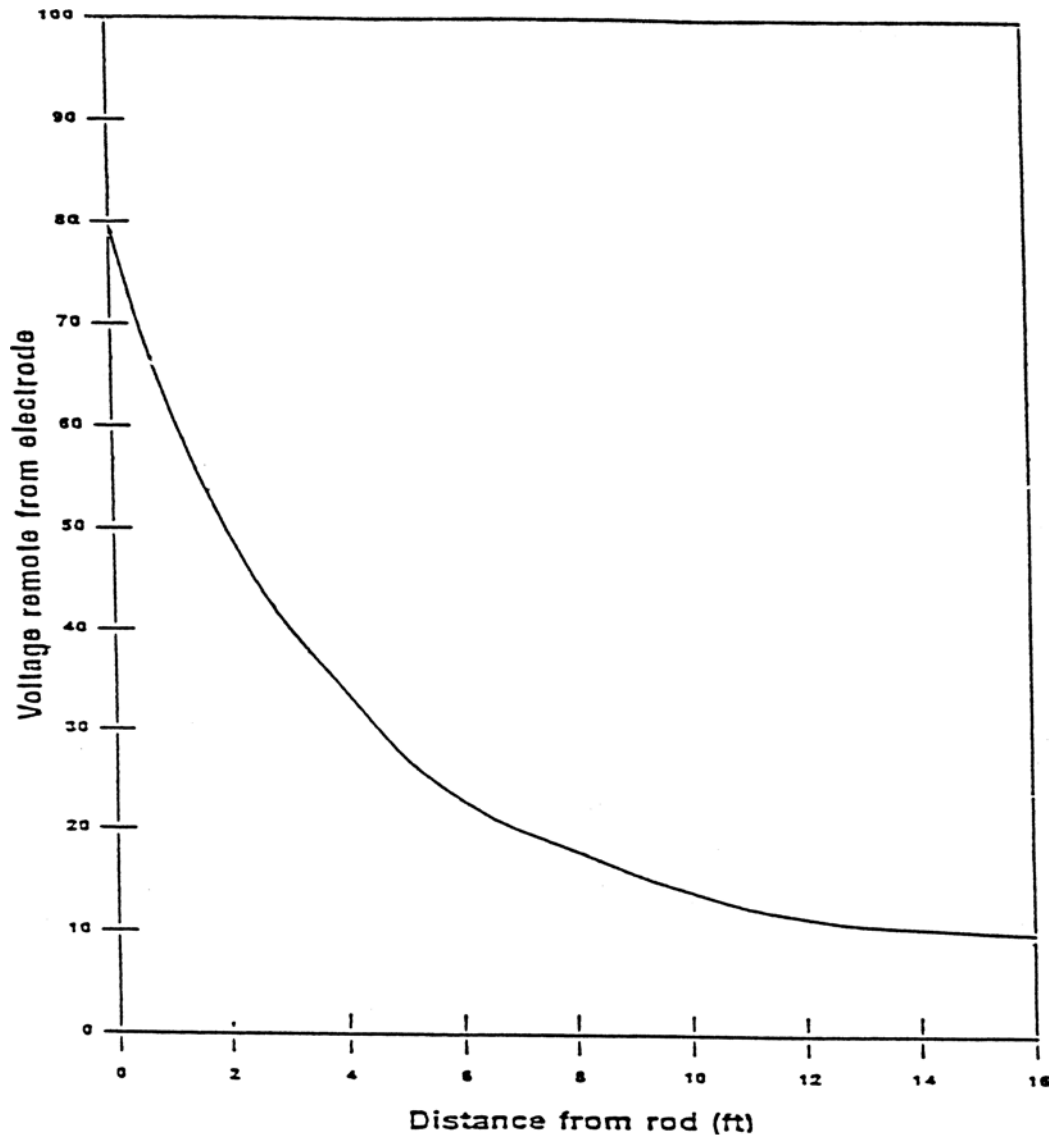


Figure A - Typical Voltage-Gradient Distribution Curve

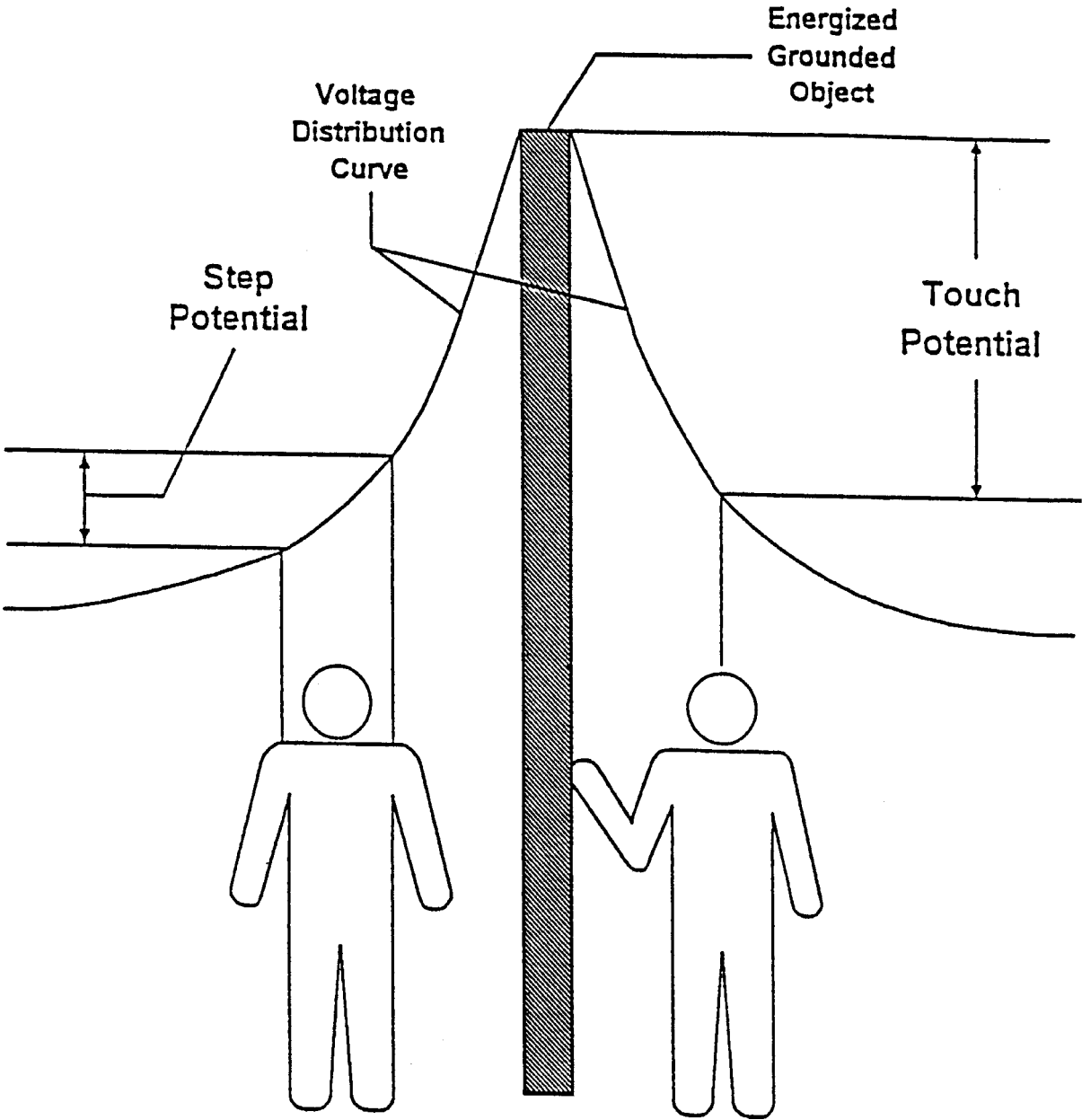


Figure B - Step and Touch Potentials

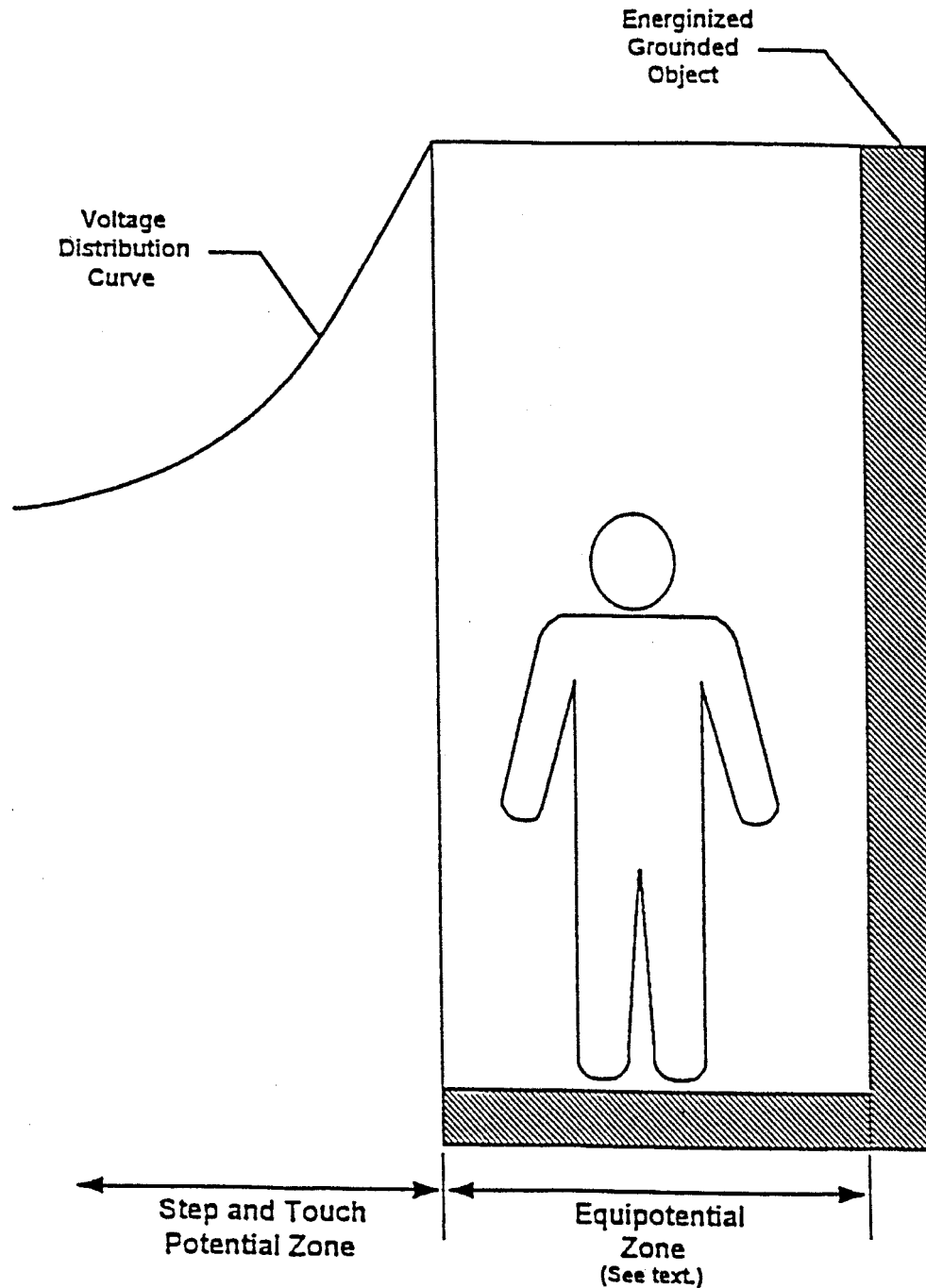


Figure C - Protection from Ground-Potential Gradients

[Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050 and [49.17].060. 98-07-009, § 296-45-903, filed 3/6/98, effective 5/6/98.]

WAC 296-45-905 Appendix C—Methods of inspecting and testing wood poles—Nonmandatory.

I. "Introduction"

When work is to be performed on a wood pole, it is important to determine the condition of the pole before it is climbed. The weight of the employee, the weight of equipment being installed, and other working stresses (such as the removal or retensioning of conductors) can lead to the failure of a defective pole or one that is not designed to handle the additional

stresses.⁽¹⁾ For these reasons, it is essential that an inspection and test of the condition of a wood pole be performed before it is climbed.

Footnote⁽¹⁾

A properly guyed pole in good condition should, at a minimum, be able to handle the weight of an employee climbing it. If the pole is found to be unsafe to climb or to work from, it must be secured so that it does not fail while an employee is on it. The pole can be secured by a line truck boom, by ropes or guys, or by lashing a new pole alongside it. If a new one is lashed alongside the defective pole, work should be performed from the new one.

II. "Inspection of wood poles"

Wood poles should be inspected by a qualified employee for the following conditions:⁽²⁾

Footnote⁽²⁾

The presence of any of these conditions is an indication that the pole may not be safe to climb or to work from. The employee performing the inspection must be qualified to make a determination as to whether or not it is safe to perform the work without taking additional precautions.

A. General condition

The pole should be inspected for buckling at the ground line and for an unusual angle with respect to the ground. Buckling and odd angles may indicate that the pole has rotted or is broken.

B. Cracks

The pole should be inspected for cracks. Horizontal cracks perpendicular to the grain of the wood may weaken the pole. Vertical ones, although not considered to be a sign of a defective pole, can pose a hazard to the climber, and the employee should keep his or her gaffs away from them while climbing.

C. Holes

Hollow spots and woodpecker holes can reduce the strength of a wood pole.

D. Shell rot and decay

Rotting and decay are cutout hazards and are possible indications of the age and internal condition of the pole.

E. Knots

One large knot or several smaller ones at the same height on the pole may be evidence of a weak point on the pole.

F. Depth of setting

Evidence of the existence of a former ground line substantially above the existing ground level may be an indication that the pole is no longer buried to a sufficient extent.

G. Soil conditions

Soft, wet, or loose soil may not support any changes of stress on the pole.

H. Burn marks

Burning from transformer failures or conductor faults could damage the pole so that it cannot withstand mechanical stress changes.

III. "Testing of wood poles"

The following tests are recognized as acceptable methods of testing wood poles:

A. Hammer test

Rap the pole sharply with a hammer weighing about 3 pounds, starting near the ground line and continuing upwards circumferentially around the pole to a height of approximately 6 feet. The hammer will produce a clear sound and rebound sharply when striking sound wood. Decay pockets will be indicated by a dull sound or a less pronounced hammer rebound. Also, prod the pole as near the ground line as possible using a pole prod or a screwdriver with a blade at least 5 inches long. If substantial decay is encountered, the pole is considered unsafe.

B. Rocking test

Apply a horizontal force to the pole and attempt to rock it back and forth in a direction perpendicular to the line. Caution must be exercised to avoid causing power lines to swing together. The force may be applied either by pushing with a pike pole or pulling with a rope. If the pole cracks during the test, it shall be considered unsafe.

[Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050 and [49.17].060. 98-07-009, § 296-45-905, filed 3/6/98, effective 5/6/98.]

Chapter 296-46B WAC**ELECTRICAL SAFETY STANDARDS,
ADMINISTRATION, AND INSTALLATION****WAC**

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296-46B-910	Temporary fees—Electrical/telecommunications contractor's license, administrator certificate and examination, master electrician certificate and examination, temporary electrician certificate and examination, temporary electrician permit, copy, and miscellaneous fees.
296-46B-911	Electrical testing laboratory and engineer accreditation fees.
296-46B-915	Civil penalty schedule.
296-46B-920	Electrical/telecommunications license/certificate types and scope of work.
296-46B-925	Electrical/telecommunications contractor's license.
296-46B-930	Assignment—Administrator or master electrician.
296-46B-935	Administrator certificate.
296-46B-940	Electrician/training/temporary certificate of competency or permit required.
296-46B-945	Qualifying for master, journeyman, specialty electrician examinations.
296-46B-960	Administrator and electrician certificate of competency examinations.

296-46B-965	Training certificate required.
296-46B-970	Continuing education.
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296-46B-985	Penalties for false statements or material misrepresentations.
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DISPOSITION OF SECTIONS FORMERLY CODIFIED IN THIS CHAPTER

296-46B-005	Chapter 19.28 RCW rule references. [Statutory Authority: RCW 19.28.006, 19.28.010, 19.28.031, 19.28.041, 19.28.061, 19.28.101, 19.28.131, 19.28.161, 19.28.171, 19.28.191, 19.28.201, 19.28.211, 19.28.241, 19.28.251, 19.28.271, 19.28.311, 19.28.321, 19.28.400, 19.28.420, 19.28.490, 19.28.551, 2002 c 249, chapters 34.05 and 19.28 RCW. 03-09-111, § 296-46B-005, filed 4/22/03, effective 5/23/03.] Repealed by 06-24-041, filed 11/30/06, effective 12/31/06. Statutory Authority: RCW 19.28.006, 19.28.010, 19.28.031, 19.28.041, 19.28.061, 19.28.101, 19.28.131, 19.28.161, 19.28.171, 19.28.191, 19.28.201, 19.28.211, 19.28.241, 19.28.251, 19.28.281, 19.28.311, 19.28.321, 19.28.400, 19.28.420, 19.28.490, 19.28.551.
296-46B-020	General definitions. [Statutory Authority: RCW 19.28.006, 19.28.010, 19.28.031, 19.28.041, 19.28.061, 19.28.101, 19.28.131, 19.28.161, 19.28.171, 19.28.191, 19.28.201, 19.28.211, 19.28.241, 19.28.251, 19.28.281, 19.28.311, 19.28.321, 19.28.400, 19.28.420, 19.28.490, 19.28.551. 06-05-028, § 296-46B-020, filed 2/7/06, effective 5/1/06; 05-10-024, § 296-46B-020, filed 4/26/05, effective 6/30/05. Statutory Authority: RCW 19.28.006, 19.28.010, 19.28.031, 19.28.041, 19.28.061, 19.28.101, 19.28.131, 19.28.161, 19.28.171, 19.28.191, 19.28.201, 19.28.211, 19.28.241, 19.28.251, 19.28.271, 19.28.311, 19.28.321, 19.28.400, 19.28.420, 19.28.490, 19.28.551, 2003 c 399, 2003 c 211, 2003 c 78, and 2003 c 242. 04-12-049, § 296-46B-020, filed 5/28/04, effective 6/30/04. Statutory Authority: RCW 19.28.006, 19.28.010, 19.28.031, 19.28.041, 19.28.061, 19.28.101, 19.28.131, 19.28.161, 19.28.171, 19.28.191, 19.28.201, 19.28.211, 19.28.241, 19.28.251, 19.28.271, 19.28.311, 19.28.321, 19.28.400, 19.28.420, 19.28.490, 19.28.551, 2002 c 249, and chapters 34.05 and 19.28 RCW. 03-09-111, § 296-46B-020, filed 4/22/03, effective 4/22/03.] Repealed by 06-24-041, filed 11/30/06, effective 12/31/06. Statutory Authority: RCW 19.28.006, 19.28.010, 19.28.031, 19.28.041, 19.28.061, 19.28.101, 19.28.131, 19.28.161, 19.28.171, 19.28.191, 19.28.201, 19.28.211, 19.28.241, 19.28.251, 19.28.281, 19.28.311, 19.28.321, 19.28.400, 19.28.420, 19.28.490, 19.28.551.
296-46B-030	Industrial control panel and industrial utilization equipment inspection. [Statutory Authority: RCW 19.28.006, 19.28.010, 19.28.031, 19.28.041, 19.28.061, 19.28.101, 19.28.131, 19.28.161, 19.28.171, 19.28.191, 19.28.201, 19.28.211, 19.28.241, 19.28.251, 19.28.281, 19.28.311, 19.28.321, 19.28.400, 19.28.420, 19.28.490, 19.28.551. 06-05-028, § 296-46B-030, filed 2/7/06, effective 5/1/06; 05-22-025, § 296-46B-030, filed 10/25/05, effective 11/25/05; 05-10-024, § 296-46B-030, filed 4/26/05, effective 6/30/05. Statutory Authority: RCW 19.28.006, 19.28.010, 19.28.031, 19.28.041, 19.28.061, 19.28.101, 19.28.131, 19.28.161, 19.28.171, 19.28.191, 19.28.201, 19.28.211, 19.28.241, 19.28.251, 19.28.271, 19.28.311, 19.28.321, 19.28.400, 19.28.420, 19.28.490, 19.28.551, 2003 c 399, 2003 c 211, 2003 c 78, and 2003 c 242. 04-12-049, § 296-46B-030, filed 5/28/04, effective 6/30/04. Statutory Authority: RCW 19.28.006, 19.28.010, 19.28.031, 19.28.041, 19.28.061, 19.28.101, 19.28.131, 19.28.161, 19.28.171, 19.28.191, 19.28.201, 19.28.211, 19.28.241, 19.28.251, 19.28.271, 19.28.311, 19.28.321, 19.28.400, 19.28.420, 19.28.490, 19.28.551, 2002 c 249, chapters 34.05 and 19.28 RCW. 03-09-111, § 296-46B-030, filed 4/22/03, effective 5/23/03.] Repealed by 06-24-041, filed 11/30/06, effective

296-46B-040

12/31/06. Statutory Authority: RCW 19.28.006, 19.28.010, 19.28.031, 19.28.041, 19.28.061, 19.28.101, 19.28.131, 19.28.161, 19.28.171, 19.28.191, 19.28.201, 19.28.211, 19.28.241, 19.28.251, 19.28.281, 19.28.311, 19.28.321, 19.28.400, 19.28.420, 19.28.490, 19.28.551.

296-46B-527

Traffic management systems. [Statutory Authority: RCW 19.28.006, 19.28.010, 19.28.031, 19.28.041, 19.28.061, 19.28.101, 19.28.131, 19.28.161, 19.28.171, 19.28.191, 19.28.201, 19.28.211, 19.28.241, 19.28.251, 19.28.281, 19.28.311, 19.28.321, 19.28.400, 19.28.420, 19.28.490, 19.28.551. 06-05-028, § 296-46B-040, filed 2/7/06, effective 5/1/06. Statutory Authority: RCW 19.28.006, 19.28.010, 19.28.031, 19.28.041, 19.28.061, 19.28.101, 19.28.131, 19.28.161, 19.28.171, 19.28.191, 19.28.201, 19.28.211, 19.28.241, 19.28.251, 19.28.271, 19.28.311, 19.28.321, 19.28.400, 19.28.420, 19.28.490, 19.28.551, 2002 c 249, chapters 34.05 and 19.28 RCW. 03-09-111, § 296-46B-040, filed 4/22/03, effective 5/23/03.] Repealed by 06-24-041, filed 11/30/06, effective 12/31/06. Statutory Authority: RCW 19.28.006, 19.28.010, 19.28.031, 19.28.041, 19.28.061, 19.28.101, 19.28.131, 19.28.161, 19.28.171, 19.28.191, 19.28.201, 19.28.211, 19.28.241, 19.28.251, 19.28.281, 19.28.311, 19.28.321, 19.28.400, 19.28.420, 19.28.490, 19.28.551.

Special occupancies—Temporary installations. [Statutory Authority: RCW 19.28.006, 19.28.010, 19.28.031, 19.28.041, 19.28.061, 19.28.101, 19.28.131, 19.28.161, 19.28.171, 19.28.191, 19.28.201, 19.28.211, 19.28.241, 19.28.251, 19.28.271, 19.28.311, 19.28.321, 19.28.400, 19.28.420, 19.28.490, 19.28.551, 2002 c 249, chapters 34.05 and 19.28 RCW. 03-09-111, § 296-46B-527, filed 4/22/03, effective 5/23/03.] Repealed by 05-10-024, filed 4/26/05, effective 6/30/05. Statutory Authority: RCW 19.28.006, 19.28.010, 19.28.031, 19.28.041, 19.28.061, 19.28.101, 19.28.131, 19.28.161, 19.28.171, 19.28.191, 19.28.201, 19.28.211, 19.28.241, 19.28.251, 19.28.281, 19.28.311, 19.28.321, 19.28.400, 19.28.420, 19.28.490, and 19.28.551.

296-46B-950

Opportunity for gaining credit for previous work experience gained in certain specialties. [Statutory Authority: RCW 19.28.006, 19.28.010, 19.28.031, 19.28.041, 19.28.061, 19.28.101, 19.28.131, 19.28.161, 19.28.171, 19.28.191, 19.28.201, 19.28.211, 19.28.241, 19.28.251, 19.28.281, 19.28.311, 19.28.321, 19.28.400, 19.28.420, 19.28.490, and 19.28.551. 05-10-024, § 296-46B-950, filed 4/26/05, effective 6/30/05. Statutory Authority: RCW 19.28.006, 19.28.010, 19.28.031, 19.28.041, 19.28.061, 19.28.101, 19.28.131, 19.28.161, 19.28.171, 19.28.191, 19.28.201, 19.28.211, 19.28.241, 19.28.251, 19.28.271, 19.28.311, 19.28.321, 19.28.400, 19.28.420, 19.28.490, 19.28.551, 2003 c 399, 2003 c 211, 2003 c 78, and 2003 c 242. 04-12-049, § 296-46B-950, filed 5/28/04, effective 6/30/04. Statutory Authority: RCW 19.28.006, 19.28.010, 19.28.031, 19.28.041, 19.28.061, 19.28.101, 19.28.131, 19.28.161, 19.28.171, 19.28.191, 19.28.201, 19.28.211, 19.28.241, 19.28.251, 19.28.271, 19.28.311, 19.28.321, 19.28.400, 19.28.420, 19.28.490, 19.28.551, and chapter 19.28 RCW. 03-18-089, § 296-46B-950, filed 9/2/03, effective 10/3/03. Statutory Authority: RCW 19.28.006, 19.28.010, 19.28.031, 19.28.041, 19.28.061, 19.28.101, 19.28.131, 19.28.161, 19.28.171, 19.28.191, 19.28.201, 19.28.211, 19.28.241, 19.28.251, 19.28.271, 19.28.311, 19.28.321, 19.28.400, 19.28.420, 19.28.490, 19.28.551, 2002 c 249, chapters 34.05 and 19.28 RCW. 03-09-111, § 296-46B-950, filed 4/22/03, effective 4/22/03.] Repealed by 06-05-028, filed 2/7/06, effective 5/1/06. Statutory Authority: RCW 19.28.006, 19.28.010, 19.28.031, 19.28.041, 19.28.061, 19.28.101, 19.28.131, 19.28.161, 19.28.171, 19.28.191, 19.28.201, 19.28.211, 19.28.241, 19.28.251, 19.28.281, 19.28.311, 19.28.321, 19.28.400, 19.28.420, 19.28.490, 19.28.551.

296-46B-951

Domestic appliance specialty. [Statutory Authority: RCW 19.28.006, 19.28.010, 19.28.031, 19.28.041, 19.28.061, 19.28.101, 19.28.131, 19.28.161, 19.28.171, 19.28.191, 19.28.201, 19.28.211, 19.28.241, 19.28.251, 19.28.271, 19.28.311, 19.28.321, 19.28.400, 19.28.420, 19.28.490, 19.28.551, 2002 c 249, chapters 34.05 and 19.28 RCW. 03-09-111, § 296-46B-951, filed 4/22/03, effective 4/22/03.] Repealed by 05-10-024, filed 4/26/05, effective 6/30/05. Statutory Authority: RCW 19.28.006, 19.28.010, 19.28.031, 19.28.041, 19.28.061, 19.28.101, 19.28.131, 19.28.161, 19.28.171, 19.28.191, 19.28.201, 19.28.211, 19.28.241, 19.28.251, 19.28.281, 19.28.311, 19.28.321, 19.28.400, 19.28.420, 19.28.490, 19.28.551.

296-46B-955

19.28.311, 19.28.321, 19.28.400, 19.28.420, 19.28.490, and 19.28.551.

Appliance repair specialty electrician enforcement procedures. [Statutory Authority: RCW 19.28.006, 19.28.010, 19.28.031, 19.28.041, 19.28.061, 19.28.101, 19.28.131, 19.28.161, 19.28.171, 19.28.191, 19.28.201, 19.28.211, 19.28.241, 19.28.251, 19.28.281, 19.28.311, 19.28.321, 19.28.400, 19.28.420, 19.28.490, and 19.28.551. 05-10-024, § 296-46B-955, filed 4/26/05, effective 6/30/05. Statutory Authority: RCW 19.28.006, 19.28.010, 19.28.031, 19.28.041, 19.28.061, 19.28.101, 19.28.131, 19.28.161, 19.28.171, 19.28.191, 19.28.201, 19.28.211, 19.28.241, 19.28.251, 19.28.271, 19.28.311, 19.28.321, 19.28.400, 19.28.420, 19.28.490, 19.28.551, 2002 c 249, chapters 34.05 and 19.28 RCW. 03-09-111, § 296-46B-955, filed 4/22/03, effective 4/22/03.] Repealed by 06-05-028, filed 2/7/06, effective 5/1/06. Statutory Authority: RCW 19.28.006, 19.28.010, 19.28.031, 19.28.041, 19.28.061, 19.28.101, 19.28.131, 19.28.161, 19.28.171, 19.28.191, 19.28.201, 19.28.211, 19.28.241, 19.28.251, 19.28.281, 19.28.311, 19.28.321, 19.28.400, 19.28.420, 19.28.490, 19.28.551.

WAC 296-46B-010 General. Adopted standards - inspectors - city inspection - variance.

The 2005 edition of the National Electrical Code (NFPA 70 - 2005) including Annex A, B, and C; the 2003 edition of standard for the Installation of Stationary Pumps for Fire Protection (NFPA 20 - 2003); the 2002 edition of standard for Emergency and Standby Power Systems (NFPA 110 - 2002); Commercial Building Telecommunications Cabling Standard (ANSI/TIA/EIA 568-B.1-May 2001 including Annex 1 through 5); Commercial Building Standard for Telecommunications Pathway and Spaces (ANSI/TIA/EIA 569-A-7 December 2001 including Annex 1 through 4); Commercial Building Grounding and Bonding Requirements for Telecommunications (ANSI/TIA/EIA 607 - A - 2002); Residential Telecommunications Cable Standard (ANSI/TIA/EIA 570-A-December 2001); American Railroad Engineering and Maintenance of Way Association - 2005 Communications and Signal Manual; and the National Electrical Safety Code (NESC C2-2002 excluding Appendixes A and B) are hereby adopted by reference as part of this chapter. Other codes, manuals, and reference works referred to in this chapter are available for inspection and review in the Olympia office of the electrical section of the department during business hours.

The requirements of this chapter will be observed where there is any conflict between this chapter and the National Electrical Code (NFPA 70), Centrifugal Fire Pumps (NFPA 20), the Emergency and Standby Power Systems (NFPA 110), ANSI/TIA/EIA 568-B, ANSI/TIA/EIA 569-A, ANSI/TIA/EIA 607, ANSI/TIA/EIA 570, or the NESC C2-2002.

The National Electrical Code will be followed where there is any conflict between standard for Installation of Stationary Pumps for Fire Protection (NFPA 20), standard for Emergency and Standby Power Systems (NFPA 110), ANSI/TIA/EIA 568-B, ANSI/TIA/EIA 569-A, ANSI/TIA/EIA 607, ANSI/TIA/EIA 570, or the NESC C2-2002 and the National Electrical Code (NFPA 70).

[Statutory Authority: RCW 19.28.006, 19.28.010, 19.28.031, 19.28.041, 19.28.061, 19.28.101, 19.28.131, 19.28.161, 19.28.171, 19.28.191, 19.28.201, 19.28.211, 19.28.241, 19.28.251, 19.28.281, 19.28.311, 19.28.321, 19.28.400, 19.28.420, 19.28.490, 19.28.551. 06-24-041, § 296-46B-010, filed 11/30/06, effective 12/31/06; 06-05-028, § 296-46B-010, filed 2/7/06, effective 5/1/06; 05-10-024, § 296-46B-010, filed 4/26/05, effective 6/30/05. Statutory Authority: RCW 19.28.006, 19.28.010, 19.28.031, 19.28.041, 19.28.061, 19.28.101, 19.28.131, 19.28.161,

19.28.171, 19.28.191, 19.28.201, 19.28.211, 19.28.241, 19.28.251, 19.28.271, 19.28.311, 19.28.321, 19.28.400, 19.28.420, 19.28.490, 19.28.551, 2003 c 399, 2003 c 211, 2003 c 78, and 2003 c 242. 04-12-049, § 296-46B-010, filed 5/28/04, effective 6/30/04. Statutory Authority: RCW 19.28.006, 19.28.010, 19.28.031, 19.28.041, 19.28.061, 19.28.101, 19.28.131, 19.28.161, 19.28.171, 19.28.191, 19.28.201, 19.28.211, 19.28.241, 19.28.251, 19.28.271, 19.28.311, 19.28.321, 19.28.400, 19.28.420, 19.28.490, 19.28.551, 2002 c 249, chapters 34.05 and 19.28 RCW. 03-09-111, § 296-46B-010, filed 4/22/03, effective 5/23/03.]

WAC 296-46B-100 General definitions. (1) All definitions listed in the National Electrical Code and chapter 19.28 RCW are recognized in this chapter unless other specific definitions are given in this chapter.

(2) "Accreditation" is a determination by the department that a laboratory meets the requirements of this chapter and is therefore authorized to evaluate electrical products that are for sale in the state of Washington.

(3) "Administrative law judge" means an administrative law judge (ALJ) appointed pursuant to chapter 34.12 RCW and serving in board proceedings pursuant to chapter 19.28 RCW and this chapter.

(4) "ANSI" means American National Standards Institute. Copies of ANSI standards are available from the National Conference of States on Building Codes and Standards, Inc.

(5) "Appeal" is a request for review of a department action by the board as authorized by chapter 19.28 RCW.

(6) "Appellant" means any person, firm, partnership, corporation, or other entity that has filed an appeal or request for board review.

(7) "Appliance" means household appliance.

(8) "ASTM" means the American Society for Testing and Materials. Copies of ASTM documents are available from ASTM International.

(9) "AWG" means American Wire Gauge.

(10) "Basement" means that portion of a building that is partly or completely below grade plane. A basement shall be considered as a story above grade plane and not a basement where the finished surface of the floor above the basement is:

(a) More than 1829 mm (six feet) above grade plane;

(b) More than 1829 mm (six feet) above the finished ground level for more than 50% of the total building perimeter; or

(c) More than 3658 mm (twelve feet) above the finished ground level at any point. Also see "mezzanine" and "story."

(11) "Board" means the electrical board established and authorized under chapter 19.28 RCW.

(12) "Chapter" means chapter 296-46B WAC unless expressly used for separate reference.

(13) "Category list" is a list of nonspecific product types determined by the department.

(14) A "certified electrical product" is an electrical product to which a laboratory, accredited by the state of Washington, has the laboratory's certification mark attached.

(15) A "certification mark" is a specified laboratory label, symbol, or other identifying mark that indicates the manufacturer produced the product in compliance with appropriate standards or that the product has been tested for specific end uses.

(16) "Certificate of competency" includes the certificates of competency for master journeyman electrician, master specialty electrician, journeyman, and specialty electrician.

(17) A laboratory "certification program" is a specified set of testing, inspection, and quality assurance procedures, including appropriate implementing authority, regulating the evaluation of electrical products for certification marking by an electrical products certification laboratory.

(18) A "complete application" includes the submission of all appropriate fees, documentation, and forms.

(19) "Construction," for the purposes of chapter 19.28 RCW, means electrical construction.

(20) "Coordination (selective)" as defined in NEC 100 shall be determined and documented by a professional engineer registered under chapter 18.43 RCW.

(21) "Department" means the department of labor and industries of the state of Washington.

(22) "Director" means the director of the department, or the director's designee.

(23) "Electrical equipment" includes electrical conductors, conduit, raceway, apparatus, materials, components, and other electrical equipment not exempted by RCW 19.28.006 (9). Any conduit/raceway of a type listed for electrical use is considered to be electrical equipment even if no wiring is installed in the conduit/raceway at the time of the conduit/raceway installation.

(24) An "electrical products certification laboratory" is a laboratory or firm accredited by the state of Washington to perform certification of electrical products.

(25) An "electrical products evaluation laboratory" is a laboratory or firm accredited by the state of Washington to perform on-site field evaluation of electrical products for safety.

(26) "Exit, and unobstructed (as applied to NEC 110.26 (C)(2)(a))" means an exit path that allows a worker to travel to the exit from any other area in the room containing the equipment described in NEC 110.26 (C)(2) without having to pass through that equipment's required working space.

(27) "Field evaluated" means an electrical product to which a field evaluation mark is attached. Field evaluation must include job site inspection unless waived by the department, and may include component sampling and/or laboratory testing.

(28) "Field evaluation mark" is a specified laboratory label, symbol, or other identifying mark indicating the manufacturer produced the product in essential compliance with appropriate standards or that the product has been evaluated for specific end uses.

(29) A "field evaluation program" is a specified set of testing, inspection, and quality assurance procedures, including appropriate implementing authority regulating the testing and evaluation of electrical products for field evaluation marking.

(30) The "filing" is the date the document is actually received in the office of the chief electrical inspector.

(31) "Final judgment" means any money that is owed to the department under this chapter, including fees and penalties, or any money that is owed to the department as a result of an individual's or contractor's unsuccessful appeal of a citation.

(32) "Fished wiring" is when cable or conduit is installed within the finished surfaces of an existing building or building structure (e.g., wall, floor or ceiling cavity).

(33) "Household appliance" means utilization equipment installed in a dwelling unit that is built in standardized sizes or types and is installed or connected as a unit to perform one or more functions such as cooking and other equipment installed in a kitchen, clothes drying, clothes washing, portable room air conditioning units and portable heaters, etc. Fixed electric space-heating equipment covered in NEC 424 (furnaces, baseboard and wall heaters, electric heat cable, etc.) and fixed air-conditioning/heat pump equipment (NEC 440) are not household appliances. Household appliance does not mean any utilization equipment that:

(a) Supplies electrical power, other than Class 2, to other utilization equipment; or

(b) Receives electrical power, other than Class 2, through other utilization equipment.

(34) HVAC/refrigeration specific definitions:

(a) "HVAC/refrigeration" means heating, ventilation, air conditioning, and refrigeration.

(b) "HVAC/refrigeration component" means electrical power and limited energy components within the "HVAC/refrigeration system," including, but not limited to: Pumps, compressors, motors, heating coils, controls, switches, thermostats, humidistats, low-voltage damper controls, outdoor sensing controls, outside air dampers, stand-alone duct smoke detectors, air monitoring devices, zone control valves and equipment for monitoring of HVAC/refrigeration control panels and low-voltage connections. This definition excludes equipment and components of non-"HVAC/refrigeration control systems."

(c) "HVAC/refrigeration control panel" means an enclosed, manufactured assembly of electrical components designed specifically for the control of a HVAC/refrigeration system. Line voltage equipment that has low voltage, NEC Class 2 control or monitoring components incidental to the designed purpose of the equipment is not an HVAC/refrigeration control panel (e.g., combination starters).

(d) "HVAC/refrigeration control system" means a network system regulating and/or monitoring a HVAC/refrigeration system. Equipment of a HVAC/refrigeration control system includes, but is not limited to: Control panels, data centers, relays, contactors, sensors, and cables related to the monitoring and control of a HVAC/refrigeration system(s).

(e) "HVAC/refrigeration equipment" means the central unit primary to the function of the "HVAC/refrigeration system." HVAC/refrigeration includes, but is not limited to: Heat pumps, swamp coolers, furnaces, compressor packages, and boilers.

(f) "HVAC/refrigeration system" means a system of HVAC/refrigeration: Wiring, equipment, and components integrated to generate, deliver, or control heated, cooled, filtered, refrigerated, or conditioned air. This definition excludes non-HVAC/refrigeration control systems (e.g., fire alarm systems, intercom systems, building energy management systems, and similar non-HVAC/refrigeration systems) (see Figure 920-1 and Figure 920-2).

(35) "IBC" means the International Building Code. Copies of the IBC are available from the International Code Council.

(36) An "individual" or "party" or "person" means an individual, firm, partnership, corporation, association, government subdivision or unit thereof, or other entity.

(37) An "installation" includes the act of installing, connecting, repairing, modifying, or otherwise performing work on an electrical system, component, equipment, or wire except as exempted by WAC 296-46B-925.

(38) An "identification plate" is a phenolic or metallic plate or other similar material engraved in block letters at least 1/4" (6 mm) high unless specifically required to be larger by this chapter, suitable for the environment and application. The letters and the background must be in contrasting colors. Screws, rivets, or methods specifically described in this chapter must be used to affix an identification plate to the equipment or enclosure.

(39) "License" means a license required under chapter 19.28 RCW.

(40) "Labeled" means an electrical product that bears a certification mark issued by a laboratory accredited by the state of Washington.

(41) A "laboratory" may be either an electrical product(s) certification laboratory or an electrical product(s) evaluation laboratory.

(42) A "laboratory operations control manual" is a document to establish laboratory operation procedures and may include a laboratory quality control manual.

(43) "Like-in-kind" means having similar characteristics such as voltage requirement, current draw, circuit overcurrent and short circuit characteristics, and function within the system and being in the same location. Like-in-kind also includes any equipment component authorized by the manufacturer as a suitable component replacement part.

(44) "Lineman" is a person employed by a serving electrical utility or employed by a licensed general electrical contractor who carries, on their person, evidence that they:

(a) Have graduated from a department-approved lineman's apprenticeship course; or

(b) Are currently registered in a department-approved lineman's apprenticeship course and are working under the direct one hundred percent supervision of a journeyman electrician or a graduate of a lineman's apprenticeship course approved by the department. The training received in the lineman's apprenticeship program must include training in applicable articles of the currently adopted National Electrical Code.

(45) "Listed" means equipment has been listed and identified by a laboratory approved by the state of Washington for the appropriate equipment standard per this chapter.

(46) "Low voltage" means:

(a) NEC, Class 1 power limited circuits at 30 volts maximum.

(b) NEC, Class 2 circuits powered by a Class 2 power supply as defined in NEC 725.41(A).

(c) NEC, Class 3 circuits powered by a Class 3 power supply as defined in NEC 725.41(A).

(d) Circuits of telecommunications systems as defined in chapter 19.28 RCW.

(47) "Mezzanine" is the intermediate level or levels between the floor and ceiling of any story with an aggregate floor area of not more than one-third of the area of the room

or space in which the level or levels are located. Also see "basement" and "story."

(48) "NEC" means National Electrical Code. Copies of the NEC are available from the National Fire Protection Association.

(49) "NEMA" means National Electrical Manufacturer's Association. Copies of NEMA standards are available from the National Electrical Manufacturer's Association.

(50) "NESC" means National Electrical Safety Code. Copies of the NESC are available from the Institute of Electrical and Electronics Engineers, Inc.

(51) "NETA" means International Electrical Testing Association, Inc. Copies of the NETA standards and information are available from the International Electrical Testing Association, Inc.

(52) "NFPA" means the National Fire Protection Association. Copies of NFPA documents are available from the National Fire Protection Association.

(53) "NRTL" means Nationally Recognized Testing Laboratory accredited by the federal Occupational Safety and Health Administration (OSHA) after meeting the requirements of 29 CFR 1910.7.

(54) "Point of contact" for utility work, means the point at which a customer's electrical system connects to the serving utility system.

(55) "Proceeding" means any matter regarding an appeal before the board including hearings before an administrative law judge.

(56) "Public area or square" is an area where the public has general, clear, and unrestricted access.

(57) A "quality control manual" is a document to maintain the quality control of the laboratory's method of operation. It consists of specified procedures and information for each test method responding to the requirements of the product standard. Specific information must be provided for portions of individual test methods when needed to comply with the standard's criteria or otherwise support the laboratory's operation.

(58) "RCW" means the Revised Code of Washington. Copies of electrical RCWs are available from the department and the office of the code reviser.

(59) A "stand-alone amplified sound or public address system" is a system that has distinct wiring and equipment for audio signal generation, recording, processing, amplification, and reproduction. This definition does not apply to telecommunications installations.

(60) "Service" or "served" means that as defined in RCW 34.05.010(19) when used in relation to department actions or proceedings.

(61) "Story" is that portion of a building included between the upper surface of a floor and the upper surface of the floor or roof next above. Next above means vertically and not necessarily directly above. Also see "basement" and "mezzanine."

(62) "Structure," for the purposes of this chapter and in addition to the definition in the NEC, means something constructed either in the field or factory that is used or intended for supporting or sheltering any use or occupancy as defined by the IBC.

(63) A "telecommunications local service provider" is a regulated or unregulated (e.g., by the Federal Communica-

tions Commission or the utilities and transportation commission as a telephone or telecommunications provider) firm providing telecommunications service ahead of the telecommunications network demarcation point to an end-user's facilities.

(64) "TIA/EIA" means the Telecommunications Industries Association/Electronic Industries Association which publishes the TIA/EIA Telecommunications Building Wiring Standards. Standards and publications are adopted by TIA/EIA in accordance with the American National Standards Institute (ANSI) patent policy.

(65) A "training school" is a public community or technical college or not-for-profit nationally accredited technical or trade school licensed by the work force training and education coordinating board under chapter 28C.10 RCW.

(66) "Under the control of a utility" for the purposes of RCW 19.28.091 and 19.28.101 is when electrical equipment is not owned by a utility and:

(a) Is located in a vault, room, closet, or similar enclosure that is secured by a lock or seal so that access is restricted to the utility's personnel; or

(b) The utility is obligated by contract to maintain the equipment and the contract provides that access to the equipment is restricted to the utility's personnel or other qualified personnel.

(67) "UL" means Underwriters Laboratory.

(68) "Utility" means an electrical utility.

(69) "Utility system" means electrical equipment owned by or under the control of a serving utility that is used for the transmission or distribution of electricity from the source of supply to the point of contact.

(70) "Utilization voltage" means the voltage level employed by the utility's customer for connection to lighting fixtures, motors, heaters, or other electrically operated equipment other than power transformers.

(71) "Variance" is a modification of the electrical requirements as adopted in chapter 19.28 RCW or any other requirements of this chapter that may be approved by the chief electrical inspector if assured that equivalent objectives can be achieved by establishing and maintaining effective safety.

(72) "WAC" means the Washington Administrative Code. Copies of this chapter of the WACs are available from the department and the office of the code reviser.

[Statutory Authority: RCW 19.28.006, 19.28.010, 19.28.031, 19.28.041, 19.28.061, 19.28.101, 19.28.131, 19.28.161, 19.28.171, 19.28.191, 19.28.201, 19.28.211, 19.28.241, 19.28.251, 19.28.281, 19.28.311, 19.28.321, 19.28.400, 19.28.420, 19.28.490, 19.28.551. 06-24-041, § 296-46B-100, filed 11/30/06, effective 12/31/06.]

WAC 296-46B-110 General—Requirements for electrical installations.

012 Mechanical execution of work.

(1) Unused openings. Unused openings in boxes, raceways, auxiliary gutters, cabinets, cutout boxes, meter socket enclosures, equipment cases, or housings shall be effectively closed to afford protection substantially equivalent to the wall of the equipment. Where metallic plugs or plates are used with nonmetallic enclosures, they shall be recessed at least 6 mm (1/4") from the outer surface of the enclosure. Unused openings do not include weep holes, unused mount-

ing holes, or any other opening with less than .15 square inches of open area.

016 Flash protection.

(2) The flash protection marking required by NEC 110.16 must be an identification plate or label approved by the electrical inspector and may be installed either in the field or in the factory. The plate or label may be mounted using adhesive.

022 Identification of disconnecting means.

(3) For the purposes of legibly marking a disconnecting means, as required in NEC 110.22, an identification plate is required unless the disconnect is a circuit breaker/fused switch installed within a panelboard and the circuit breaker/fused switch is identified by a panelboard schedule. In other than dwelling units, the identification plate must include the identification designation of the circuit source panelboard that supplies the disconnect.

(4) Where electrical equipment is installed to obtain a series combination rating, the identification as required by NEC 110.22, must be in the form of an identification plate that is substantially yellow in color. The words "CAUTION - SERIES COMBINATION RATED SYSTEM" must be on the label in letters at least 13 mm (1/2") high.

030 Over 600 volts - general.

(5) Each cable operating at over 600 volts and installed on customer-owned systems must be legibly marked in a permanent manner at each termination point and at each point the cable is accessible. The required marking must use phase designation, operating voltage, and circuit number if applicable.

[Statutory Authority: RCW 19.28.006, 19.28.010, 19.28.031, 19.28.041, 19.28.061, 19.28.101, 19.28.131, 19.28.161, 19.28.171, 19.28.191, 19.28.201, 19.28.211, 19.28.241, 19.28.251, 19.28.281, 19.28.311, 19.28.321, 19.28.400, 19.28.420, 19.28.490, 19.28.551. 06-24-041, § 296-46B-110, filed 11/30/06, effective 12/31/06; 06-05-028, § 296-46B-110, filed 2/7/06, effective 5/1/06; 05-22-025, § 296-46B-110, filed 10/25/05, effective 11/25/05; 05-10-024, § 296-46B-110, filed 4/26/05, effective 6/30/05. Statutory Authority: RCW 19.28.006, 19.28.010, 19.28.031, 19.28.041, 19.28.061, 19.28.101, 19.28.131, 19.28.161, 19.28.171, 19.28.191, 19.28.201, 19.28.211, 19.28.241, 19.28.251, 19.28.271, 19.28.311, 19.28.321, 19.28.400, 19.28.420, 19.28.490, 19.28.551, 2003 c 399, 2003 c 211, 2003 c 78, and 2003 c 242. 04-12-049, § 296-46B-110, filed 5/28/04, effective 6/30/04. Statutory Authority: RCW 19.28.006, 19.28.010, 19.28.031, 19.28.041, 19.28.061, 19.28.101, 19.28.131, 19.28.161, 19.28.171, 19.28.191, 19.28.201, 19.28.211, 19.28.241, 19.28.251, 19.28.271, 19.28.311, 19.28.321, 19.28.400, 19.28.420, 19.28.490, 19.28.551, 2002 c 249, chapters 34.05 and 19.28 RCW. 03-09-111, § 296-46B-110, filed 4/22/03, effective 5/23/03.]

WAC 296-46B-210 Wiring and protection—Branch circuits.

008B Other than dwelling units - GFCI requirements.

(1) GFCI requirements.

All 125-volt, 15- and 20-ampere receptacles installed in wet locations must have Class A ground-fault circuit interrupter protections for personnel.

011 Branch circuits.

(2) Circuits must be taken to all unfinished spaces adaptable to future dwelling unit living areas that are not readily accessible to the service or branch circuit panelboard. The circuits must terminate in a suitable box(es). The box must contain an identification of the intended purpose of the cir-

cuit(s). The branch circuit panelboard must have adequate space and capacity for the intended load(s).

012 Arc-fault circuit-interrupter protection.

(3) For the purpose of NEC 210.12(B), Dwelling Unit Bedroom spaces that:

- (a) Are accessed only through the bedroom;
- (b) Are ancillary to the bedroom's function; and
- (c) Contain branch circuits that supply 125-volt, 15- and 20-ampere, outlets must be protected by an arc-fault circuit interrupter listed to provide protection per NEC 210.12.

For the purposes of this section, such spaces will include, but not be limited to, spaces such as closets and sitting areas, but will not include bathrooms.

025 Common area branch circuits.

(4) For the purpose of NEC 210.25, loads for septic or water well systems that are shared by no more than two dwelling units may be supplied from either of the two dwelling units if approved by the local building official and local health department.

051(B)(5) Receptacle outlet locations.

(5) Receptacle outlets installed in appliance garages may be counted as a required countertop outlet.

052(A)(2) Dwelling unit receptacle outlets.

(6) For the purpose of NEC 210.52 (A)(2)(1), "similar openings" include the following configurations that are a permanent part of the dwelling configuration or finish:

- (a) Window seating; and
- (b) Bookcases or cabinets that extend from the floor to a level at least 1.7 meters (five (5) feet six (6) inches) above the floor.

Any outlets eliminated by such window seating, bookcases, or cabinets must be installed elsewhere within the room.

052(C) Countertops.

(7) A receptacle(s) is not required to be installed in the area directly behind a sink or range as shown in NEC 210.52, Figure 210.52. Outlets must be installed within 24" on either side of a sink or range as shown in Figure 210.52.

(8) If it is impracticable to install the outlet(s) required in NEC 21.52 (C)(3), a receptacle is not required on any peninsular counter surface as required by NEC 210.52 (C)(3) so long as the peninsular counter area extends no farther than 6' from the face of the adjoining countertop. Any outlet(s) eliminated using this subsection must be installed in the wall space at the point where the peninsula connects to the wall countertop in addition to the outlets required by NEC 210.52 (C)(1).

[Statutory Authority: RCW 19.28.006, 19.28.010, 19.28.031, 19.28.041, 19.28.061, 19.28.101, 19.28.131, 19.28.161, 19.28.171, 19.28.191, 19.28.201, 19.28.211, 19.28.241, 19.28.251, 19.28.281, 19.28.311, 19.28.321, 19.28.400, 19.28.420, 19.28.490, 19.28.551. 06-24-041, § 296-46B-210, filed 11/30/06, effective 12/31/06; 06-05-028, § 296-46B-210, filed 2/7/06, effective 5/1/06; 05-10-024, § 296-46B-210, filed 4/26/05, effective 6/30/05. Statutory Authority: RCW 19.28.006, 19.28.010, 19.28.031, 19.28.041, 19.28.061, 19.28.101, 19.28.131, 19.28.161, 19.28.171, 19.28.191, 19.28.201, 19.28.211, 19.28.241, 19.28.251, 19.28.271, 19.28.311, 19.28.321, 19.28.400, 19.28.420, 19.28.490, 19.28.551, 2003 c 399, 2003 c 211, 2003 c 78, and 2003 c 242. 04-12-049, § 296-46B-210, filed 5/28/04, effective 6/30/04. Statutory Authority: RCW 19.28.006, 19.28.010, 19.28.031, 19.28.041, 19.28.061, 19.28.101, 19.28.131, 19.28.161, 19.28.171, 19.28.191, 19.28.201, 19.28.211, 19.28.241, 19.28.251, 19.28.271, 19.28.311, 19.28.321, 19.28.400, 19.28.420, 19.28.490, 19.28.551, 2002 c 249, chapters 34.05 and 19.28 RCW. 03-09-111, § 296-46B-210, filed 4/22/03, effective 5/23/03.]

WAC 296-46B-215 Wiring and protection—Feeders.

010 Feeders - ground fault protection testing.

Equipment ground fault protection systems required by the NEC must be tested prior to being placed into service to verify proper installation and operation of the system as determined by the manufacturer's published instructions. This test or a subsequent test must include all system feeders. A firm having qualified personnel and proper equipment must perform the tests required. A copy of the manufacturer's performance testing instructions and a written performance acceptance test record signed by the person performing the test must be provided for the inspector's records at the time of inspection. The performance acceptance test record must include test details including, but not limited to, all trip settings and measurements taken during the test.

[Statutory Authority: RCW 19.28.006, 19.28.010, 19.28.031, 19.28.041, 19.28.061, 19.28.101, 19.28.131, 19.28.161, 19.28.171, 19.28.191, 19.28.201, 19.28.211, 19.28.241, 19.28.251, 19.28.271, 19.28.311, 19.28.321, 19.28.400, 19.28.420, 19.28.490, 19.28.551, 2002 c 249, chapters 34.05 and 19.28 RCW. 03-09-111, § 296-46B-215, filed 4/22/03, effective 5/23/03.]

WAC 296-46B-220 Wiring and protection—Branch circuit, feeder, and service calculations.

003 Branch circuit calculations.

Occupancy lighting loads. In determining feeder and service entrance conductor sizes and equipment ratings, the currently adopted Washington state energy code unit lighting power allowance table and footnotes may be used in lieu of NEC 220.12.

[Statutory Authority: RCW 19.28.006, 19.28.010, 19.28.031, 19.28.041, 19.28.061, 19.28.101, 19.28.131, 19.28.161, 19.28.171, 19.28.191, 19.28.201, 19.28.211, 19.28.241, 19.28.251, 19.28.281, 19.28.311, 19.28.321, 19.28.400, 19.28.420, 19.28.490, and 19.28.551. 05-10-024, § 296-46B-220, filed 4/26/05, effective 6/30/05. Statutory Authority: RCW 19.28.006, 19.28.010, 19.28.031, 19.28.041, 19.28.061, 19.28.101, 19.28.131, 19.28.161, 19.28.171, 19.28.191, 19.28.201, 19.28.211, 19.28.241, 19.28.251, 19.28.271, 19.28.311, 19.28.321, 19.28.400, 19.28.420, 19.28.490, 19.28.551, 2002 c 249, chapters 34.05 and 19.28 RCW. 03-09-111, § 296-46B-220, filed 4/22/03, effective 5/23/03.]

WAC 296-46B-225 Wiring and protection—Outside branch circuits and feeders.

032 Location of outside feeder disconnecting means.

The building disconnecting means required by NEC 225.32 must be provided to disconnect all ungrounded conductors that supply or pass through a building or structure per the requirements of NEC 225.32 (except for Exceptions 1, 2, 3, or 4) in accordance with subsection (1) or (2) of this section.

(1) Outside location: Except for an outdoor generator set described in a NEC 700, 701, or 702 system, where the feeder disconnecting means is installed outside a building or structure, it must be on the building or structure or within sight and within fifteen feet of the building or structure supplied. The building disconnecting means may supply only one building/structure unless the secondary building(s)/structure(s) has a separate building disconnecting means meeting the requirements of the NEC and this subsection. The disconnecting means must have an identification plate with at least one-half-inch high letters identifying:

- (a) The building/structure served; and

(b) Its function as the building/structure main disconnect(s).

(2) Inside location: The feeder disconnecting means may be installed anywhere inside a building or structure when there is a feeder disconnecting means, located elsewhere on the premises, with overcurrent protection sized for the feeder conductors.

[Statutory Authority: RCW 19.28.006, 19.28.010, 19.28.031, 19.28.041, 19.28.061, 19.28.101, 19.28.131, 19.28.161, 19.28.171, 19.28.191, 19.28.201, 19.28.211, 19.28.241, 19.28.251, 19.28.281, 19.28.311, 19.28.321, 19.28.400, 19.28.420, 19.28.490, and 19.28.551. 05-10-024, § 296-46B-225, filed 4/26/05, effective 6/30/05. Statutory Authority: RCW 19.28.006, 19.28.010, 19.28.031, 19.28.041, 19.28.061, 19.28.101, 19.28.131, 19.28.161, 19.28.171, 19.28.191, 19.28.201, 19.28.211, 19.28.241, 19.28.251, 19.28.271, 19.28.311, 19.28.321, 19.28.400, 19.28.420, 19.28.490, 19.28.551, 2002 c 249, and chapters 34.05 and 19.28 RCW. 03-09-111, § 296-46B-225, filed 4/22/03, effective 5/23/03.]

WAC 296-46B-230 Wiring and protection—Services.

001 General service requirements.

(1) The owner, the owner's agent, or the electrical contractor making the installation must consult the serving utility regarding the utility's service entrance requirements for equipment location and meter equipment requirements before installing the service and equipment. Provisions for a meter and related equipment, an attachment of a service drop, or an underground service lateral must be made at a location acceptable to the serving utility. The point of contact for a service drop must permit the clearances required by the NEC.

(2) A firewall must have a minimum two-hour rating as defined by the local building official to be considered a building separation in accordance with Article 100 NEC.

(3) The height of the center of the service meter must be as required by the serving utility. Secondary instrument transformer metering conductor(s) are not permitted in the service raceway.

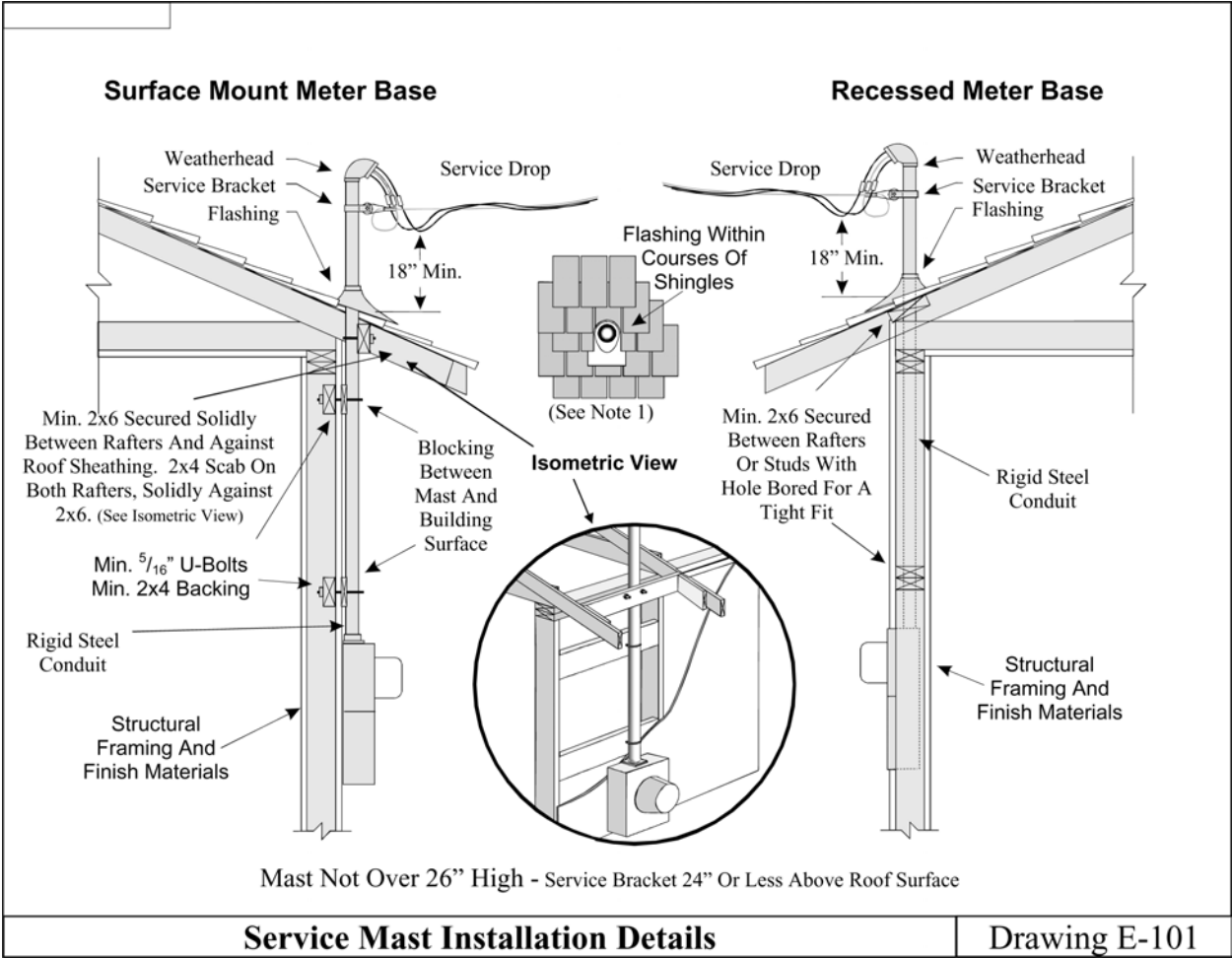
028 Service or other masts.

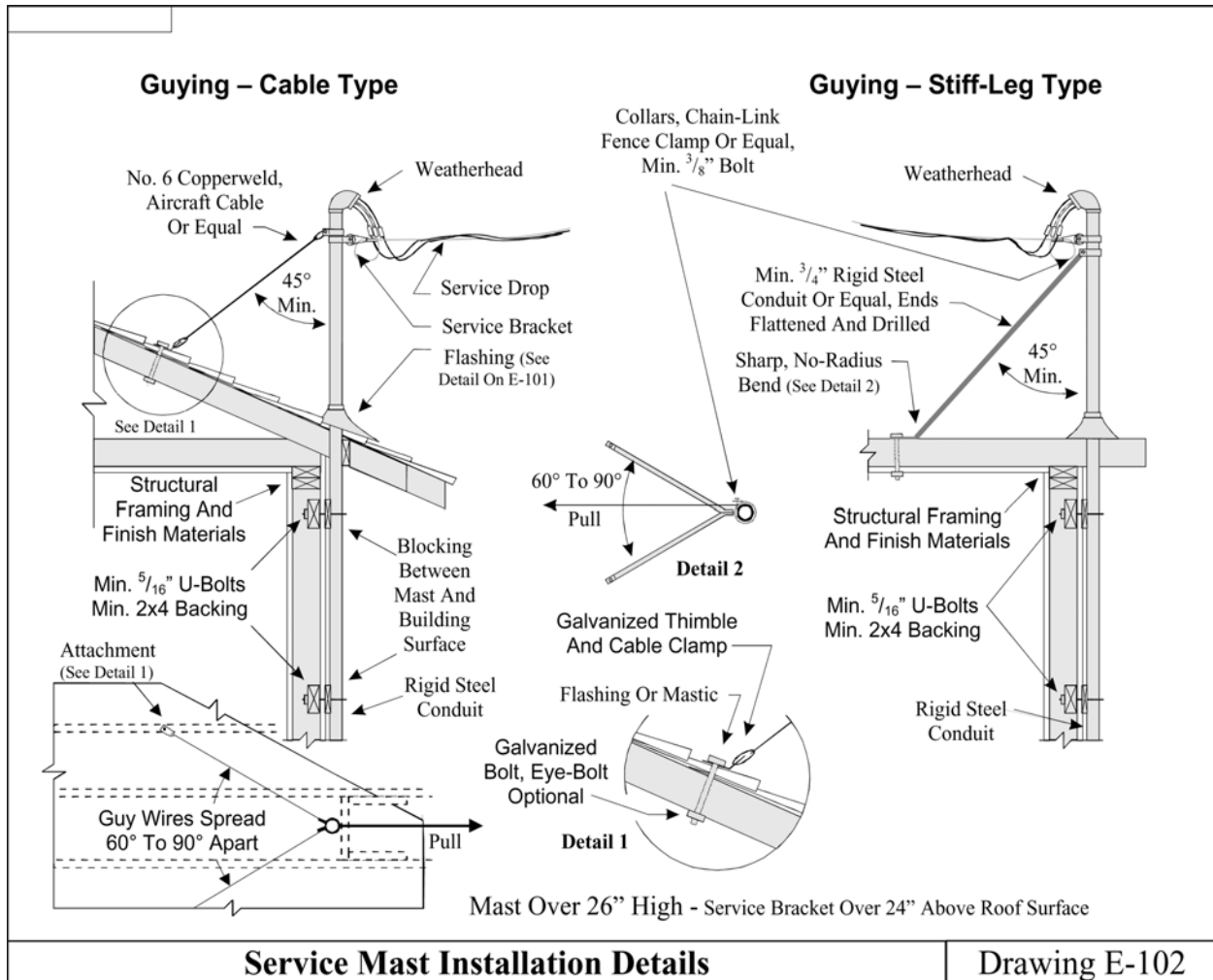
(4) Conduit extended through the roof to provide means of attaching:

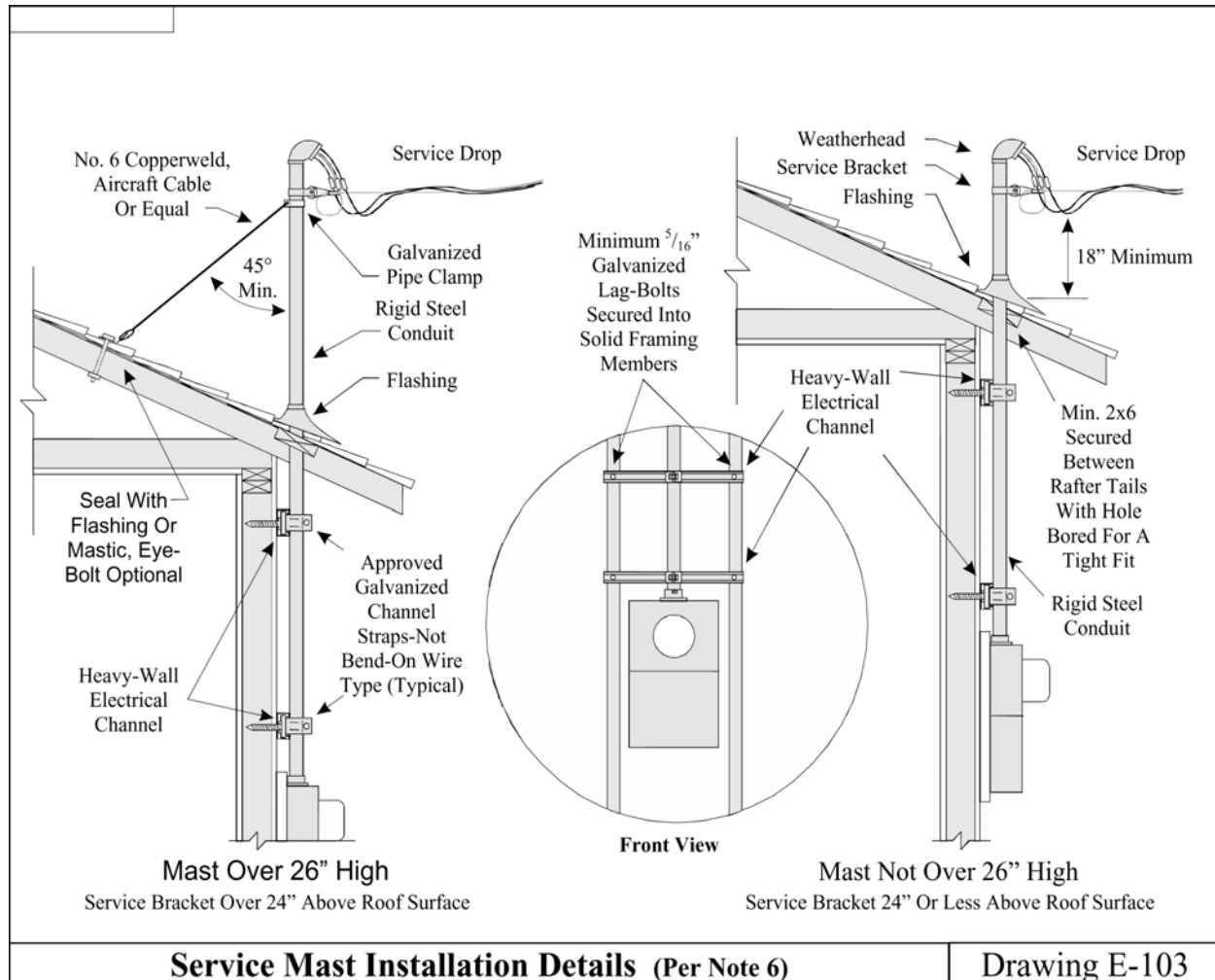
(a) All overhead drops for service, feeder, or branch circuits exceeding #1 AWG aluminum or #3 AWG copper must be rigid steel galvanized conduit no smaller than two inches.

(b) All overhead drops for service, feeder or branch circuits not exceeding #1 AWG aluminum or #3 AWG copper must be rigid steel galvanized conduit no smaller than one and one-quarter inch. The installation must comply with drawings E-101 and/or E-102, or must provide equivalent strength by other approved means. Masts for altered or relocated installations will be permitted to comply with drawing E-103.

(c) For the purposes of NEC 225.19 and 230.24, a residential patio cover, that is not over one story and not over twelve feet in height and is used only for recreation or outdoor living purposes and not as a carport, garage, storage room or habitable room as described in Appendix Chapter 1 in the IBC and Appendix Chapter H in the IRC, is not considered a roof. Overhead conductor spans must maintain a minimum 900 mm (36") clearance above these covers.







Notes to drawings E-101, E-102, and E-103

- (1) An approved roof flashing must be installed on each mast where it passes through a roof. Plastic, nonhardening mastic must be placed between lead-type flashings and the conduit. Neoprene type flashings will also be permitted to be used.
- (2) Masts must be braced, secured, and supported in such a manner that no pressure from the attached conductors will be exerted on a roof flashing, meter base, or other enclosures.
- (3) Utilization of couplings for a mast are permitted only below the point the mast is braced, secured, or supported.
- (4) Except as otherwise required by the serving utility, service mast support guys must be installed if the service drop attaches to the mast more than twenty-four inches above the roof line or if the service drop is greater than one hundred feet in length from the pole or support. Masts for support of other than service drops must comply with this requirement as well.
- (5) Intermediate support masts must be installed in an approved manner with methods identical or equal to those required for service masts.
- (6) For altered services, where it is impractical to install U bolt mast supports due to interior walls remaining closed, it will be permissible to use other

alternate mast support methods such as heavy gauge, galvanized, electrical channel material that is secured to two or more wooden studs with five-sixteenths inch diameter or larger galvanized lag bolts.

(7) Conductors must extend at least eighteen inches from all mastheads to permit connection to the connecting overhead wiring.

040 Service conductors - two-family and multiple-occupancy buildings.

(5) Two-family and multiple-occupancy buildings. A second or additional service drop or lateral to a building having more than one occupancy will be permitted to be installed at a location separate from other service drops or laterals to the building provided that all the following conditions are complied with:

- (a) Each service drop or lateral must be sized in accordance with the NEC for the calculated load to be served by the conductors;
- (b) Each service drop or lateral must terminate in listed metering/service equipment;
- (c) Each occupant must have access to the occupant's service disconnecting means;
- (d) No more than six service disconnects may be supplied from a single transformer;

(e) All service drops or laterals supplying a building must originate at the same transformer or power supply;

(f) A permanent identification plate must be placed at each service disconnect location that identifies all other service disconnect locations in or on the building, the area or units served by each, the total number of service disconnecting means on the building/structure and the area or units served. If a structure consists of multiple buildings (i.e., by virtue of fire separation), all service disconnects in or on the entire structure must be labeled to identify all service disconnects in or on the structure; and

(g) A permanent identification plate must be placed at each feeder disconnecting means identifying the area or units served if the feeder disconnecting means is remote from the area or unit served.

042 Service conductor - size and rating.

(6) If the service conductors have a lesser ampacity than the overcurrent protection or the equipment rating that they terminate in or on, an identification plate showing the ampacity of the conductors must be installed on the service equipment.

043 Wiring methods for 600 volts, nominal or less.

(7) The installation of service conductors not exceeding 600 volts, nominal, within a building or structure is limited to the following methods: Galvanized or aluminum rigid metal conduit; galvanized intermediate metal conduit; wireways; busways; auxiliary gutters; rigid nonmetallic conduit; cablebus; or mineral-insulated, metal-sheathed cable (type MI).

(8) Electrical metallic tubing must not be installed as the wiring method for service entrance conductors inside a building. Existing electrical metallic tubing, installed prior to October 1984, which is properly grounded and used for service entrance conductors may be permitted to remain if the conduit is installed in a nonaccessible location and is the proper size for the installed conductors.

(9) In addition to methods allowed in the NEC, the grounded service conductor is permitted to be identified with a yellow jacket or with one or more yellow stripes.

062 Service equipment - general.

(10) Service equipment, subpanels, and similar electrical equipment must be installed so that they are readily accessible and may not be installed in bathrooms, clothes closets, or shower rooms. All indoor service equipment and subpanel equipment must have adequate working space and be adequately illuminated.

(11) Temporary construction service equipment may only be used for construction purposes and must be disconnected when the permanent service is connected unless the department grants an extension of time.

070 Service disconnecting means.

(12) The service disconnecting means must be installed at a readily accessible location in accordance with (a) or (b) of this subsection.

(a) Outside location: Service disconnecting means will be permitted on the building or structure or within sight and within fifteen feet of the building or structure served. The building disconnecting means may supply only one building/structure. The service disconnecting means must have an identification plate with one-half-inch high letters identifying:

(i) The building/structure served; and

(ii) Its function as the building/structure main service disconnect(s).

(b) Inside location: When the service disconnecting means is installed inside the building or structure, it must be located so that the service raceway extends no more than fifteen feet inside the building/structure.

095 Ground-fault protection of equipment.

(13) Equipment ground-fault protection systems required by the NEC must be tested prior to being placed into service to verify proper installation and operation of the system as determined by the manufacturer's published instructions. This test or a subsequent test must include all service voltage feeders. A firm having qualified personnel and proper equipment must perform the tests required. A copy of the manufacturer's performance testing instructions and a written performance acceptance test record signed by the person performing the test must be provided for the inspector's records at the time of inspection. The performance acceptance test record must include test details including, but not limited to, all trip settings and measurements taken during the test.

200 Wiring methods exceeding 600 volts.

(14) The installation of service conductors exceeding 600 volts, nominal, within a building or structure must be limited to the following methods: Galvanized rigid metal conduit, galvanized intermediate metal conduit, schedule 80 rigid nonmetallic conduit, metal-clad cable that is exposed for its entire length, cablebus, or busways.

(15) In addition to methods allowed in the NEC, the grounded service conductor is permitted to be identified with a yellow jacket or with one or more yellow stripes.

[Statutory Authority: RCW 19.28.006, 19.28.010, 19.28.031, 19.28.041, 19.28.061, 19.28.101, 19.28.131, 19.28.161, 19.28.171, 19.28.191, 19.28.201, 19.28.211, 19.28.241, 19.28.251, 19.28.281, 19.28.311, 19.28.321, 19.28.400, 19.28.420, 19.28.490, 19.28.551. 06-24-041, § 296-46B-230, filed 11/30/06, effective 12/31/06; 05-10-024, § 296-46B-230, filed 4/26/05, effective 6/30/05. Statutory Authority: RCW 19.28.006, 19.28.010, 19.28.031, 19.28.041, 19.28.061, 19.28.101, 19.28.131, 19.28.161, 19.28.171, 19.28.191, 19.28.201, 19.28.211, 19.28.241, 19.28.251, 19.28.271, 19.28.311, 19.28.321, 19.28.400, 19.28.420, 19.28.490, 19.28.551, 2002 c 249, chapters 34.05 and 19.28 RCW. 03-09-111, § 296-46B-230, filed 4/22/03, effective 5/23/03.]

WAC 296-46B-250 Wiring and protection—Grounding and bonding.

032 Two or more buildings or structures.

(1) Effective August 1, 2003, an equipment grounding conductor must be installed with the circuit conductors between buildings and/or structures. A grounded conductor (i.e., neutral) is not permitted to be used in place of a separate equipment grounding conductor between buildings and/or structures.

052 Grounding electrodes.

(2) If a ground resistance test is not performed to ensure a resistance to ground of twenty-five ohms or less, two or more electrodes as specified in NEC 250.52 must be installed a minimum of six feet apart. However, a temporary construction service is not required to have more than one made electrode.

(3) If a concrete encased electrode is installed, inspection may be accomplished by the following methods:

(a) At the time of inspection of other work on the project, providing the concrete encased electrode is accessible for a visual inspection;

(b) At the time of the service inspection providing the installer has provided a method so the inspector can verify the continuity of the electrode conductor along its entire length (e.g., attaching a length of copper wire to one end of the electrode that reaches the location of the grounding electrode conductor that will enable the inspector to measure the resistance with a standard resistance tester). The concrete encased electrode does not have to be accessible for a visual inspection; or

(c) Other method when prior approval, on a job site basis, is given by the inspector.

If a special inspection trip is required to inspect a grounding electrode conductor, a trip fee will be charged for that inspection in addition to the normal permit fee.

056 Resistance of rod, pipe, and plate electrodes.

(4) For services only, when multiple buildings or structures are located adjacent, but structurally separate from each other, any installed rod, pipe, or plate electrodes used for those services must be installed so that each building's or structure's electrodes are not less than 1.8 m (6 ft) apart from the adjacent building's or structure's electrodes.

090 Bonding.

(5) Metallic stubs or valves used in nonmetallic plumbing systems are not required to be bonded to the electrical system unless required by an electrical equipment manufacturer's instructions.

(6) Hot and cold water plumbing lines are not required to be bonded together if, at the time of inspection, the inspector can determine the lines are mechanically and electrically joined by one or more metallic mixing valves.

184 Solidly grounded neutral systems over 1 kV.

(7) In addition to the requirements of NEC 250.184(A), the following applies for:

(a) Existing installations.

(i) The use of a concentric shield will be allowed for use as a neutral conductor for extension, replacement, or repair, if all of the following are complied with:

(A) The existing system uses the concentric shield as a neutral conductor;

(B) Each individual conductor contains a separate concentric shield sized to no less than thirty-three and one-half percent of the ampacity of the phase conductor for three-phase systems or one hundred percent of the ampacity of the phase conductor for single-phase systems;

(C) The new or replacement cable's concentric shield is enclosed inside an outer insulating jacket; and

(D) Existing cable (i.e., existing cable installed directly in the circuit between the work and the circuit's overcurrent device) successfully passes the following tests:

- A cable maintenance high potential dielectric test. The test must be performed in accordance with the cable manufacturer's instruction or the 2001 NETA maintenance test specifications; and

- A resistance test of the cable shield. Resistance must be based on the type, size, and length of the conductor used as the cable shield using the conductor properties described in NEC Table 8 Conductor Properties.

An electrical engineer must provide a specific certification to the electrical plan review supervisor in writing that the test results of the maintenance high potential dielectric test and the resistance test have been reviewed by the electrical engineer and that the cable shield is appropriate for the installation. The electrical engineer must stamp the certification document with the engineer's stamp and signature. The document may be in the form of a letter or electrical plans.

Testing results are valid for a period of seven years from the date of testing. Cable will not be required to be tested at a shorter interval.

(ii) A concentric shield used as a neutral conductor in a multigrounded system fulfills the requirements of an equipment grounding conductor.

(b) New installations.

(i) New installations do not include extensions of existing circuits.

(ii) The use of the concentric shield will not be allowed for use as a neutral conductor for new installations. A listed separate neutral conductor meeting the requirements of NEC 250.184(A) must be installed.

[Statutory Authority: RCW 19.28.006, 19.28.010, 19.28.031, 19.28.041, 19.28.061, 19.28.101, 19.28.131, 19.28.161, 19.28.171, 19.28.191, 19.28.201, 19.28.211, 19.28.241, 19.28.251, 19.28.281, 19.28.311, 19.28.321, 19.28.400, 19.28.420, 19.28.490, 19.28.551. 06-24-041, § 296-46B-250, filed 11/30/06, effective 12/31/06; 06-05-028, § 296-46B-250, filed 2/7/06, effective 5/1/06; 05-10-024, § 296-46B-250, filed 4/26/05, effective 6/30/05. Statutory Authority: RCW 19.28.006, 19.28.010, 19.28.031, 19.28.041, 19.28.061, 19.28.101, 19.28.131, 19.28.161, 19.28.171, 19.28.191, 19.28.201, 19.28.211, 19.28.241, 19.28.251, 19.28.271, 19.28.311, 19.28.321, 19.28.400, 19.28.420, 19.28.490, 19.28.551, 2003 c 399, 2003 c 211, 2003 c 78, and 2003 c 242. 04-12-049, § 296-46B-250, filed 5/28/04, effective 6/30/04. Statutory Authority: RCW 19.28.006, 19.28.010, 19.28.031, 19.28.041, 19.28.061, 19.28.101, 19.28.131, 19.28.161, 19.28.171, 19.28.191, 19.28.201, 19.28.211, 19.28.241, 19.28.251, 19.28.271, 19.28.311, 19.28.321, 19.28.400, 19.28.420, 19.28.490, 19.28.551, 2002 c 249, chapters 34.05 and 19.28 RCW. 03-09-111, § 296-46B-250, filed 4/22/03, effective 5/23/03.]

WAC 296-46B-300 Wiring methods and materials—Wiring methods.

001 Wiring methods.

(1) Cables and raceways for telecommunications, power limited, NEC Class 2 and Class 3 conductors must be installed in compliance with Chapter 3 NEC unless other methods are specifically allowed elsewhere in the NEC, chapter 19.28 RCW, or this chapter.

005 Underground installations.

(2) Induction loops.

See WAC 296-46B-901(23) for induction detection loops that are made in a public roadway and regulated by a governmental agency.

Other induction loops must comply with the following requirements:

(a) General:

(i) A preformed direct burial induction loop is designed to be installed within the road surface base (e.g., concrete or asphalt) or below the road surface of a road with an unpaved surface (e.g., gravel or brick pavers);

(ii) A saw-cut induction detection loop is designed to be installed into a groove saw-cut into an existing paved road surface (e.g., concrete or asphalt);

(iii) The loop system includes the loop and the lead-in conductor;

(iv) The loop system must be:

(A) Tested to assure that at 500 volts DC, the resistance between the conductor and ground equals or exceeds 50 megohms; and

(B) Without splice; or

(C) If spliced, the splice must be soldered and appropriately insulated;

(v) The lead-in conductor must comply with the following:

(A) Must be stranded and have a lay (i.e., twist) of two turns per foot; and

(B) If installed in an electrical raceway;

• Are not required to be listed or suitable for wet locations; and

• Must have a burial cover of at least 6"; or

(C) If direct buried;

• Must be listed for the use; and

• Must have a burial cover of at least 18".

(b) Preformed direct burial induction detection loops must conform with the following:

(i) The loop conductor must be rated for direct burial and be a minimum of No. 16 AWG;

(ii) The loop design must not allow movement of the loop conductor within the outer jacket. The outer jacket containing the loop conductor is not required to be listed;

(iii) The loop yoke casing (i.e., the location where the lead-in conductor is connected to the loop):

(A) Includes any device used to house the "loop to lead-in splice" or to otherwise couple the loop with the lead-in electrical raceway;

(B) Is not required to be listed; and

(C) Must have a coupler that will create a waterproof bond with the electrical raceway, containing the lead-in conductor, or a direct buried lead-in conductor.

(c) Saw-cut induction detection loops:

(i) The loop conductor must be cross-linked polyethylene or EPR Type USE insulation and be a minimum of No. 18 AWG stranded;

(ii) The saw-cut groove must not cut into rebar installed within the roadway.

011 Support of raceways, cables, or boxes in suspended ceilings.

(3) NEC power limited, Class 2, and Class 3 cables must be secured in compliance with NEC 334.30 and must be secured to boxes in compliance with NEC 314.17.

(4) Telecommunications cables must be secured in a manner that will not cause damage to the cables and at intervals not exceeding five feet. Cables are considered adequately supported when run through holes in building structural elements or other supporting elements. Telecommunications cables may be fished into inaccessible hollow spaces of finished buildings. Clamps or fittings are not required where telecommunications cables enter boxes.

(5) Optical fiber cables must be secured in a manner that will not cause damage to the cables and at intervals not exceeding five feet. Cables are considered adequately supported when run through holes in building structural elements or other supporting elements. Optical fiber cables may be fished into inaccessible hollow spaces of finished buildings. Supports must allow a bending radius that will not cause damage to the cables.

(2007 Ed.)

(6) Where not restricted by the building code official or Article 300 NEC, the wires required in NEC 300.11(A) may support raceways, cables, or boxes under the following conditions:

(a) Raceways and/or cables are not larger than three-quarter-inch trade size;

(b) No more than two raceways or cables are supported by a support wire. The two-cable limitation does not apply to telecommunications cables, Class 2 cables, or Class 3 cables on support wires installed exclusively for such cables. The support wire must be adequate to carry the cable(s) weight and all attached cables must be secured with approved fittings; or

(c) Raceways and cables are secured to the support wires by fittings designed and manufactured for the purpose.

In addition to (a), (b), and (c) of this subsection, the following conditions must be complied with:

(d) The support wires are minimum #12 AWG and are securely fastened to the structural ceiling and to the ceiling grid system; and

(e) The raceways or cables serve equipment that is located within the ceiling cavity or is mounted on or supported by the ceiling grid system. Telecommunications cables, Class 2 cables, or Class 3 cables supported as required by this section, may pass through ceiling cavities without serving equipment mounted on or supported by the ceiling grid system.

017 Conductors in raceway.

(7) Cables will be permitted in all raceway systems if:

(a) The cable is appropriate for the environment; and

(b) The percentage fill does not exceed that allowed in NEC Chapter 9, Table 1.

[Statutory Authority: RCW 19.28.006, 19.28.010, 19.28.031, 19.28.041, 19.28.061, 19.28.101, 19.28.131, 19.28.161, 19.28.171, 19.28.191, 19.28.201, 19.28.211, 19.28.241, 19.28.251, 19.28.281, 19.28.311, 19.28.321, 19.28.400, 19.28.420, 19.28.490, 19.28.551, 06-24-041, § 296-46B-300, filed 11/30/06, effective 12/31/06; 05-10-024, § 296-46B-300, filed 4/26/05, effective 6/30/05. Statutory Authority: RCW 19.28.006, 19.28.010, 19.28.031, 19.28.041, 19.28.061, 19.28.101, 19.28.131, 19.28.161, 19.28.171, 19.28.191, 19.28.201, 19.28.211, 19.28.241, 19.28.251, 19.28.271, 19.28.311, 19.28.321, 19.28.400, 19.28.420, 19.28.490, 19.28.551, 2003 c 399, 2003 c 211, 2003 c 78, and 2003 c 242. 04-12-049, § 296-46B-300, filed 5/28/04, effective 6/30/04. Statutory Authority: RCW 19.28.006, 19.28.010, 19.28.031, 19.28.041, 19.28.061, 19.28.101, 19.28.131, 19.28.161, 19.28.171, 19.28.191, 19.28.201, 19.28.211, 19.28.241, 19.28.251, 19.28.271, 19.28.311, 19.28.321, 19.28.400, 19.28.420, 19.28.490, 19.28.551, 2002 c 249, chapters 34.05 and 19.28 RCW. 03-09-111, § 296-46B-300, filed 4/22/03, effective 5/23/03.]

WAC 296-46B-314 Wiring methods and materials—Outlet, device, pull and junction boxes.

001 Boxes and fittings.

(1) Conduit bodies, junction, pull, and outlet boxes must be installed so that the wiring contained in them is accessible without removing any part of the building structure, including insulation material.

023(H) Flexible cord connection of pendant boxes.

(2) The flexible cord and cord connection must comply with NEC 314.23(H) and the following:

(a) A suspended pendant box must not contain conduit "knockouts" and connection to a suspended box must utilize an integral threaded hub;

[Title 296 WAC—p. 1017]

(b) The maximum length of the cord for a suspended pendant drop from a permanently installed junction box to a suitable tension take-up device above the pendant box must not exceed six feet;

(c) The flexible cord must be supported at each end with an approved cord grip or strain relief connector fitting/device that will eliminate all stress on the conductor connections;

(d) The flexible cord must be a minimum #14 AWG copper;

(e) The flexible cord ampacity must be determined using NEC Table 400.5(A) column A; and

(f) The flexible cord must be hard or extra hard usage.

[Statutory Authority: RCW 19.28.006, 19.28.010, 19.28.031, 19.28.041, 19.28.061, 19.28.101, 19.28.131, 19.28.161, 19.28.171, 19.28.191, 19.28.201, 19.28.211, 19.28.241, 19.28.251, 19.28.281, 19.28.311, 19.28.321, 19.28.400, 19.28.420, 19.28.490, and 19.28.551. 05-10-024, § 296-46B-314, filed 4/26/05, effective 6/30/05. Statutory Authority: RCW 19.28.006, 19.28.010, 19.28.031, 19.28.041, 19.28.061, 19.28.101, 19.28.131, 19.28.161, 19.28.171, 19.28.191, 19.28.201, 19.28.211, 19.28.241, 19.28.251, 19.28.271, 19.28.311, 19.28.321, 19.28.400, 19.28.420, 19.28.490, 19.28.551, 2003 c 399, 2003 c 211, 2003 c 78, and 2003 c 242. 04-12-049, § 296-46B-314, filed 5/28/04, effective 6/30/04. Statutory Authority: RCW 19.28.006, 19.28.010, 19.28.031, 19.28.041, 19.28.061, 19.28.101, 19.28.131, 19.28.161, 19.28.171, 19.28.191, 19.28.201, 19.28.211, 19.28.241, 19.28.251, 19.28.271, 19.28.311, 19.28.321, 19.28.400, 19.28.420, 19.28.490, 19.28.551, 2002 c 249, chapters 34.05 and 19.28 RCW. 03-09-111, § 296-46B-314, filed 4/22/03, effective 5/23/03.]

WAC 296-46B-334 Wiring methods and materials—Nonmetallic-sheathed cable.

010 Nonmetallic-sheathed cable.

(1) The building classification, for subsections (2), (3), and (4) of this section, will be as determined by the building official. For the purposes of this section, Type III, IV and V may be as defined in the International Building Code adopted in the state of Washington. The installer must provide the inspector documentation substantiating the type of building construction and finish material rating(s) prior to any electrical inspection.

(2) This section replaces NEC 334.10(2). In multifamily dwellings, Type NM, Type NMC, and Type NMS cable(s) may be used in structures of Types III, IV, and V construction except as prohibited in NEC 334.12.

(3) This section replaces NEC 334.10(3). In all other structures, Type NM, Type NMC, and Type NMS cable(s) may be used in structures of Types III, IV, and V construction except as prohibited in NEC 334.12. All cable(s) must be concealed within walls, floors, or ceilings that provide a thermal barrier of material that has at least a 15-minute finish rating as identified in listings of fire-rated assemblies.

(4) This section replaces NEC 334.10(4). Cable trays in structures of Types III, IV, and V construction, where the cable(s) is identified for the use, except as prohibited in NEC 334.12.

015 Exposed work.

(5) Where Type NMC cable is installed in shallow chases in plaster, masonry, concrete, adobe or similar material, the cable must be protected against nails or screws by:

(a) A steel plate at least 1.59 mm (1/16 in.) thick and covered with plaster, adobe, or similar finish; or

(b) Being recessed in a chase at least 6.985 cm (2 3/4 in.) deep, as measured from the finished surface, and covered

with plaster, adobe, or similar finish. The cable(s) must be at least 6.35 mm (2 1/2 in.) from the finished surface.

[Statutory Authority: RCW 19.28.006, 19.28.010, 19.28.031, 19.28.041, 19.28.061, 19.28.101, 19.28.131, 19.28.161, 19.28.171, 19.28.191, 19.28.201, 19.28.211, 19.28.241, 19.28.251, 19.28.281, 19.28.311, 19.28.321, 19.28.400, 19.28.420, 19.28.490, and 19.28.551. 05-10-024, § 296-46B-334, filed 4/26/05, effective 6/30/05. Statutory Authority: RCW 19.28.006, 19.28.010, 19.28.031, 19.28.041, 19.28.061, 19.28.101, 19.28.131, 19.28.161, 19.28.171, 19.28.191, 19.28.201, 19.28.211, 19.28.241, 19.28.251, 19.28.271, 19.28.311, 19.28.321, 19.28.400, 19.28.420, 19.28.490, 19.28.551, 2003 c 399, 2003 c 211, 2003 c 78, and 2003 c 242. 04-12-049, § 296-46B-334, filed 5/28/04, effective 6/30/04. Statutory Authority: RCW 19.28.006, 19.28.010, 19.28.031, 19.28.041, 19.28.061, 19.28.101, 19.28.131, 19.28.161, 19.28.171, 19.28.191, 19.28.201, 19.28.211, 19.28.241, 19.28.251, 19.28.271, 19.28.311, 19.28.321, 19.28.400, 19.28.420, 19.28.490, 19.28.551, 2002 c 249, chapters 34.05 and 19.28 RCW. 03-09-111, § 296-46B-334, filed 4/22/03, effective 5/23/03.]

WAC 296-46B-358 Wiring methods and materials—Electrical metallic tubing.

012 Electrical metallic tubing.

In addition to complying with the provisions of Article 358 NEC, electrical metallic tubing may not be installed in direct contact with the earth or in concrete on or below grade. Also see NEC 300.6 for resistance to corrosion.

[Statutory Authority: RCW 19.28.006, 19.28.010, 19.28.031, 19.28.041, 19.28.061, 19.28.101, 19.28.131, 19.28.161, 19.28.171, 19.28.191, 19.28.201, 19.28.211, 19.28.241, 19.28.251, 19.28.271, 19.28.311, 19.28.321, 19.28.400, 19.28.420, 19.28.490, 19.28.551, 2002 c 249, chapters 34.05 and 19.28 RCW. 03-09-111, § 296-46B-358, filed 4/22/03, effective 5/23/03.]

WAC 296-46B-394 Wiring methods and materials—Concealed knob-and-tube wiring.

001 Knob-and-tube wiring.

Article 394 NEC does not prohibit the installation of loose or rolled thermal insulating material in spaces containing existing knob-and-tube wiring provided that all the following conditions are met:

(1) The wiring must be surveyed by an appropriately licensed electrical contractor who must certify in writing to the department that the wiring is in good condition with no evidence of improper overcurrent protection, conductor insulation failure or deterioration, and with no improper connections or splices. The electrical inspector must inspect all repairs, alterations, or extensions to the electrical system.

(2) The insulation must meet Class I specifications as identified in the Uniform Building Code, with a flame spread factor of twenty-five or less as tested using ASTM E84-81a. Foam insulation may not be used with knob-and-tube wiring.

(3) All knob-and-tube circuits must have overcurrent protection in compliance with NEC Table 310.16, 60 degree centigrade, Column C. Overcurrent protection must be either circuit breakers or Type S fuses.

[Statutory Authority: RCW 19.28.006, 19.28.010, 19.28.031, 19.28.041, 19.28.061, 19.28.101, 19.28.131, 19.28.161, 19.28.171, 19.28.191, 19.28.201, 19.28.211, 19.28.241, 19.28.251, 19.28.271, 19.28.311, 19.28.321, 19.28.400, 19.28.420, 19.28.490, 19.28.551, 2002 c 249, chapters 34.05 and 19.28 RCW. 03-09-111, § 296-46B-394, filed 4/22/03, effective 5/23/03.]

WAC 296-46B-410 Equipment for general use—Luminaires.

004 Luminaires.

(1) All luminaires within an enclosed shower area or within five feet of the waterline of a bathtub must be enclosed, unless specifically listed for such use; these luminaires, with exposed metal parts that are grounded, must be ground fault circuit interrupter protected.

018 Exposed luminaire (fixture) parts.

(2) Replacement luminaires that are directly wired or attached to boxes supplied by wiring methods that do not provide a ready means for grounding and that have exposed conductive parts will be permitted only where the luminaires are provided with ground-fault circuit-interrupter protection and marked "no equipment ground."

030 Flexible cord connection of electric discharge luminaires.

(3) A ground-type attachment plug cap and receptacle connection at the source junction box is not required when the flexible cord complies with NEC 410.30 and the following:

(a) Connection to a source junction box must utilize an approved cable connector or clamp;

(b) The maximum length of the cord for a suspended pendant drop from a permanently installed junction box to a suitable tension take-up device above the pendant luminaire must not exceed six feet;

(c) The flexible cord must be supported at each end with an approved cord grip or strain relief connector fitting/device that will eliminate all stress on the conductor connections;

(d) The flexible cord must be a minimum #14 AWG copper;

(e) The flexible cord ampacity must be determined in NEC Table 400.5(A) column A;

(f) The flexible cord must be hard or extra hard usage; and

(g) A vertical flexible cord supplying electric discharge luminaires must be secured to the luminaire support as per NEC 334.30(A).

[Statutory Authority: RCW 19.28.006, 19.28.010, 19.28.031, 19.28.041, 19.28.061, 19.28.101, 19.28.131, 19.28.161, 19.28.171, 19.28.191, 19.28.201, 19.28.211, 19.28.241, 19.28.251, 19.28.281, 19.28.311, 19.28.321, 19.28.400, 19.28.420, 19.28.490, and 19.28.551. 05-10-024, § 296-46B-410, filed 4/26/05, effective 6/30/05. Statutory Authority: RCW 19.28.006, 19.28.010, 19.28.031, 19.28.041, 19.28.061, 19.28.101, 19.28.131, 19.28.161, 19.28.171, 19.28.191, 19.28.201, 19.28.211, 19.28.241, 19.28.251, 19.28.271, 19.28.311, 19.28.321, 19.28.400, 19.28.420, 19.28.490, 19.28.551, 2003 c 399, 2003 c 211, 2003 c 78, and 2003 c 242. 04-12-049, § 296-46B-410, filed 5/28/04, effective 6/30/04. Statutory Authority: RCW 19.28.006, 19.28.010, 19.28.031, 19.28.041, 19.28.061, 19.28.101, 19.28.131, 19.28.161, 19.28.171, 19.28.191, 19.28.201, 19.28.211, 19.28.241, 19.28.251, 19.28.271, 19.28.311, 19.28.321, 19.28.400, 19.28.420, 19.28.490, 19.28.551, 2002 c 249, chapters 34.05 and 19.28 RCW. 03-09-111, § 296-46B-410, filed 4/22/03, effective 5/23/03.]

WAC 296-46B-422 Equipment for general use—Appliances.

010 Water heater circuit.

Water heaters with a rated circuit load in excess of 3,500 watts at 208 or 240 volts must be provided with branch circuit conductors not smaller than #10 AWG copper or equal. Overcurrent protection must comply with NEC 422.11(E).

(2007 Ed.)

[Statutory Authority: RCW 19.28.006, 19.28.010, 19.28.031, 19.28.041, 19.28.061, 19.28.101, 19.28.131, 19.28.161, 19.28.171, 19.28.191, 19.28.201, 19.28.211, 19.28.241, 19.28.251, 19.28.271, 19.28.311, 19.28.321, 19.28.400, 19.28.420, 19.28.490, 19.28.551, 2002 c 249, chapters 34.05 and 19.28 RCW. 03-09-111, § 296-46B-422, filed 4/22/03, effective 5/23/03.]

WAC 296-46B-430 Motors, motor circuits, and controllers.

007 Marking on motors and multimotor equipment.

Except as required by the National Electrical Code, there is no requirement for motors to be identified for use or listed/field evaluated by a laboratory. All motors must be manufactured according to National Electrical Manufacturer's Association (NEMA) standards for motors except motors that:

(1) Are a component part of equipment listed or field evaluated by a laboratory; or

(2) Are a component part of industrial utilization equipment approved by the department per WAC 296-46B-901.

[Statutory Authority: RCW 19.28.006, 19.28.010, 19.28.031, 19.28.041, 19.28.061, 19.28.101, 19.28.131, 19.28.161, 19.28.171, 19.28.191, 19.28.201, 19.28.211, 19.28.241, 19.28.251, 19.28.281, 19.28.311, 19.28.321, 19.28.400, 19.28.420, 19.28.490, 19.28.551. 06-24-041, § 296-46B-430, filed 11/30/06, effective 12/31/06. Statutory Authority: RCW 19.28.006, 19.28.010, 19.28.031, 19.28.041, 19.28.061, 19.28.101, 19.28.131, 19.28.161, 19.28.171, 19.28.191, 19.28.201, 19.28.211, 19.28.241, 19.28.251, 19.28.271, 19.28.311, 19.28.321, 19.28.400, 19.28.420, 19.28.490, 19.28.551, 2003 c 399, 2003 c 211, 2003 c 78, and 2003 c 242. 04-12-049, § 296-46B-430, filed 5/28/04, effective 6/30/04. Statutory Authority: RCW 19.28.006, 19.28.010, 19.28.031, 19.28.041, 19.28.061, 19.28.101, 19.28.131, 19.28.161, 19.28.171, 19.28.191, 19.28.201, 19.28.211, 19.28.241, 19.28.251, 19.28.271, 19.28.311, 19.28.321, 19.28.400, 19.28.420, 19.28.490, 19.28.551, 2002 c 249, chapters 34.05 and 19.28 RCW. 03-09-111, § 296-46B-430, filed 4/22/03, effective 5/23/03.]

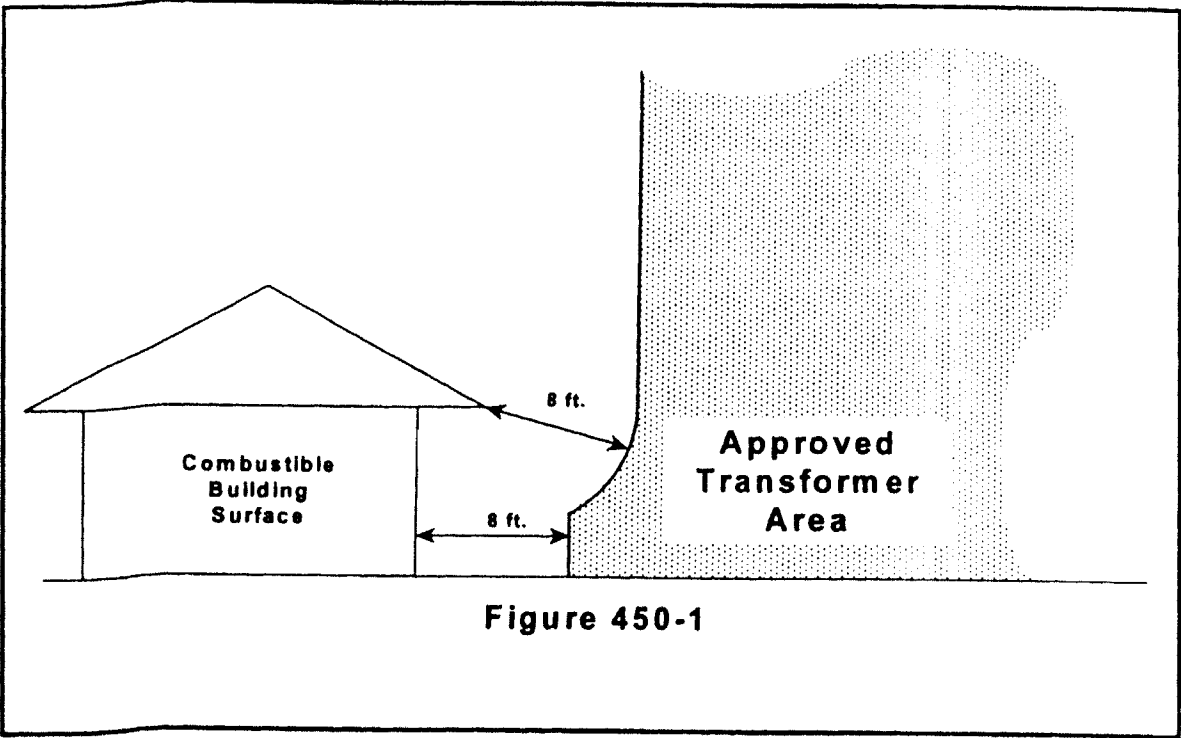
WAC 296-46B-450 Equipment for general use—Transformers and transformer vaults.

027 Flammable-liquid or oil-filled transformers installed outdoors.

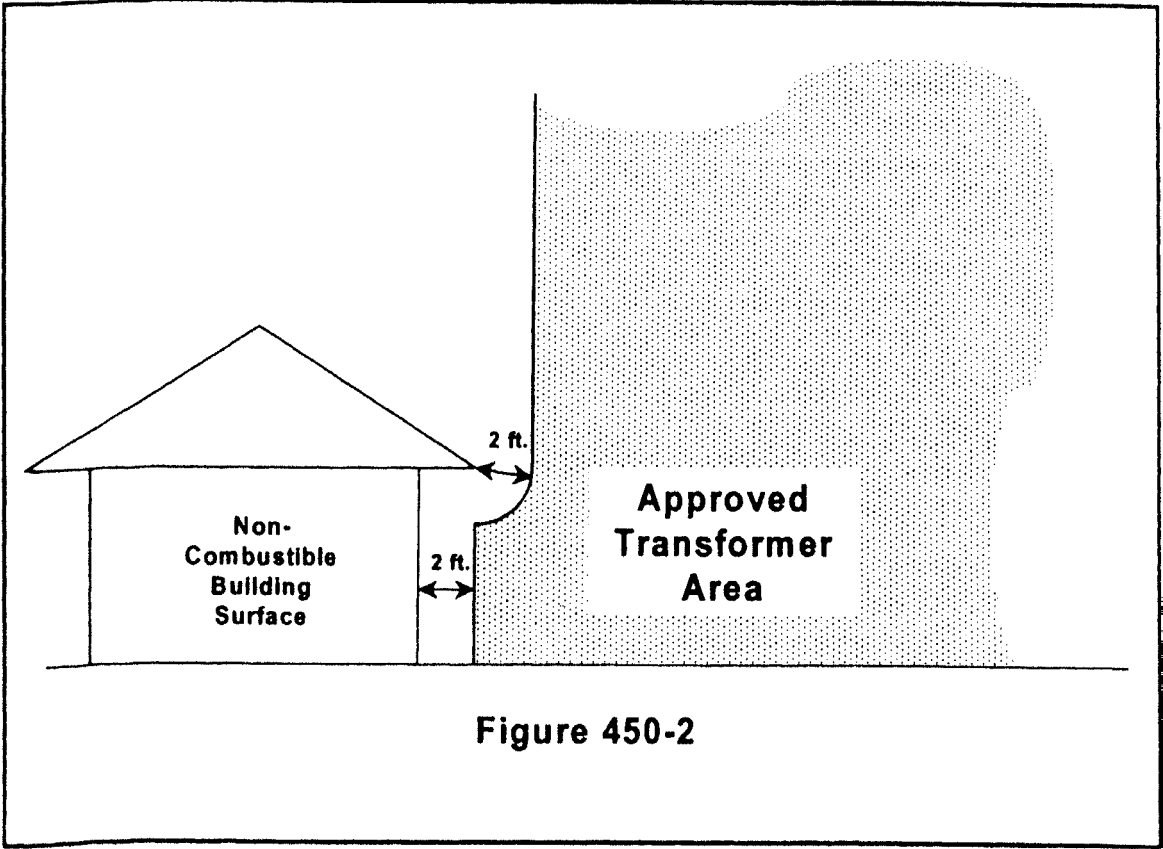
(1) Flammable-liquid or oil-filled transformers installed outdoors must meet the following requirements:

(a) A transformer installed adjacent to a building/structure with any combustible surface may be located only in the shaded "Approved Transformer Area" shown in Figure 450-1;

"Approved Transformer Area" shown in Figure 450-1;



(b) A transformer installed adjacent to a building/structure with no combustible surface(s) may be located only in the shaded "Approved Transformer Area" shown in Figure 450-2;



(c) In an area in which a transformer is to be installed next to a noninhabited structure, the transformer may be no closer than two feet to the building/structure and must be outside a line extended vertically from the ends of the eaves or rooflines;

(d) A building/structure may have no doors, windows, stairways, or other openings closer than eight feet to the transformer;

(e) The finished grade at the location of the transformer must be such that any oil leaking from the transformer will flow away from the building/structure and will not pool; and

(f) If transformers are installed in areas subject to traffic other than pedestrian traffic, they must be provided with adequate guarding.

(2) Enclosures for total underground flammable-liquid or oil-filled transformers must not be located within eight feet of a doorway, operable window, stairways or fire escape. Adequate space must be maintained above the enclosure so that a boom may be used to lift the transformer from the enclosure.

[Statutory Authority: RCW 19.28.006, 19.28.010, 19.28.031, 19.28.041, 19.28.061, 19.28.101, 19.28.131, 19.28.161, 19.28.171, 19.28.191, 19.28.201, 19.28.211, 19.28.241, 19.28.251, 19.28.271, 19.28.311, 19.28.321, 19.28.400, 19.28.420, 19.28.490, 19.28.551, 2002 c 249, chapters 34.05 and 19.28 RCW. 03-09-111, § 296-46B-450, filed 4/22/03, effective 5/23/03.]

WAC 296-46B-501 Special occupancies NEC Class I locations.

001 Sewage disposal systems.

(1) Pumping chambers for sewage, effluent, or grinder pumps in on-site and septic tank effluent pump (S.T.E.P.) disposal systems will be considered unclassified when not more than five residential units are connected to the system, residential units are connected to a utility sewage system, or when nonresidential systems have residential loading characteristics and all of the following general installations requirements are complied with:

(a) The pumping chamber must be adequately vented. Venting may be accomplished through the building or structure plumbing vents where the system venting has been approved by the local jurisdiction authority or by a direct two-inch minimum vent to the atmosphere;

(b) Equipment that in normal operation may cause an arc or spark must not be installed in any pumping chamber;

(c) Float switches installed in a pumping chamber must be hermetically sealed to prevent the entrance of gases or vapors;

(d) Junction boxes, conduits and fittings installed in the septic atmosphere must be of a noncorrosive type, installed to prevent the entrance of gases or vapors;

(e) Where a conduit system is installed between the pumping chamber and the control panel, motor disconnect, or power source, an approved sealing method must be installed to prevent the migration of gases or vapors from the pumping chamber, and must remain accessible; and

(f) Wire splices in junction boxes installed in pumping chambers must be suitable for wet locations.

(2) Residential wastewater loading characteristics in a nonresidential installation:

(a) For systems that process less than three thousand five hundred gallons of wastewater per day may be certified by:

(i) An on-site wastewater designer licensed under chapter 18.210 RCW; or

(ii) A professional engineer, engaged in the business of on-site wastewater system design, licensed under chapter 18.43 RCW.

(b) For systems that process three thousand five hundred gallons or more of wastewater per day may be certified by a professional engineer, engaged in the business of on-site wastewater system design, licensed under chapter 18.43 RCW.

Written documentation must be signed and stamped by the designer or engineer and provided to the electrical inspector prior to inspection.

(3) Any residential or nonresidential system that has building or structure floor drains being discharged into the system is classified as Class I Division 1. Drains from any commercially made tub, shower, basin, sink, or toilet are not considered floor drains.

(4) Pumping chamber access covers can be covered by gravel, light aggregate, or noncohesive granulated soil, and must be accessible for excavation. Access covers that are buried must have their exact location identified at the electrical panel or other prominent location by an identification plate. The authority having jurisdiction for performing electrical inspections must approve the identification plate location.

(5) Indoor grinder pumps installed in chambers with less than fifty gallons capacity are not required to meet the requirements of this section, except for the venting requirements in subsection (1)(a) of this section. Indoor grinder pumps installed in chambers with less than fifty gallons capacity are not classified systems as described in Article 500 NEC.

(6) Secondary treatment effluent pumping chambers such as sand filters are unclassified, and require no special wiring methods.

(7) Inspection approval is required prior to covering or concealing any portion of the septic electrical system, including the pump. New septic and effluent tanks containing electrical wires and equipment must be inspected and approved prior to being loaded with sewage.

[Statutory Authority: RCW 19.28.006, 19.28.010, 19.28.031, 19.28.041, 19.28.061, 19.28.101, 19.28.131, 19.28.161, 19.28.171, 19.28.191, 19.28.201, 19.28.211, 19.28.241, 19.28.251, 19.28.281, 19.28.311, 19.28.321, 19.28.400, 19.28.420, 19.28.490, 19.28.551. 06-05-028, § 296-46B-501, filed 2/7/06, effective 5/1/06. Statutory Authority: RCW 19.28.006, 19.28.010, 19.28.031, 19.28.041, 19.28.061, 19.28.101, 19.28.131, 19.28.161, 19.28.171, 19.28.191, 19.28.201, 19.28.211, 19.28.241, 19.28.251, 19.28.271, 19.28.311, 19.28.321, 19.28.400, 19.28.420, 19.28.490, 19.28.551, 2002 c 249, chapters 34.05 and 19.28 RCW. 03-09-111, § 296-46B-501, filed 4/22/03, effective 5/23/03.]

WAC 296-46B-514 Special occupancies—Motor fuel dispensing facilities.

001 General.

(1) In addition to the scope included in NEC 514.1, Article 514 NEC must be complied with for all liquified flammable gas storage or transfer facilities.

011 Emergency disconnecting means - dispensing and service stations.

(2) An emergency disconnecting means or operator must be provided to disconnect the pump or dispensing equipment serving gasoline, volatile flammable liquids, or liquefied flammable gases. The emergency disconnecting means or operator must disconnect all conductors of the circuit supplying all station dispensers and/or pumps (including the grounded conductor) simultaneously from the source(s) of supply.

(3) For installations with only one dispensing device, the emergency disconnecting means/operator may be used to satisfy subsection (2) of this section.

(4) For multicircuit installations, an electrically held normally open contactor operated by a push-button may serve as the disconnecting means to satisfy subsection (2) of this section. If a disconnecting pushbutton is used, the pushbutton may not function as the resetting mechanism for the electrically held contactor. The resetting means must be:

(a) Located at least fifteen feet or out of sight from the disconnecting pushbutton;

(b) Installed behind a cover or guard; and

(c) Identified with an identification plate that is substantially black in color.

(5) The disconnecting means satisfying subsection (2) of this section must be labeled with an identification plate, with letters at least one inch high, as the emergency disconnecting means. The disconnecting means or operator must be:

(a) Substantially red in color; and

(b) For attended facilities - must be readily accessible and must be located outdoors and within sight of the pump or dispensing equipment it controls; or

(c) For unattended facilities - must be readily accessible and must be located within sight, but at least twenty feet from the pump or dispensing equipment it controls.

[Statutory Authority: RCW 19.28.006, 19.28.010, 19.28.031, 19.28.041, 19.28.061, 19.28.101, 19.28.131, 19.28.161, 19.28.171, 19.28.191, 19.28.201, 19.28.211, 19.28.241, 19.28.251, 19.28.271, 19.28.311, 19.28.321, 19.28.400, 19.28.420, 19.28.490, 19.28.551, 2002 c 249, chapters 34.05 and 19.28 RCW. 03-09-111, § 296-46B-514, filed 4/22/03, effective 5/23/03.]

WAC 296-46B-517 Special occupancies—Health care facilities.

001 Health care facilities.

In health care facilities, the following methods must be used to determine adequate capacity and ratings of equipment providing electrical power for the essential electrical systems defined in Article 517 NEC:

(1) Systems in new facilities:

(a) Emergency system: The emergency branch must consist of two branches known as:

(i) Life safety system: The feeder conductors and equipment used to supply electrical power to the life safety branch must be determined by summation of the connected loads as determined by Article 220 NEC and may not be subjected to any reduction due to the diversity of the loads. Feeder and equipment will be subject to a one hundred twenty-five percent multiplier for continuous loads in accordance with Article 220 NEC.

(ii) Critical branch system: The feeder conductors and equipment must be calculated in accordance with Article 220

NEC, including a level of diversity as determined by such article.

(b) Equipment branch: The feeder conductors and equipment used to supply electrical power to the equipment branch of the essential electrical system must be calculated in accordance with Article 220 NEC, including a level of diversity as determined by such article.

(c) Generator sizing: The rating of the generator(s) supplying electrical power to the essential system of a health care facility must meet or exceed the summation of the loads determined in (a) and (b) of this subsection with no additional demand factors applied. Momentary X-ray loads may be ignored if the generator is rated at least three hundred percent of the largest momentary X-ray load connected.

(2) Existing essential systems in facilities to which additional load is to be added:

(a) Existing loads: The existing loads of the separate branches of the essential electrical system may be determined by WAC 296-46B-901 (15)(j).

(b) Added loads: Added loads to the separate branches of the essential electrical system must be determined by subsection (1) of this section.

(c) Generator sizing: The rating of the generator(s) supplying electrical power to the essential electrical system must meet or exceed the summation of the loads determined by (a) and (b) of this subsection with no additional demand factors applied.

[Statutory Authority: RCW 19.28.006, 19.28.010, 19.28.031, 19.28.041, 19.28.061, 19.28.101, 19.28.131, 19.28.161, 19.28.171, 19.28.191, 19.28.201, 19.28.211, 19.28.241, 19.28.251, 19.28.281, 19.28.311, 19.28.321, 19.28.400, 19.28.420, 19.28.490, 19.28.551. 06-24-041, § 296-46B-517, filed 11/30/06, effective 12/31/06. Statutory Authority: RCW 19.28.006, 19.28.010, 19.28.031, 19.28.041, 19.28.061, 19.28.101, 19.28.131, 19.28.161, 19.28.171, 19.28.191, 19.28.201, 19.28.211, 19.28.241, 19.28.251, 19.28.271, 19.28.311, 19.28.321, 19.28.400, 19.28.420, 19.28.490, 19.28.551, 2002 c 249, chapters 34.05 and 19.28 RCW. 03-09-111, § 296-46B-517, filed 4/22/03, effective 5/23/03.]

WAC 296-46B-520 Special occupancies—Theaters, motion picture and television studios, performance areas and similar areas.

001 Concerts, motion picture productions, stage shows, and similar shows.

(1) Service equipment, separately derived systems, feeders and circuits for concerts, motion picture productions, stage shows, and similar shows, must comply with the NEC and this chapter.

(2) The ampacity of cords and cables must be determined from the appropriate Article 400 NEC cord and cable ampacity tables including all notes.

[Statutory Authority: RCW 19.28.006, 19.28.010, 19.28.031, 19.28.041, 19.28.061, 19.28.101, 19.28.131, 19.28.161, 19.28.171, 19.28.191, 19.28.201, 19.28.211, 19.28.241, 19.28.251, 19.28.271, 19.28.311, 19.28.321, 19.28.400, 19.28.420, 19.28.490, 19.28.551, 2002 c 249, chapters 34.05 and 19.28 RCW. 03-09-111, § 296-46B-520, filed 4/22/03, effective 5/23/03.]

WAC 296-46B-550 Special occupancies—Mobile homes, manufactured homes and mobile home parks.

001 Mobile/manufactured homes - inspection.

(1) All alterations to the mobile/manufactured home electrical system must be permitted and inspected by the factory assembled structures section of the department. Electric

cal wiring in structures that are attached to the mobile/manufactured home and for which the source of power is from the mobile/manufactured home is inspected by the factory assembled structures section of the department.

032 Mobile/manufactured homes - service.

(2) If an electrical service is installed on the mobile/manufactured home:

(a) It must be installed only by the manufacturer, at the manufacturing plant. The manufacturer must complete the service except for service connections, meter, and grounding electrode conductor; and

(b) The owner or an electrical contractor must complete the service at the site.

033 Mobile/manufactured homes - feeder.

(3) When the mobile or manufactured home is supplied with power using a permanent wiring method, the equipment grounding conductor will be permitted to be bare. Bare conductors used underground must be copper. For the purposes of this section, portable cord is not considered a permanent wiring method.

[Statutory Authority: RCW 19.28.006, 19.28.010, 19.28.031, 19.28.041, 19.28.061, 19.28.101, 19.28.131, 19.28.161, 19.28.171, 19.28.191, 19.28.201, 19.28.211, 19.28.241, 19.28.251, 19.28.271, 19.28.311, 19.28.321, 19.28.400, 19.28.420, 19.28.490, 19.28.551, 2002 c 249, chapters 34.05 and 19.28 RCW. 03-09-111, § 296-46B-550, filed 4/22/03, effective 5/23/03.]

WAC 296-46B-553 Special occupancies—Floating buildings. 004 Floating buildings and similar facilities - services and feeders.

(1) Where electrical power is provided, floating buildings and similar facilities in addition to complying with the appropriate sections of Article 553 NEC must have a readily accessible service rated disconnect located on the shoreline within sight of the shoreline connection of the dock, wharf or similar structure to which the floating building or similar facility is moored.

(2) Where shore power is provided, each floating building or similar facility must have a disconnecting means located within sight of each floating building or similar facility. The disconnecting means must be installed adjacent to but not in or on the floating building or similar facility.

007 Floating buildings and similar installations - wiring methods.

(3) Extra-hard usage portable power cables rated not less than 75°C, 600 volts, listed for wet locations and sunlight resistance and having an outer jacket rated for the environment may be used as a permanent wiring method when joining the structures indicated above and for any concealed or protected wiring on a sectionalized floating dock leading to a floating building or similar facility. The cable needs to be resistant only to environments it is normally exposed to on an ongoing basis.

(4) Conductors operating in excess of 600 volts, nominal may not be installed on floating portions of a floating building or similar facility.

[Statutory Authority: RCW 19.28.006, 19.28.010, 19.28.031, 19.28.041, 19.28.061, 19.28.101, 19.28.131, 19.28.161, 19.28.171, 19.28.191, 19.28.201, 19.28.211, 19.28.241, 19.28.251, 19.28.271, 19.28.311, 19.28.321, 19.28.400, 19.28.420, 19.28.490, 19.28.551, 2002 c 249, chapters 34.05 and 19.28 RCW. 03-09-111, § 296-46B-553, filed 4/22/03, effective 5/23/03.]

(2007 Ed.)

WAC 296-46B-555 Special occupancies—Marinas and boatyards. (1) For the purposes of NEC 555.1, the scope of work includes private, noncommercial docking facilities.

(2) For the purposes of NEC 555.5, transformer terminations must be located a minimum of twelve inches above the deck of a dock (datum plane requirements do not apply for this section).

(3) For the purposes of NEC 555.7, adjacent means within sight.

(4) For the purposes of NEC 555.9, all electrical connections must be installed a minimum of twelve inches above the deck of a pier unless the connections are approved for wet locations (datum plane requirements do not apply for this section).

(5) For the purposes of NEC 555.10, all enclosures must be corrosion resistant. All gasketed enclosures must be arranged with a weep hole to discharge condensation.

(6) For the purposes of NEC 555.11, gasketed enclosures are only required for wet locations.

(7) For the purposes of NEC 555.13, the following wiring methods are allowed:

(a) All wiring installed in a damp or wet location must be suitable for wet locations.

(b) Extra-hard usage portable power cables rated not less than 75°C, 600 volts, listed for wet locations and sunlight resistance and having an outer jacket rated for the environment are permitted. Portable power cables are permitted as a permanent wiring method under or within docks and piers or where provided with physical protection. The requirements of NEC 555.13 (B)(4)(b) do not apply.

(c) Overhead wiring must be installed at the perimeter of areas where boats are moored, stored, moved, or serviced to avoid possible contact with masts and other parts of boats.

(d) For the purposes of NEC 555.13 (B)(5), the wiring methods of Chapter 3 NEC will be permitted.

(8) For the purposes of NEC 555.19, receptacles must be mounted not less than twelve inches above the deck surface of the pier or dock (datum plane requirements do not apply for this section). Shore power receptacles that provide shore power for boats must be rated not less than 20 amperes and must be single outlet type and must be of the locking and grounding type or pin and sleeve type.

(9) For the purposes of NEC 555.21, electrical wiring and equipment located at or serving dispensing stations must comply with Article 514 NEC in addition to the requirements of this section.

(a) Boundary classifications.

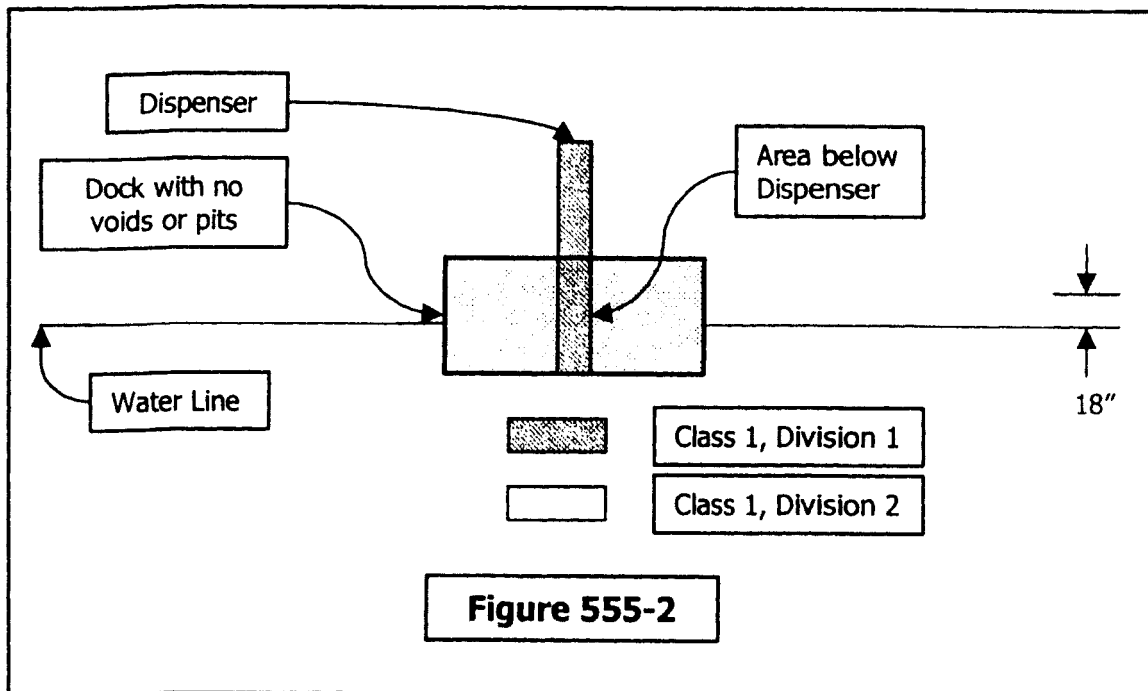
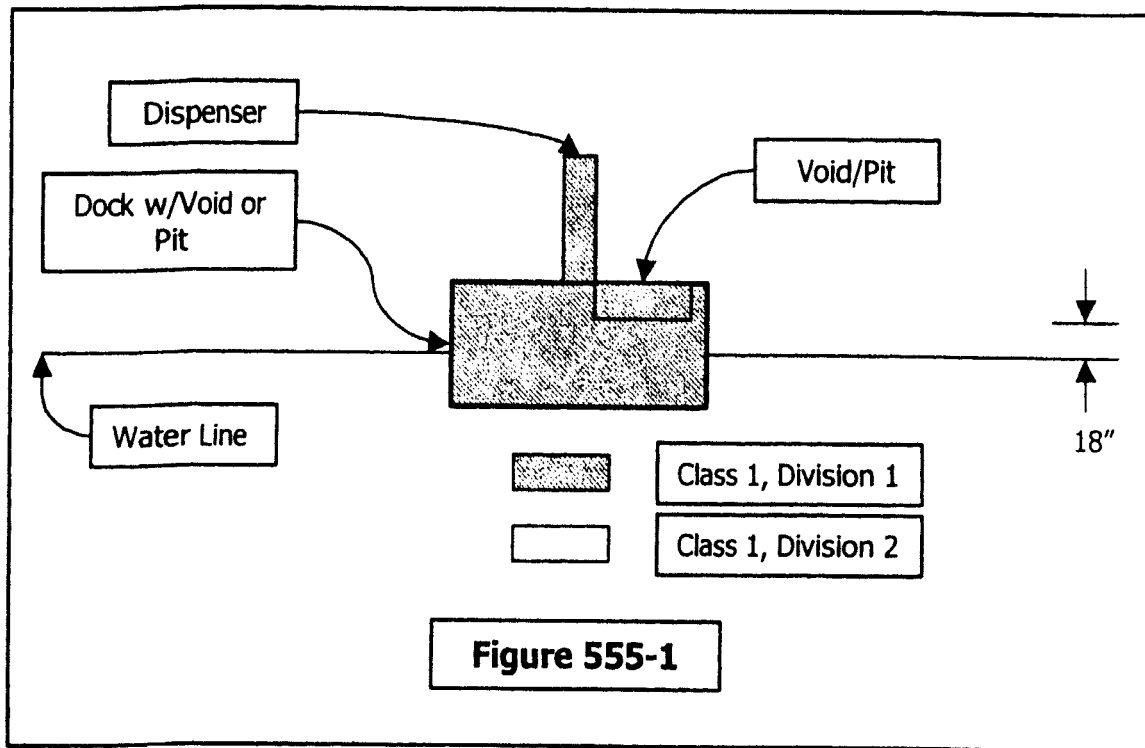
(i) Class I, Division 1. The area under the dispensing unit is a Class I, Division 1 location. If a dock has one or more voids, pits, vaults, boxes, depressions, or similar spaces where flammable liquid or vapor can accumulate below the dock surface and within twenty feet horizontally of the dispensing unit, then the area below the top of the dock and within twenty feet horizontally of the dispensing unit is a Class I, Division 1 location. See Figure 555-1.

(ii) Class I, Division 2. The area eighteen inches above the water line and within twenty feet horizontally of the dispensing unit is a Class I, Division 2 location. If a dock has one or more voids, pits, vaults, boxes, depressions, or similar spaces where flammable liquid or vapor can accumulate below the dock surface and within twenty feet horizontally of

the dispensing unit, then the area to eighteen inches above the top and adjacent to the sides of the dock and within twenty feet horizontally of the dispensing unit is a Class I, Division 2 location. See Figure 555-2.

(b) Portable power cable will be allowed as a permanent wiring method in Class I, Division 2 locations when protected from physical damage.

(10) For the purposes of NEC 555.23, the datum plane requirements do not apply.



[Statutory Authority: RCW 19.28.006, 19.28.010, 19.28.031, 19.28.041, 19.28.061, 19.28.101, 19.28.131, 19.28.161, 19.28.171, 19.28.191, 19.28.201, 19.28.211, 19.28.241, 19.28.251, 19.28.281, 19.28.311, 19.28.321, 19.28.400, 19.28.420, 19.28.490, 19.28.551, 06-05-028, § 296-46B-555, filed 2/7/06, effective 5/1/06. Statutory Authority: RCW 19.28.006, 19.28.010, 19.28.031, 19.28.041, 19.28.061, 19.28.101, 19.28.131, 19.28.161, 19.28.171, 19.28.191, 19.28.201, 19.28.211, 19.28.241, 19.28.251, 19.28.271, 19.28.311, 19.28.321, 19.28.400, 19.28.420, 19.28.490, 19.28.551, 2002 c 249, chapters 34.05 and 19.28 RCW. 03-09-111, § 296-46B-555, filed 4/22/03, effective 5/23/03.]

WAC 296-46B-590 Special occupancies—Temporary installations.**001 Temporary installations.**

(1) For the purposes of this section, any circuit used for construction purposes is considered to be temporary.

004 Temporary installations - splices.

(2) A splice or junction box is required for all wiring splice or junction connections in a temporary installation.

[Statutory Authority: RCW 19.28.006, 19.28.010, 19.28.031, 19.28.041, 19.28.061, 19.28.101, 19.28.131, 19.28.161, 19.28.171, 19.28.191, 19.28.201, 19.28.211, 19.28.241, 19.28.251, 19.28.281, 19.28.311, 19.28.321, 19.28.400, 19.28.420, 19.28.490, and 19.28.551. 05-10-024, § 296-46B-590, filed 4/26/05, effective 6/30/05.]

WAC 296-46B-600 Special equipment—Electric signs and outline lighting.**001 Electrical signs - general.**

(1) All electrical signs within the scope of UL Standard 48, the electrical sign standard, must be listed. All electrical signs outside the scope of UL Standard 48 will be inspected for compliance with the NEC.

009 Awning electrical signs.

(2) Luminaires in outdoor awnings must be suitable for wet locations and be connected by a wiring method suitable for wet locations.

(3) Fluorescent luminaires must be located at least six inches from the awning fabric. Incandescent lamps or luminaires must be located at least eighteen inches from the awning fabric. A disconnecting means must be installed per Article 600 NEC.

(4) Listed awning signs must be installed in compliance with the manufacturer's instructions and the NEC.

010 Portable or mobile outdoor electrical signs.

(5) A weatherproof receptacle outlet that is weatherproof with the supply cord connected must be installed within six feet of each electrical sign.

(6) Extension cords are not permitted to supply portable outdoor signs.

(7) All portable outdoor electrical signs must be listed or field evaluated by a laboratory accredited by the department.

030 Neon tubing.

(8) NEC 600, Part II, Field-Installed Skeleton Tubing, will apply to all neon tubing and neon circuit conductors.

[Statutory Authority: RCW 19.28.006, 19.28.010, 19.28.031, 19.28.041, 19.28.061, 19.28.101, 19.28.131, 19.28.161, 19.28.171, 19.28.191, 19.28.201, 19.28.211, 19.28.241, 19.28.251, 19.28.271, 19.28.311, 19.28.321, 19.28.400, 19.28.420, 19.28.490, 19.28.551, 2002 c 249, chapters 34.05 and 19.28 RCW. 03-09-111, § 296-46B-600, filed 4/22/03, effective 5/23/03.]

WAC 296-46B-680 Special equipment—Swimming pools, fountains and similar installations.**001 General.**

(1) Package spa or hot tubs. Electrical heating, pumping, filtering, and/or control equipment installed within five feet of a spa or hot tub must be listed or field evaluated as a package with the spa or hot tub.

(2) A factory assembled skid pack of electrical heating, pumping, filtering, and/or control equipment (skid pack) must be installed more than five feet from a spa or hot tub and shall be listed as a package unit.

(2007 Ed.)

(3) The maintenance disconnect and field installed, listed electrical equipment for a hot tub, spa, or swim spa must be located at least five feet from the hot tub, spa or swim spa. Field installed listed equipment must meet the following additional requirements:

(a) The heater is listed as a "spa heater or swimming pool heater";

(b) The pump is listed as a "spa pump" or "swimming pool/spa pump" (the pump may be combined with a filter assembly); and

(c) Other listed equipment such as panelboards, conduit, and wire are suitable for the environment and comply with the applicable codes.

(4) Field installed, listed electrical equipment for a swimming pool must be located at least five feet from the swimming pool. Field installed listed equipment must meet the following additional requirements:

(a) The heater must be listed as a "swimming pool heater or a spa heater";

(b) The pump must be listed as a "swimming pool pump" or "spa pump" or "swimming pool/spa pump"; and

(c) Other equipment such as panelboards, conduit, and wire must be suitable for the environment and comply with the applicable codes.

The five-foot separation may be reduced by the installation of a permanent barrier, such as a solid wall, fixed glass windows or doors, etc. The five-foot separation will be determined by the shortest path or route that a cord can travel from the spa, hot tub, swim spa, or swimming pool to an object.

(5) The field assembly or installation of "recognized components" will not be permitted.

(6) Hydromassage bathtubs must be listed as a unit and bear a listing mark which reads "hydromassage bathtub."

(7) Manufacturers' instructions must be followed as part of the listing requirements.

(8) Electrical components which have failed and require replacement must be replaced with identical products unless the replacement part is no longer available; in which case, a like-in-kind product may be substituted provided the mechanical and grounding integrity of the equipment is maintained.

(9) Cut-away-type display models may not be sold for other than display purposes and are not expected to bear a listing mark.

040 Spas and hot tubs.

(10) NEC 680.42(C) will apply for interior and exterior wiring to outdoor installations of spas and hot tubs.

[Statutory Authority: RCW 19.28.006, 19.28.010, 19.28.031, 19.28.041, 19.28.061, 19.28.101, 19.28.131, 19.28.161, 19.28.171, 19.28.191, 19.28.201, 19.28.211, 19.28.241, 19.28.251, 19.28.271, 19.28.311, 19.28.321, 19.28.400, 19.28.420, 19.28.490, 19.28.551, 2002 c 249, chapters 34.05 and 19.28 RCW. 03-09-111, § 296-46B-680, filed 4/22/03, effective 5/23/03.]

WAC 296-46B-700 Emergency systems.**001 Emergency systems - general.**

(1) In all health or personal care facilities defined in this chapter, educational facilities, institutional facilities, hotels, motels, and places of assembly for one hundred or more persons, all exit and emergency lights must be installed in accordance with Article 700 NEC and located as required in stan-

[Title 296 WAC—p. 1025]

dards adopted by the state building code council under chapter 19.27 RCW.

009 Emergency systems - equipment identification.

(2) All exit and emergency lights, whether or not required by the NEC, must be installed in accordance with Article 700 NEC.

(3) All boxes and enclosures, for Article 700 NEC systems, larger than six inches by six inches, including transfer switches, generators, and power panels for emergency systems and circuits must be permanently identified with an identification plate that is substantially orange in color. All other device and junction boxes for emergency systems and circuits must be substantially orange in color, both inside and outside.

027 Coordination.

(4) The requirements for selective coordination described in NEC 700.27 are not required where the emergency system was installed prior to June 1, 2006. For new emergency systems that are supplied from an existing emergency system installed prior to June 1, 2006, the new portion of the emergency system must comply with NEC 700.27. The ground fault sensing function of overcurrent protective devices will only be required to selectively coordinate with the ground fault sensing functions of other overcurrent protective devices.

[Statutory Authority: RCW 19.28.006, 19.28.010, 19.28.031, 19.28.041, 19.28.061, 19.28.101, 19.28.131, 19.28.161, 19.28.171, 19.28.191, 19.28.201, 19.28.211, 19.28.241, 19.28.251, 19.28.281, 19.28.311, 19.28.321, 19.28.400, 19.28.420, 19.28.490, 19.28.551. 06-24-041, § 296-46B-700, filed 11/30/06, effective 12/31/06; 05-10-024, § 296-46B-700, filed 4/26/05, effective 6/30/05. Statutory Authority: RCW 19.28.006, 19.28.010, 19.28.031, 19.28.041, 19.28.061, 19.28.101, 19.28.131, 19.28.161, 19.28.171, 19.28.191, 19.28.201, 19.28.211, 19.28.241, 19.28.251, 19.28.271, 19.28.311, 19.28.321, 19.28.400, 19.28.420, 19.28.490, 19.28.551, 2002 c 249, chapters 34.05 and 19.28 RCW. 03-09-111, § 296-46B-700, filed 4/22/03, effective 5/23/03.]

WAC 296-46B-701 Legally required standby systems.

018 Coordination.

The requirements for selective coordination described in NEC 701.18 are not required where the legally required standby system was installed prior to June 1, 2006. For new legally required standby systems that are supplied from an existing legally required standby system installed prior to June 1, 2006, the new portion of the legally required standby system must comply with NEC 701.18. The ground fault sensing function of overcurrent protective devices will only be required to selectively coordinate with the ground fault sensing functions of other overcurrent protective devices.

[Statutory Authority: RCW 19.28.006, 19.28.010, 19.28.031, 19.28.041, 19.28.061, 19.28.101, 19.28.131, 19.28.161, 19.28.171, 19.28.191, 19.28.201, 19.28.211, 19.28.241, 19.28.251, 19.28.281, 19.28.311, 19.28.321, 19.28.400, 19.28.420, 19.28.490, 19.28.551. 06-24-041, § 296-46B-701, filed 11/30/06, effective 12/31/06.]

WAC 296-46B-760 Fire alarm systems. Device and junction boxes for fire alarm systems other than the surface raceway type, must be substantially red in color, both inside and outside. Power-limited fire protective signaling circuit conductors must be durably and plainly marked in or on junction boxes or other enclosures to indicate that it is a power-limited fire protective signaling circuit.

[Statutory Authority: RCW 19.28.006, 19.28.010, 19.28.031, 19.28.041, 19.28.061, 19.28.101, 19.28.131, 19.28.161, 19.28.171, 19.28.191, 19.28.201, 19.28.211, 19.28.241, 19.28.251, 19.28.281, 19.28.311, 19.28.321, 19.28.400, 19.28.420, 19.28.490, and 19.28.551. 05-10-024, § 296-46B-760, filed 4/26/05, effective 6/30/05.]

WAC 296-46B-800 Communications systems—Communications circuits.

001 Installation.

(1) All telecommunications installations on an end-user's property, beyond the end-user's telecommunications network demarcation point, made by a telecommunications service provider, both inside and outside of a building or structure, must conform to all licensing, certification, installation, permitting, and inspection requirements described in chapter 19.28 RCW and this chapter.

(2) Telecommunications service providers including its subcontractors and agents must install and maintain points of demarcation in conformance with Code of Federal Regulations (CFR), Title 47, Chapter 1, Part 68, Subpart B, Sec. 68.105 and may not place a point of demarcation further than twelve inches within an end-user's occupied space.

(3) The telecommunications service provider must identify the telecommunications network demarcation point(s) with an identification plate or label having:

- (a) The provider's name;
- (b) Customer/end-user's name; and
- (c) If a CWSTP is used, the option type used.

(4) The CFR prescribes that telecommunications service providers must choose either a MPOE (minimum point of entry) or CWSTP (cable wire service termination policy) which regulates where demarcations are placed within a multi-tenant environment.

(5) A telecommunications service provider, including its subcontractors and agents provisioning service for a second provider who is not the end-user of the service, must place the point of demarcation no further than twelve inches from the nearest POP (point of presence), of the serving provider, to the eventual end-user.

(6) Telecommunications service providers must designate each building that they provide services to with labeling at the terminating point(s) of their facilities indicating:

- (a) Whether the building is under a MPOE policy; or
- (b) Which option of a CWSTP is in effect.

(7) The CWSTP options for demarcation placement are as follows:

(a) All telecommunications service provider facilities will terminate at one location, mutually agreed upon by the provider and the building owner or designee, upon entry into the building, normally at the lowest common serving point. All demarcations will be placed no more than twelve inches from this point. The building owner and/or tenants will provide, manage and maintain building wire and cable placed beyond this demarcation point location.

(b) The telecommunications service provider's facilities will terminate at common locations, mutually agreed upon by the provider and the building owner or designee, throughout the building (terminal rooms, utility closets, etc.). The telecommunications service provider will provide, manage and maintain the building cable and registration jacks that denote the demarcation points. The demarcation points will be placed at these locations and will be accessible to end-users at

these locations. This (b) is not an option for single tenant buildings.

(c) The telecommunications service provider will terminate facilities and place demarcations at locations, mutually agreed upon by the provider and the building owner or designee, within the individually occupied units, within twelve inches or a similarly reasonable distance of cable/wire entry. The provider will provide, manage and maintain the building cable, network terminating wire and registration jacks that denote the demarcation point. This (c) is not an option for single tenant buildings.

(d) All telecommunications service provider facilities and demarcations will terminate at one location on the property, mutually agreed upon by the provider and the building owner or designee. The building owner and/or tenants will provide, manage and maintain building wire and cable placed beyond the demarcation point location.

(8) The telecommunications installer must confer with the telecommunications provider when determining the point of demarcation.

002 Definitions.

(9) **"CWSTP (cable, wire and service termination policy)"** is the policy of the Federal Communications Commission (FCC) and the Washington utilities and transportation commission (WUTC) prescribed by tariff that governs negotiations between building owners and telecommunications service providers regarding the configuration of POP(s) and demarcation point(s) in multitenant buildings when a MPOE policy is not elected by the telecommunications service provider.

(10) **"MPOE (minimum point of entry)"** is a building wiring policy of the FCC and WUTC for multitenant environment locations that can be elected by telecommunications service providers. It prescribes that the telecommunications service provider will provide a single POP for access to its network and is located either at the closest practicable point to where a telecommunications service provider's facilities (fiber, coax, or copper) cross a property line or at the closest practicable point to where the wiring enters a multiunit building or buildings. All demarcations provided for customers and end-users by the provider will be placed within twelve inches of that POP.

(11) **"POP (point-of-presence),"** also called a **"POT (point-of-termination),"** is a designated point at or near a customer premise at which a telecommunications service provider's facilities for the provision of access service ends. This can be a fiber, coax, or copper connection point. Depending on the telecommunications service provider's CWSTP with the individual building owner, demarcations may be established at the POP or at other designated locations. When the customer of a telecommunications service provider is another carrier, the demarcation will be at the closest POP to the end-user. A telecommunications service provider may have multiple POPs within a multiple tenant environment.

[Statutory Authority: RCW 19.28.006, 19.28.010, 19.28.031, 19.28.041, 19.28.061, 19.28.101, 19.28.131, 19.28.161, 19.28.171, 19.28.191, 19.28.201, 19.28.211, 19.28.241, 19.28.251, 19.28.281, 19.28.311, 19.28.321, 19.28.400, 19.28.420, 19.28.490, 19.28.551. 06-24-041, § 296-46B-800, filed 11/30/06, effective 12/31/06; 05-10-024, § 296-46B-800, filed 4/26/05, effective 6/30/05. Statutory Authority: RCW 19.28.006, 19.28.010, 19.28.031, 19.28.041, 19.28.061, 19.28.101, 19.28.131,

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19.28.161, 19.28.171, 19.28.191, 19.28.201, 19.28.211, 19.28.241, 19.28.251, 19.28.271, 19.28.311, 19.28.321, 19.28.400, 19.28.420, 19.28.490, 19.28.551, 2002 c 249, chapters 34.05 and 19.28 RCW. 03-09-111, § 296-46B-800, filed 4/22/03, effective 5/23/03.]

WAC 296-46B-900 Electrical work permits and fees.

General.

(1) When an electrical work permit is required by chapter 19.28 RCW or this chapter, inspections may not be made, equipment must not be energized, or services connected unless:

(a) A valid electrical work permit is completely and legibly filled out and readily available;

(b) The classification or type of facility to be inspected and the exact scope and location of the electrical work to be performed are clearly shown on the electrical work permit;

(c) The address where the inspection is to be made is clearly identifiable from the street, road or highway that serves the premises; and

(d) Driving directions are provided for the inspectors' use.

(2) An electrical work permit is valid for only one specific site address.

(3) Except as provided in subsection (8) of this section, a valid electrical work permit must be posted on the job site at a readily accessible and conspicuous location prior to beginning electrical work and at all times until the electrical inspection process is completed.

Permit - responsibility for.

(4) Each person, firm, partnership, corporation, or other entity must furnish a valid electrical work permit for the installation, alteration, or other electrical work performed or to be performed solely by that entity. When the permitted work is performed solely or in part by another entity, the electrical work permit purchaser must request approval from the chief electrical inspector to take responsibility for the work of the original installing entity. Each electrical work permit application must be signed by the electrical contractor's administrator (or designee) or the person, or authorized representative of the firm, partnership, corporation, or other entity that is performing the electrical installation or alteration. Permits purchased electronically do not require a handwritten signature. An entity designated to sign electrical permits must provide written authorization of the purchaser's designation when requested by the department.

(5) Permits to be obtained by customers. Whenever a serving electrical utility performs work for a customer under one of the exemptions in WAC 296-46B-925 and the work is subject to inspection, the customer is responsible for obtaining all required permits.

(6) Except for emergency repairs to existing electrical systems, electrical work permits must be obtained and posted at the job site prior to beginning the installation or alteration. An electrical work permit for emergency repairs to existing electrical systems must be obtained and posted at the job site no later than the next business day after the work is begun.

(7) Fees must be paid in accordance with the inspection fee schedule, WAC 296-46B-905. The amount of the fee due is calculated based on the fee effective at the date payment is made. If the project is required to have an electrical plan review, the plan review fees will be based on the fees effective

tive at the date the plans are received by the department for review.

Permit - requirements for.

(8) As required by chapter 19.28 RCW or this chapter, an electrical work permit is required for the installation, alteration, or maintenance of all electrical systems or equipment except for:

(a) Travel trailers;

(b) Class A basic electrical work which includes:

(i) The **like-in-kind replacement** of a: Contactor, relay, timer, starter, circuit board, or similar control component; household appliance; circuit breaker; fuse; residential luminaire; lamp; snap switch; dimmer; receptacle outlet; thermostat; heating element; luminaire ballast with an exact same ballast; component(s) of electric signs, outline lighting, skeleton neon tubing when replaced on-site by an appropriate electrical contractor and when the sign, outline lighting or skeleton neon tubing electrical system is not modified; ten horsepower or smaller motor;

(ii) Induction detection loops described in WAC 296-46B-300(2) and used to control gate access devices;

(iii) Heat cable repair; and

(iv) Embedding premanufactured heat mats in tile grout where the mat is listed by an approved testing laboratory and comes from the manufacturer with preconnected lead-in conductors. All listing marks and lead-in conductor labels must be left intact and visible for evaluation and inspection by the installing electrician and the electrical inspector.

Unless specifically noted, the exemptions listed do not include: The replacement of an equipment unit, assembly, or enclosure that contains an exempted component or combination of components (e.g., an electrical furnace/heat pump, industrial milling machine, etc.) or any appliance/equipment described in this section for Class B permits.

A provisional electrical work permit label may be posted in lieu of an electrical work permit. If a provisional electrical work permit label is used, an electrical work permit must be obtained within two working days after posting the provisional electrical work permit label.

(9) An electrical work permit is required for all installations of telecommunications systems on the customer side of the network demarcation point for projects greater than ten telecommunications outlets. All backbone installations regardless of size and all telecommunications cable or equipment installations involving penetrations of fire barriers or passing through hazardous locations require permits and inspections. For the purposes of determining the inspection threshold for telecommunications projects greater than ten outlets, the following will apply:

(a) An outlet is the combination of jacks and mounting hardware for those jacks, along with the associated cable and telecommunications closet terminations, that serve one workstation. In counting outlets to determine the inspection threshold, one outlet must not be associated with more than six standard four-pair cables or more than one twenty-five-pair cable. Therefore, installations of greater than sixty standard four-pair cables or ten standard twenty-five-pair cables require permits and inspections. (It is not the intent of the statute to allow large masses of cables to be run to workstations or spaces serving telecommunications equipment without inspection. Proper cable support and proper loading of

building structural elements are safety concerns. When considering total associated cables, the telecommunications availability at one workstation may count as more than one outlet.)

(b) The installation of greater than ten outlets and the associated cables along any horizontal pathway from a telecommunications closet to work areas during any continuous ninety-day period requires a permit and inspection.

(c) All telecommunications installations within the residential dwelling units of single-family, duplex, and multi-family dwellings do not require permits or inspections. In residential multifamily dwellings, permits and inspections are required for all backbone installations, all fire barrier penetrations, and installations of greater than ten outlets in common areas.

(d) No permits or inspections are required for installation or replacement of cord and plug connected telecommunications equipment or for patch cord and jumper cross-connected equipment.

(e) Definitions of telecommunications technical terms will come from chapter 19.28 RCW, this chapter, TIA/EIA standards, and NEC.

Permit - inspection and approval.

(10) Requests for inspections.

(a) Requests for inspections must be made no later than three business days after completion of the electrical/telecommunications installation or one business day after any part of the installation has been energized, whichever occurs first.

(b) Requests for after hours or weekend inspections must be made by contacting the local electrical inspection supervisor at least three working days prior to the requested date of inspection. The portal-to-portal inspection fees required for after hours or weekend inspections are in addition to the cost of the original electrical work permit.

(c) Emergency requests to inspect repairs necessary to preserve life and equipment safety may be requested at any time.

(d) Inspections for annual electrical maintenance permits and annual telecommunications permits may be done on a regular schedule arranged by the permit holder with the department.

(11) Final inspection approval will not be made until all inspection fees are paid in full.

Permit - duration/refunds.

(12) Electrical work permits will expire one year after the date of purchase unless electrical work is actively and consistently in progress and inspections requested. Refunds are not available for:

(a) Expired electrical work permits;

(b) Electrical work permits where the electrical installation has begun; or

(c) Any electrical work permit where an electrical inspection or electrical inspection request has been made.

Permit - annual telecommunications.

(13) The chief electrical inspector can allow annual permits for the inspection of telecommunications installations to be purchased by a building owner or licensed electrical/telecommunications contractor. The owner's full-time telecommunications maintenance staff, or a licensed electrical/telecommunications contractor(s) can perform the work done

under this annual permit. The permit holder is responsible for correcting all installation deficiencies. The permit holder must make available, to the electrical inspector, all records of all the telecommunications work performed and the valid electrical or telecommunications contractor's license numbers for all contractors working under the permit.

Permit - annual electrical.

(14) The chief electrical inspector can allow annual permits for the inspection of electrical installations to be purchased by a building owner or licensed electrical contractor. This type of permit is available for commercial/industrial locations employing a full-time electrical maintenance staff or having a yearly maintenance contract with a licensed electrical contractor.

The permit holder is responsible for correcting all installation deficiencies. The permit holder must make available, to the electrical inspector, all records of all electrical work performed.

This type of electrical permit may be used for retrofit, replacement, maintenance, repair, upgrade, and alterations to electrical systems at a single plant or building location. This type of permit does not include new or increased service or new square footage.

Provisional electrical work permit - use/duration/refunds.

(15) Only licensed electrical or telecommunications contractors can use provisional electrical work permits.

(16) If a provisional electrical work permit label is used, the following requirements must be met:

(a) Prior to beginning the work, the certified electrician or telecommunications worker performing the installation must affix the provisional electrical work permit label on the cover of the panelboard, overcurrent device, or telecommunications equipment supplying the circuit or equipment.

(b) The job site portion of the label must include the following:

- (i) Date the work is begun;
- (ii) Contractor's name;
- (iii) Contractor's license number; and
- (iv) Short description of the work.

(c) The contractor portion of the label must include the following:

- (i) Date the work is begun;
- (ii) Contractor's license number;
- (iii) Job site address;
- (iv) Owner's name; and
- (v) Short description of the work.

(d) The label must be filled in using sunlight and weather resistant ink.

(e) The contractor must return the contractor's portion of the label to the department of labor and industries, electrical section office having jurisdiction for the inspection, within two working days after the job site portion of the label is affixed. Either receipt by department of labor and industries or postmark to a valid department of labor and industries electrical address is acceptable for meeting this requirement.

(f) The contractor must return the contractor's portion of the label to the Department of Labor & Industries, Chief Electrical Inspector, within five working days after destroying or voiding any label.

(g) The contractor is responsible for safekeeping of all purchased labels.

(17) Refunds are not available for provisional electrical work permit labels.

(18) Provisional electrical work permit labels will be sold in blocks of twenty.

(19) Any contractor purchasing a provisional electrical work permit label may be audited for compliance with the provisions for purchasing, inspection, reporting of installations, and any other requirement of usage.

Class B electrical work permit - use.

(20) The electrical contractor must return the contractor's portion of the Class B label to the department of labor and industries, chief electrical inspector, within five working days after destroying or voiding any label.

(21) The electrical contractor is responsible for safekeeping of all purchased Class B labels.

(22) Only licensed electrical/telecommunication contractors can use the Class B basic electrical inspection/random inspection process. Health care, large commercial, or industrial facilities using an employee who is a certified electrician(s) can use the Class B random electrical inspection process after permission from the chief electrical inspector.

(23) If the Class B random electrical inspection process is used, the following requirements must be met:

(a) The certified electrician/telecommunications worker performing the installation must affix a Class B installation label on the cover of the panelboard or overcurrent device supplying power to the circuit or equipment prior to beginning the work.

(b) The job site portion of the label must include the following:

- (i) Date of the work;
- (ii) Electrical/telecommunication contractor's name;
- (iii) Electrical/telecommunication contractor's license number;

(iv) Installing electrician's certificate number, except for telecommunication work. For thermostat installations described in WAC 296-46B-965(15), the installing trainee may enter their training certificate number; and

(v) Short description of the work.

(c) The contractor portion of the label must include the following:

- (i) Date of the work;
- (ii) Electrical/telecommunication contractor's license number;

(iii) Installing electrician's certificate number, except for telecommunication work;

(iv) Job site address;

(v) Contact telephone number for the job site (to be used to arrange inspection); and

(vi) Short description of the work.

(d) The label must be filled in using sunlight and weather resistant ink.

(e) The electrical/telecommunication contractor must return the contractor's portion of the label to the Department of Labor and Industries, Electrical Section, Chief Electrical Inspector, P.O. Box 44460, Olympia, WA 98504-4460 within fifteen working days after the job site portion of the Class B installation label is affixed.

(24) Class B basic installation labels will be sold in blocks. Installations where a Class B basic installation label is used will be inspected on a random basis as determined by the department.

(a) If any such random inspection fails, a subsequent label in the block must be inspected.

(b) If any such subsequent installation fails inspection, another label in the block must be inspected until a label is approved without a correction(s).

(c) A fee is required for any inspection required when a correction(s) is issued as a result of the inspection of any Class B label or if an inspection is required because of (a) or (b) of this subsection. See WAC 296-46B-905(15) for fees.

(25) Any electrical/telecommunication contractor or other entity using the Class B basic electrical inspection/random inspection process may be audited for compliance with the provisions for purchasing, inspection, reporting of installations, and any other requirement of usage.

(26) Class B basic electrical work means work other than Class A basic electrical work. See WAC 296-46B-900(8) for Class A definition.

(a) Class B basic electrical work includes the following:

(i) Extension of not more than one branch electrical circuit limited to one hundred twenty volts and twenty amps each where:

(A) No cover inspection is necessary. For the purposes of this section, cover inspection does not include work covered by any surface that may be removed for inspection without damaging the surface; and

(B) The extension does not supply more than two devices or outlets as defined by the NEC. A device allowed in an extended circuit includes: General use snap switches/receptacles, luminaires, thermostats, speakers, etc., but does not include wiring/cabling systems, isolating switches, magnetic contactors, motor controllers, etc.

(ii) Like-in-kind replacement of:

(A) A single luminaire not exceeding two hundred seventy-seven volts and twenty amps; or

(B) A motor larger than ten horsepower; or

(C) The internal wiring of a furnace, air conditioner, refrigeration unit or household appliance; or

(D) An electric/gas/oil furnace not exceeding two hundred forty volts and one hundred amps when the furnace is connected to an existing branch circuit. For the purposes of this section, a boiler is not a furnace; or

(E) An individually controlled electric room heater (e.g., baseboard, wall, fan forced air, etc.), air conditioning unit or refrigeration unit not exceeding two hundred forty volts, thirty minimum circuit amps when the unit is connected to an existing branch circuit; or

(F) Circuit modification required to install not more than five residential load control devices in a residence where installed as part of an energy conservation program sponsored by an electrical utility and where the circuit does not exceed two hundred forty volts and thirty amps.

(iii) The following low voltage systems:

(A) Repair and replacement of devices not exceeding one hundred volt-amperes in Class 2, Class 3, or power limited low voltage systems in one- and two-family dwellings; or

(B) Repair and replacement of devices not exceeding one hundred volt-amperes in Class 2, Class 3, or power limited low voltage systems in other buildings, provided the equipment is not for fire alarm or nurse call systems and is not located in an area classified as hazardous by the NEC; or

(C) The installation of Class 2 or 3 device(s) or wiring for thermostat, audio, security, burglar alarm, intercom, amplified sound, public address, or access control systems. This does not include fire alarm, nurse call, lighting control, industrial automation/control or energy management systems; or

(D) Telecommunications cabling and equipment requiring inspection in RCW 19.28.470;

(iv) The replacement of not more than ten standard receptacles with GFCI receptacles;

(v) The conversion of not more than ten snap switches to dimmers for the use of controlling a luminaire(s) conversion.

(b) Class B basic electrical work does not include any work in:

(i) Areas classified as Class (I), Class (II), Class (III), or zone locations per NEC 500; or

(ii) Areas regulated by NEC 517 or 680; or

(iii) Any work where electrical plan review is required; or

(iv) Fire alarm, nurse call, lighting control, industrial automation/control or energy management systems.

[Statutory Authority: RCW 19.28.006, 19.28.010, 19.28.031, 19.28.041, 19.28.061, 19.28.101, 19.28.131, 19.28.161, 19.28.171, 19.28.191, 19.28.201, 19.28.211, 19.28.241, 19.28.251, 19.28.281, 19.28.311, 19.28.321, 19.28.400, 19.28.420, 19.28.490, 19.28.551. 06-24-041, § 296-46B-900, filed 11/30/06, effective 12/31/06; 05-22-025, § 296-46B-900, filed 10/25/05, effective 11/25/05; 05-10-024, § 296-46B-900, filed 4/26/05, effective 6/30/05. Statutory Authority: Chapter 19.28 RCW. 04-21-086, § 296-46B-900, filed 10/20/04, effective 11/22/04. Statutory Authority: RCW 19.28.006, 19.28.010, 19.28.031, 19.28.041, 19.28.061, 19.28.101, 19.28.131, 19.28.161, 19.28.171, 19.28.191, 19.28.201, 19.28.211, 19.28.241, 19.28.251, 19.28.271, 19.28.311, 19.28.321, 19.28.400, 19.28.420, 19.28.490, 19.28.551, 2003 c 399, 2003 c 211, 2003 c 78, and 2003 c 242. 04-12-049, § 296-46B-900, filed 5/28/04, effective 6/30/04. Statutory Authority: RCW 19.28.006, 19.28.010, 19.28.031, 19.28.041, 19.28.061, 19.28.101, 19.28.131, 19.28.161, 19.28.171, 19.28.191, 19.28.201, 19.28.211, 19.28.241, 19.28.251, 19.28.271, 19.28.311, 19.28.321, 19.28.400, 19.28.420, 19.28.490, 19.28.551, 2002 c 249, chapters 34.05 and 19.28 RCW. 03-09-111, § 296-46B-900, filed 4/22/03, effective 4/22/03.]

WAC 296-46B-901 General inspections, inspectors, city inspection, variance. (1) Electrical inspectors will give information as to the interpretation or application of the standards in this chapter, but will not lay out work or act as consultants for contractors, owners, or users.

(2) The department may enforce city electrical ordinances where those governmental agencies do not make electrical inspections under an established program.

(3) A variance from the electrical installation requirements of chapter 19.28 RCW or this chapter may be granted by the department when it is assured that equivalent objectives can be achieved by establishing and maintaining effective safety.

(a) Any electrical permit holder may request a variance.

(b) The permit holder must make the request in writing, using a form provided by the department, to the chief electrical inspector. The request must include:

- (i) A description of the installation as installed or proposed;
- (ii) A detailed list of the applicable code violations;
- (iii) A detailed list of safety violations;
- (iv) A description of the proposal for meeting equivalent objectives for code and/or safety violations; and
- (v) Appropriate variance application fee as listed in WAC 296-46B-905.

Inspection.

(4) Electrical wiring or equipment subject to this chapter must be sufficiently accessible, at the time of inspection, to allow the inspector to visually inspect the installation to verify conformance with the NEC and any other electrical requirements of this chapter.

(5) Cables or raceways, fished according to the NEC, do not require visual inspection.

(6) All required equipment grounding conductors installed in concealed cable or flexible conduit systems must be completely installed and made up at the time of the rough-in cover inspection.

(7) The installation of all structural elements and mechanical systems (e.g., framing, plumbing, ducting, etc.) must be complete in the area(s) where electrical inspection is requested. Prior to completion of an exterior wall cover inspection, either:

(a) The exterior shear panel/sheathing nail inspection must be completed by the building code inspector; or

(b) All wiring and device boxes must be a minimum of 63 mm (2 1/2") from the exterior surface of the framing member; or

(c) All wiring and device boxes must be protected by a steel plate a minimum of 1.6 mm (1/16") thick and of appropriate width and height installed to cover the area of the wiring or box.

(8) In order to meet the minimum electrical safety standards for installations, all materials, devices, appliances, and equipment, not exempted in chapter 19.28 RCW, must conform to applicable standards recognized by the department, be listed, or field evaluated. Other than as allowed in subsection (20) of this section, equipment must not be energized until such standards are met unless specific permission has been granted by the chief electrical inspector.

(9) The department will recognize the state department of transportation as the inspection authority for telecommunications systems installation within the rights of way of state highways provided the department of transportation maintains and enforces an equal, higher or better standard of construction and of materials, devices, appliances and equipment than is required for telecommunications systems installations by chapter 19.28 RCW and this chapter.

Inspection move on buildings and structures.

(10) All buildings or structures relocated into or within the state:

(a) Other than residential, wired inside the United States (U.S.) must be inspected to ensure compliance with current requirements of chapter 19.28 RCW and the rules developed by the department.

(b) Wired outside the U.S. or Canada must be inspected to ensure compliance with all current requirements of chapter 19.28 RCW and the rules developed by the department.

(11) Residential buildings or structures wired in the U.S., to NEC requirements, and moved into or within a county, city, or town must be inspected to ensure compliance with the NEC requirements in effect at the time and place the original wiring was made. The building or structure must be inspected to ensure compliance with all current requirements of chapter 19.28 RCW and the rules developed by the department if:

(a) The original occupancy classification of the building or structure is changed as a result of the move; or

(b) The building or structure has been substantially remodeled or rehabilitated as a result of the move.

(12) Residential buildings or structures wired in Canada to Canadian Electrical Code (CEC) standards and moved into or within a county, city, or town, must be inspected to ensure compliance with the following minimum safety requirements:

(a) Service, service grounding, and service bonding must comply with the current chapter 19.28 RCW and rules adopted by the department.

(b) Canadian Standards Association (CSA) listed Type NMD cable is allowed with the following qualifications:

(i) CSA listed Type NMD cable, American Wire Gauge #10 and smaller installed after 1964 utilizing an equipment grounding conductor smaller than the phase conductors, must be:

(A) Replaced with a cable utilizing a full-size equipment grounding conductor; or

(B) Protected by a ground fault circuit interrupter protection device.

(ii) CSA listed Type NMD cable, #8 AWG and larger, must:

(A) Utilize an equipment grounding conductor sized according to the requirements of the NEC in effect at the time of the installation;

(B) Be protected by a ground fault circuit interrupter protection device; or

(C) Be replaced.

(c) Other types of wiring and cable must be:

(i) Replaced with wiring listed or field evaluated in accordance with U.S. standards by a laboratory approved by the department; or

(ii) Protected by a ground fault circuit interrupter protection device and arc fault circuit protection device.

(d) Equipment, other than wiring or panelboards, manufactured and installed prior to 1997, must be listed and identified by laboratory labels approved by the department or CSA labels.

(e) All panelboards must be listed and identified by testing laboratory labels approved by the department with the following qualifications:

(i) CSA listed panelboards labeled "Suitable for Use as Service Equipment" will be considered to be approved as "Suitable for Use only as Service Equipment."

(ii) CSA listed panelboards must be limited to a maximum of 42 circuits.

(iii) CSA listed panelboards used as lighting and appliance panelboards as described in the NEC, must meet all current requirements of the NEC and this chapter.

(f) Any wiring or panelboards replaced or changed as a result of the move must meet current requirements of chapter 19.28 RCW and this chapter.

(g) The location, type, and ground fault circuit interrupter protection of receptacles and equipment in a bathroom, kitchen, basement, garage, or outdoor area must meet the Washington requirements in effect at the time the wiring was installed.

(h) 4, 15-ampere, kitchen small appliance circuits will be accepted in lieu of 2, 20-ampere, kitchen small appliance circuits. Receptacles will not be required to be added on kitchen peninsular or island counters.

(i) Spacing requirements for all other receptacles must meet the Washington requirements in effect at the time the wiring was installed.

(j) Receptacles installed above baseboard or fixed wall space heaters must be removed and the outlet box covered with a blank cover. The receptacle is required to be relocated as closely as possible to the existing location.

(k) Lighting outlet and switch locations must meet the Washington requirements in effect at the time the wiring was installed.

(l) Dedicated 20-ampere small appliance circuits are not required in dining rooms.

(m) Electric water heater branch circuits must be adequate for the load.

(n) The location, type, and circuit protection of feeders must meet the Washington requirements in effect at the time the wiring was installed.

Classification or definition of occupancies.

(13) Occupancies are classified and defined as follows:

(a) Educational facility refers to a building or portion of a building used primarily for educational purposes by six or more persons at one time for twelve hours per week or four hours in any one day. Educational occupancy includes: Schools (preschool through grade twelve), colleges, academies, universities, and trade schools.

(b) Institutional facility refers to a building or portion of a building used primarily for detention and correctional occupancies where some degree of restraint or security is required for a time period of twenty-four or more hours. Such occupancies include, but are not restricted to: Penal institutions, reformatories, jails, detention centers, correctional centers, and residential-restrained care.

(c) Health or personal care facility. Health or personal care facility refers to buildings or parts of buildings that contain, but are not limited to, facilities that are required to be licensed by the department of social and health services or the department of health (e.g., hospitals, nursing homes, private alcoholism hospitals, private psychiatric hospitals, boarding homes, alcoholism treatment facilities, maternity homes, birth centers or childbirth centers, residential treatment facilities for psychiatrically impaired children and youths, and renal hemodialysis clinics) and medical, dental or chiropractic offices or clinics, outpatient or ambulatory surgical clinics, and such other health care occupancies where patients who may be unable to provide for their own needs and safety without the assistance of another person are treated.

(i) "Hospital" means any institution, place, building, or agency providing accommodations, facilities and services over a continuous period of twenty-four hours or more, for observation, diagnosis, or care of two or more individuals not related to the operator who are suffering from illness, injury, deformity, or abnormality, or from any other condition for

which obstetrical, medical, or surgical services would be appropriate for care or diagnosis.

(ii) "Nursing home," "nursing home unit" or "long-term care unit" means a group of beds for the accommodation of patients who, because of chronic illness or physical infirmities, require skilled nursing care and related medical services but are not acutely ill and not in need of the highly technical or specialized services ordinarily a part of hospital care.

(iii) "Boarding home" means any home or other institution, however named, which is advertised, announced, or maintained for the express or implied purpose of providing board and domiciliary care to seven or more aged persons not related by blood or marriage to the operator. It must not include any home, institution, or section thereof which is otherwise licensed and regulated under the provisions of state law providing specifically for the licensing and regulation of such home, institution, or section thereof.

(iv) "Private alcoholism hospital" means an institution, facility, building, or equivalent designed, organized, maintained, and operated to provide diagnosis, treatment, and care of individuals demonstrating signs or symptoms of alcoholism, including the complications of associated substance use and other medical diseases that can be appropriately treated and cared for in the facility and providing accommodations, medical services, and other necessary services over a continuous period of twenty-four hours or more for two or more individuals unrelated to the operator, provided that this chapter will not apply to any facility, agency, or other entity which is owned and operated by a public or governmental body.

(v) "Alcoholism treatment facility" means a private place or establishment, other than a licensed hospital, operated primarily for the treatment of alcoholism.

(vi) "Private psychiatric hospital" means a privately owned and operated establishment or institution which: Provides accommodations and services over a continuous period of twenty-four hours or more, and is expressly and exclusively for observing, diagnosing, or caring for two or more individuals with signs or symptoms of mental illness, who are not related to the licensee.

(vii) "Maternity home" means any home, place, hospital, or institution in which facilities are maintained for the care of four or more women, not related by blood or marriage to the operator, during pregnancy or during or within ten days after delivery: Provided, however, that this definition will not apply to any hospital approved by the American College of Surgeons, American Osteopathic Association or its successor.

(viii) "Birth center" or "childbirth center" means a type of maternity home which is a house, building, or equivalent organized to provide facilities and staff to support a birth service, provided that the birth service is limited to low-risk maternal clients during the intrapartum period.

(ix) "Ambulatory surgical facility" means a facility, not a part of a hospital, providing surgical treatment to patients not requiring inpatient care in a hospital. This term does not include a facility in the offices of private physicians or dentists, whether for individual or group practice, if the privilege of using such facility is not extended to physicians or dentists outside the individual or group practice. (NEC; Ambulatory Health Care Center.)

(x) "Hospice care center" means any building, facility, place, or equivalent, organized, maintained, and operated specifically to provide beds, accommodations, facilities, and services over a continuous period of twenty-four hours or more for palliative care of two or more individuals, not related to the operator, who are diagnosed as being in the latter stages of an advanced disease which is expected to lead to death.

(xi) "Renal hemodialysis clinic" means a facility in a building or part of a building which is approved to furnish the full spectrum of diagnostic, therapeutic, and rehabilitative services required for the care of renal dialysis patients (including inpatient dialysis furnished directly or under arrangement). (NEC; Ambulatory Health Care Center.)

(xii) "Medical, dental, and chiropractic clinic" means any clinic or physicians' office where patients are not regularly kept as bed patients for twenty-four hours or more. Electrical plan review not required.

(xiii) "Residential treatment facility for psychiatrically impaired children and youth" means a residence, place, or facility designed and organized to provide twenty-four-hour residential care and long-term individualized, active treatment for clients who have been diagnosed or evaluated as psychiatrically impaired.

(xiv) "Adult residential rehabilitation center" means a residence, place, or facility designed and organized primarily to provide twenty-four-hour residential care, crisis and short-term care and/or long-term individualized active treatment and rehabilitation for clients diagnosed or evaluated as psychiatrically impaired or chronically mentally ill as defined herein or in chapter 71.24 RCW.

(xv) "Group care facility" means a facility other than a foster-family home maintained and operated for the care of a group of children on a twenty-four-hour basis.

(d) Licensed day care centers.

(i) "Child day care center" means a facility providing regularly scheduled care for a group of children one month of age through twelve years of age for periods less than twenty-four hours; except, a program meeting the definition of a family child care home will not be licensed as a day care center without meeting the requirements of WAC 388-150-020(5).

(ii) "School-age child care center" means a program operating in a facility other than a private residence accountable for school-age children when school is not in session. The facility must meet department of licensing requirements and provide adult supervised care and a variety of developmentally appropriate activities.

(iii) "Family child day care home" means the same as "family child care home" and "a child day care facility" licensed by the state, located in the family abode of the person or persons under whose direct care and supervision the child is placed, for the care of twelve or fewer children, including children who reside at the home. Electrical plan review not required.

Plan review for educational, institutional or health care facilities and other buildings.

(14) Plan review is a part of the electrical inspection process; its primary purpose is to determine:

(a) That service/feeder conductors are calculated and sized according to the proper NEC or WAC article or section;

(b) The classification of hazardous locations; and

(c) The proper design of emergency and standby systems.

(15) Electrical plan review.

(a) Electrical plan review is not required for:

(i) Lighting specific projects that result in an electrical load reduction on each feeder involved in the project;

(ii) Low voltage systems;

(iii) Modifications to existing electrical installations where all of the following conditions are met:

- Service or distribution equipment involved is rated not more than 400 amperes and does not exceed 250 volts;

- Does not involve emergency systems other than listed unit equipment per NEC 700.12(F);

- Does not involve branch circuits or feeders of an essential electrical system as defined in NEC 517.2; and

- Service and feeder load calculations are increased by 5% or less.

(iv) Stand-alone utility fed services that do not exceed 250 volts, 400 amperes where the project's distribution system does not include:

- Emergency systems other than listed unit equipment per NEC 700.12(F);

- Critical branch circuits or feeders as defined in NEC 517.2; or

- A required fire pump system.

(b) Electrical plan review is required for all other new or altered electrical projects in educational, institutional, or health care occupancies classified or defined in this chapter.

(c) If a review is required, the electrical plan must be submitted for review and approval before the electrical work is begun.

(d) Electrical plans.

(i) The plan must be submitted for plan review prior to beginning any electrical inspection. If a plan is rejected during the plan review process, no electrical inspection(s) may proceed until the plan is resubmitted and a conditional acceptance is granted.

(ii) The submitted plan will receive a preliminary review within seven business days after receipt by the department.

(iii) If the submitted plan:

- Is rejected at the preliminary review, no inspection(s) will be made on the project.

- Receives conditional acceptance, the permit holder may request a preliminary inspection(s) in writing to the department. The request must note that the preliminary inspection(s) is conditional and subject to any alterations required from the final plan review process.

(iv) Once the submitted plan has plan review approval, the approved plan must be available on the job site for use by the electrical inspector.

(v) The approved plan must be available on the job site, for use by the electrical inspector, prior to the final electrical inspection.

(vi) If the approved plan requires changes from the conditionally accepted plan, alterations to the project may be required to make the project comply with the approved plan.

(e) All electrical plans for educational facilities, hospitals and nursing homes must be prepared by, or under the direction of, a consulting engineer registered under chapter

18.43 RCW, and chapters 246-320, 180-29, and 388-97 WAC and stamped with the engineer's mark and signature.

(f) Refer plans for department review to the Electrical Section, Department of Labor and Industries, P.O. Box 44460, Olympia, Washington 98504-4460.

(g) Plans for projects within cities that perform electrical inspections within their jurisdiction, and provide an electrical plan review program that equals or exceeds the department's program in plans examiner minimum qualifications per chapter 19.28 RCW, must be submitted to that city for review, unless the agency regulating the installation specifically requires review by the department.

(h) Plans to be reviewed by the department must be legible, identify the name and classification of the facility, clearly indicate the scope and nature of the installation and the person or firm responsible for the electrical plans. The plans must clearly show the electrical installation or alteration in floor plan view, include switchboard and/or panelboard schedules and when a service or feeder is to be installed or altered, must include a riser diagram, load calculation, fault current calculation and interrupting rating of equipment. Where existing electrical systems are to supply additional loads, the plans must include documentation that proves adequate capacity and ratings. The plans must be submitted with a plan review submittal form available from the department. Plan review fees are not required to be paid until the review is completed. Plans will not be returned until all fees are paid. Fees will be calculated based on the date the plans are received by the department.

(i) The department may perform the plan review for new or altered electrical installations of other types of construction when the owner or electrical contractor makes a voluntary request for review.

(j) For existing structures where additions or alterations to feeders and services are proposed, Article 220.87(1) NEC may be used. If Article 220.87(1) NEC is used, the following is required:

(i) The date of the measurements.

(ii) A statement attesting to the validity of the demand data, signed by a professional electrical engineer or the electrical administrator of the electrical contractor performing the work.

(iii) A diagram of the electrical system identifying the point(s) of measurement.

(iv) Building demand measured continuously on the highest-loaded phase of the feeder or service over a thirty-day period, with demand peak clearly identified. (Demand peak is defined as the maximum average demand over a fifteen-minute interval.)

Wiring methods for designated building occupancies.

(16) Wiring methods, equipment and devices for health or personal care, educational and institutional facilities as defined or classified in this chapter and for places of assembly for one hundred or more persons must comply with Tables 901-1 and 901-2 of this chapter and the notes thereto. The local building authority will determine the occupant load of places of assembly.

(17) Listed tamper-resistant receptacles or listed tamper-resistant receptacle cover plates are required in all licensed day care centers, all licensed children group care facilities and psychiatric patient care facilities where accessible to

children five years of age and under. Listed tamper-resistant receptacles are required in psychiatric patient care facilities where accessible to psychiatric patients over five years of age.

Notes to Tables 901-1 and 901-2.

1. Wiring methods in accordance with the NEC unless otherwise noted.
2. Metallic or nonmetallic raceways, MI, MC, or AC cable, except that in places of assembly located within educational or institutional facilities, wiring methods must conform to NEC 518.4(A). Places of assembly located within educational or institutional facilities may not be wired according to NEC 518.4 (B) or (C).
3. Limited energy system may use wiring methods in accordance with the NEC.

Table 901-1 Health or Personal Care Facilities

Health or Personal Care Facility Type⁽¹⁾	Plan Review Required
Hospital	Yes
Nursing home unit or long-term care unit	Yes
Boarding home or assisted living facility	Yes
Private alcoholism hospital	Yes
Alcoholism treatment facility	Yes
Private psychiatric hospital	Yes
Maternity home	Yes
Birth center or childbirth center	No
Ambulatory surgery facility	Yes
Hospice care center	No
Renal hemodialysis clinic	Yes
Medical, dental, and chiropractic clinic	No
Residential treatment facility for psychiatrically impaired children and youth	Yes
Adult residential rehabilitation center	Yes
Group care facility	No

Table 901-2 Educational and Institutional Facilities, Places of Assembly or Other Facilities

Educational, Institutional or Other Facility Types	Plan Review Required
Educational ⁽²⁾⁽³⁾	Yes
Institutional ⁽²⁾⁽³⁾	Yes
Places of Assembly for 100 or more persons ⁽¹⁾	No
Child day care center ⁽¹⁾	No
School-age child care center ⁽¹⁾	No
Family child day care home, family child care home, or child day care facility ⁽¹⁾	No

Industrial control panel and industrial utilization equipment inspection.

(18) Specific definitions for this section:

(a) "Department evaluation" means a review in accordance with subsection (19)(c) of this section.

(b) "Engineering evaluation" means a review in accordance with subsection (19)(d) of this section.

(c) "Food processing plants" include buildings or facilities used in a manufacturing process, but do not include:

- (i) Municipal or other government facilities;
- (ii) Educational facilities or portions thereof;
- (iii) Institutional facilities or portions thereof;
- (iv) Restaurants;
- (v) Farming, ranching, or dairy farming operations;
- (vi) Residential uses; or
- (vii) Other installations not used for direct manufacturing purposes.

(d) In RCW 19.28.901, "industrial control panel" means a factory or user wired assembly of industrial control equipment such as motor controllers, switches, relays, power supplies, computers, cathode ray tubes, transducers, and auxiliary devices used in the manufacturing process to control industrial utilization equipment. The panel may include disconnecting means and motor branch circuit protective devices. Industrial control panels include only those used in a manufacturing process in a food processing or industrial plant.

(e) "Industrial plants" include buildings or facilities used in a manufacturing process or a manufacturing training facility (e.g., educational shop area in an educational or institutional facility), but do not include:

- (i) Municipal or other government facilities;
- (ii) Other educational facilities or portions thereof;
- (iii) Other institutional facilities or portions thereof;
- (iv) Restaurants;
- (v) Farming, ranching, or dairy farming operations;
- (vi) Residential uses; or
- (vii) Other installations not used for direct manufacturing purposes.

(f) "Industrial utilization equipment" means equipment directly used in a manufacturing process in a food processing or industrial plant, in particular the processing, treatment, moving, or packaging of a material. Industrial utilization equipment does not include: Cold storage, warehousing, or similar storage equipment.

(g) "Manufacturing process" means to make or process a raw material or part into a finished product for sale using industrial utilization equipment. A manufacturing process does not include the storage of a product for future distribution (e.g., cold storage, warehousing, and similar storage activity).

(h) "Normal department inspection" is a part of the department electrical inspection process included with the general wiring inspection of a building, structure, or other electrical installation. Normal department inspection will only be made for equipment solely using listed or field evaluated components and wired to the requirements of the NEC. Fees for the normal department inspections required under this chapter are included in the electrical work permit fee calculated for the installation and are not a separate inspection fee. However, inspection time associated with such equipment is subject to the progress inspection rates in WAC 296-46B-905.

(i) For the purposes of this section, "panel" means a single box or enclosure containing the components comprising an industrial control panel. A panel does not include any wiring

methods connecting multiple panels or connecting a panel(s) and other electrical equipment.

(19) Industrial control panels and industrial utilization equipment will be determined to meet the minimum electrical safety standards for installations by:

(a) Listing or field evaluation of the entire panel or equipment;

(b) Normal department inspection for compliance with codes and rules adopted under this chapter; or

(c) By engineer review (see (d) of this subsection) or through June 30, 2007, by department evaluation showing compliance with appropriate standards. Appropriate standards are NEMA, ANSI, NFPA 79, UL 508A, International Electrotechnical Commission 60204, or their equivalent. Industrial utilization equipment is required to conform to a nationally or internationally recognized standard applicable for the particular industrial utilization equipment. Compliance must be shown as follows:

(i) The equipment's manufacturer must document, by letter to the equipment owner, the equipment's conformity to an appropriate standard(s). The letter must state:

- (A) The equipment manufacturer's name;
- (B) The type of equipment;
- (C) The equipment model number;
- (D) The equipment serial number;
- (E) The equipment supply voltage, amperes, phasing;
- (F) The standard(s) used to manufacture the equipment.

Except for the reference of construction requirements to ensure the product can be installed in accordance with the National Electrical Code, the National Electrical Code is not considered a standard for the purposes of this section;

(G) Fault current interrupting rating of the equipment or the owner may provide documentation showing that the fault current available at the point where the building wiring connects to the equipment is less than 5,000 AIC; and

(H) The date the equipment was manufactured. Equipment that was manufactured prior to January 1, 1985, is not required to meet (c)(i)(F) of this subsection.

(ii) The equipment owner must document, by letter to the chief electrical inspector, the equipment's usage as industrial utilization equipment as described in this section and provide a copy of the equipment manufacturer's letter described in (c)(i) of this subsection. The owner's letter must be accompanied by the fee required in WAC 296-46B-905(14).

For the purposes of this section, the owner must be a food processing or industrial plant as described in this section.

(iii) The chief electrical inspector will evaluate the equipment manufacturer's letter, equipment owner's letter, and the individual equipment.

If the equipment is determined to have had electrical modifications since the date of manufacture, the chief electrical inspector will not approve equipment using this method.

(iv) If required by the chief electrical inspector, the owner must provide the department with a copy, in English, of the standard(s) used and any documentation required by the chief electrical inspector to support the claims made in the equipment manufacturer's or owner's letter. At the request of the owner, the department will obtain a copy of any necessary standard to complete the review. If, per the owner's request, the department obtains the copy of the standard, the owner

will be billed for all costs associated with obtaining the standard.

If the industrial utilization equipment has been determined to be manufactured to a standard(s) appropriate for industrial utilization equipment as determined by the chief electrical inspector per RCW 19.28.901(1), the equipment will be marked with a department label.

The department will charge a marking fee as required in WAC 296-46B-905(14). Once marked by the department, the equipment is suitable for installation anywhere within the state without modification so long as the equipment is being used as industrial utilization equipment. If payment for marking is not received by the department within thirty days of marking the equipment, the department's mark(s) will be removed and the equipment ordered removed from service.

(v) If the equipment usage is changed to other than industrial utilization equipment or electrical modifications are made to the equipment, the equipment must be successfully listed or field evaluated by a laboratory approved by the department.

(vi) The equipment must be permanently installed at the owner's facility and inspected per the requirements of RCW 19.28.101.

(d) An engineering review where an engineer, accredited by the department, shows the equipment to be in compliance with appropriate standards in (c) of this subsection. See WAC 296-46B-997 for the requirements to become an accredited engineer. Appropriate standards are NEMA, ANSI, NFPA 79, UL 508A, International Electrotechnical Commission 60204, or their equivalent. Industrial utilization equipment is required to conform to a nationally or internationally recognized standard applicable for the particular industrial utilization equipment. The engineer must:

(i) Document, by letter to the chief electrical inspector, the equipment's conformity to an appropriate standard(s) and the fault current interrupting rating of the equipment.

(ii) Affix a permanent label to the equipment showing:

(A) Engineer's name;

(B) Date of approval;

(C) Equipment serial number; and

(D) The following statement: "This equipment meets appropriate standards for industrial utilization equipment."

(20) The department may authorize, on a case-by-case basis, use of the industrial control panel or equipment, for a period not to exceed six months or as approved by the chief electrical inspector after use is begun, before its final inspection, listing, or evaluation.

Traffic management systems.

(21) The department will perform the electrical inspection and acceptance of traffic management systems within its jurisdiction. A traffic management system includes:

(a) Traffic illumination systems;

(b) Traffic signal systems;

(c) Traffic monitoring systems;

(d) The electrical service cabinet and all related components and equipment installed on the load side of the service cabinet supplying electrical power to the traffic management system; and

(e) Signalization system(s) necessary for the operation of a light rail system.

A traffic management system can provide signalization for controlling vehicular traffic, pedestrian traffic, or rolling stock.

(22) The department recognizes that traffic signal conductors, pole and bracket cables, signal displays, and traffic signal controllers/cabinets and associated components used in traffic management systems are acceptable for the purpose of meeting the requirements of chapter 19.28 RCW provided they conform with the following standards or are listed on the Washington state department of transportation (WSDOT) qualified products list.

(a) WSDOT/APWA Standard Specifications and Plans;

(b) WSDOT Design Manual;

(c) International Municipal Signal Association (IMSA);

(d) National Electrical Manufacturer's Association (NEMA);

(e) Federal Standards 170/Controller Cabinets;

(f) Manual for Uniform Road, Bridge, and Municipal Construction;

(g) Institute of Transportation Engineers (ITE); or

(h) Manual of Uniform Traffic Control Devices (MUTCD).

(23) Associated induction detection loop or similar circuits will be accepted by the department without inspection.

(24) For the licensing requirements of chapter 19.28 RCW, jurisdictions will be considered owners of traffic management systems when doing electrical work for other jurisdiction(s) under a valid interlocal agreement, as permitted by chapter 39.34 RCW. Interlocal agreements for traffic management systems must be filed with the department prior to work being performed for this provision to apply.

(25) Jurisdictions, with an established electrical inspection authority, and WSDOT may perform electrical inspection on their rights of way for each other by interlocal agreement. They may not perform electrical inspection on other rights of way except as allowed in chapter 19.28 or 39.34 RCW.

(26) Underground installations.

(a) In other than open trenching, raceways will be considered "fished" according to the NEC and do not require visual inspection.

(b) The department will conduct inspections in open trenching within its jurisdiction. The electrical work permit purchaser must coordinate the electrical inspection. A written request (e.g., letter, e-mail, fax, etc.) for inspection, made to the department office having the responsibility to perform the inspection, must be made a minimum of two working days prior to the day inspection is needed (e.g., two working days—10:00 a.m. Tuesday request for a 10:00 a.m. Thursday inspection, excluding holidays and weekends).

If, after proper written request, the department fails to make an electrical inspection at the time requested, underground conduit may be covered after inspection by the local government jurisdiction's project inspector/designee. Written documentation of a local government jurisdiction inspection must be provided to the department when requested.

Written documentation will include:

(i) Date and time of inspection;

(ii) Location;

(iii) Installing firm;

(iv) Owner;

- (v) Type of conduit;
- (vi) Size of conduit;
- (vii) Depth of conduit; and
- (viii) Project inspector/designee name and contact information.

(27) Identification of traffic management system components. Local government jurisdictions or WSDOT may act as the certifying authority for the safety evaluation of all components.

(a) An electrical service cabinet must contain only listed components. The electrical service cabinet enclosure is not required to be listed but will conform to the standards in subsection (2) of this section.

(b) The local government jurisdiction must identify, as acceptable, the controller cabinet or system component(s) with an identification plate. The identification plate must be located inside the cabinet and may be attached with adhesive.

(28) Conductors of different circuits in same cable, enclosure, or raceway. All traffic management system circuits will be permitted to occupy the same cable, enclosure, or raceway without regard to voltage characteristics, provided all conductors are insulated for the maximum voltage of any conductor in the cable, enclosure, or raceway.

[Statutory Authority: RCW 19.28.006, 19.28.010, 19.28.031, 19.28.041, 19.28.061, 19.28.101, 19.28.131, 19.28.161, 19.28.171, 19.28.191, 19.28.201, 19.28.211, 19.28.241, 19.28.251, 19.28.281, 19.28.311, 19.28.321, 19.28.400, 19.28.420, 19.28.490, 19.28.551. 06-24-041, § 296-46B-901, filed 11/30/06, effective 12/31/06.]

WAC 296-46B-905 Temporary fees—Inspection fees. Valid from January 1, 2007, through December 31, 2007, or until modified in rule, whichever comes first. To calculate inspection fees, the amperage is based on the conductor ampacity or the overcurrent device rating. The total fee must not be less than the number of progress inspection (one-half hour) units times the progress inspection fee rate from subsection (8) of this section, PROGRESS INSPECTIONS.

The amount of the fee due is calculated based on the fee effective at the date of a department assessed fee (e.g., plan review or fee due) or when the electrical permit is purchased.

(1) Residential.

(a) Single- and two-family residential (New Construction).

Notes:

- (1) Square footage is the area included within the surrounding exterior walls of a building exclusive of any interior courts. (This includes any floor area in an attached garage, basement, or unfinished living space.)
 - (2) "Inspected with the service" means that a separate service inspection fee is included on the same electrical work permit.
 - (3) "Inspected at the same time" means all wiring is to be ready for inspection during the initial inspection trip.
 - (4) An "outbuilding" is a structure that serves a direct accessory function to the residence, such as a pump house or storage building. Outbuilding does not include buildings used for commercial type occupancies or additional dwelling occupancies.
- | | |
|--|---------|
| (i) First 1300 sq. ft. | \$69.00 |
| Each additional 500 sq. ft. or portion of | \$22.00 |
| (ii) Each outbuilding or detached garage - inspected at the same time as a dwelling unit on the property | \$29.00 |
| (iii) Each outbuilding or detached garage - inspected separately | \$46.00 |
| (iv) Each swimming pool - inspected with the service | \$46.00 |
| (v) Each swimming pool - inspected separately | \$69.00 |
| (vi) Each hot tub, spa, or sauna - inspected with the service | \$29.50 |
| (vii) Each hot tub, spa, or sauna - inspected separately | \$46.00 |
| (viii) Each septic pumping system - inspected with the service | \$29.50 |

- (ix) Each septic pumping system - inspected separately \$46.00
- (b) Multifamily residential and miscellaneous residential structures, services/feeders (New Construction).**

Each service/feeder	Ampacity	Service/Feeder	Additional Feeder
	0 to 200	\$75.00	\$22.00
	201 to 400	\$91.00	\$46.00
	401 to 600	\$128.00	\$64.00
	601 to 800	\$164.00	\$87.00
	801 and over	\$233.00	\$175.00

(c) Single or multifamily altered services/feeders including circuits.

(i) Each altered service/altered feeder

Ampacity	Service or Feeder
0 to 200	\$64.00
201 to 600	\$91.00
601 and over	\$140.00

- (ii) Maintenance or repair of a meter or mast (no alterations to the service or feeder) \$34.00

(d) Single or multifamily residential circuits only (no service inspection).

Note:

Altered or added circuit fees are calculated per panelboard. Total cost of the alterations in an individual panel should not exceed the cost of a complete altered service or feeder of the same rating, as shown in subsection (1) RESIDENTIAL (c) (table) of this section.

- (i) 1 to 4 circuits (see note above) \$46.00
- (ii) Each additional circuit (see note above) \$5.00

(e) Mobile homes, modular homes, mobile home parks, and RV parks.

- (i) Mobile home or modular home service or feeder only \$46.00
- (ii) Mobile home service and feeder \$75.00

(f) Mobile home park sites and RV park sites.

Note:

For master service installations, see subsection (2) COMMERCIAL/INDUSTRIAL of this section.

- (i) First site service or site feeder \$46.00
- (ii) Each additional site service; or additional site feeder inspected at the same time as the first service or feeder \$29.00

(2) Commercial/industrial.

(a) New service/feeder, and additional new feeders inspected at the same time (includes circuits).

Note:

For large COMMERCIAL/INDUSTRIAL projects that include multiple feeders, "inspected at the same time" can be interpreted to include additional inspection trips for a single project. The additional inspections must be for electrical work specified on the permit at the time of purchase. The permit fee for such projects must be calculated from (2)(a)(i)(table) of this section. However, the total fee must not be less than the number of progress inspection (one-half hour) units times the progress inspection fee rate from subsection (8) PROGRESS INSPECTIONS of this section.

Service/feeders

Ampacity	Service/Feeder	Additional Feeder
0 to 100	\$75.00	\$46.00
101 to 200	\$91.00	\$58.00
201 to 400	\$175.00	\$69.00
401 to 600	\$204.00	\$82.00
601 to 800	\$264.00	\$111.00
801 to 1000	\$322.00	\$134.00
1001 and over	\$351.00	\$187.00

(b) Altered services or feeders (no circuits).

(i) Service/feeders

Ampacity	Service/Feeder
0 to 200	\$75.00
201 to 600	\$175.00
601 to 1000	\$264.00
1001 and over	\$239.00

- (ii) Maintenance or repair of a meter or mast (no alterations to the service or feeder) \$64.00

(c) Circuits only.

Note:

Altered/added circuit fees are calculated per panelboard. Total cost of the alterations in a panel (or panels) should not exceed the cost of a new feeder (or feeders) of the same rating, as shown in subsection (2) COMMERCIAL/INDUSTRIAL (2)(a)(i)(table) above.

- (i) First 5 circuits per branch circuit panel \$58.00
- (ii) Each additional circuit per branch circuit panel \$5.00
- (d) **Over 600 volts surcharge per permit.** \$58.00
- (3) **Temporary service(s).**

Note:

(1) See WAC 296-46B-527 for information about temporary installations.
 (2) Temporary stage or concert inspections requested outside of normal business hours will be subject to the portal-to-portal hourly fees in subsection (11) OTHER INSPECTIONS. The fee for such after hours inspections shall be the greater of the fee from this subsection or the portal-to-portal fee.

Temporary services, temporary stage or concert productions.

Ampacity	Service/Feeder	Additional Feeder
0 to 60	\$40.00	\$21.00
61 to 100	\$46.00	\$22.00
101 to 200	\$58.00	\$29.00
201 to 400	\$69.00	\$35.00
401 to 600	\$93.00	\$46.00
601 and over	\$105.00	\$53.00

(4) Irrigation machines, pumps, and equipment.**Irrigation machines.**

- (a) Each tower - when inspected at the same time as a service and feeder from (2) COMMERCIAL/INDUSTRIAL \$5.00
- (b) Towers - when not inspected at the same time as a service and feeders - 1 to 6 towers \$69.00
- (c) Each additional tower \$5.00

(5) Miscellaneous - commercial/industrial and residential.

(a) **A Class 2 low-voltage thermostat** and its associated cable controlling a single piece of utilization equipment or a single furnace and air conditioner combination.

- (i) First thermostat \$35.00
- (ii) Each additional thermostat inspected at the same time as the first \$11.00

(b) **Class 2 or 3 low-voltage systems and telecommunications systems.** Includes all telecommunications installations, fire alarm, nurse call, energy management control systems, industrial and automation control systems, lighting control systems, and similar Class 2 or 3 low-energy circuits and equipment not included in WAC 296-46B-900 for Class B work.

- (i) First 2500 sq. ft. or less \$40.00
- (ii) Each additional 2500 sq. ft. or portion thereof \$11.00

(c) Signs and outline lighting.

- (i) First sign (no service included) \$35.00
- (ii) Each additional sign inspected at the same time on the same building or structure \$16.00

(d) Berth at a marina or dock.**Note:**

Five berths or more shall be permitted to have the inspection fees based on appropriate service and feeder fees from section (2) COMMERCIAL/INDUSTRIAL (a) (i) above.

- (i) Berth at a marina or dock \$46.00
- (ii) Each additional berth inspected at the same time \$29.00
- (e) Yard pole, pedestal, or other meter loops only.
- (i) Yard pole, pedestal, or other meter loops only \$46.00
- (ii) Meters installed remote from the service equipment and inspected at the same time as a service, temporary service or other installations \$11.00

(f) Emergency inspections requested outside of normal working hours.

Regular fee plus surcharge of: \$87.00

(g) Generators.**Note:**

Permanently installed generators: Refer to the appropriate residential or commercial new/altered service or feeder section.
 Portable generators: Permanently installed transfer equipment for portable generators \$64.00

(h) Electrical - annual permit fee.**Note:**

See WAC 296-46B-900(14).

For commercial/industrial location employing full-time electrical maintenance staff or having a yearly maintenance contract with a licensed electrical contractor. Note, all yearly maintenance contracts must detail the number of contractor electricians necessary to complete the work required under the contract. This number will be used as a basis for calculating the appropriate fee. Each inspection is based on a 2-hour maximum.

	Inspections	Fee
1 to 3 plant electricians	12	\$1,677.00
4 to 6 plant electricians	24	\$3,356.00
7 to 12 plant electricians	36	\$5,034.00
13 to 25 plant electricians	52	\$6,713.00
More than 25 plant electricians	52	\$8,392.00

(i) Telecommunications - annual permit fee.**Note:**

(1) See WAC 296-46B-900(13).

(2) Annual inspection time required may be estimated by the purchaser at the rate for "OTHER INSPECTIONS" in this section, charged portal-to-portal per hour.

For commercial/industrial location employing full-time telecommunications maintenance staff or having a yearly maintenance contract with a licensed electrical/telecommunications contractor.

2-hour minimum \$139.00

Each additional hour, or portion thereof, of portal-to-portal inspection time \$69.00

(j) Permit requiring ditch cover inspection only.

Each 1/2 hour, or portion thereof \$35.00

(k) Cover inspection for elevator/conveyance installation. This item is only available to a licensed/registered elevator contractor.**(6) Carnival inspections.****(a) First carnival field inspection each calendar year.**

(i) Each ride and generator truck \$16.00

(ii) Each remote distribution equipment, concession, or gaming show \$5.00

(iii) If the calculated fee for first carnival field inspection above is less than \$89.00, the minimum inspection fee shall be: \$87.00

(b) Subsequent carnival inspections.

(i) First ten rides, concessions, generators, remote distribution equipment, or gaming show \$87.00

(ii) Each additional ride, concession, generator, remote distribution equipment, or gaming show \$5.00

(c) Concession(s) or ride(s) not part of a carnival.

(i) First field inspection each year of a single concession or ride, not part of a carnival \$69.00

(ii) Subsequent inspection of a single concession or ride, not part of a carnival \$46.00

(7) Trip fees.

(a) Requests by property owners to inspect existing installations. (This fee includes a maximum of one hour of inspection time. All inspection time exceeding one hour will be charged at the rate for progressive inspections.) \$69.00

(b) Submitter notifies the department that work is ready for inspection when it is not ready. \$35.00

(c) Additional inspection required because submitter has provided the wrong address or incomplete, improper or illegible directions for the site of the inspection. \$35.00

(d) More than one additional inspection required to inspect corrections; or for repeated neglect, carelessness, or improperly installed electrical work. \$35.00

(e) Each trip necessary to remove a noncompliance notice. \$35.00

(f) Corrections that have not been made in the prescribed time, unless an exception has been requested and granted. \$35.00

(g) Installations that are covered or concealed before inspection. \$35.00

(8) Progress inspections.**Note:**

The fees calculated in subsections (1) through (6) of this section will apply to all electrical work. This section will be applied to a permit where the permit holder has requested additional inspections beyond the number supported by the permit fee calculated at the rate in subsections (1) through (6) of this section.

On partial or progress inspections, each 1/2 hour. \$35.00

(9) Plan review.

Fee is thirty-five percent of the electrical work permit fee as determined by WAC 296-46B-905, plus a plan review submission and shipping/handling fee of: \$58.00

(a) Supplemental submissions of plans per hour or fraction of an hour of review time.	\$69.00
(b) Plan review shipping and handling fee.	\$16.00
(10) Out-of-state inspections.	
(a) Permit fees will be charged according to the fees listed in this section.	
(b) Travel expenses: All travel expenses and per diem for out-of-state inspections are billed following completion of each inspection(s). These expenses can include, but are not limited to: Inspector's travel time, travel cost and per diem at the state rate. Travel time is hourly based on the rate in subsection (11) of this section.	
(11) Other inspections.	
Inspections not covered by above inspection fees must be charged portal-to-portal per hour:	\$69.00
(12) Refund processing fee.	
All requests for permit fee refunds will be assessed a processing fee. (Refund processing fees will not be charged for electrical contractors, using the contractor deposit system, who request less than twenty-four refunds during a rolling calendar year.)	\$11.00
(13) Variance request processing fee.	
Variance request processing fee. This fee is nonrefundable once the transaction has been validated.	\$69.00
(14) Marking of industrial utilization equipment.	
(a) Standard(s) letter review (per hour of review time).	\$69.00
(b) Equipment marking - charged portal-to-portal per hour:	\$69.00
(c) All travel expenses and per diem for in/out-of-state review and/or equipment marking are billed following completion of each inspection(s). These expenses can include, but are not limited to: Inspector's travel time, travel cost and per diem at the state rate. Travel time is hourly based on the rate in (b) of this subsection.	
(15) Class B basic electrical work labels.	
(a) Block of twenty Class B basic electrical work labels (not refundable).	\$200.00
(b) Reinspection of Class B basic electrical work to assure that corrections have been made (per 1/2 hour timed from leaving the previous inspection until the reinspection is completed). See WAC 296-46B-900.	\$36.40
(c) Reinspection of Class B basic electrical work because of a failed inspection of another Class B label (per 1/2 hour from previous inspection until the reinspection is completed). See WAC 296-46B-900.	\$36.40
(16) Provisional electrical work permit labels.	
(a) Block of twenty provisional electrical work permit labels.	\$200.00

[Statutory Authority: RCW 19.28.006, 19.28.010, 19.28.031, 19.28.041, 19.28.061, 19.28.101, 19.28.131, 19.28.161, 19.28.171, 19.28.191, 19.28.201, 19.28.211, 19.28.241, 19.28.251, 19.28.281, 19.28.311, 19.28.321, 19.28.400, 19.28.420, 19.28.490, 19.28.551. 06-24-041, § 296-46B-905, filed 11/30/06, effective 12/31/06; 06-05-028, § 296-46B-905, filed 2/7/06, effective 5/1/06; 05-22-025, § 296-46B-905, filed 10/25/05, effective 11/25/05. Statutory Authority: Chapter 19.28 RCW. 04-21-086, § 296-46B-905, filed 10/20/04, effective 11/22/04. Statutory Authority: RCW 19.28.006, 19.28.010, 19.28.031, 19.28.041, 19.28.061, 19.28.101, 19.28.131, 19.28.161, 19.28.171, 19.28.191, 19.28.201, 19.28.211, 19.28.241, 19.28.251, 19.28.271, 19.28.311, 19.28.321, 19.28.400, 19.28.420, 19.28.490, 19.28.551, and chapter 19.28 RCW. 03-18-089, § 296-46B-905, filed 9/2/03, effective 10/3/03. Statutory Authority: RCW 19.28.006, 19.28.010, 19.28.031, 19.28.041, 19.28.061, 19.28.101, 19.28.131, 19.28.161, 19.28.171, 19.28.191, 19.28.201, 19.28.211, 19.28.241, 19.28.251, 19.28.271, 19.28.311, 19.28.321, 19.28.400, 19.28.420, 19.28.490, 19.28.551, 2002 c 249, chapters 34.05 and 19.28 RCW. 03-09-111, § 296-46B-905, filed 4/22/03, effective 4/22/03.]

WAC 296-46B-906 Inspection fees. To calculate inspection fees, the amperage is based on the conductor ampacity or the overcurrent device rating. The total fee must not be less than the number of progress inspection (one-half

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hour) units times the progress inspection fee rate from subsection (8) of this section, PROGRESS INSPECTIONS.

The amount of the fee due is calculated based on the fee effective at the date of a department assessed fee (e.g., plan review or fee due) or when the electrical permit is purchased.

(1) Residential.

(a) Single- and two-family residential (New Construction).

Notes:

- (1) Square footage is the area included within the surrounding exterior walls of a building exclusive of any interior courts. (This includes any floor area in an attached garage, basement, or unfinished living space.)
- (2) "Inspected with the service" means that a separate service inspection fee is included on the same electrical work permit.
- (3) "Inspected at the same time" means all wiring is to be ready for inspection during the initial inspection trip.
- (4) An "outbuilding" is a structure that serves a direct accessory function to the residence, such as a pump house or storage building. Outbuilding does not include buildings used for commercial type occupancies or additional dwelling occupancies.
- (i) First 1300 sq. ft. \$73.00
- Each additional 500 sq. ft. or portion of \$23.40
- (ii) Each outbuilding or detached garage - inspected at the same time as a dwelling unit on the property \$30.50
- (iii) Each outbuilding or detached garage - inspected separately \$48.10
- (iv) Each swimming pool - inspected with the service \$48.10
- (v) Each swimming pool - inspected separately \$73.00
- (vi) Each hot tub, spa, or sauna - inspected with the service \$30.50
- (vii) Each hot tub, spa, or sauna - inspected separately \$48.10
- (viii) Each septic pumping system - inspected with the service \$30.50
- (ix) Each septic pumping system - inspected separately \$48.10
- (b) Multifamily residential and miscellaneous residential structures, services and feeders (New Construction).**

Each service and/or feeder

Ampacity	Service/Feeder	Additional Feeder
0 to 200	\$78.70	\$23.40
201 to 400	\$97.80	\$48.10
401 to 600	\$134.30	\$66.90
601 to 800	\$172.30	\$91.80
801 and over	\$245.70	\$184.30

(c) Single or multifamily altered services or feeders including circuits.

(i) Each altered service and/or altered feeder

Ampacity	Service/Feeder
0 to 200	\$66.90
201 to 600	\$97.80
601 and over	\$147.40

- (ii) Maintenance or repair of a meter or mast (no alterations to the service or feeder) \$36.30

(d) Single or multifamily residential circuits only (no service inspection).

Note:

Altered or added circuit fees are calculated per panelboard. Total cost of the alterations in an individual panel should not exceed the cost of a complete altered service or feeder of the same rating, as shown in subsection (1) RESIDENTIAL (c) (table) of this section.

- (i) 1 to 4 circuits (see note above) \$48.10
- (ii) Each additional circuit (see note above) \$5.30

(e) Mobile homes, modular homes, mobile home parks, and RV parks.

- (i) Mobile home or modular home service or feeder only \$48.10
- (ii) Mobile home service and feeder \$78.70

(f) Mobile home park sites and RV park sites.

Note:

For master service installations, see subsection (2) COMMERCIAL/INDUSTRIAL of this section.

- (i) First site service or site feeder \$48.10
- (ii) Each additional site service; or additional site feeder inspected at the same time as the first service or feeder \$30.50

(2) Commercial/industrial.**(a) New service or feeder, and additional new feeders inspected at the same time (includes circuits).****Note:**

For large COMMERCIAL/INDUSTRIAL projects that include multiple feeders, "inspected at the same time" can be interpreted to include additional inspection trips for a single project. The additional inspections must be for electrical work specified on the permit at the time of purchase. The permit fee for such projects must be calculated from (2)(a)(i)(table) of this section. However, the total fee must not be less than the number of progress inspection (one-half hour) units times the progress inspection fee rate from subsection (8) PROGRESS INSPECTIONS of this section.

Ampacity	Service/Feeder	Additional Feeder
0 to 100	\$78.70	\$48.10
101 to 200	\$95.80	\$61.30
201 to 400	\$184.30	\$73.00
401 to 600	\$214.80	\$85.80
601 to 800	\$277.70	\$116.90
801 to 1000	\$339.00	\$141.40
1001 and over	\$369.80	\$197.30

(b) Altered services/feeders (no circuits).**(i) Service/feeder**

Ampacity	Service/Feeder
0 to 200	\$78.70
201 to 600	\$184.30
601 to 1000	\$277.70
1001 and over	\$308.40

(ii) Maintenance or repair of a meter or mast (no alterations to the service or feeder) \$66.90

(c) Circuits only.**Note:**

Altered/added circuit fees are calculated per panelboard. Total cost of the alterations in a panel (or panels) should not exceed the cost of a new feeder (or feeders) of the same rating, as shown in subsection (2) COMMERCIAL/INDUSTRIAL (2)(a)(i)(table) above.

- (i) First 5 circuits per branch circuit panel \$61.30
(ii) Each additional circuit per branch circuit panel \$5.30
(d) Over 600 volts surcharge per permit. \$61.30

(3) Temporary service(s).**Note:**

- (1) See WAC 296-46B-527 for information about temporary installations.
(2) Temporary stage or concert inspections requested outside of normal business hours will be subject to the portal-to-portal hourly fees in subsection (11) OTHER INSPECTIONS. The fee for such after hours inspections shall be the greater of the fee from this subsection or the portal-to-portal fee.

Temporary services, temporary stage or concert productions.

Ampacity	Service/Feeder	Additional Feeder
0 to 60	\$42.20	\$21.60
61 to 100	\$48.10	\$23.40
101 to 200	\$61.30	\$30.50
201 to 400	\$73.00	\$36.40
401 to 600	\$97.80	\$48.10
601 and over	\$110.90	\$55.30

(4) Irrigation machines, pumps, and equipment.**Irrigation machines.**

- (a) Each tower - when inspected at the same time as a service and feeder from (2) COMMERCIAL/INDUSTRIAL \$5.30
(b) Towers - when not inspected at the same time as a service and feeder - 1 to 6 towers \$73.00
(c) Each additional tower \$5.30

(5) Miscellaneous - commercial/industrial and residential.

(a) A Class 2 low-voltage thermostat and its associated cable controlling a single piece of utilization equipment or a single furnace and air conditioner combination.

- (i) First thermostat \$36.40
(ii) Each additional thermostat inspected at the same time as the first \$11.40

(b) Class 2 or 3 low-voltage systems and telecommunications systems.

Includes all telecommunications installations, fire alarm, nurse call, energy management control systems, industrial and automation control systems, lighting control systems, and similar Class 2 or 3 low-energy circuits and equipment not included in WAC 296-46B-110 for Class B work.

- (i) First 2500 sq. ft. or less \$42.20

- (ii) Each additional 2500 sq. ft. or portion thereof \$11.40

(c) Signs and outline lighting.

- (i) First sign (no service included) \$36.40
(ii) Each additional sign inspected at the same time on the same building or structure \$17.30

(d) Berth at a marina or dock.**Note:**

Five berths or more shall be permitted to have the inspection fees based on appropriate service and feeder fees from section (2) COMMERCIAL/INDUSTRIAL (a) (i) above.

- (i) Berth at a marina or dock \$48.10
(ii) Each additional berth inspected at the same time \$30.50

(e) Yard pole, pedestal, or other meter loops only.

- (i) Yard pole, pedestal, or other meter loops only \$48.10
(ii) Meters installed remote from the service equipment and inspected at the same time as a service, temporary service or other installations \$11.40

(f) Emergency inspections requested outside of normal working hours.

Regular fee plus surcharge of: \$91.80

(g) Generators.**Note:**

Permanently installed generators: Refer to the appropriate residential or commercial new/altered service or feeder section.

Portable generators: Permanently installed transfer equipment for portable generators \$66.90

(h) Electrical - annual permit fee.**Note:**

See WAC 296-46B-900(14).

For commercial/industrial location employing full-time electrical maintenance staff or having a yearly maintenance contract with a licensed electrical contractor. Note, all yearly maintenance contracts must detail the number of contractor electricians necessary to complete the work required under the contract. This number will be used as a basis for calculating the appropriate fee. Each inspection is based on a 2-hour maximum.

	Inspections	Fee
1 to 3 plant electricians	12	\$1,765.50
4 to 6 plant electricians	24	\$3,532.80
7 to 12 plant electricians	36	\$5,298.90
13 to 25 plant electricians	52	\$7,066.20
More than 25 plant electricians	52	\$8,833.50

(i) Telecommunications - annual permit fee.**Notes:**

(1) See WAC 296-46B-900(13).

(2) Annual inspection time required may be estimated by the purchaser at the rate for "OTHER INSPECTIONS" in this section, charged portal-to-portal per hour.

For commercial/industrial location employing full-time telecommunications maintenance staff or having a yearly maintenance contract with a licensed electrical/telecommunications contractor.

2-hour minimum \$146.10

Each additional hour, or portion thereof, of portal-to-portal inspection time \$73.00

(j) Permit requiring ditch cover inspection only.

Each 1/2 hour, or portion thereof \$36.40

(k) Cover inspection for elevator/conveyance installation. \$61.30

This item is only available to a licensed/registered elevator contractor.

(6) Carnival inspections.**(a) First carnival field inspection each calendar year.**

- (i) Each ride and generator truck \$17.30
(ii) Each remote distribution equipment, concession, or gaming show \$5.30
(iii) If the calculated fee for first carnival field inspection above is less than \$89.00, the minimum inspection fee shall be: \$91.80

(b) Subsequent carnival inspections.

- (i) First ten rides, concessions, generators, remote distribution equipment, or gaming show \$91.80
(ii) Each additional ride, concession, generator, remote distribution equipment, or gaming show \$5.30

(c) Concession(s) or ride(s) not part of a carnival.

- (i) First field inspection each year of a single concession or ride, not part of a carnival \$73.00

(ii) Subsequent inspection of a single concession or ride, not part of a carnival	\$48.10
(7) Trip fees.	
(a) Requests by property owners to inspect existing installations. (This fee includes a maximum of one hour of inspection time. All inspection time exceeding one hour will be charged at the rate for progressive inspections.)	\$73.00
(b) Submitter notifies the department that work is ready for inspection when it is not ready.	\$36.40
(c) Additional inspection required because submitter has provided the wrong address or incomplete, improper or illegible directions for the site of the inspection.	\$36.40
(d) More than one additional inspection required to inspect corrections; or for repeated neglect, carelessness, or improperly installed electrical work.	\$36.40
(e) Each trip necessary to remove a noncompliance notice.	\$36.40
(f) Corrections that have not been made in the prescribed time, unless an exception has been requested and granted.	\$36.40
(g) Installations that are covered or concealed before inspection.	\$36.40
(8) Progress inspections.	
Note:	
The fees calculated in subsections (1) through (6) of this section will apply to all electrical work. This section will be applied to a permit where the permit holder has requested additional inspections beyond the number supported by the permit fee calculated at the rate in subsections (1) through (6) of this section.	
On partial or progress inspections, each 1/2 hour.	\$36.40
(9) Plan review.	
Fee is thirty-five percent of the electrical work permit fee as determined by WAC 296-46B-905, plus a plan review submission and shipping/handling fee of:	\$61.30
(a) Supplemental submissions of plans per hour or fraction of an hour of review time.	\$73.00
(b) Plan review shipping and handling fee.	\$17.30
(10) Out-of-state inspections.	
(a) Permit fees will be charged according to the fees listed in this section.	
(b) Travel expenses:	
All travel expenses and per diem for out-of-state inspections are billed following completion of each inspection(s). These expenses can include, but are not limited to: Inspector's travel time, travel cost and per diem at the state rate. Travel time is hourly based on the rate in subsection (11) of this section.	
(11) Other inspections.	
Inspections not covered by above inspection fees must be charged portal-to-portal per hour:	\$73.00
(12) Refund processing fee.	
All requests for permit fee refunds will be assessed a processing fee. (Refund processing fees will not be charged for electrical contractors, using the contractor deposit system, who request less than twenty-four refunds during a rolling calendar year.)	\$11.40
(13) Variance request processing fee.	
Variance request processing fee. This fee is nonrefundable once the transaction has been validated.	\$73.00
(14) Marking of industrial utilization equipment.	
(a) Standard(s) letter review (per hour of review time).	\$73.00
(b) Equipment marking - charged portal-to-portal per hour:	\$73.00
(c) All travel expenses and per diem for in/out-of-state review and/or equipment marking are billed following completion of each inspection(s). These expenses can include, but are not limited to: Inspector's travel time, travel cost and per diem at the state rate. Travel time is hourly based on the rate in (b) of this subsection.	
(15) Class B basic electrical work labels.	
(a) Block of twenty Class B basic electrical work labels (not refundable).	\$200.00
(b) Reinspection of Class B basic electrical work to assure that corrections have been made (per 1/2 hour timed from leaving the previous inspection until the reinspection is completed). See WAC 296-46B-110(8).	\$36.40
(c) Reinspection of Class B basic electrical work because of a failed inspection of another Class B label (per 1/2 hour from previous inspection until the reinspection is completed). See WAC 296-46B-110(8).	\$36.40
(16) Provisional electrical work permit labels.	
Block of twenty provisional electrical work permit labels.	\$200.00

[Statutory Authority: RCW 19.28.006, 19.28.010, 19.28.031, 19.28.041, 19.28.061, 19.28.101, 19.28.131, 19.28.161, 19.28.171, 19.28.191, 19.28.201, 19.28.211, 19.28.241, 19.28.251, 19.28.281, 19.28.311, 19.28.321, 19.28.400, 19.28.420, 19.28.490, 19.28.551. 06-24-041, § 296-46B-906, filed 11/30/06, effective 12/31/06.]

WAC 296-46B-909 Electrical/telecommunications contractor's license, administrator certificate and examination, master electrician certificate and examination, electrician certificate and examination, temporary electrician permit, copy, and miscellaneous fees.

- Notes:**
- (1) The department will deny renewal of a license, certificate, or permit if an individual owes money as a result of an outstanding final judgment(s) to the department or is in revoked status. The department will deny application of a license, certificate, or permit if an individual is in suspended status.
 - (2) Certificates may be prorated for shorter renewal periods in one-year increments. Each year or part of a year will be calculated to be one year.
 - (3) The amount of the fee due is calculated based on the fee effective at the date payment is made.

(1) General or specialty contractor's license. (Nonrefundable after license has been issued.)

- | | |
|---|----------|
| (a) Per twenty-four-month period | \$232.90 |
| (b) Reinstatement of a general or specialty contractor's license after a suspension | \$47.30 |

(2) Master electrician/administrator/electrician/trainee certificate.

- | | |
|--|---------|
| (a) Examination application (nonrefundable) | |
| Administrator certificate examination application. (Required only for department administered examinations.) (Not required when testing with the department's contractor.) | \$29.30 |
| (b) Examination fees (nonrefundable) | |

Note:

Normal examination administration is performed by a state authorized contractor. The fees for such examinations are set by contract with the department. For written examinations administered by the department, use the following fee schedule.

- | | |
|---|----------|
| (i) Master electrician or administrator first-time examination fee (when administered by the department) | \$70.50 |
| (ii) Master electrician or administrator retest examination fee (when administered by the department) | \$82.50 |
| (iii) Journeyman or specialty electrician examination fee (first test or retest when administered by the department) | \$53.00 |
| (iv) Certification examination review fee | \$109.20 |
| (c) Original certificates (nonrefundable after certificate has been issued) | |
| (i) Electrical administrator original certificate (except 09 telecommunication) | \$105.40 |
| (ii) Telecommunications administrator original certificate (for 09 telecommunications) | \$70.20 |
| (iii) Master electrician exam application (includes original certificate and application processing fee) (\$29.30 is nonrefundable after application is submitted) | \$134.70 |
| (iv) Journeyman or specialty electrician application (includes original certificate and application processing fee) (\$29.30 is nonrefundable after application is submitted) | \$75.60 |
| (v) Training certificate | \$37.10 |
| (A) 0% supervision modified training certificate. Includes trainee update of hours (i.e., submission of affidavit of experience) (\$44.90 is nonrefundable after application is submitted) | \$67.40 |
| (B) 75% supervision modified training certificate. | \$44.90 |
| (C) Unsupervised training certificate as allowed by RCW 19.28.161 (4)(b). | \$22.40 |
| (vi) Temporary electrician permit (valid as allowed and described in WAC 296-46B-940(27)) | \$23.40 |
| (d) Certificate renewal (nonrefundable) | |
| (i) Master electrician or administrator certificate renewal | \$133.20 |
| (ii) Telecommunications (09) administrator certificate renewal | \$88.80 |
| (iii) Late renewal of master electrician or administrator certificate | \$266.40 |
| (iv) Late renewal of telecommunications (09) administrator certificate | \$177.60 |

(v) Journeyman or specialty electrician certificate renewal	\$70.20	(1) General or specialty contractor's license. (Nonrefundable after license has been issued.)	
(vi) Late renewal of journeyman or specialty electrician certificate	\$140.50	(a) Per twenty-four-month period. Valid through December 31, 2008.	\$221.00
(vii) Trainee certificate renewal or update of hours (i.e., submission of affidavit of experience)	\$44.90	(b) Reinstatement of a general or specialty contractor's license after a suspension	\$47.30
(e) Reciprocal certificate (nonrefundable)		(2) Master electrician/administrator/electrician/trainee certificate.	
(i) Master electrician reciprocal certificate	\$132.20	(a) Examination application (nonrefundable)	
(ii) Journeyman or specialty electrician reciprocal certificate	\$75.60	Administrator certificate examination application.	\$29.30
(f) Certificate - reinstatement (nonrefundable)		(Required only for department administered examinations.) (Not required when testing with the department's contractor.)	
(i) Reinstatement of a suspended master electrician or administrator's certificate (in addition to normal renewal fee)	\$47.30	(b) Examination fees (nonrefundable)	
(ii) Reinstatement of suspended journeyman, or specialty electrician certificate (in addition to normal renewal fee)	\$22.40	Note:	
(g) Assignment/unassignment of master electrician/administrator designation (nonrefundable)	\$35.00	Normal examination administration is performed by a state authorized contractor. The fees for such examinations are set by contract with the department. For written examinations administered by the department, use the following fee schedule.	
(3) Certificate/license.		(i) Master electrician or administrator first-time examination fee (when administered by the department)	\$70.50
(a) Replacement for lost or damaged certificate/license. (Nonrefundable.)	\$15.40	(ii) Master electrician or administrator retest examination fee (when administered by the department)	\$82.50
(b) Optional display quality General Master Electrician certificate.	\$25.00	(iii) Journeyman or specialty electrician examination fee (first test or retest when administered by the department)	\$53.00
(4) Continuing education courses or instructors. (Nonrefundable.)		(iv) Certification examination review fee	\$109.20
(a) If the course or instructor review is performed by the electrical board or the department		(c) Original certificates (nonrefundable after certificate has been issued)	
The course or instructor review	\$45.00	(i) Electrical administrator original certificate (except 09 telecommunication). Valid through December 31, 2009	\$100.00
(b) If the course or instructor review is contracted out by the electrical board or the department		(ii) Telecommunications administrator original certificate (for 09 telecommunications). Valid through December 31, 2008	\$67.00
(i) Continuing education course or instructor submittal and approval (per course or instructor)	As set in contract	(iii) Master electrician exam application (includes original certificate and application processing fee) (\$29.30 is nonrefundable after application is submitted). Valid through December 31, 2009	\$128.00
(ii) Applicant's request for review, by the chief electrical inspector, of the contractor's denial	\$109.50	(iv) Journeyman or specialty electrician application (includes original certificate and application processing fee) (\$29.30 is nonrefundable after application is submitted). Valid through December 31, 2009	\$72.00
(5) Copy fees. (Nonrefundable.)		(v) Training certificate. Valid through December 31, 2008	\$35.00
(a) Certified copy of each document (maximum charge per file):	\$49.80	(A) 0% supervision modified training certificate. Includes trainee update of hours (i.e., submission of affidavit of experience) (\$44.90 is nonrefundable after application is submitted)	\$64.00
(i) First page:	\$22.40	(B) 75% supervision modified training certificate.	\$43.00
(ii) Each additional page:	\$2.00	(C) Unsupervised training certificate as allowed by RCW 19.28.161 (4)(b).	\$21.00
(b) Replacement RCW/WAC printed document:	\$5.00	(vi) Temporary electrician permit (valid as allowed and described in WAC 296-46B-940(27))	\$23.40
(6) Refund processing fee. (Nonrefundable.)	\$11.40	(d) Certificate renewal (nonrefundable)	
(7) Training school program review fees. Initial training school program review fee. (Nonrefundable.)		(i) Master electrician or administrator certificate renewal. Valid through December 31, 2009	\$127.00
(a) Initial training school program review fee submitted for approval. Valid for three years or until significant changes in program content or course length are implemented (see WAC 296-46B-971(4)).	\$516.00	(ii) Telecommunications (09) administrator certificate renewal. Valid through December 31, 2008	\$84.00
(b) Renewal of training school program review fee submitted for renewal. Valid for 3 years or until significant changes in program content or course length are implemented (see WAC 296-46B-971(4)).	\$258.00	(iii) Late renewal of master electrician or administrator certificate	\$266.40
[Statutory Authority: RCW 19.28.006, 19.28.010, 19.28.031, 19.28.041, 19.28.061, 19.28.101, 19.28.131, 19.28.161, 19.28.171, 19.28.191, 19.28.201, 19.28.211, 19.28.241, 19.28.251, 19.28.281, 19.28.311, 19.28.321, 19.28.400, 19.28.420, 19.28.490, 19.28.551. 06-24-041, § 296-46B-909, filed 11/30/06, effective 12/31/06.]		(iv) Late renewal of telecommunications (09) administrator certificate	\$177.60
		(v) Journeyman or specialty electrician certificate renewal. Valid through December 31, 2009	\$67.00
		(vi) Late renewal of journeyman or specialty electrician certificate	\$140.50
		(vii) Trainee certificate renewal or update of hours (i.e., submission of affidavit of experience). Valid through December 31, 2008	\$43.00
		(viii) Late trainee certificate renewal	\$60.00
		(e) Reciprocal certificate (nonrefundable)	
		(i) Master electrician reciprocal certificate. Valid through December 31, 2009	\$126.00
		(ii) Journeyman or specialty electrician reciprocal certificate. Valid through December 31, 2009	\$72.00
		(f) Certificate - reinstatement (nonrefundable)	

WAC 296-46B-910 Temporary fees—Electrical/telecommunications contractor's license, administrator certificate and examination, master electrician certificate and examination, temporary, electrician certificate and examination, temporary electrician permit, copy, and miscellaneous fees. Effective January 1, 2007. If the fee is reduced from the permanent fee in WAC 296-46B-909, the temporary fee is valid through the date indicated for the specific fee or until modified in rule, whichever comes first.

- Notes:**
- (1) The department will deny renewal of a license, certificate, or permit if an individual owes money as a result of an outstanding final judgment(s) to the department or is in revoked status. The department will deny application of a license, certificate, or permit if an individual is in suspended status.
 - (2) Certificates may be prorated for shorter renewal periods in one-year increments. Each year or part of a year will be calculated to be one year.
 - (3) The amount of the fee due is calculated based on the fee effective at the date payment is made.

(i) Reinstatement of a suspended master electrician or administrator's certificate (in addition to normal renewal fee)	\$47.30
(ii) Reinstatement of suspended journeyman, specialty electrician, or training certificate (in addition to normal renewal fee)	\$22.40
(g) Assignment/unassignment of master electrician/administrator designation (nonrefundable)	\$35.00
(3) Certificate/license.	
(a) Replacement for lost or damaged certificate/license. (Nonrefundable.)	\$15.40
(b) Optional display quality General Master Electrician certificate.	\$25.00
(4) Continuing education/trainee courses or instructors. (Nonrefundable.)	
(a) If the course or instructor review is performed by the electrical board or the department The course or instructor review	\$45.00
(b) If the course or instructor review is contracted out by the electrical board or the department	
(i) Continuing education course or instructor submittal and approval (per course or instructor)	As set in contract
(ii) Applicant's request for review, by the chief electrical inspector, of the contractor's denial	\$109.50
(5) Copy fees. (Nonrefundable.)	
(a) Certified copy of each document (maximum charge per file):	\$49.80
(i) First page:	\$22.40
(ii) Each additional page:	\$2.00
(b) RCW/WAC printed document:	\$5.00
(6) Refund processing fee. (Nonrefundable.)	\$11.40
(7) Training school program review fees. Initial training school program review fee. (Nonrefundable.)	
(a) Initial training school program review fee submitted for approval. Valid for three years or until significant changes in program content or course length are implemented (see WAC 296-46B-971(4)).	\$516.00
(b) Renewal of training school program review fee submitted for renewal. Valid for 3 years or until significant changes in program content or course length are implemented (see WAC 296-46B-971(4)).	\$258.00

[Statutory Authority: RCW 19.28.006, 19.28.010, 19.28.031, 19.28.041, 19.28.061, 19.28.101, 19.28.131, 19.28.161, 19.28.171, 19.28.191, 19.28.201, 19.28.211, 19.28.241, 19.28.251, 19.28.281, 19.28.311, 19.28.321, 19.28.400, 19.28.420, 19.28.490, 19.28.551. 06-05-028, § 296-46B-910, filed 11/30/06, effective 12/31/06. Statutory Authority: RCW 19.28.006, 19.28.010, 19.28.031, 19.28.041, 19.28.061, 19.28.101, 19.28.131, 19.28.161, 19.28.171, 19.28.191, 19.28.201, 19.28.211, 19.28.241, 19.28.251, 19.28.271, 19.28.311, 19.28.321, 19.28.400, 19.28.420, 19.28.490, 19.28.551, 2003 c 399, 2003 c 211, 2003 c 78, and 2003 c 242. 04-12-049, § 296-46B-910, filed 5/28/04, effective 6/30/04. Statutory Authority: RCW 19.28.006, 19.28.010, 19.28.031, 19.28.041, 19.28.061, 19.28.101, 19.28.131, 19.28.161, 19.28.171, 19.28.191, 19.28.201, 19.28.211, 19.28.241, 19.28.251, 19.28.271, 19.28.311, 19.28.321, 19.28.400, 19.28.420, 19.28.490, 19.28.551, 2002 c 249, chapters 34.05 and 19.28 RCW. 03-09-111, § 296-46B-910, filed 4/22/03, effective 4/22/03.]

WAC 296-46B-911 Electrical testing laboratory and engineer accreditation fees. The amount of the fee due is calculated based on the fee effective at the date payment is made.

Electrical testing laboratory	
Initial filing fee: (Nonrefundable)	\$516.00
Initial accreditation fee:	
1 product category	\$258.00
Each additional category for the next 19 categories	\$103.20 each
Maximum for 20 categories or more	\$2,218.80
Renewal fee: (Nonrefundable)	50% of initial filing fee
Renewal of existing accreditations	
Each additional category for the next 19 categories	\$103.20 each
Maximum for 20 categories or more	\$2,218.80

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Engineer for evaluating industrial utilization equipment	
Initial filing fee: (Nonrefundable)	\$516.00
Renewal fee: (Nonrefundable)	50% of initial filing fee

[Statutory Authority: RCW 19.28.006, 19.28.010, 19.28.031, 19.28.041, 19.28.061, 19.28.101, 19.28.131, 19.28.161, 19.28.171, 19.28.191, 19.28.201, 19.28.211, 19.28.241, 19.28.251, 19.28.281, 19.28.311, 19.28.321, 19.28.400, 19.28.420, 19.28.490, 19.28.551. 06-05-028, § 296-46B-911, filed 2/7/06, effective 5/1/06. Statutory Authority: RCW 19.28.006, 19.28.010, 19.28.031, 19.28.041, 19.28.061, 19.28.101, 19.28.131, 19.28.161, 19.28.171, 19.28.191, 19.28.201, 19.28.211, 19.28.241, 19.28.251, 19.28.271, 19.28.311, 19.28.321, 19.28.400, 19.28.420, 19.28.490, 19.28.551, 2003 c 399, 2003 c 211, 2003 c 78, and 2003 c 242. 04-12-049, § 296-46B-911, filed 5/28/04, effective 6/30/04. Statutory Authority: RCW 19.28.006, 19.28.010, 19.28.031, 19.28.041, 19.28.061, 19.28.101, 19.28.131, 19.28.161, 19.28.171, 19.28.191, 19.28.201, 19.28.211, 19.28.241, 19.28.251, 19.28.271, 19.28.311, 19.28.321, 19.28.400, 19.28.420, 19.28.490, 19.28.551, 2002 c 249, chapters 34.05 and 19.28 RCW. 03-09-111, § 296-46B-911, filed 4/22/03, effective 4/22/03.]

WAC 296-46B-915 Civil penalty schedule. Each day that a violation occurs will be a separate offense.

Once a violation of chapter 19.28 RCW or chapter 296-46B WAC becomes a final judgment, any additional violation within three years becomes a "second" or "additional" offense subject to an increased penalty as set forth in the following tables.

In case of continued, repeated or gross violation of the provisions of chapter 19.28 RCW or this chapter, or if property damage or bodily injury occurs as a result of the failure of a person, firm, partnership, corporation, or other entity to comply with chapter 19.28 RCW or this chapter the department may double the penalty amounts shown in subsections (1) through (13) of this section.

Continued or repeated violation may occur if the person, firm, partnership, corporation or other entity who violates a provision of chapter 19.28 RCW, chapter 296-46B WAC has received one or more written warnings of a similar violation within a one-year period.

A person, firm, partnership, corporation or other entity who violates a provision of chapter 19.28 RCW or chapter 296-46B WAC is liable for a civil penalty based upon the following schedule.

(1) Offering to perform, submitting a bid for, advertising, installing or maintaining cables, conductors or equipment:	
(a) That convey or utilize electrical current without having a valid electrical contractor's license.	
(b) Used for information generation, processing, or transporting of signals optically or electronically in telecommunications systems without having a valid telecommunications contractor's license.	
First offense:	\$500
Second offense:	\$1,500
Third offense:	\$3,000
Each offense thereafter:	\$6,000
(2) Employing an individual for the purposes of chapter 19.28 RCW who does not possess a valid certificate of competency or training certificate to do electrical work.	
First offense:	\$250
Each offense thereafter:	\$500
(3) Performing electrical work without having a valid certificate of competency or electrical training certificate.	
First offense:	\$250
Each offense thereafter:	\$500
(4) Employing electricians and electrical trainees for the purposes of chapter 19.28 RCW in an improper ratio. Contractors found to have violated this section three times in a three-year period must be the subject of an electrical audit in accordance with WAC 296-46B-975.	

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First offense:	\$250
Each offense thereafter:	\$500
(5) Failing to provide proper supervision to an electrical trainee as required by chapter 19.28 RCW. Contractors found to have violated this section three times in a three-year period must be the subject of an electrical audit in accordance with WAC 296-46B-975.	
First offense:	\$250
Each offense thereafter:	\$500
(6) Working as an electrical trainee without proper supervision as required by chapter 19.28 RCW.	
First offense:	\$50
Second offense:	\$250
Each offense thereafter:	\$500
(7) Offering, bidding, advertising, or performing electrical or telecommunications installations, alterations or maintenance outside the scope of the firm's specialty electrical or telecommunications contractors license.	
First offense:	\$500
Second offense:	\$1,500
Third offense:	\$3,000
Each offense thereafter:	\$6,000
(8) Selling or exchanging electrical equipment associated with spas, hot tubs, swimming pools or hydromassage bathtubs which are not listed by an approved laboratory.	
First offense:	\$500
Second offense:	\$1,000
Each offense thereafter:	\$2,000
Definition:	
The sale or exchange of electrical equipment associated with hot tubs, spas, swimming pools or hydromassage bathtubs includes to: "Sell, offer for sale, advertise, display for sale, dispose of by way of gift, loan, rental, lease, premium, barter or exchange."	
(9) Covering or concealing installations prior to inspection.	
First offense:	\$250
Second offense:	\$1,000
Each offense thereafter:	\$2,000
(10) Failing to make corrections within fifteen days of notification by the department.	
Exception:	
Where an extension has been requested and granted, this penalty applies to corrections not completed within the extended time period.	
First offense:	\$250
Second offense:	\$1,000
Each offense thereafter:	\$2,000
(11) Failing to obtain or post an electrical/telecommunications work permit or provisional electrical work permit label prior to beginning the electrical/telecommunications installation or alteration.	
Exception:	
In cases of emergency repairs to existing electrical/telecommunications systems, this penalty will not be charged if the permit is obtained and posted no later than the business day following beginning work on the emergency repair.	
First offense:	\$250
Second offense:	\$1,000
Each offense thereafter:	\$2,000
(12) Violating chapter 19.28 RCW duties of the electrical/telecommunications administrator or master electrician.	
(a) Failing to be a member of the firm or a supervisory employee and shall be available during working hours to carry out the duties of an administrator or master electrician.	
First offense:	\$1,000
Second offense:	\$1,500
Each offense thereafter:	\$3,000
(b) Failing to ensure that all electrical work complies with the electrical installation laws and rules of the state.	
First offense:	\$100
Second offense:	\$250
Third offense:	\$1,000
Each offense thereafter:	\$3,000
(c) Failing to ensure that the proper electrical safety procedures are used.	
First offense:	\$500
Second offense:	\$1,500
Each offense thereafter:	\$3,000
(d) Failing to ensure that all electrical labels, permits, and certificates required to perform electrical work are used.	
First offense:	\$250

Each offense thereafter:	\$500
(e) Failing to ensure that all electrical licenses, required to perform electrical work are used (i.e., work performed must be in the allowed scope of work for the contractor).	
First offense:	\$500
Second offense:	\$1,500
Third offense:	\$3,000
Each offense thereafter:	\$6,000
(f) Failing to see that corrective notices issued by an inspecting authority are complied with within fifteen days.	
Exception: Where an extension has been requested and granted, this penalty applies to corrections not completed within the extended time period.	
First offense:	\$250
Second offense:	\$1,000
Each offense thereafter:	\$2,000
(g) Failing to notify the department in writing within ten days if the master electrician or administrator terminates the relationship with the electrical contractor.	
First offense:	\$500
Second offense:	\$1,000
Each offense thereafter:	\$3,000
(13) Violating any of the provisions of chapter 19.28 RCW or chapter 296-46B WAC which are not identified in subsections (1) through (12) of this section.	
RCW 19.28.161 through 19.28.271 and the rules developed pursuant to them.	
First offense:	\$250
Each offense thereafter:	\$500
All other chapter 19.28 RCW provisions and the rules developed pursuant to them.	
First offense:	\$250
Second offense:	\$750
Each offense thereafter:	\$2,000

[Statutory Authority: RCW 19.28.006, 19.28.010, 19.28.031, 19.28.041, 19.28.061, 19.28.101, 19.28.131, 19.28.161, 19.28.171, 19.28.191, 19.28.201, 19.28.211, 19.28.241, 19.28.251, 19.28.281, 19.28.311, 19.28.321, 19.28.400, 19.28.420, 19.28.490, 19.28.551. 06-05-028, § 296-46B-915, filed 2/7/06, effective 5/1/06; 05-22-025, § 296-46B-915, filed 10/25/05, effective 11/25/05; 05-10-024, § 296-46B-915, filed 4/26/05, effective 6/30/05. Statutory Authority: Chapter 19.28 RCW. 04-21-086, § 296-46B-915, filed 10/20/04, effective 11/22/04. Statutory Authority: RCW 19.28.006, 19.28.010, 19.28.031, 19.28.041, 19.28.061, 19.28.101, 19.28.131, 19.28.161, 19.28.171, 19.28.191, 19.28.201, 19.28.211, 19.28.241, 19.28.251, 19.28.271, 19.28.311, 19.28.321, 19.28.400, 19.28.420, 19.28.490, 19.28.551, 2003 c 399, 2003 c 211, 2003 c 78, and 2003 c 242. 04-12-049, § 296-46B-915, filed 5/28/04, effective 6/30/04. Statutory Authority: RCW 19.28.006, 19.28.010, 19.28.031, 19.28.041, 19.28.061, 19.28.101, 19.28.131, 19.28.161, 19.28.171, 19.28.191, 19.28.201, 19.28.211, 19.28.241, 19.28.251, 19.28.271, 19.28.311, 19.28.321, 19.28.400, 19.28.420, 19.28.490, 19.28.551, 2002 c 249, chapters 34.05 and 19.28 RCW. 03-09-111, § 296-46B-915, filed 4/22/03, effective 4/22/03.]

WAC 296-46B-920 Electrical/telecommunications license/certificate types and scope of work. (1) General electrical (01): A general electrical license and/or certificate encompasses all phases and all types of electrical and telecommunications installations and minor plumbing under RCW 18.106.150. For the purposes of RCW 18.106.150, the like-in-kind replacement includes the appliance or any component part of the appliance (e.g., such as, but not limited to, the thermostat in a water heater).

(2) All specialties listed in this subsection may perform the electrical work described within their specific specialty as allowed by the occupancy and location described within the specialty's scope of work. Except for residential (02), the scope of work for these specialties does not include plumbing work regulated under chapter 18.106 RCW. See RCW 18.106.150 for plumbing exceptions for the residential (02) specialty. For the purposes of RCW 18.106.150, the like-in-kind replacement includes the appliance or any component

part of the appliance (e.g., such as, but not limited to, the thermostat in a water heater). **Specialty** (limited) electrical licenses and/or certificates are as follows:

(a) **Residential (02):** Limited to the telecommunications, low voltage, and line voltage wiring of one- and two-family dwellings, or multifamily dwellings not exceeding three stories above grade. All wiring is limited to nonmetallic sheathed cable, except for services and/or feeders, exposed installations where physical protection is required, and for wiring buried below grade.

(i) This specialty also includes the wiring for ancillary structures such as, but not limited to: Appliances, equipment, swimming pools, septic pumping systems, domestic water systems, limited energy systems (e.g., doorbells, intercoms, fire alarm, burglar alarm, energy control, HVAC/refrigeration, etc.), multifamily complex offices/garages, site lighting when supplied from the residence or ancillary structure, and other structures directly associated with the functionality of the residential units.

(ii) This specialty does not include wiring occupancies defined in WAC 296-46B-901(13), or commercial occupancies such as: Motels, hotels, offices, assisted living facilities, or stores.

(iii) See RCW 18.106.150 for plumbing exceptions for the residential (02) specialty.

(b) **Pump and irrigation (03):** Limited to the electrical connection of circuits, feeders, controls, low voltage, related telecommunications, and services to supply: Domestic water systems and public water systems include but are not limited to pumps, pressurization, filtration, treatment, or other equipment and controls, and irrigation water pumps, circular irrigation system's pumps and pump houses.

This specialty may also perform the work defined in (c) of this subsection.

Also see RCW 18.106.010 (10)(c).

(c) **Domestic pump (03A):** Limited to the extension of a branch circuit, which is supplied and installed by others, to signaling circuits, motor control circuits, motor control devices, and pumps which do not exceed 7 1/2 horsepower at 250 volts AC single phase input power, regardless of motor controller output or motor voltage/phase, used in residential potable water or residential sewage disposal systems. Domestic water systems and public water systems include but are not limited to pumps, pressurization, filtration, treatment, or other equipment and controls.

Also see RCW 18.106.010 (10)(c).

(d) **Signs (04):** Limited to placement and connection of signs and outline lighting, the electrical supply, related telecommunications, controls and associated circuit extensions thereto; and the installation of a maximum 60 ampere, 120/240 volt single phase service to supply power to a remote sign only. This specialty may service, maintain, or repair exterior luminaires that are mounted on a pole or other structure with like-in-kind components.

(i) Electrical licensing/certification is not required to:

(A) Clean the nonelectrical parts of an electric sign;

(B) To form or pour a concrete pole base used to support a sign;

(C) To operate machinery used to assist an electrician in mounting an electric sign or sign supporting pole; or

(D) To assemble the structural parts of a billboard.

(ii) Electrical licensing/certification is required to: Install, modify, or maintain a sign, sign supporting pole, sign face, sign ballast, lamp socket, lamp holder, disconnect switch, or any other part of a listed electric sign.

(e) **Limited energy system (06):** Limited to the installation of signaling and power limited circuits and related equipment. This specialty is restricted to low-voltage circuits. This specialty includes the installation of telecommunications, HVAC/refrigeration low-voltage wiring, fire protection signaling systems, intrusion alarms, energy management and control systems, industrial and automation control systems, lighting control systems, commercial and residential amplified sound, public address systems, and such similar low-energy circuits and equipment in all occupancies and locations.

(i) For the purposes of this section, when a line voltage connection is removed and reconnected to a replacement component located inside the control cabinet, the replacement must be like-in-kind or replaced using the equipment manufacturer's authorized replacement component. The line voltage circuit is limited to 120 volts 20 amps maximum and must have a means of disconnect.

(ii) The limited energy systems (06) specialty may repair or replace line voltage connections terminated inside the cabinet to power supplies internal to the low voltage equipment provided there are no modifications to the characteristics of the branch circuit/feeder load being supplied by the circuit.

(iii) The limited energy systems (06) specialty may not replace or modify the line voltage circuit or cabling or alter the means of connection of the line voltage circuit to the power supply or to the control cabinet.

Limited energy electrical contractors may perform all telecommunications work under their specialty (06) electrical license and administrator's certificate.

(f) **HVAC/refrigeration systems:**

(i) See WAC 296-46B-100 for specific HVAC/refrigeration definitions.

(ii) For the purposes of this section when a component is replaced, the replacement must be like-in-kind or made using the equipment manufacturer's authorized replacement component.

(iii) The HVAC/refrigeration specialties described in (f)(v) and (vi) of this subsection may:

(A) Install HVAC/refrigeration: Telecommunications, Class 2 low-voltage control circuit wiring/components in all residential occupancies;

(B) Install, repair, replace, and maintain line voltage components within HVAC/refrigeration equipment. Such line voltage components include product illumination luminaires installed within and powered from the HVAC/refrigeration system (e.g., reach-in beverage coolers, frozen food cases, produce cases, etc.) and new or replaced factory authorized accessories such as internally mounted outlets;

(C) Repair, replace, or maintain the internal components of the HVAC/refrigeration equipment disconnecting means or controller so long as the disconnecting means or controller is not located within a motor control center or panelboard (see Figure 920-1 and Figure 920-2);

(D) Install, repair, replace, and maintain short sections of raceway to provide physical protection for low-voltage cables. For the purposes of this section a short section cannot

mechanically interconnect two devices, junction boxes, or other equipment or components; and

(E) Repair, replace, or maintain line voltage flexible supply whips not over six feet in length, provided there are no modifications to the characteristics of the branch circuit/feeder load being supplied by the whip. There is no limitation on the whip raceway method (e.g., metallic replaced by nonmetallic).

(iv) The HVAC/refrigeration specialties described in (f)(v) and (vi) of this subsection may not:

(A) Install line voltage controllers or disconnect switches external to HVAC/refrigeration equipment;

(B) Install, repair, replace, or maintain:

- Integrated building control systems, other than HVAC/refrigeration systems;

- Single stand-alone line voltage equipment or components (e.g., heat cable, wall heaters, radiant panel heaters, baseboard heaters, contactors, motor starters, and similar equipment) unless the equipment or component:

Is exclusively controlled by the HVAC/refrigeration system and requires the additional external connection to a mechanical system(s) (e.g., connection to water piping, gas piping, refrigerant system, ducting for the HVAC/refrigeration system, gas fireplace flume, ventilating systems, etc. (i.e., as in the ducting connection to a bathroom fan)). The external connection of the equipment/component to the mechanical system must be required as an integral component allowing the operation of the HVAC/refrigeration system; or

Contains a HVAC/refrigeration mechanical system(s) (e.g., water piping, gas piping, refrigerant system, etc.) within the equipment (e.g., "through-the-wall" air conditioning units, self-contained refrigeration equipment, etc.);

- Luminaires that serve as a building or structure lighting source, even if mechanically connected to a HVAC/refrigeration system (e.g., troffer luminaire used as a return air device, lighting within a walk-in cooler/freezer used for personnel illumination);

- Raceway/conduit systems;

- Line voltage: Service, feeder, or branch circuit conductors. However, if a structure's feeder/branch circuit supplies HVAC/refrigeration equipment containing a supplementary overcurrent protection device(s), this specialty may install the conductors from the supplementary overcurrent device(s) to the supplemental HVAC/refrigeration equipment if the supplementary overcurrent device and the HVAC/refrigeration equipment being supplied are located within sight of each other (see Figure 920-2); or

- Panelboards, switchboards, or motor control centers external to HVAC/refrigeration system.

(v) HVAC/refrigeration **(06A)**:

(A) This specialty is not limited by voltage, phase, or amperage.

(B) No unsupervised electrical trainee can install, repair, replace, or maintain any part of a HVAC/refrigeration system that contains any circuit rated over 600 volts whether the circuit is energized or deenergized.

(C) This specialty may:

- Install HVAC/refrigeration: Telecommunications, Class 2 low-voltage control circuit wiring/components in other than residential occupancies:

That have no more than three stories on/above grade; or
Regardless of the number of stories above grade if the installation:

- Does not pass between stories;

- Is made in a previously occupied and wired space; and

- Is restricted to the HVAC/refrigeration system;

- Repair, replace, and maintain HVAC/refrigeration:

Telecommunications, Class 2 low-voltage control circuit wiring/components in all occupancies regardless of the number of stories on/above grade.

- Install a bonding conductor for metal gas piping to an existing accessible grounding electrode conductor or grounding electrode only when terminations can be made external to electrical panelboards, switchboards, or other distribution equipment.

(D) This specialty may not install, repair, replace, or maintain: Any electrical wiring governed under article(s) 500, 501, 502, 503, 504, 505, 510, 511, 513, 514, 515, or 516 NEC (i.e., classified locations) located outside the HVAC/refrigeration equipment.

(vi) HVAC/refrigeration - restricted **(06B)**:

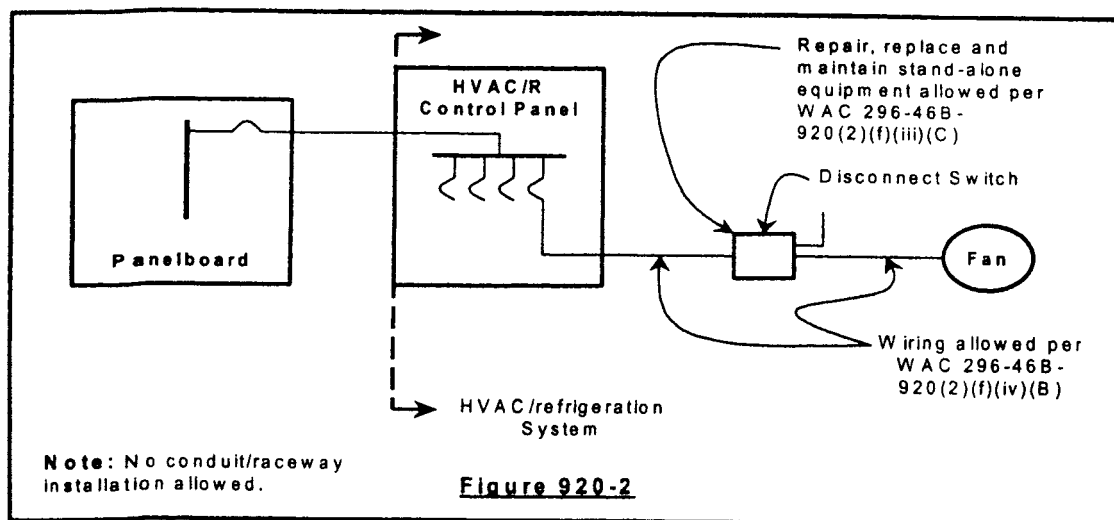
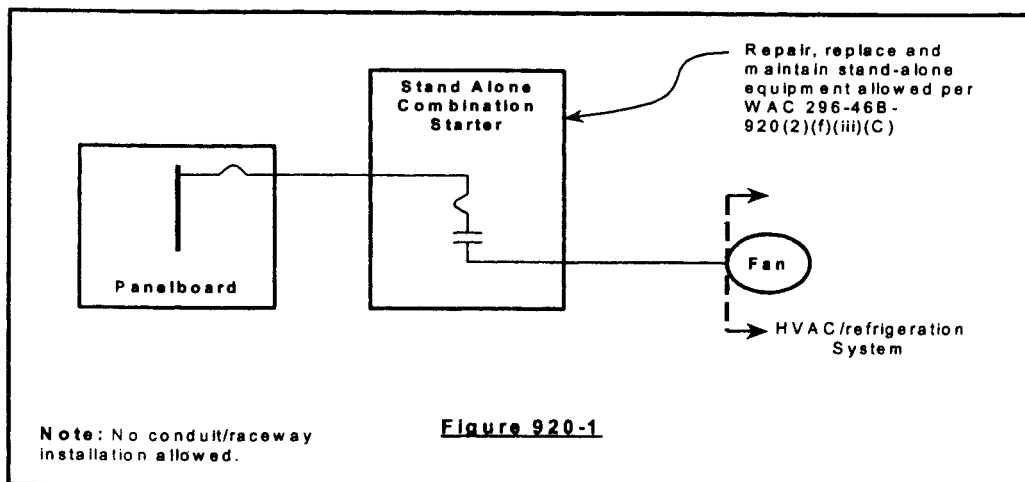
(A) This specialty may not perform any electrical work where the primary electrical power connection to the HVAC/refrigeration system exceeds: 250 volts, single phase, or 120 amps.

(B) This specialty may install, repair, replace, or maintain HVAC/refrigeration: Telecommunications, Class 2 low-voltage control circuit wiring/components in other than residential occupancies that have no more than three stories on/above grade.

(C) This specialty may not install, repair, replace, or maintain:

- The allowed telecommunications/low-voltage HVAC/refrigeration wiring in a conduit/raceway system; or

- Any electrical work governed under article(s) 500, 501, 502, 503, 504, 505, 510, 511, 513, 514, 515, or 516 NEC (i.e., classified locations).



(g) **Nonresidential maintenance (07):** Limited to maintenance, repair and replacement of like-in-kind existing electrical equipment and conductors. This specialty does not include maintenance activities in residential dwellings defined in (a) of this subsection for the purposes of accumulating training experience toward qualification for the residential (02) specialty electrician examination.

This specialty may perform the work defined in (h), (i), (j), (k), and (l) of this subsection.

(h) **Nonresidential lighting maintenance and lighting retrofit (07A):** Limited to working within the housing of existing nonresidential luminaires for work related to repair, service, maintenance of luminaires and installation of energy efficiency lighting retrofit upgrades. This specialty includes replacement of lamps, ballasts, sockets and the installation of listed lighting retrofit reflectors and kits. All work is limited to the luminaire body, except remote located ballasts may be replaced or retrofitted with approved products. This specialty does not include installing new luminaires or branch circuits; moving or relocating existing luminaires; or altering existing branch circuits.

(i) **Residential maintenance (07B):** This specialty is limited to residential dwellings as defined in WAC 296-46B-

920 (2)(a), multistory dwelling structures with no commercial facilities, and the interior of dwelling units in multistory structures with commercial facilities. This specialty may maintain, repair, or replace (like-in-kind) existing electrical utilization equipment, and all permit exempted work as defined in WAC 296-46B-900.

This specialty is limited to equipment and circuits to a maximum of 250 volts, 60 amperes, and single phase maximum.

This specialty may disconnect and reconnect low-voltage control and line voltage supply whips not over six feet in length provided there are no modifications to the characteristics of the branch circuit or whip.

For the purpose of this specialty, "electrical equipment" does not include electrical conductors, raceway or conduit systems external to the equipment or whip. This specialty cannot perform any plumbing work regulated under chapter 18.106 RCW.

(j) **Restricted nonresidential maintenance (07C):** This specialty may maintain, repair, or replace (like-in-kind) existing electrical utilization equipment, and all permit exempted work as defined in WAC 296-46B-900 except for the replacement or repair of circuit breakers.

This specialty is limited to equipment and circuits to a maximum of 277 volts and 20 amperes for lighting branch circuits only and/or maximum 250 volts and 60 amperes for other circuits.

The replacement of luminaires is limited to in-place replacement required by failure of the luminaire to operate. Luminaires installed in suspended lay-in tile ceilings may be relocated providing: The original field installed luminaire supply whip is not extended or relocated to a new supply point; or if a manufactured wiring assembly supplies luminaire power, a luminaire may be relocated no more than eight feet providing the manufactured wiring assembly circuiting is not changed.

This specialty may disconnect and reconnect low-voltage control and line voltage supply whips not over six feet in length provided there are no modifications to the characteristics of the branch circuit. For the purpose of this specialty, "electrical equipment" does not include electrical conductors, raceway or conduit systems external to the equipment or whip.

This specialty may perform the work defined in (h) and (i) of this subsection.

This specialty cannot perform any work governed under Article(s) 500, 501, 502, 503, 504, 505, 510, 511, 513, 514, 515, or 516 NEC (i.e., classified locations). This specialty cannot perform any plumbing work regulated under chapter 18.106 RCW.

(k) **Appliance repair (07D):** Servicing, maintaining, repairing, or replacing household appliances, small commercial/industrial appliances, and other small electrical utilization equipment.

(i) For the purposes of this subsection:

(A) The appliance or electrical utilization equipment must be self-contained and built to standardized sizes or types. The appliance/equipment must be connected as a single unit to a single source of electrical power limited to a maximum of 250 volts, 60 amperes, single phase.

(B) Appliances and electrical utilization equipment include, but are not limited to: Ovens, office equipment, vehicle repair equipment, commercial kitchen equipment, self-contained hot tubs and spas, grinders, and scales.

(C) Appliances and utilization equipment do not include systems and equipment such as: Alarm/energy management/similar systems, luminaires, furnaces/heaters/air conditioners/heat pumps, sewage disposal equipment, door/gate/similar equipment, or individual components installed so as to create a system (e.g., pumps, switches, controllers, etc.).

(ii) This specialty includes:

(A) The in-place like-in-kind replacement of the appliance or equipment if the same unmodified electrical circuit is used to supply the equipment being replaced. This specialty also includes the like-in-kind replacement of electrical components within the appliance or equipment;

(B) The disconnection and reconnection of low-voltage control and line voltage supply whips not over six feet in length provided there are no modifications to the characteristics of the branch circuit; and

(C) The installation of an outlet box and outlet at an existing appliance or equipment location when converting the appliance from a permanent electrical connection to a plug and cord connection. Other than the installation of the outlet

box and outlet, there can be no modification to the existing branch circuit supplying the appliance or equipment.

(iii) This specialty does not include:

(A) The installation, repair, or modification of branch circuits conductors, services, feeders, panelboards, disconnect switches, or raceway/conductor systems interconnecting multiple appliances, equipment, or other electrical components.

(B) Any work governed under Article(s) 500, 501, 502, 503, 504, 505, 510, 511, 513, 514, 515, or 516 NEC (i.e., classified locations).

(C) Any plumbing work regulated under chapter 18.106 RCW.

(l) **Equipment repair (07E):** Servicing, maintaining, repairing, or replacing utilization equipment.

See RCW 19.28.095 for the equipment repair scope of work and definitions. This specialty cannot perform any plumbing work regulated under chapter 18.106 RCW.

(m) **Telecommunications (09):** Limited to the installation, maintenance, and testing of telecommunications systems, equipment, and associated hardware, pathway systems, and cable management systems.

(i) This specialty includes:

(A) Installation of open wiring systems of telecommunications cables.

(B) Surface nonmetallic raceways designated and used exclusively for telecommunications.

(C) Optical fiber innerduct raceway.

(D) Underground raceways designated and used exclusively for telecommunications and installed for additions or extensions to existing telecommunications systems not to exceed fifty feet inside the building.

(E) Incidental short sections of circular or surface metal raceway, not to exceed ten feet, for access or protection of telecommunications cabling and installation of cable trays and ladder racks in telecommunications service entrance rooms, spaces, or closets.

(F) Audio or paging systems where the amplification is integrated into the telephone system equipment.

(G) Audio or paging systems where the amplification is provided by equipment listed as an accessory to the telephone system equipment and requires the telephone system for the audio or paging system to function.

(H) Closed circuit video monitoring systems if there is no integration of line or low-voltage controls for cameras and equipment. Remote controlled cameras and equipment are considered (intrusion) security systems and must be installed by appropriately licensed electrical contractors and certified electricians.

(I) Customer satellite and conventional antenna systems receiving a telecommunications service provider's signal. All receiving equipment is on the customer side of the telecommunications network demarcation point.

(ii) This specialty does not include horizontal cabling used for fire protection signaling systems, intrusion alarms, access control systems, patient monitoring systems, energy management control systems, industrial and automation control systems, HVAC/refrigeration control systems, lighting control systems, and stand-alone amplified sound or public address systems. Telecommunications systems may interface with other building signal systems including security, alarms,

and energy management at cross-connection junctions within telecommunications closets or at extended points of demarcation. Telecommunications systems do not include the installation or termination of premises line voltage service, feeder, or branch circuit conductors or equipment. Horizontal cabling for a telecommunications outlet, necessary to interface with any of these systems outside of a telecommunications closet, is the work of the telecommunications contractor.

(n) **Door, gate, and similar systems (10):** This specialty may install, service, maintain, repair, or replace door/gate/similar systems electrical operator wiring and equipment.

(i) For the purposes of this subsection, door/gate/similar systems electrical operator systems include electric gates, doors, windows, awnings, movable partitions, curtains and similar systems. These systems include, but are not limited to: Electric gate/door/similar systems operators, control push buttons, key switches, key pads, pull cords, air and electric treadle, air and electric sensing edges, coil cords, take-up reels, clocks, photo electric cells, loop detectors, motion detectors, remote radio and receivers, antenna, timers, lock-out switches, stand-alone release device with smoke detection, strobe light, annunciator, control panels, wiring and termination of conductors.

(ii) This specialty includes:

(A) Low-voltage, NEC Class 2, door/gate/similar systems electrical operator systems where the door/gate/similar systems electrical operator system is not connected to other systems.

(B) Branch circuits originating in a listed door/gate/similar systems electric operator control panel that supplies only door/gate/similar systems system components providing: The branch circuit does not exceed 600 volts, 20 amperes and the component is within sight of the listed door/gate/similar systems electric operator control panel.

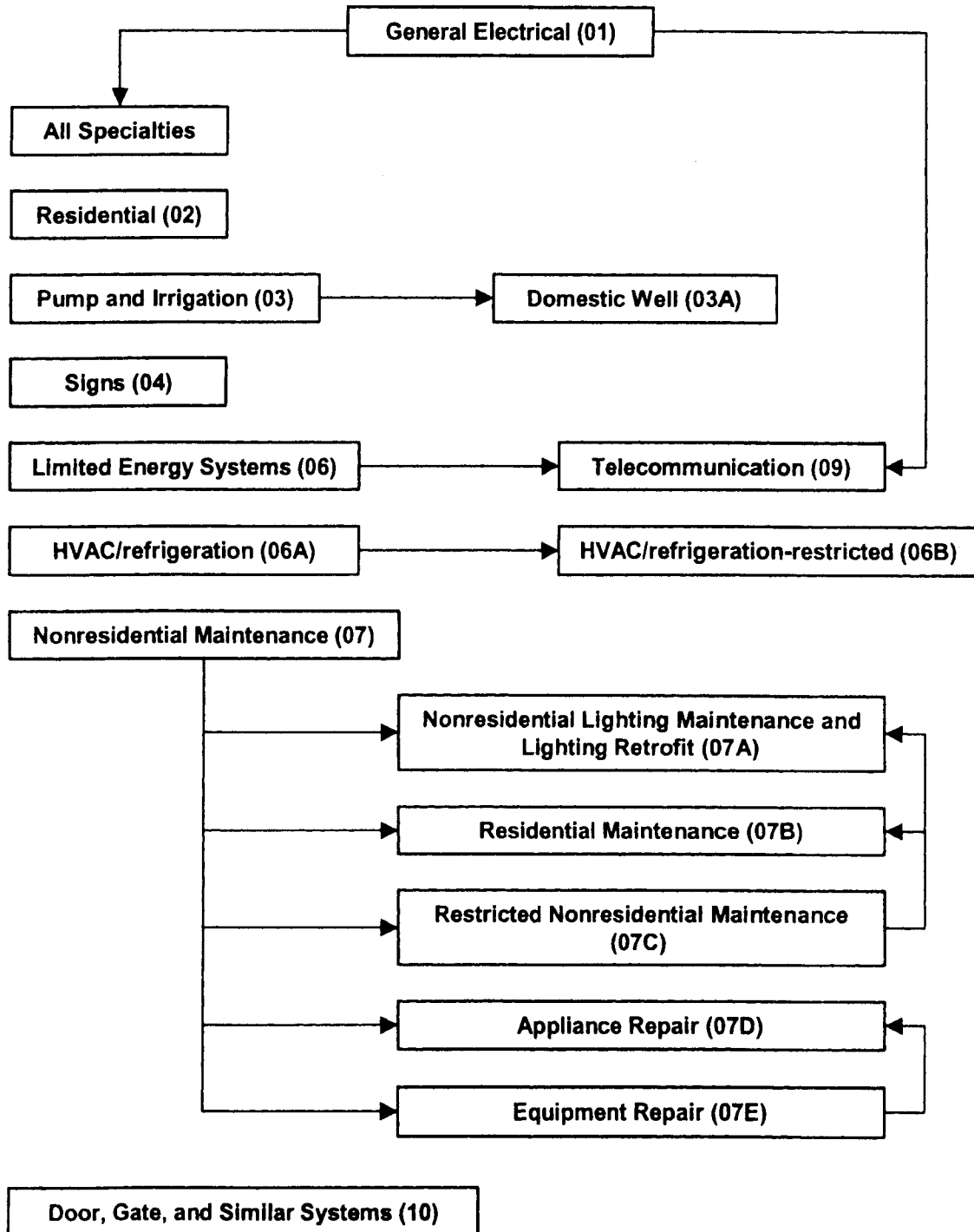
(C) Reconnection of line voltage power to a listed door/gate/similar systems electric operator control panel is permitted provided:

- There are no modifications to the characteristics of the branch circuit/feeder;
- The circuit/feeder does not exceed 600 volts, 20 amperes; and
- The conductor or conduit extending from the branch circuit/feeder disconnecting means or junction box does not exceed six feet in length.

(iii) This specialty does not include any work governed under Article(s) 500, 501, 502, 503, 504, 505, 510, 511, 513, 514, 515, or 516 NEC (i.e., classified locations). This specialty may not install, repair, or replace branch circuit (line voltage) conductors, services, feeders, panelboards, or disconnect switches supplying the door/gate/similar systems electric operator control panel.

(3) A specialty electrical contractor, other than the **(06)** limited energy specialty electrical contractor, may only perform telecommunications work within the equipment or occupancy limitations of their specialty electrical contractor's license. Any other telecommunications work requires a telecommunications contractor's license.

Table 920-1 Allowed Scope of Work Crossover



[Statutory Authority: RCW 19.28.006, 19.28.010, 19.28.031, 19.28.041, 19.28.061, 19.28.101, 19.28.131, 19.28.161, 19.28.171, 19.28.191, 19.28.201, 19.28.211, 19.28.241, 19.28.251, 19.28.281, 19.28.311, 19.28.321, 19.28.400, 19.28.420, 19.28.490, 19.28.551. 06-24-041, § 296-46B-920, filed 11/30/06, effective 12/31/06; 06-05-028, § 296-46B-920, filed 2/7/06, effective 5/1/06; 05-22-025, § 296-46B-920, filed 10/25/05, effective 11/25/05; 05-10-024, § 296-46B-920, filed 4/26/05, effective 6/30/05. Statutory Authority: RCW 19.28.006, 19.28.010, 19.28.031, 19.28.041, 19.28.061, 19.28.101, 19.28.131, 19.28.161, 19.28.171, 19.28.191, 19.28.201, 19.28.211, 19.28.241, 19.28.251, 19.28.271, 19.28.311, 19.28.321, 19.28.400, 19.28.420, 19.28.490, 19.28.551, 2003 c 399, 2003 c 211, 2003 c 78, and 2003 c 242. 04-12-049, § 296-46B-920, filed 5/28/04, effective 6/30/04. Statutory Authority: RCW 19.28.006, 19.28.010, 19.28.031, 19.28.041, 19.28.061, 19.28.101, 19.28.131, 19.28.161, 19.28.171, 19.28.191, 19.28.201, 19.28.211, 19.28.241, 19.28.251, 19.28.271, 19.28.311, 19.28.321, 19.28.400, 19.28.420, 19.28.490, 19.28.551, 2002 c 249, chapters 34.05 and 19.28 RCW. 03-09-111, § 296-46B-920, filed 4/22/03, effective 4/22/03.]

WAC 296-46B-925 Electrical/telecommunications contractor's license. General.

(1) The department will issue an electrical/telecommunications contractor's license that will expire twenty-four months following the date of issue to a person, firm, partnership, corporation or other entity that complies with requirements for such license in chapter 19.28 RCW. An electrical/telecommunications contractor's license will not be issued to or renewed for a person, firm, or partnership unless the Social Security number, date of birth, and legal address of the individual legal owner(s) are submitted with the application. The department may issue an electrical/telecommunications contractor's license for a period greater or less than twenty-four months for the purpose of equalizing the number of electrical contractor's licenses that expire each month. The department may prorate the electrical/telecommunications contractor's license fee according to the license period.

(2) Combination specialty contractor's license. The department may issue a combination specialty contractor's license to a firm that qualifies for more than one specialty electrical contractor's license. The assigned administrator must be certified in all specialties applicable to the combination specialty contractor's license. The license will plainly indicate the specialty licenses' codes included in the combination license. An administrator assigned to a telecommunications contractor must be certified as a telecommunications administrator. A combination license will not be issued for telecommunications (09).

(3) See RCW 19.28.041(1) for a contractor doing domestic pumping work as defined in RCW 18.106.010 (10)(c).

(4) The department may deny renewal of an electrical/telecommunications contractor's license if a firm, an owner, partner, member, or corporate officer owes money as a result of an outstanding final judgment(s) to the department.

Electrical/telecommunications contractor bond, cash or securities deposit.

(5) Bond, cash, or securities deposit.

(a) The electrical/telecommunications contractor may furnish the department with a cash or security deposit to meet the bond requirements in lieu of posting a bond. A cash or security deposit assigned to the department for bond requirements will be held in place for one year after the contractor's license is expired, revoked, or the owner notifies the department in writing that the company is no longer doing business in the state of Washington as an electrical/telecommunications contractor. Upon written request, the cash or security deposit will then be released by the department providing there is no pending legal action against the contractor under chapter 19.28 RCW of which the department has been notified.

(b) See RCW 19.28.041(7) for a contractor doing domestic pumping work as defined in RCW 18.106.010 (10)(c).

Telecommunications contractor insurance.

(6) To obtain a telecommunications contractor's license, the applicant must provide the department with an original certificate of insurance naming the department of labor and industries, electrical section as the certificate holder. Insurance coverage must be no less than twenty thousand dollars for injury or damages to property, fifty thousand dollars for

injury or damage including death to any one person, and one hundred thousand dollars for injury or damage including death to more than one person. The insurance will be considered a continuing obligation unless canceled by the insurance company. The insurance company must notify the department in writing ten days prior to the effective date of said cancellation or failure to renew.

(7) The telecommunications contractor may furnish the department with an assigned account to meet the insurance requirements in lieu of a certificate of insurance. An account assigned to the department for insurance requirements will be held in place for three years after the contractor's license is expired, revoked, or the owner notifies the department in writing that the company is no longer doing business in the state of Washington as a telecommunications contractor. Upon written request, the account then will be released by the department providing there is no pending legal action against the contractor under chapter 19.28 RCW of which the department has been notified.

Electrical/telecommunications contractor exemptions.

(8) The following types of systems and circuits are considered exempt from the requirements for licensing and permitting described in chapter 19.28 RCW. The electrical failure of these systems does not inherently or functionally compromise safety to life or property.

Low-voltage thermocouple derived circuits and low-voltage circuits for:

- (a) Built-in residential vacuum systems;
- (b) Underground landscape sprinkler systems;
- (c) Underground landscape lighting; and
- (d) Residential garage doors.

For these types of systems and circuits to be considered exempt, the following conditions must be met:

(e) The power supplying the installation must be derived from a listed Class 2 power supply;

(f) The installation and termination of line voltage equipment and conductors supplying these systems is performed by appropriately licensed and certified electrical contractors and electricians;

(g) The conductors of these systems do not pass through fire-rated walls, fire-rated ceilings or fire-rated floors in other than residential units; and

(h) Conductors or luminaires are not installed in installations covered by the scope of Article 680 NEC (swimming pools, fountains, and similar installations).

(9) Firms who clean and/or replace lamps in luminaires are not included in the requirements for licensing in chapter 19.28 RCW. This exemption does not apply to electric signs as defined in the NEC.

(10) Firms who install listed plug and cord connected utilization equipment are not included in the requirements for licensing in chapter 19.28 RCW. The plug and cord must be a single listed unit consisting of a molded plug and cord and not exceeding 250 volt 60 ampere single phase. The plug and cord can be field installed per the manufacturer's instructions and the product listing requirements. The utilization equipment must be a single manufactured unit that does not require any electrical field assembly except for the installation of the plug and cord.

(11) Firms regulated by the Federal Communications Commission or the utilities and transportation commission, supplying telecommunications service to an end-user's property, are not required to be licensed as a telecommunications contractor under chapter 19.28 RCW for telecommunications installations made ahead of the telecommunications network demarcation point.

(12) Unregulated firms, supplying telecommunications service to an end-user's property, are not required to be licensed as a telecommunications contractor under chapter 19.28 RCW for telecommunications installations made ahead of the telecommunications network demarcation point.

(13) Leaseholders. For electrical installations, maintenance, or alterations to existing buildings only, any person, firm, partnership, corporation, or other entity holding a valid, signed lease from the property owner authorizing the leaseholder to perform electrical work, on the property the leaseholder occupies, will be allowed to purchase an electrical permit(s) and do electrical work on or within the property described in the lease. The lessee and/or his or her regularly employed employees must perform the electrical installation, maintenance and alteration.

The lessee who performs the electrical maintenance or installation work must be the sole occupant of the property or space. Property owners or leaseholders cannot perform electrical work on new buildings for rent, sale, or lease, without the proper electrical licensing and certification. Refer to RCW 19.28.261 for exemptions from licensing and certification.

(14) Assisting a householder. A friend, neighbor, relative, or other person (including a certified electrician) may assist a householder, at his/her residence in the performance of electrical work on the condition that the householder is present when the work is performed and the person assisting the householder does not accept money or other forms of compensation for the volunteer work. For the purposes of this subsection, a residence is a single-family residence.

(15) Volunteering to do electrical work. There are no exceptions from the electrical contractor's license or electrician certification requirements to allow persons to perform volunteer electrical work for anyone other than a householder or a nonprofit organization as allowed by RCW 19.28.091(7). For the purpose of this section, volunteer means that there is no remuneration or receiving of goods or services in return for electrical installations performed.

(16) Farms or place of business. See RCW 19.28.261 for licensing/certification exemptions allowed for the owner(s) of a farm or other place of business and for the employees of the owner.

Exemptions - electrical utility and electrical utility's contractor.

(17) Electrical utility system exemption. Neither a serving electrical utility nor a contractor employed by the serving electrical utility is required to have an electrical contractor's license for work on the "utility system" or on service connections or on meters and other apparatus or appliances used to measure the consumption of electricity.

(a) Street lighting exemption. A serving electrical utility is not required to have an electrical contractor's license or

electrical permit to work on electrical equipment used in the lighting of streets, alleys, ways, or public areas or squares.

Utilities are allowed to install outside area lighting on privately owned property where the lighting fixture(s) is installed on a utility owned pole(s) used to support utility owned electric distribution wiring or equipment designed to supply electrical power to a customer's property.

Utilities are allowed to install area lighting outside and not attached to a building or other customer owned structure when the areas are outside publicly owned buildings such as: Publicly owned/operated parking lots, parks, schools, play fields, beaches, and similar areas; or the areas are privately owned where the public has general, clear and unrestricted access such as: Church parking lots, and commercial property public parking areas and similar areas.

Utilities are not allowed to install area lighting when the area is privately owned and the public does not have general, clear, and unrestricted access such as industrial property, residential property and controlled commercial property where the public's access is otherwise restricted.

Utilities are not allowed to install area lighting where the lighting is supplied from a source of power derived from a customer owned electrical system.

(b) Customer-owned equipment exemption. A serving electrical utility is not required to have an electrical contractor's license to work on electrical equipment owned by a commercial, industrial, or public institution customer if:

(i) The utility has not solicited such work; and

(ii) Such equipment:

(A) Is located outside a building or structure; and

(B) The work performed is on the primary side of the customer's transformer(s) which supplies power at the customer's utilization voltage.

(c) Exempted equipment and installations. No person, firm, partnership, corporation, or other entity is required to have an electrical contractor's license for work on electrical equipment and installations thereof that are exempted by RCW 19.28.091.

(d) Exemption from inspection.

(i) The work of a serving electrical utility and its contractors on the utility system is not subject to inspection. The utility is responsible for inspection and approval for the installation.

(ii) Work exempted by NEC 90.2 (B)(5), 1981 edition, is not subject to inspection.

Exemptions - electrical utility telecommunications transition equipment installations, maintenance and repair.

(18) No license, inspection or other permit will be required by the department of any electric utility or, of any person, firm, partnership or corporation or other entity employed or retained by an electric utility or its contractor, because of work in connection with the installation, maintenance, or repair of telecommunications transition equipment located ahead of the utility's telecommunications network demarcation point on the outside of a building or other structure when the work is performed by a qualified person consistent with the requirements of the National Electric Code (NEC) except as provided in (a) and (b) of this subsection:

(a) The following exceptions to the NEC shall be permitted:

(i) An additional service disconnect supplying power to the transition equipment can be connected on the supply side of the main service disconnect supplying general power to the building;

(ii) Service entrance disconnects may be separated when clearly labeled;

(iii) The service disconnect used for supplying power to the transition equipment must be connected to the grounding electrode system using:

(A) # 8 AWG copper or larger grounding electrode conductor if protected from physical damage; or

(B) # 6 AWG copper or larger grounding electrode conductor if not protected from physical damage;

(iv) Use of equipment or materials that have been listed/field evaluated by a recognized independent testing laboratory or the department;

(v) Low-voltage circuits do not require a separate disconnecting means and may be grounded to the transition equipment grounding system;

(vi) Any other variance to the NEC must be approved by the department.

(b) A variance recommended by a joint utility standards group composed of representatives of both public and private utilities or certified by a professional engineer will be approved by the department unless the recommendation is inconsistent with meeting equivalent objectives for public safety.

(c) For the purposes of this section, a qualified worker is employed by a utility or its contractor and is familiar with the construction or operation of such lines and/or equipment that concerns his/her position and who is proficient with respect to the safety hazards connected therewith, or, one who has passed a journey status examination for the particular branch of the electrical trades with which he/she may be connected or is in a recognized training or apprenticeship course and is supervised by a journey level person.

(d) Although the utility is responsible for inspection and approval of the installation, including the selection of material and equipment, the department reserves the right to audit worker qualifications and inspect such installations semiannually for conformance with the requirements of (a), (b) and (c) of this subsection but shall not collect a permit fee for such inspection or audit.

(e) If a utility fails to meet the requirements of this section, the department may require the utility to develop and submit a remedial action plan and schedule to attain compliance with this section which may be enforced by the department.

(f) This exemption shall be in addition to any other exemption provided in chapter 19.28 RCW, this chapter or other applicable law.

Exemptions - independent electrical power production equipment exemption.

(19) An independent electrical power production entity is not required to have an electrical contractor's license to work on electrical equipment used to produce or transmit electrical power if:

(a) The entity is:

(i) The owner or operator of the generating facility is regulated by the Federal Energy Regulatory Commission (FERC);

(ii) A municipal utility, or other form of governmental electric utility, or by an electrical cooperative or mutual corporation; or

(iii) The owner or operator of the generating facility is an independent electrical power producer and the facility generates electrical power only for sale to one or more:

(A) Electrical utilities regulated by FERC, municipal utility, or other form of governmental utility, or to an electric cooperative or mutual corporation; and

(B) The electrical power generated by the facility is not used for self-generation or any other on- or off-site function other than sale to one or more utilities regulated by FERC or by one or more state public utilities commissions, or to a PUD, municipal utility, or other form of governmental electric utility, or to an electric cooperative or mutual corporation.

(b) The entity must supply the chief electrical inspector a valid master business license issued by the department of licensing, state of Washington so that the entity's status as a revenue generating business can be confirmed.

(c) The entity has entered into an agreement to sell electricity to a utility or to a third party; and

(d) The electrical equipment is used to transmit electricity from the terminals of an electrical generating unit located on premises to the point of interconnection with a utility system.

(e) The electrical power production facility's generation capacity exceeds 115 KVA.

(f) Notwithstanding that a generating facility may be granted an exemption pursuant to this section, the facility will be subject to all the requirements of chapter 19.28 RCW if the facility at any time in the future ceases to comply with the requirements for exemption. All site facilities not exclusively and directly required to generate and/or distribute the electrical power generated on the site are subject to all the licensing and inspection requirements of chapter 19.28 RCW. All facility services, feeders, and circuits not exclusively and directly required to generate and/or distribute the electrical power (e.g., lights, outlets, etc.) must comply with all requirements of chapter 19.28 RCW for licensing and inspection. Facility circuits supplied to equipment required for the function of generation equipment (e.g., block heaters, power supplies, etc.) must comply with all requirements of chapter 19.28 RCW for licensing and inspection up to and including the equipment termination point.

Exemptions - telegraph and telephone utility and telegraph and telephone utility's contractor.

(20) Telegraph and telephone utility exempted equipment and installations. No person, firm, partnership, corporation, or other entity is required to have an electrical contractor's license for work on electrical equipment and installations thereof that are exempted by RCW 19.28.151. For the purposes of this exemption, "building or buildings used exclusively for that purpose" may mean any separate building or space of a building where the space is separated from the remainder of the building by a two-hour fire wall. The tele-

communications or telegraph equipment within such a space must supply telephone or telegraph service to other customer's buildings (i.e., telecommunications or telegraph equipment cannot solely supply the building containing the telephone/telegraph space).

Exemptions - manufacturers of electrical/telecommunications products.

(21) Manufacturers of electrical/telecommunications systems products will be allowed to utilize a manufacturer's authorized factory-trained technician to perform initial calibration, testing, adjustment, modification incidental to the startup and checkout of the equipment, or replacement of components within the confines of the specific product, without permit or required licensing:

- (a) Provided the product:
 - (i) Has not been previously energized;
 - (ii) Has been recalled by the Consumer Product Safety Commission;
 - (iii) Is within the manufacturer's written warranty period;
 or
- (iv) The manufacturer is working under the written request and supervision of an appropriately licensed electrical contractor.

(b) Modifications to the equipment, as designated above, must not include any changes to the original intended configuration nor changes or contact with external or field-connected components or wiring.

(c) The manufacturer will be responsible for obtaining any required reapproval/recertification from the original listing or field evaluation laboratory.

(d) The manufacturer must notify the department if any modifications have been made or reapproval/recertification is required.

Premanufactured electric power generation equipment assemblies and control gear.

(22) Premanufactured electric power generation equipment assemblies and control gear.

(a) Manufacturers of premanufactured electric power generation equipment assemblies and control gear will be allowed to utilize a manufacturer's authorized factory-trained technician to perform initial calibration, testing, adjustment, modification incidental to the startup and checkout of the equipment, or replacement of components within the confines of the specific product, without permit or required licensing, provided:

- (i) For transfer equipment, the product has not been previously energized or is within the manufacturer's written warranty period;
- (ii) Modifications to the equipment, as designated above, must not include any changes to the original intended configuration nor changes or contact with external or field-connected components or wiring;
- (iii) The manufacturer will be responsible for obtaining any required reapproval/recertification from the original listing or field evaluation laboratory; or
- (iv) The manufacturer must notify the department if any modifications have been made or reapproval/recertification is required.

(b) Premanufactured electric power generation equipment assemblies are made up of reciprocating internal combustion engines and the associated control gear equipment. Control gear equipment includes control logic, metering, and annunciation for the operation and the quality of power being generated by the reciprocating internal combustion engine and does not have the function of distribution of power.

(c) Modifications of a transfer switch must not include changes to the original intended configuration or changes or contact with externally field-connected components.

(d) For the purposes of this subsection, the following work on premanufactured electric power generation equipment assemblies is not exempt from the requirements of chapter 19.28 RCW:

(i) Installation or connection of conduit or wiring between the power generation unit, transfer switch, control gear;

(ii) Installation of the transfer switch;

(iii) Connections between the power generation unit, transfer switch, control gear, and utility's transmission or distribution systems;

(iv) Connections between the power generation unit, transfer switch, control gear, and any building or structure; or

(v) Test connections with any part of:

(A) The utility's transmission or distribution system; or

(B) The building or structure.

(23) The installation, maintenance, or repair of a medical device deemed in compliance with chapter 19.28 RCW is exempt from licensing requirements under RCW 19.28.091, certification requirements under RCW 19.28.161, and inspection and permitting requirements under RCW 19.28-101. This exemption does not include work providing electrical feeds into the power distribution unit or installation of conduits and raceways. This exemption covers only those factory engineers or third-party service companies with equivalent training who are qualified to perform such service.

(24) Coincidental electrical/plumbing work. See RCW 19.28.091(8) for the plumber exemption.

(25) Nothing in this section will alter or amend any other exemptions from or requirement for licensure or inspection, chapter 19.28 RCW or this chapter.

[Statutory Authority: RCW 19.28.006, 19.28.010, 19.28.031, 19.28.041, 19.28.061, 19.28.101, 19.28.131, 19.28.161, 19.28.171, 19.28.191, 19.28.201, 19.28.211, 19.28.241, 19.28.251, 19.28.281, 19.28.311, 19.28.321, 19.28.400, 19.28.420, 19.28.490, 19.28.551, 06-24-041, § 296-46B-925, filed 11/30/06, effective 12/31/06; 06-05-028, § 296-46B-925, filed 2/7/06, effective 5/1/06; 05-10-024, § 296-46B-925, filed 4/26/05, effective 6/30/05. Statutory Authority: Chapter 19.28 RCW. 04-21-086, § 296-46B-925, filed 10/20/04, effective 11/22/04. Statutory Authority: RCW 19.28.006, 19.28.010, 19.28.031, 19.28.041, 19.28.061, 19.28.101, 19.28.131, 19.28.161, 19.28.171, 19.28.191, 19.28.201, 19.28.211, 19.28.241, 19.28.251, 19.28.271, 19.28.311, 19.28.321, 19.28.400, 19.28.420, 19.28.490, 19.28.551, 2003 c 399, 2003 c 211, 2003 c 78, and 2003 c 242. 04-12-049, § 296-46B-925, filed 5/28/04, effective 6/30/04. Statutory Authority: RCW 19.28.006, 19.28.010, 19.28.031, 19.28.041, 19.28.061, 19.28.101, 19.28.131, 19.28.161, 19.28.171, 19.28.191, 19.28.201, 19.28.211, 19.28.241, 19.28.251, 19.28.271, 19.28.311, 19.28.321, 19.28.400, 19.28.420, 19.28.490, 19.28.551, 2002 c 249, chapters 34.05 and 19.28 RCW. 03-09-111, § 296-46B-925, filed 4/22/03, effective 4/22/03.]

WAC 296-46B-930 Assignment—Administrator or master electrician. An administrator or master electrician designated on the electrical/telecommunications contractor's

license must be a member of the firm who fulfills the duties of an assigned master electrician/administrator as required in RCW 19.28.061(5), or be a full-time supervisory employee. In determining whether the individual is a member of the firm, the department will require that the individual is named on the electrical contractor application or at subsequent renewal and:

- (1) Partners must be on file with the department of licensing; or
- (2) Corporate officers or members of an LLC must be on file with the secretary of state.

In determining whether an individual is a full-time supervisory employee, the department will consider whether the individual is on the electrical/telecommunications contractor's full-time payroll; receives a regular salary or wage similar to other employees; has supervisory responsibility for work performed by the electrical/telecommunications contractor, and carries out the duties shown in chapter 19.28 RCW.

[Statutory Authority: RCW 19.28.006, 19.28.010, 19.28.031, 19.28.041, 19.28.061, 19.28.101, 19.28.131, 19.28.161, 19.28.171, 19.28.191, 19.28.201, 19.28.211, 19.28.241, 19.28.251, 19.28.281, 19.28.311, 19.28.321, 19.28.400, 19.28.420, 19.28.490, and 19.28.551. 05-10-024, § 296-46B-930, filed 4/26/05, effective 6/30/05. Statutory Authority: RCW 19.28.006, 19.28.010, 19.28.031, 19.28.041, 19.28.061, 19.28.101, 19.28.131, 19.28.161, 19.28.171, 19.28.191, 19.28.201, 19.28.211, 19.28.241, 19.28.251, 19.28.271, 19.28.311, 19.28.321, 19.28.400, 19.28.420, 19.28.490, 19.28.551, 2003 c 399, 2003 c 211, 2003 c 78, and 2003 c 242. 04-12-049, § 296-46B-930, filed 5/28/04, effective 6/30/04. Statutory Authority: RCW 19.28.006, 19.28.010, 19.28.031, 19.28.041, 19.28.061, 19.28.101, 19.28.131, 19.28.161, 19.28.171, 19.28.191, 19.28.201, 19.28.211, 19.28.241, 19.28.251, 19.28.271, 19.28.311, 19.28.321, 19.28.400, 19.28.420, 19.28.490, 19.28.551, and chapter 19.28 RCW. 03-18-089, § 296-46B-930, filed 9/2/03, effective 10/3/03. Statutory Authority: RCW 19.28.006, 19.28.010, 19.28.031, 19.28.041, 19.28.061, 19.28.101, 19.28.131, 19.28.161, 19.28.171, 19.28.191, 19.28.201, 19.28.211, 19.28.241, 19.28.251, 19.28.271, 19.28.311, 19.28.321, 19.28.400, 19.28.420, 19.28.490, 19.28.551, 2002 c 249, chapters 34.05 and 19.28 RCW. 03-09-111, § 296-46B-930, filed 4/22/03, effective 4/22/03.]

WAC 296-46B-935 Administrator certificate. General.

(1) The department will deny renewal of a certificate if an individual owes money as a result of an outstanding final judgment(s) to the department.

(2) For special accommodation see WAC 296-46B-960.

(3) An applicant will not be issued a specialty administrator certificate that is a subspecialty of a certificate the applicant currently holds (i.e., the applicant is not eligible to take the domestic well administrator examination if the applicant currently possesses a pump and irrigation administrator certificate).

Qualifying for examination.

(4) There are no qualification requirements for taking an administrator certificate examination. Applicants should contact the testing agency directly.

Original - administrator certificates.

(5) The scope of work for electrical administrators is described in WAC 296-46B-920. The department will issue an original administrator certificate to a general administrator, or specialty administrator who:

(a) Successfully completes the appropriate administrator examination; and

(b) Submits the appropriate examination passing report from the testing agency with the applicant's: Date of birth, mailing address, and Social Security number; and

(c) Pays all appropriate fees as listed in WAC 296-46B-910.

For an examination report to be considered, all the above must be submitted within ninety days after the completion of the examination. After ninety days, the applicant will be required to successfully retake the complete examination. An individual's original administrator certificate will expire on their birth date at least one year, and not more than three years, from the date of original issue.

Combination - specialty administrator certificate.

(6) The department may issue a combination specialty administrator certificate to an individual who qualifies for more than one specialty administrators' certificate. The combination specialty administrators' certificate will plainly indicate the specialty administrator's certificate(s) the holder has qualified for. Telecommunications cannot be issued a combination because the renewal requirements are different from those required for electrical administrators. Temporary administrator certificates will not be issued as a part of a combination certificate.

Renewal - administrator certificate.

(7) An individual must apply for renewal of their administrator certificate on or before the expiration date of the certificate. The individual may not apply for renewal more than ninety days prior to the expiration date. Renewed certificates are valid for three years, with the exception of telecommunications administrators, who will be renewed for two years.

(8) An individual may renew their administrator certificate within ninety days after the expiration date without reexamination if the individual pays the late renewal fee listed in WAC 296-46B-910.

(9) All renewals received more than ninety days after the expiration date of the certificate will be denied. The administrator will be required to pass the appropriate administrator examination before being recertified.

(10) All applicants for certificate renewal must:

(a) Submit a complete renewal application;

(b) Pay all appropriate fees as listed in WAC 296-46B-910; and

(c) Provide accurate evidence on the renewal form that the individual has completed the continuing education requirements described in WAC 296-46B-970. If an individual files inaccurate or false evidence of continuing education information when renewing a certificate, the individual's certificate may be suspended or revoked.

Telecommunications administrators are not required to provide continuing education information.

Continuing education for pump and irrigation (03) and domestic pump (03A) administrators may be comprised of fifty percent electrical and fifty percent plumbing instruction.

(11) An individual who has not completed the required hours of continuing education can renew an administrator's certificate if the individual applies for renewal on or before

the certificate expires and pays the appropriate renewal fee. However, the certificate will be placed in an inactive status.

When the certificate is placed in inactive status, an assigned administrator will be automatically unassigned from the electrical contractor. The electrical contractor will be notified of the unassignment and has ninety days to replace the administrator. An assignment fee will then be required per WAC 296-46B-910.

The inactive certificate will be returned to current status upon validation, by the department, of the required continuing education requirements. If the certificate renewal date occurs during the inactive period, the certificate must be renewed on or before the renewal date to allow the return to current status.

(12) An individual may renew a suspended administrator's certificate by submitting a complete renewal application including obtaining and submitting the continuing education required for renewal. However, the certificate will remain in a suspended status for the duration of the suspension period.

(13) An individual may not renew a revoked or temporary administrator's certificate.

Temporary specialty administrator certificate.

(14) See WAC 296-46B-930 for additional information.

[Statutory Authority: RCW 19.28.006, 19.28.010, 19.28.031, 19.28.041, 19.28.061, 19.28.101, 19.28.131, 19.28.161, 19.28.171, 19.28.191, 19.28.201, 19.28.211, 19.28.241, 19.28.251, 19.28.281, 19.28.311, 19.28.321, 19.28.400, 19.28.420, 19.28.490, 19.28.551. 06-24-041, § 296-46B-935, filed 11/30/06, effective 12/31/06; 05-10-024, § 296-46B-935, filed 4/26/05, effective 6/30/05. Statutory Authority: RCW 19.28.006, 19.28.010, 19.28.031, 19.28.041, 19.28.061, 19.28.101, 19.28.131, 19.28.161, 19.28.171, 19.28.191, 19.28.201, 19.28.211, 19.28.241, 19.28.251, 19.28.271, 19.28.311, 19.28.321, 19.28.400, 19.28.420, 19.28.490, 19.28.551, 2003 c 399, 2003 c 211, 2003 c 78, and 2003 c 242. 04-12-049, § 296-46B-935, filed 5/28/04, effective 6/30/04. Statutory Authority: RCW 19.28.006, 19.28.010, 19.28.031, 19.28.041, 19.28.061, 19.28.101, 19.28.131, 19.28.161, 19.28.171, 19.28.191, 19.28.201, 19.28.211, 19.28.241, 19.28.251, 19.28.271, 19.28.311, 19.28.321, 19.28.400, 19.28.420, 19.28.490, 19.28.551, 2002 c 249, chapters 34.05 and 19.28 RCW. 03-09-111, § 296-46B-935, filed 4/22/03, effective 4/22/03.]

WAC 296-46B-940 Electrician/training/temporary certificate of competency or permit required. Electrician - general.

(1) The department will deny renewal of a certificate or permit if an individual owes money as a result of an outstanding final judgment(s) to the department.

Electrician - scope of work.

(2) The scope of work for electricians and trainees is described in WAC 296-46B-920.

Electrician - certificate of competency required.

(3) To work in the electrical construction trade, an individual must possess a current valid:

(a) Master journeyman electrician certificate of competency issued by the department;

(b) Journeyman electrician certificate of competency issued by the department;

(c) Master specialty electrician certificate of competency issued by the department;

(d) Specialty electrician certificate of competency issued by the department;

(e) Temporary electrician permit. Unless continually supervised by an appropriately certified electrician, no temporary electrician can install, repair, replace, or maintain any electrical wiring or equipment where the system voltage is more than 600 volts, whether the system is energized or deenergized; or

(f) Electrical training certificate, learning the trade in the proper ratio, per RCW 19.28.161, under the supervision of a certified master journeyman electrician, journeyman electrician, master specialty electrician working in their specialty, or specialty electrician working in their specialty.

(4) The department issues master electrician and electrician certificates of competency in the following areas of electrical work:

(a) General journeyman **(01)**;

(b) Specialties:

(i) Residential **(02)**;

(ii) Pump and irrigation **(03)**;

(iii) Domestic pump **(03A)**;

(iv) Signs **(04)**;

(v) Limited energy system **(06)**;

(vi) HVAC/refrigeration **(06A)**;

(vii) HVAC/refrigeration - restricted **(06B)**;

(viii) Nonresidential maintenance **(07)**;

(ix) Nonresidential lighting maintenance and lighting retrofit **(07A)**;

(x) Residential maintenance **(07B)**;

(xi) Restricted nonresidential maintenance **(07C)**;

(xii) Appliance repair **(07D)**;

(xiii) Equipment repair **(07E)**; and

(xiv) Door, gate, and similar systems **(10)**.

Exemptions - linemen.

(5) Definition: See general definitions WAC 296-46B-100 for the definition of a lineman.

(6) Electrical linemen employed by a:

(a) Serving electrical utility or the serving utility's contractor, or a subcontractor to their subcontractor, while performing work described in WAC 296-46B-925 do not need certificates of competency.

(b) Licensed general electrical contractors do not need certificates of competency if the electrical equipment:

(i) Is on commercial or industrial property;

(ii) Is located outside a building or structure; and

(iii) The work performed is on the primary side of the customer's transformer(s) supplying power at the customer's building or structure utilization voltage.

Exemptions - plumbers.

(7) Coincidental electrical/plumbing work. See RCW 19.28.091(8) for the plumber exemption.

Original - master electrician, journeyman, and specialty electrician certificates of competency.

(8) The department will issue an original certificate of competency to master, journeyman, or specialty electricians who meet the eligibility requirements listed in:

(a) RCW 19.28.191 (1)(a) or (b); and

(i) Submit an application for an original master electrician certificate including: Date of birth, mailing address and Social Security number; and

(ii) Pay all appropriate fees, as listed in WAC 296-46B-910;

(b) RCW 19.28.191 (1)(d) through (e);

(i) Submit an original master electrician certification examination application including: Date of birth, mailing address and Social Security number; and

(ii) Pay all appropriate fees, as listed in WAC 296-46B-910; or

(c) RCW 19.28.191 (1)(f) through (g);

(i) Submit an original electrician certification examination application including: Date of birth, mailing address and Social Security number; and

(ii) Pay all appropriate fees, as listed in WAC 296-46B-910.

(9) An individual's original electrician certificate of competency will expire on their birth date at least two years, and not more than three years, from the date of original issue.

Renewal - master electrician, journeyman, and specialty electrician certificates of competency.

(10) An individual must apply for renewal of their electrician certificate of competency on or before the expiration date of the certificate. The individual may not apply for renewal more than ninety days prior to the expiration date. Renewed certificates are valid for three years.

(11) An individual may renew their certificate of competency within ninety days after the expiration date without reexamination if the individual pays the late renewal fee listed in WAC 296-46B-910.

(12) All applications for renewal received more than ninety days after the expiration date of the certificate of competency require that the electrician pass the appropriate competency examination before being recertified.

(13) All applicants for certificate of competency renewal must:

(a) Submit a complete renewal application;

(b) Pay all appropriate fees; and

(c) Provide accurate evidence on the renewal form that the individual has completed the continuing education requirements described in WAC 296-46B-970. Continuing education classes are only valid when all the requirements of WAC 296-46B-970 are completed. If an individual files inaccurate or false evidence of continuing education information when renewing a certificate of competency, the individual's certificate of competency may be suspended or revoked.

Continuing education for pump and irrigation **(03)** and domestic pump **(03A)** electricians may be comprised of fifty percent electrical and fifty percent plumbing instruction.

(14) An individual who has not completed the required hours of continuing education can renew a certificate of competency if the individual applies for renewal before the certificate of competency expires and pays the appropriate renewal fee. However, the certificate of competency will be placed in an inactive status. The inactive certificate of competency will be returned to current status upon validation, by the department, of the required continuing education. If the certificate renewal date occurs during the inactive period, the certificate

must be renewed on or before the renewal date to allow the return to current status.

(15) An individual may renew a suspended certificate of competency by submitting a complete renewal application including obtaining and submitting the continuing education required for renewal. However, the certificate will remain in a suspended status for the duration of the suspension period.

(16) An individual may not renew a revoked or temporary certificate of competency.

Reciprocal agreements between Washington and other states.

(17) The department negotiates reciprocal agreements with states that have equivalent requirements for certification of master electricians, journeymen, or specialty electricians. These agreements allow electricians from those reciprocal states to become certified in the state of Washington without examination and allow Washington certified electricians to become certified in the other states without taking competency examinations.

(18) An individual coming into the state of Washington from a reciprocal state will be issued a reciprocal electrician certificate of competency if all the following conditions are met:

(a) The department has a valid reciprocal agreement with the other state in the master electrician category requested, journeyman, or specialty category requested;

(b) The individual makes a complete application for the reciprocity certificate on the form provided by the department. A complete application includes:

(i) Application for reciprocal certificate of competency;

(ii) Evidence that the individual meets the eligibility requirements listed in RCW 19.28.191, by presenting a valid journeyman or specialty electrician certificate or certified letter from the issuing state; and

(iii) All appropriate fees as listed in WAC 296-46B-910.

(c) The individual obtained the reciprocal state's certificate of competency as a master electrician, journeyman, or specialty electrician by examination and the individual held the reciprocal state's certificate for a period of at least one year;

(19) An individual is not eligible for a reciprocal electrician certificate of competency if the individual:

(a) Has failed to renew a similar Washington master electrician or electrician certificate of competency as required in RCW 19.28.211;

(b) Has a similar Washington master electrician or electrician certificate of competency in suspended, revoked, or inactive status under this chapter; or

(c) Was a resident of the state of Washington at the time the examination was taken in the other state.

Military/shipyard experience.

(20) An individual who has worked in the electrical construction trade performing work described in WAC 296-46B-920 while serving in the armed forces of the United States may be eligible to take the examination for the certificate of competency as a journeyman or specialty electrician. Credit may be allowed for hours worked or training received.

If an individual has military experience in a specialized electrical field (e.g., rating) that is similar to a specialty elec-

trician category listed in WAC 296-46B-920, credit may be allowed toward the appropriate specialty certificate. Nuclear, marine, shipyard, shipboard, radar, weapons, aeronautical experience, or similar experience may be acceptable for no more than fifty percent of the minimum required work experience for qualifying for electrician examination.

The department will evaluate and determine whether the submitted experience is related specifically to the electrical construction/maintenance trade regulated by chapter 19.28 RCW.

Experience in another country.

(21) If an individual has a journeyman electrician certificate from a country outside the United States that requires that at least four years of electrical construction training and certification is obtained by examination, the individual may be eligible for four thousand hours of the specialty credit allowed towards the qualification to take the Washington journeyman electrician examination.

No more than two years of the required training to become a Washington journeyman electrician may be for work described for specialty electricians or technicians in WAC 296-46B-920. In addition to the maximum of four thousand hours credit that may be allowed by this subsection, an additional four thousand hours of new commercial/industrial experience must be obtained using a training certificate in the state while under the supervision of a master journeyman electrician or journeyman electrician.

Documentation substantiating the individual's out-of-country experience must be submitted in English.

(22) Out-of-country experience credit is not allowed toward a specialty electrician certificate.

Training school credit.

(23) No more than fifty percent of the minimum work experience needed to qualify for specialty electrician certification is allowed for any training school program (e.g., a specialty requiring two thousand hours of minimum required work experience may receive no more than one thousand hours credit from an electrical construction training program).

(24) See RCW 19.28.191 (1)(h) for training school credit allowed for journeyman applicants.

(25) See WAC 296-46B-971 for additional information on training schools.

Temporary electrician permit.

(26) Temporary permits are not allowed for master electricians.

(27) Temporary electrician permit when coming from out-of-state. An individual coming from out-of-state must either obtain a reciprocal electrician certificate, valid training certificate, or make application and receive approval for a temporary electrician permit to perform electrical work in the state, or otherwise obtain an electrician certificate of competency.

(a) Initial temporary electrician permit when coming from out-of-state.

(i) If an individual can show evidence of work experience in another state similar to RCW 19.28.191, the department

may issue the individual one initial temporary journeyman or specialty electrician permit. The individual must present appropriate evidence at the time of application showing work experience equivalent to that required by RCW 19.28.191.

The initial temporary electrician permit allows the individual to work as an electrician between the date of filing a completed application for the certification examination and the notification of the results of the examination. This initial permit will be issued for one twenty-day period and will become invalid on the expiration date listed on the temporary electrician permit or the date the individual is notified they have failed the examination, whichever is earlier.

(ii) To qualify for an initial temporary electrician permit, an individual must:

(A) Meet the eligibility requirements of RCW 19.28.191; and

(B) Submit a complete application for an initial temporary electrician permit and original certification including:

- Date of birth, mailing address, Social Security number; and

- All appropriate fees as listed in WAC 296-46B-910.

(iii) The individual must not have ever possessed a Washington master electrician, journeyman electrician, specialty electrician, or temporary electrician certificate of competency in the specialty requested.

(iv) If the initial temporary electrician permit becomes invalid, it will not be extended or renewed. To continue to work in the electrical trade, the individual must apply for and receive a:

(A) Second temporary electrician permit; or

(B) Training certificate and work in the proper ratio, per RCW 19.28.161, under the direct supervision of either a certified master journeyman electrician, journeyman electrician, master specialty electrician working in the appropriate specialty, or a specialty electrician working in the appropriate specialty.

(b) Second temporary electrician permit.

(i) If the individual fails the certification examination during the initial temporary electrician period and provides verification of enrollment in an approved journeyman refresher course or approved appropriate specialty electrician refresher course, as prescribed in RCW 19.28.231, application may be made for a second temporary electrician permit.

A complete second application must include proof of enrollment in the refresher course and all appropriate fees as listed in WAC 296-46B-910.

(ii) The second temporary electrician permit will be issued for one ninety-day period and will become invalid: Upon withdrawal from the electrician refresher course, on the expiration date listed on the temporary electrician permit, or the date the individual is notified they have failed the examination, whichever is earlier;

(iii) After successfully completing the electrician refresher course, the individual must provide appropriate course completion documentation to the department and will be eligible to retake the appropriate competency exam.

(iv) If the second temporary electrician permit becomes invalid, it will not be extended or renewed. To continue to work in the electrical trade, the individual must apply for and receive a training certificate and work in the proper ratio, per

RCW 19.28.161, under the direct supervision of either a certified master journeyman electrician, journeyman electrician, master specialty electrician working in the appropriate specialty, or a specialty electrician working in the appropriate specialty.

[Statutory Authority: RCW 19.28.006, 19.28.010, 19.28.031, 19.28.041, 19.28.061, 19.28.101, 19.28.131, 19.28.161, 19.28.171, 19.28.191, 19.28.201, 19.28.211, 19.28.241, 19.28.251, 19.28.281, 19.28.311, 19.28.321, 19.28.400, 19.28.420, 19.28.490, 19.28.551. 06-24-041, § 296-46B-940, filed 11/30/06, effective 12/31/06; 05-10-024, § 296-46B-940, filed 4/26/05, effective 6/30/05. Statutory Authority: RCW 19.28.006, 19.28.010, 19.28.031, 19.28.041, 19.28.061, 19.28.101, 19.28.131, 19.28.161, 19.28.171, 19.28.191, 19.28.201, 19.28.211, 19.28.241, 19.28.251, 19.28.271, 19.28.311, 19.28.321, 19.28.400, 19.28.420, 19.28.490, 19.28.551, 2003 c 399, 2003 c 211, 2003 c 78, and 2003 c 242. 04-12-049, § 296-46B-940, filed 5/28/04, effective 6/30/04. Statutory Authority: RCW 19.28.006, 19.28.010, 19.28.031, 19.28.041, 19.28.061, 19.28.101, 19.28.131, 19.28.161, 19.28.171, 19.28.191, 19.28.201, 19.28.211, 19.28.241, 19.28.251, 19.28.271, 19.28.311, 19.28.321, 19.28.400, 19.28.420, 19.28.490, 19.28.551, 2002 c 249, chapters 34.05 and 19.28 RCW. 03-09-111, § 296-46B-940, filed 4/22/03, effective 4/22/03.]

WAC 296-46B-945 Qualifying for master, journeyman, specialty electrician examinations. Qualifying for master, journeyman, specialty electrician examinations.

- (1) All applicants must be at least sixteen years of age.

Qualifying for the master electrician examination.

- (2) An individual may take the master electrician's certificate of competency examination if the individual meets the requirements described in RCW 19.28.191 (1)(d) or (e).

Qualifying for the master electrician examination from out-of-state.

- (3) No credit may be applied from out-of-state toward qualifying for a master electrician certificate of competency examination.

Qualifying for the journeyman electrician competency examination.

- (4) An individual may take the journeyman electrician's certificate of competency examination if the individual held a current electrical training certificate and has worked for an employer who employs at least one certified master electrician, journeyman, or specialty electrician on staff and the individual:

(a) Has been employed, in the electrical construction trade, under the direct supervision of a master electrician, journeyman electrician or specialty electrician working in the appropriate specialty in the proper ratio, per RCW 19.28.161, for four years (eight thousand hours). Of the eight thousand hours:

(i) At least two years (four thousand hours) must be in new industrial and/or new commercial electrical installation (excluding all work described for specialty electricians or technicians) under the direct supervision of a master journeyman electrician or journeyman electrician while working for a general electrical contractor; and

(ii) Not more than a total of two years (four thousand hours) may be for work described as an electrical specialty in WAC 296-46B-920(2).

(b) Has completed a four-year apprenticeship program in the electrical construction trade that is registered with the

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state apprenticeship council while working under the direct supervision of a master journeyman or journeyman electrician in the proper ratio, per RCW 19.28.161; or

(c) Has completed a two-year electrical construction training program as described in RCW 19.28.191 for journeyman electricians, and two years (four thousand hours) of work experience in new industrial and/or new commercial electrical installations (excluding work described for specialty electricians or electrical technicians) under the direct supervision of a journeyman electrician while working for a general electrical contractor in the proper ratio, per RCW 19.28.161. See WAC 296-46B-971 for additional training school information.

Electrical construction training hours gained in specialties requiring less than two years (i.e., four thousand hours) will not be credited towards qualification for journeyman electrician.

The trainee and their employer and/or apprenticeship training director must attest to the accuracy of all information contained on affidavits of experience used to verify eligibility for the examination.

Qualifying for the journeyman/specialty electrician competency examination when work was performed in a state requiring electrician certification.

- (5) An individual may take the journeyman/specialty electrician's competency examination when the appropriate state having authority certifies to the department that:

(a) The work was legally performed under the other state's licensing and certification requirements;

(i) For journeyman applicants who meet the minimum hour requirements described in WAC 296-46B-945(4).

(ii) For specialty applicants who meet the minimum hour requirements described in WAC 296-46B-945(9).

(b) The other state's certificate of competency was obtained by examination.

Electrical construction training hours gained in specialties requiring less than two years (i.e., four thousand hours) may not be credited towards qualification for journeyman electrician.

Qualifying for the journeyman/specialty electrician competency examination when work was performed in a state that does not require electrician certification.

- (6) If the other state requires electrical contractor licensing:

(a) An individual may take the journeyman/specialty electrician's competency examination when an appropriately licensed electrical contractor(s), registered apprenticeship training director, or nationally recognized contractor or labor organization files a notarized letter of experience with the department accompanied by payroll documentation which certifies and shows that:

(i) For journeyman applicants: The individual meets the minimum hour requirements described in WAC 296-46B-945(4).

(ii) For specialty applicants: The individual meets the minimum hour requirements described in WAC 296-46B-945(9).

(b) An individual may take the journeyman/specialty electrician's competency examination when an employer(s),

acting under a property owner exemption, files a notarized letter of experience from the property owner with the department accompanied by payroll documentation which certifies and shows that:

(i) For journeyman applicants: The individual meets the minimum hour requirements described in WAC 296-46B-945(4).

(ii) For specialty applicants: The individual meets the minimum hour requirements described in WAC 296-46B-945(9).

(7) If the other state does not require electrical contractor licensing or registration: An individual may take the journeyman/specialty electrician's competency examination when the individual's employer(s), registered apprenticeship training director, or nationally recognized contractor or labor organization files a notarized letter(s) of experience with the department accompanied by payroll documentation which certifies and shows that:

(a) For journeyman applicants: The individual meets the minimum work requirements described in WAC 296-46B-945(4).

(b) For specialty applicants: The individual meets the minimum work requirements described in WAC 296-46B-945(9).

(8) The letter of experience described in subsections (6) and (7) of this section should include a complete list of the individual's usual duties with percentages attributed to each.

Qualifying for a specialty electrician certificate of competency or examination.

(9) An individual may qualify for a specialty electrician's examination and certificate of competency if the individual held a current electrical training certificate, and has worked for an employer who employs at least one certified master journeyman electrician, journeyman electrician, appropriate master specialty electrician, or appropriate specialty electrician on staff and the individual:

(a) Has been employed, in the electrical construction trade, under the direct supervision of an appropriate electrician in the appropriate specialty as follows:

Table 945-1 Experience Hours

Specialty	Minimum Hours of Work Experience Required to be Eligible for Examination ⁽⁴⁾⁽⁵⁾	Minimum Hours of Work Experience Required for Certification
Residential certificate (02)	4,000 ⁽³⁾	4,000
Pump and irrigation certificate (03)	4,000 ⁽³⁾⁽⁸⁾	4,000 ⁽⁸⁾
Domestic pump certificate (03A)	720 ⁽¹⁾⁽²⁾⁽⁸⁾	2,000 ⁽⁶⁾⁽⁸⁾
Signs certificate (04)	4,000 ⁽³⁾	4,000
Limited energy system certificate (06)	4,000 ⁽³⁾	4,000
HVAC/refrigeration system certificate (06A)	4,000 ⁽³⁾	4,000 ⁽⁷⁾
HVAC/refrigeration - restricted (06B)	1,000 ⁽¹⁾⁽²⁾	2,000 ⁽⁶⁾
Nonresidential maintenance certificate (07)	4,000 ⁽³⁾	4,000

[Title 296 WAC—p. 1060]

Table 945-1 Experience Hours

Specialty	Minimum Hours of Work Experience Required to be Eligible for Examination ⁽⁴⁾⁽⁵⁾	Minimum Hours of Work Experience Required for Certification
Nonresidential lighting maintenance and lighting retrofit certificate (07A)	720 ⁽¹⁾⁽²⁾	2,000 ⁽⁶⁾
Residential maintenance certificate (07B)	720 ⁽¹⁾⁽²⁾	2,000 ⁽⁶⁾
Restricted nonresidential maintenance certificate (07C)	1,000 ⁽¹⁾⁽²⁾	2,000 ⁽⁶⁾
Appliance repair certificate (07D)	720 ⁽¹⁾⁽²⁾	2,000 ⁽⁶⁾
Equipment repair certificate (07E)	1,000 ⁽¹⁾⁽²⁾	2,000 ⁽⁶⁾
Door, gate, and similar systems certificate (10)	720 ⁽¹⁾⁽²⁾	2,000 ⁽⁶⁾

Notes: (1)Until the examination is successfully completed, the trainee must work under one hundred percent supervision. Once the appropriate examination is successfully completed, the modified supervision trainee may work under zero percent supervision.

(2)The trainee may have only one zero percent supervision certificate in a specialty (valid for no more than two years). If the trainee has not gained the required work experience by the time the zero percent supervision certificate has expired, the trainee must get a seventy-five percent supervision certificate and work under supervision until all required work experience hours are gained and credited towards the minimum work experience requirement.

(3)This specialty is not eligible for modified trainee status as allowed in chapter 19.28 RCW.

(4)The trainee and their employer and/or apprenticeship training director must attest to the accuracy of all information contained on affidavits of experience used to verify eligibility for the examination.

(5)Neither previous work experience credit nor training school credit is allowed as a substitute for the initial hours of minimum work experience required to be eligible for examination unless the trainee's work experience hours under direct supervision are provided as required in RCW 19.28.191 (1) (g)(ii).

(6)Electrical construction training hours gained in specialties requiring less than two years for certification may not be credited towards qualification for journeyman electrician.

(7)The 2,000 minimum hours of work experience required for certification as a HVAC/refrigeration-restricted (06B) specialty electrician may be credited as 2,000 hours towards the 4,000 minimum hours of work experience required for certification as a HVAC/refrigeration (06A) specialty electrician. Hours of work experience credited from the HVAC/refrigeration-restricted (06B) specialty cannot be credited towards qualification for taking the general electrician (01) examination or minimum work experience requirements.

(8)Experience hours may be coincidentally credited towards qualifying for electrician and plumber certifications. See RCW 19.28.191 (1)(g)(v).

(b) Or has completed an appropriate two-year apprenticeship program in the electrical construction trade that is registered with the state apprenticeship council while working under the direct supervision of an electrician in the appropriate specialty in the proper ratio, per RCW 19.28.161.

Qualifying for a certificate of competency when the Washington electrical work experience is exempt from certification requirements in RCW 19.28.261.

(10) To receive credit for electrical work experience that is exempted in RCW 19.28.261, an individual must provide

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the department with verification from the employer or owner according to WAC 296-46B-965 (i.e., affidavit(s) of experience). For the purposes of this section, exempt work does not include work performed on property owned by the individual seeking credit.

(11) All exempt individuals learning the electrical trade must obtain an electrical training certificate from the department and renew it biannually in order to receive credit for hours worked in the trade according to WAC 296-46B-965.

(12) The department may require verification of supervision in the proper ratio from the certified supervising electrician(s).

(13) Telecommunications work experience:

(a) Credit may be verified only by employers exempted by RCW 19.28.261, general electrical (01) contractors, and limited energy system (06) electrical contractors for limited energy experience for telecommunications work done:

(i) Under the supervision of a certified journeyman or limited energy electrician; and

(ii) In compliance with RCW 19.28.191.

(b) Individuals who want to obtain credit for hours of experience toward electrician certification for work experience doing telecommunications installations must:

(i) Obtain an electrical training certificate;

(ii) Renew the training certificate biannually in order to receive credit for hours worked in the trade according to WAC 296-46B-965.

(c) Telecommunications contractors may not verify telecommunications work experience toward electrician certification.

[Statutory Authority: RCW 19.28.006, 19.28.010, 19.28.031, 19.28.041, 19.28.061, 19.28.101, 19.28.131, 19.28.161, 19.28.171, 19.28.191, 19.28.201, 19.28.211, 19.28.241, 19.28.251, 19.28.281, 19.28.311, 19.28.321, 19.28.400, 19.28.420, 19.28.490, 19.28.551. 06-24-041, § 296-46B-945, filed 11/30/06, effective 12/31/06; 06-05-028, § 296-46B-945, filed 2/7/06, effective 5/1/06; 05-10-024, § 296-46B-945, filed 4/26/05, effective 6/30/05. Statutory Authority: RCW 19.28.006, 19.28.010, 19.28.031, 19.28.041, 19.28.061, 19.28.101, 19.28.131, 19.28.161, 19.28.171, 19.28.191, 19.28.201, 19.28.211, 19.28.241, 19.28.251, 19.28.271, 19.28.311, 19.28.321, 19.28.400, 19.28.420, 19.28.490, 19.28.551, 2003 c 399, 2003 c 211, 2003 c 78, and 2003 c 242. 04-12-049, § 296-46B-945, filed 5/28/04, effective 6/30/04. Statutory Authority: RCW 19.28.006, 19.28.010, 19.28.031, 19.28.041, 19.28.061, 19.28.101, 19.28.131, 19.28.161, 19.28.171, 19.28.191, 19.28.201, 19.28.211, 19.28.241, 19.28.251, 19.28.271, 19.28.311, 19.28.321, 19.28.400, 19.28.420, 19.28.490, 19.28.551, 2002 c 249, chapters 34.05 and 19.28 RCW. 03-09-111, § 296-46B-945, filed 4/22/03, effective 4/22/03.]

WAC 296-46B-960 Administrator and electrician certificate of competency examinations. General.

(1) The minimum passing score on any examination or examination section is seventy percent. If examination is requested to be administered by the department, an application is required and the examination must be successfully completed within one year of application or the individual must submit a new application for exam including all appropriate fees.

(2) All examinations are open book.

(a) Candidates may use:

(i) Any original copyrighted material;

(ii) A silent, nonprinting, nonprogrammable calculator that is not designed for preprogrammed electrical calculations;

(iii) Copies of chapter 19.28 RCW and this chapter; or

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(iv) A foreign language dictionary that does not contain definitions.

(b) Candidates may not use:

(i) Copies of copyrighted material;

(ii) Copies of internet publications, except for RCWs or WACs;

(iii) Personal notes; or

(iv) A personal computing device of any type other than the calculator in (a)(ii) of this subsection.

(3) Administrator, master electrician, and electrician examinations may consist of multiple sections. All sections must be successfully completed within a one-year examination period after beginning the examination. Within the one-year examination period, the candidate does not have to retake any sections successfully completed within the examination period. If all sections are not successfully completed within the one-year period, the candidate must begin a new examination period and retake all sections.

Special accommodations for examination.

(4) An applicant for an examination who, due to a specific physical, mental, or sensory impairment, requires special accommodation in examination procedures, may submit a written request to the chief electrical inspector for the specific accommodation needed.

(a) The applicant must also submit to the department a signed and notarized release, authorizing the specifically identified physician or other specialist to discuss the matter with the department representative. The applicant must also submit an individualized written opinion from a physician or other appropriate specialist:

(i) Verifying the existence of a specific physical, mental, or sensory impairment;

(ii) Stating whether special accommodation is needed for a specific examination;

(iii) Stating what special accommodation is necessary; and

(iv) Stating if extra time for an examination is necessary and if so, how much time is required. The maximum allowance for extra time is double the normal time allowed.

(b) The written request for special accommodation and individualized written opinion must be submitted to the department at least six weeks in advance of the examination date and must be accompanied by a completed application and fees as described in WAC 296-46B-910.

(c) Only readers and interpreters provided from the administrative office of the courts and/or approved by the department may be used for reading or interpreting the examination. The applicant will be required to bear all costs associated with providing any reading or interpretive services used for an examination.

(d) Applicants who pass the examination with the assistance of a reader or interpreter will be issued a certificate with the following printed restriction: "Requires reading supervision for product usage." A competent reader or interpreter must be present on any job site where a person with this restriction is performing electrical work as described in chapter 19.28 RCW.

Applicants who pass the examination with the assistance of a mechanical device (e.g., magnifier, etc.) will be issued a certificate with the following printed restriction: "Requires

mechanical reading assistance for product usage." Appropriate mechanical reading assistance must be present on any job site where a person with this restriction is performing electrical work as described in chapter 19.28 RCW.

If a candidate successfully retakes the examination without the assistance of a reader or translator, a new certificate will be issued without the restriction.

(5) Applicants who wish to use a foreign language dictionary during an examination must obtain approval at the examination site prior to the examination. Only dictionaries without definitions will be approved for use.

Failed examination appeal procedures.

(6) Any candidate who takes an examination and does not pass the examination may request a review of the examination.

(a) The department will not modify examination results unless the candidate presents clear and convincing evidence of error in the grading of the examination.

(b) The department will not consider any challenge to examination grading unless the total of the potentially revised score would result in a passing score.

(7) The procedure for requesting an informal review of examination results is as follows:

(a) The request must be made in writing to the chief electrical inspector and must be received within twenty days of the date of the examination and must request a rescore of the examination. The written request must include the appropriate fees for examination review described in WAC 296-46B-910.

(b) The following procedures apply to a review of the results of the examination:

(i) The candidate will be allowed one hour to review their examination.

(ii) The candidate must identify the challenged questions of the examination and must state the specific reason(s) why the results should be modified with multiple published reference material supporting the candidate's position.

(iii) Within fifteen days of the candidate's review, the department will review the examination and candidate's justification and notify the candidate in writing of the department's decision.

Subjects included in administrator certificate, or master electrician, journeyman, or specialty electrician competency examinations.

(8) The following subjects are among those that may be included in the examination for an administrator certificate or electrician certificate of competency. The list is not exclusive. The examination may also contain subjects not on the list.

(a) For general administrators, master journeyman, and journeyman electricians:

AC - Generator; 3-phase; meters; characteristics of; power in AC circuits (power factor); mathematics of AC circuits.

Administration - Chapter 19.28 RCW and this chapter.

Air conditioning - Basic.

Blueprints - Surveys and plot plans; floor plans; service and feeders; electrical symbols; elevation views; plan views.

Building wire.

Cable trays.

Calculations.

Capacitive reactance.

Capacitor - Types; in series and parallel.

Circuits - Series; parallel; combination; basic; branch; outside branch circuits; calculations.

Conductor - Voltage drop (line loss); grounded.

Conduit - Wiring methods.

DC - Generator; motors; construction of motors; meters.

Definitions - Electrical.

Electrical units.

Electron theory.

Fastening devices.

Fire alarms - Introduction to; initiating circuits.

Fuses.

Generation - Electrical principles of.

Grounding.

Incandescent lights.

Inductance - Introduction to; reactance.

Insulation - Of wire.

Mathematics - Square root; vectors; figuring percentages.

Motors/controls - Motors vs. generators/CEMF; single phase; capacitor; repulsion; shaded pole; basic principles of AC motors.

Ohm's Law.

Power.

Power factor - AC circuits; correction of; problems.

Rectifiers.

Resistance - Of wire.

Rigging.

Safety - Electrical shock.

Services.

3-wire system.

Tools.

Transformers - Principles of; types; single-phase; 3-phase connections.

Voltage polarity across a load.

Wiring methods - Conduit; general.

Wiring systems - Less than 600 volts; 480/277 volts; single-and 3-phase delta or wye; distribution systems over 600 volts.

Note: The general administrator, master journeyman, and journeyman electrician examinations may also include the subjects listed below for specialty electrician examinations.

(b) For specialty administrators, master specialty and specialty electricians, the following subjects are among those that may be included in the examination. Examination subjects are restricted to those subjects related to the scope of work of the specialty described in WAC 296-46B-920. The list is not exclusive. The examination may also contain subjects not on the list.

AC - Meters.

Administration - Chapter 19.28 RCW and this chapter.

Appliance circuits or controls.

Blueprints - Floor plans; service and feeders.

Cables - Wiring methods.

Calculations.

Circuits - Series; parallel; combination; basic; outside branch.

Conductor - Voltage drop (line loss); grounded; aluminum or copper.

Conduit - Wiring methods.

Electrical signs, circuits, controls, or services.

Electrical units.

First aid.

Fuses.

General lighting.

Grounding of conductors.

Insulation of wire.

Limited energy circuits or systems.

Maintenance of electrical systems.

Mathematics - Figuring percentage.

Motor circuits, controls, feeders, or services.

Ohm's Law.

Overcurrent protection.

Resistance of wire.

Safety - Electrical shock.

Services.

Sizes of building wire.

3-wire system.

Tools.

Transformer - Ratios; single-phase/3-phase connections.

Failing an administrator certificate exam or electrician certificate of competency examination.

(9) Anyone failing an administrator or electrician competency examination may retake the examination by making arrangements with the testing agency and paying the retesting fee.

(10) If the individual makes a score of less than sixty percent, the individual must wait two weeks before being eligible to retest.

(11) If the individual makes a score of sixty to sixty-nine percent, the individual must wait one day before being eligible to retest.

(12) If the individual fails an electrician examination or a part of an administrator or master electrician examination three times within a one-year period, the individual must wait three months to retake the failed portion of the examination.

(13) Anyone failing an electrician competency examination may continue to work in the electrical trade if they have a valid electrical training certificate and work under the direct supervision of a certified journeyman or specialty electrician in the proper ratio, per RCW 19.28.161.

Cheating on an examination.

(14) Anyone found cheating on an examination or using inappropriate materials/equipment during an examination will be required to wait at least eleven months before being allowed to reexamine. All such reexaminations will be administered by the department in Tumwater, Washington and the candidate will be required to apply and schedule for the examination with the chief electrical inspector.

[Statutory Authority: RCW 19.28.006, 19.28.010, 19.28.031, 19.28.041, 19.28.061, 19.28.101, 19.28.131, 19.28.161, 19.28.171, 19.28.191, 19.28.201, 19.28.211, 19.28.241, 19.28.251, 19.28.281, 19.28.311, 19.28.321, 19.28.400, 19.28.420, 19.28.490, 19.28.551, 06-24-041, § 296-46B-960, filed 11/30/06, effective 12/31/06; 06-05-028, § 296-46B-960, filed 2/7/06, effective 5/1/06; 05-10-024, § 296-46B-960, filed 4/26/05, effective 6/30/05. Statutory Authority: RCW 19.28.006, 19.28.010, 19.28.031, 19.28.041, 19.28.061, 19.28.101, 19.28.131, 19.28.161,

(2007 Ed.)

19.28.171, 19.28.191, 19.28.201, 19.28.211, 19.28.241, 19.28.251, 19.28.271, 19.28.311, 19.28.321, 19.28.400, 19.28.420, 19.28.490, 19.28.551, 2002 c 249, chapters 34.05 and 19.28 RCW. 03-09-111, § 296-46B-960, filed 4/22/03, effective 4/22/03.]

WAC 296-46B-965 Training certificate required. General.

(1) A training certificate is required to work in the electrical construction trade if an individual does not:

(a) Possess a current journeyman certificate of competency issued by the department;

(b) Possess a current specialty electrician certificate of competency issued by the department while working in that specialty's scope of work;

(c) Possess a valid temporary electrician permit;

(d) Possess a valid temporary specialty electrician permit while working in that specialty's scope of work; or

(e) Is not working in exempt status as allowed by chapter 19.28 RCW.

(2) Trainees who have had their training certificates revoked or suspended (during the duration of the revocation or suspension) will not be issued a training certificate.

Original training certificates.

(3) The department will issue an original training certificate when the trainee applicant submits a complete training certificate application including:

(a) Date of birth, mailing address, Social Security number; and

(b) All appropriate fees as listed in WAC 296-46B-910.

All applicants for an electrical training certificate must be at least sixteen years of age. The original training certificate will be valid for two years.

(c) If an individual has previously held an electrical training certificate, then that individual is not eligible for a subsequent original training certificate.

Specialty specific - zero percent and seventy-five percent supervision modified training certificates.

(4) For specialties as allowed in Table 945-1 (i.e., specialties with seven hundred twenty minimum hours of work experience required to be eligible for examination):

(a) The department will approve the trainee to take the appropriate specialty competency examination necessary to qualify for a zero percent supervision modified training certificate. To qualify, the trainee applicant must submit a complete zero percent supervision modified training certificate application including:

(i) Date of birth, mailing address, Social Security number;

(ii) Affidavit of experience fulfilling the minimum work experience hours required to qualify for the specialty examination described in Table 945-1; and

(iii) All appropriate fees as listed in WAC 296-46B-910.

Upon successful completion of the appropriate examination, the trainee will be issued a nonrenewable zero percent supervision modified training certificate for the appropriate specialty. The zero percent supervision modified training certificate will be restricted in duration to the time allowed in Table 945-1, note 2.

(b) Prior to the expiration of the zero percent supervision modified training certificate or temporary specialty electrician permit obtained as described in WAC 296-46B-940(28), the individual must submit a complete application for a seventy-five percent supervision modified training certificate for the appropriate specialty including:

(i) Seventy-five percent supervision training certificate application including: Date of birth, mailing address, Social Security number; and

(ii) All appropriate fees as listed in WAC 296-46B-910.

(c) A trainee may possess multiple (i.e., in different specialties) modified supervision training certificates for specialties where reduced supervision is allowed in Table 945-1. Combination training certificates will not be issued.

Renewal of training certificates.

(5) An individual must apply for renewal of their training certificate on or before the expiration date of the certificate. The individual may not apply for renewal more than ninety days prior to the expiration date. Renewed certificates are valid for two years.

(6) An individual may renew their training certificate after the expiration date if the individual pays the late renewal fee listed in WAC 296-46B-910.

(7) All applicants for training certificate renewal must:

(a) Submit a complete renewal application;

(b) Pay all appropriate fees; and

(c) Provide accurate evidence on the renewal form that the individual has completed the continuing education requirements described in WAC 296-46B-970. Continuing education classes are only valid when all the requirements of WAC 296-46B-970 are completed. If an individual files inaccurate or false evidence of continuing education information when renewing a training certificate, the individual's training certificate may be suspended.

Continuing education for trainees seeking pump and irrigation **(03)** and domestic pump **(03A)** experience credit may be comprised of fifty percent electrical and fifty percent plumbing instruction.

(d) Within thirty days after renewing an electrical training certificate, the individual, if not enrolled in a department approved apprenticeship program, must submit a completed, signed, and notarized affidavit(s) of experience for all hours of experience gained since the individual's last training certificate was effective.

Employers are required to provide the necessary documentation and signed affidavit of experience to the trainee within twenty days after the trainee requests the affidavit. See WAC 296-46B-965(6). See WAC 296-46B-985(4) for the penalty for providing a false or inaccurate affidavit of experience. If the individual is enrolled in a department approved apprenticeship program, the program may submit the required affidavit(s) of experience upon the individual's completion of the required experience hours without cost to the individual. The affidavit of experience must accurately attest to:

(i) The electrical installation work performed for each employer the individual worked for in the electrical trade during the previous period;

(ii) The correct electrical category the individual worked in; and

(iii) The actual number of hours worked in each category worked under the proper supervision of a Washington certified, master journeyman electrician, journeyman electrician or appropriate master specialty electrician or specialty electrician under that specific training certificate. If a trainee possesses multiple training certificates, an affidavit must be submitted for each training certificate for the hours worked under that specific training certificate.

If the individual is enrolled in a department approved apprenticeship program, the program may submit the required affidavit(s) of experience upon the individual's completion of the required experience hours without cost to the individual.

(8) An individual who has not completed the required hours of continuing education can renew a training certificate if the individual applies for renewal before the training certificate expires and pays the appropriate renewal fee. However, the training certificate will be placed in an inactive status. The inactive training certificate will be returned to current status upon validation, by the department, of the required continuing education.

(9) An individual may renew a suspended training certificate by submitting a complete renewal application including obtaining and submitting the continuing education required for renewal. However, the certificate will remain in a suspended status for the duration of the suspension period.

(10) An individual will not be issued a renewed or reinstated training certificate if the individual owes the department money as a result of an outstanding final judgment.

(11) The individual should ask each employer and/or apprenticeship training director for an accurately completed, signed, and notarized affidavit of experience for the previous certification period. The employer(s) or apprenticeship training director(s) must provide the previous period's affidavit of experience to the individual within twenty days of the request. If an individual is enrolled in an approved apprenticeship program under chapter 49.04 RCW when the individual renews an electrical training certificate, the individual and their apprenticeship training director and/or each employer must give the department an accurately completed, signed, and notarized affidavit of experience accurately attesting to:

(a) The electrical installation work the individual performed in the electrical trade during the previous certification period;

(b) The correct electrical category the individual worked in; and

(c) The actual number of hours worked in each category under the proper supervision of a Washington certified master journeyman electrician, journeyman electrician or appropriate master specialty or specialty electrician for each employer. For apprentices enrolled in a registered apprenticeship program, the applicant and the training director are the only authorized signatures the department will accept on affidavits of experience.

(12) The individual and their employer(s) and/or apprenticeship training director(s) must sign and have notarized the affidavit of experience attesting to the accuracy of all information contained in the affidavit.

Trainees seeking a journeyman electrician certificate - working with no supervision.

(13) Trainee seeking a general (01) journeyman electrician certificate of competency. After review by the department, a trainee may be issued a six-month, nonrenewable unsupervised electrical training certificate that will allow the individual to work without supervision if the trainee:

- (a) Has submitted a complete application for an unsupervised electrical training certificate;
- (b) Has worked over seven thousand hours properly supervised not to include more than four thousand of specialty experience;
- (c) Has successfully completed or is currently enrolled in an approved apprenticeship program or an electrical construction trade program in a school approved by the board of community and technical colleges;
- (d) Has paid all appropriate training certificate fees listed in WAC 296-46B-910; and
- (e) Is currently working for and continues to work for a licensed electrical contractor that employs at least one certified journeyman or specialty electrician in the appropriate specialty.

Trainees seeking certain specialty electrician certificates - working with reduced or no supervision.

(14) After review by the department, a trainee may be issued a nonrenewable zero percent supervision training certificate that will allow the individual to work without supervision if the trainee meets the requirements in subsection (4) of this section.

(15) Electrical trainees may work unsupervised when installing HVAC/R thermostat cable when the HVAC/R system consists of a single thermostat in one- and two-family dwelling units where line voltage power has not been connected to the dwelling's electrical system.

[Statutory Authority: RCW 19.28.006, 19.28.010, 19.28.031, 19.28.041, 19.28.061, 19.28.101, 19.28.131, 19.28.161, 19.28.171, 19.28.191, 19.28.201, 19.28.211, 19.28.241, 19.28.251, 19.28.281, 19.28.311, 19.28.321, 19.28.400, 19.28.420, 19.28.490, 19.28.551. 06-24-041, § 296-46B-965, filed 11/30/06, effective 12/31/06; 05-10-024, § 296-46B-965, filed 4/26/05, effective 6/30/05. Statutory Authority: RCW 19.28.006, 19.28.010, 19.28.031, 19.28.041, 19.28.061, 19.28.101, 19.28.131, 19.28.161, 19.28.171, 19.28.191, 19.28.201, 19.28.211, 19.28.241, 19.28.251, 19.28.271, 19.28.311, 19.28.321, 19.28.400, 19.28.420, 19.28.490, 19.28.551, 2002 c 249, chapters 34.05 and 19.28 RCW. 03-09-111, § 296-46B-965, filed 4/22/03, effective 4/22/03.]

WAC 296-46B-970 Continuing education. General requirements - continuing education classes requirements for administrator, master electrician, and electrician renewal.

(1) DEFINITIONS - for purposes of this section.

- (a) "Applicant" means the entity submitting an application for review.
- (b) "Application" means a submittal made by an applicant seeking instructor or class approval.
- (c) "Calendar day" means each day of the week, including weekends and holidays.
- (d) "Class" means continuing education class or course.
- (e) "Contractor" means the entity who has contracted with the department to review and approve/deny continuing education classes and instructors.

(f) "Date of notification" means the date of a request for additional information from the contractor or the approval/denial letter sent to the applicant by the contractor.

(g) "Individual" means an administrator or electrician seeking credit for continuing education.

(h) "Instructor" means an individual who is authorized to instruct an approved continuing education class.

(i) "Working day" means Monday through Friday, excluding state of Washington holidays.

(2) GENERAL.

(a) The department and the electrical board have the right to monitor all approved classes without notice and at no charge.

If the department or electrical board determines that the class or instructor does not meet or exceed the minimum requirements for approval or course length or instructor qualifications, the department may revoke the class or instructor approval and reduce the number of credited hours for the class.

(b) Department-offered classes and the instructors used for those classes are automatically approved and do not need to be sent to the contractor for review.

(c) Instructors who meet the minimum requirements using subsection (5)(b)(i)(D) of this section may only instruct classes sponsored by the manufacturer(s) who verified the instructors' qualifications under subsection (5)(b)(i)(D) of this section.

(d) An individual will not be given credit for the same approved continuing education class taken more than once. No credit will be granted for any class not approved per this section.

(e) Telecommunications administrators do not require continuing educations.

(f) Other administrators, master electricians, and electricians:

(i) To be eligible for renewal of an administrator certificate, master electrician or electrician certificate of competency, the individual must have completed at least eight hours of approved continuing education for each year of the prior certification period. The individual is not required to take the classes in separate years. At least eight hours of the total required continuing education must be on the currently adopted National Electrical Code changes. Beginning January 1, 2005, four hours of the required continuing education must be on the currently adopted chapter 19.28 RCW and its related WAC(s).

(ii) An individual changing an electrical administrator and an electrician certificate of competency into a master electrician's certificate of competency as allowed in RCW 19.28.191 (1)(a) or (b) must have completed at least eight hours of approved continuing education for each year of the prior electrician certificate period. The individual is not required to take the classes in separate years. Eight hours of the required continuing education must be on the currently adopted National Electrical Code changes. Beginning January 1, 2005, four hours of the required continuing education must be on the currently adopted chapter 19.28 RCW and its related WAC(s).

(iii) Any portion of a year of a prior administrator or electrician certificate period is equal to one year for the purposes of the required continuing educations.

(iv) An individual who has both an electrician certificate and an administrator certification may use the same class to fulfill the requirements for continuing education.

(g) Training certificates:

(i) Effective July 1, 2007, to be eligible for renewal of a training certificate, the individual must have completed:

(A) At least sixteen hours of approved basic classroom electrical training classes; or

(B) Equivalent electrical training courses taken as a part of an approved:

- Apprenticeship program under chapter 49.04 RCW; or
- Electrical training program under RCW 19.28.191

(1)(h).

Note that trainees seeking experience credit in the pump and irrigation **(03)** or domestic pumping **(03A)** specialties must take pumping industry basic classroom training classes;

In addition, trainees working in the pump and irrigation **(03)** or domestic pump **(03A)** specialties may be credited for courses approved as a part of the requirements for plumber trainees required in RCW 18.106.070(5).

(h) A continuing education class attended or completed by an individual before the class's effective date cannot be used to meet the certificate renewal requirements.

(i) If neither the electrical board nor the department has a contract in effect as described in this section, the department may, at its option, elect to act as the contractor. If a contractor is not in place and the department elects not to act as the contractor, the electrical board will act as the contractor. If either the electrical board or the department acts as the contractor, the following will apply:

(i) The fee for class or instructor submittal is as set in WAC 296-46B-910(4).

(ii) The electrical board or the department will:

(A) Review the application for completeness within fifteen working days after receipt.

(B) If the application is incomplete, notify the applicant within seven working days of the status of the review and what additional information is required.

(C) Complete the review and approval/denial process within fifteen working days upon receipt of a complete application or additional requested information.

(iii) An appeal of a denial by the department will be heard by the full electrical board in accordance with WAC 296-46B-995.

(3) CLASS AND INSTRUCTOR - GENERAL APPROVAL PROCESS.

(a) The contractor will review submitted class and instructor applications to determine whether the application meets the minimum requirements for approval.

(b) The contractor will deny approval of applications that do not meet the minimum requirements.

(c) All applications will be considered to be new applications (i.e., Classes and instructors may not be renewed. All applications must include all information necessary to show conformance with the minimum requirements).

(d) Minimum requirements:

(i) Application review fees:

(A) The contractor may charge a fee for review of an application. Such fees, paid by the applicant, are nonrefundable.

(B) The fee will be as set by contractor between the department and the contractor.

(C) The fee will be set for a minimum of one year.

(D) Upon mutual agreement between the department and the contractor, the fee may be raised or lowered.

(ii) Application:

(A) The applicant must submit a complete application to the contractor at least thirty calendar days prior to offering or instructing a class.

(B) The contractor will only consider material included with the application when reviewing an application.

(C) All applications will consist of:

- One copy of all material;
- Applicant's name, address, contact name, and telephone number;
- All required fees;
- Any other information the applicant wants to consider during the review; and
- Class applications will include:
 - Sponsor's name, address, contact name, and telephone number;
 - Class title;
 - Number of continuing education hours requested for the class;
 - Category of class for which approval is sought (i.e., code update, RCW/WAC update, industry related, basic classroom electrical training, pumping industry, or pumping industry basic classroom training);
 - Any required examinations;
 - Statement of whether the class is open to the public;
 - Class syllabus (e.g., general description of the training, specific NEC articles referenced, time allowed for various subject matter, etc.). Note that for all pumping industry classes, curriculum must include fifty percent electrical and fifty percent plumbing instruction;
 - List of resources (e.g., texts, references, etc.);
 - Copies of all visual aids;
 - Sample of the completion certificate.

• Instructor application will include:

- Instructor's name, address, telephone number;
- Copies of credentials or other information showing conformance with the instructor minimum qualifications.

(e) Contractor's review process:

(i) When the application is received, the contractor must:

(A) Date stamp the application;

(B) Review the application for completeness within seven working days after receipt.

(ii) If the application is incomplete, the contractor must within two working days notify the applicant of the status of the review and what additional information is required.

(A) The applicant must provide any additional information requested by the contractor within five working days after the date of notification.

(B) The contractor will deny the application if the additional required information is not received within the five working days after the date of notification.

(iii) When the contractor has received a complete application, the contractor must review and evaluate the application for compliance with the minimum requirements.

The contractor must complete the review and approval/denial process within seven working days upon receipt of a

complete application or additional requested information and within two working days notify:

- The applicant in writing; and
- The chief electrical inspector in writing and electronically. The contractor's electronic notification to the chief electrical inspector must be made in a format approved by the chief electrical inspector.

(iv) A notification of denial must include:

- (A) Applicant's name and telephone number;
- (B) Date of denial;
- (C) Sponsor's name and class title if applicable;
- (D) Instructor's name if applicable; and
- (E) The reason for denial.

(v) A notification of approval:

(A) For classes must include:

- Applicant's name and telephone number;
- Sponsor's name and telephone number;
- Class title;
- Class number;
- Number of hours approved for the class. Note that the

contractor may reduce the hours requested in the application if the review shows that the requested number of hours is excessive;

- Effective date for this class;
- Expiration date of class;
- Category for which the class is approved (i.e., code update, RCW/WAC update, industry related, basic classroom electrical training, pumping industry, or pumping industry basic classroom training);
- Sample of written class roster and attendance sheet;
- Type of class (i.e., classroom, correspondence, internet); and

- Whether the class is open to the public.

(B) For instructors must include:

- Applicant's name and telephone number;
- Instructor's name and telephone number;
- Effective date for the approval; and
- Expiration date of the approval.

(vi) Applicant's request for review of the contractor's decision:

The applicant's may request a review of the contractor's decision to deny or modify an application:

- All requests for review must be:
- Made in writing;
- Received by the chief electrical inspector within twenty calendar days of the contractor's denial; and
- Accompanied by a review fee of \$109.50. The review fee is nonrefundable.

(4) CLASS APPROVAL PROCESS.

(a) Class approval will be valid for three years except:

(i) If the class is "code update" and a new NEC is adopted by the department within the class approval period, the class approval will be considered automatically revoked; or

(ii) If the class is modified after the application is approved, the class approval will be considered automatically revoked (i.e., change in syllabus, hours, examination, etc.).

(b) Minimum requirements:

(i) Class content:

(A) Industry-related classes must be based on:

- Codes or rules included in the NEC chapters 19.28 RCW or 296-46B WAC;

- Electrical theory based on currently published documents that are readily available for retail purchase; and/or

- Materials and methods that pertain to electrical construction, building management systems, electrical maintenance, or workplace health and safety.

(B) Code update classes must be based on the latest adopted version of the NEC and must specify the NEC articles to be addressed in the class presentation.

(C) RCW/WAC update classes must be based on the latest adopted versions of chapter 19.28 RCW and/or chapter 296-46B WAC.

(D) All basic classroom electrical training classes and pumping industry basic classroom training classes must be classroom instruction only. Correspondence and internet classes are not allowed. All basic classroom electrical training classes must include an appropriate written examination to ensure the participant understands the basic concepts of the class. To successfully complete the class, the participant must score at least seventy percent on the examination.

(E) In addition, for pumping industry classes, curriculum must include fifty percent electrical and fifty percent plumbing instruction.

(ii) Class length:

(A) The minimum allowed length of a class is two hours; however, the minimum length for a basic classroom electrical trainee classroom training or pumping industry basic classroom trainee classroom training is eight hours that can be delivered in multiple classroom sessions of not less than two hours each.

(B) The maximum allowed credit for a class is twenty-four hours.

(C) Class length must be based on two-hour increments (e.g., 2, 4, 6, 8, etc.).

(D) Class length must be based on the following:

- Classroom instruction will be based on the total hours the individual is in the classroom. A class may be divided into multiple sections so long as each section is not less than two hours in length and all sections are taken within a one month period.

- Correspondence instruction will be based on:

- A written examination (i.e., twenty-five questions will equal one hour of classroom instruction). Individuals must be responsible to determine the correct answer without the assistance of the sponsor.

- Internet instruction will be based on:

- A written examination (i.e., twenty-five questions will equal one hour of classroom instruction).

- Examinations must not direct or point the individual to a correct answer or reference. Individuals must be responsible to determine the correct answer without the assistance of the sponsor.

- To successfully complete a correspondence or internet class, a participant must score at least 70% on the examination required for the class.

(iii) Class material must include:

Supplementary written instruction material appropriate to the type and length of the class.

(iv) Class material may include:

- Supplementary internet material;

- Supplementary texts;
 - Other material as appropriate.
- (v) Certificates of completion:

(A) The sponsor must award a completion certificate to each individual successfully completing the approved class. To successfully complete a correspondence or internet class, a participant must score at least 70% on the examination required for the class.

(B) The completion certificate must include the:

- Name of participant;
- Participant's Washington certificate number;
- Name of sponsor;
- Name of class;
- Date of class;
- Name of instructor;
- Location of the class:
 - If a classroom-type class, the city and state in which the class was given;
 - If a correspondence class, state the class is a correspondence class;
 - If an internet class, state the class is an internet class;
- Class approval number;
- Number of continuing units; and
- Type of continuing education units.

(vi) Instructors:

(A) For classroom instruction, all instructors must be approved per this section; and

(B) For correspondence and internet instruction, the applicant must show that the sponsor regularly employs at least one staff member who meets the requirements for instructors in this section.

(5) INSTRUCTOR APPROVAL PROCESS:

(a) Instructor approval will be valid for three years except:

(i) If the instructor's credentials are invalidated (e.g., suspension or revocation by the issuing entity) for any reason, approval will be automatically revoked.

(ii) When the instructor approval expires or is revoked, a new application must be submitted to regain approved instructor status.

(b) Minimum requirements:

(i) The application must show that the instructor meets one of the following:

(A) Has a valid Washington administrator, master electrician, or electrician's certificate and has appropriate knowledge of and experience working as an electrical/electronic trainer; or

(B) Is an instructor in a two-year program in the electrical construction trade licensed by the Washington work force training and education coordinating board. The instructor's normal duties must include providing electrical/electronic education; or

(C) Is a high school vocational teacher, community college, college, qualified instructor with a state of Washington approved electrical apprenticeship program, or university instructor. The instructor's normal duties must include providing electrical/electronic education; or

(D) Works for and is approved by a manufacturer of electrical products to teach electrical continuing education.

(ii) Any other information the applicant wants to be considered during the review.

(6) FORMS:

(a) The contractor will:

Develop an appropriate form(s) for the applicant's use when submitting for instructor or class approval;

(b) Applicants must use the contractor's form when submitting an application for review.

(7) PUBLICATIONS:

The contractor will provide the department with appropriate material for use by the department on the electrical program web site and may post the application process, review, and approval requirements on the contractor's web site.

(8) CLASS ATTENDANCE:

(a) The contractor is not responsible for monitoring any individual's attendance or class completion.

(b) The department is not responsible for providing verification of an individual's continuing education history with the class sponsor;

(c) Electrical approved classes offered in Washington:

(i) The sponsor must provide the department with an accurate and typed course attendance/completion roster for each class given. Class attendance will only be verified based on the attendance/completion roster provided by the sponsor. Completion certificates are not an acceptable method of verifying attendance at a class approved in Washington under this chapter.

(A) The typed attendance/completion roster must be provided within thirty days of class completion.

(B) In addition, within seven days, the course sponsor must provide the attendance/completion roster in an internet format provided by the department.

(C) The attendance/completion roster must show each individual's name, Washington certificate number, class number, location of class, date of completion, and instructor's name. The typed roster must contain the signature of the class sponsor's authorized representative.

(ii) The sponsor must provide the individual a certificate of completion within fifteen days after successful class completion. See subsection (4) of this section.

(iii) Individuals will not be granted credit for continuing education classes unless the sponsor's attendance/completion roster shows the individual successfully completed the class.

(iv) The department will keep submitted class rosters on file for four years.

(d) Classes approved under chapter 18.106 RCW for the pumping industry will be verified through the normal roster reporting method for those classes.

(e) Classes offered in other states:

(i) For individuals to apply continuing education units earned from out-of-state classes, one of the following conditions must be met:

(A) The individual must request that the class sponsor submit a complete continuing education class application and gain approval for the class as described in this section for classes and instructors. Application for class or instructor approval will not be considered more than three years after the date the class was offered; or

(B) The department must have entered into a reciprocal agreement with the state providing class approval.

(ii) The individual must provide a copy of an accurate and completed award or certificate from the class sponsor identifying the class location, date of completion, individual's

names, and Washington certificate number. The department will only accept a copy of the sponsor's certificate or form as evidence that the individual attended and completed the class. The department must verify all out-of-state sponsor's certificates or forms with the issuing state prior to accepting them as evidence of class completion.

(9) Contractor requirements:

(a) The contractor cannot be a sponsor or instructor.

(b) The contractor cannot be an employee of the department.

(c) The contractor must:

(i) Be an independent entity with no organizational, managerial, financial, design, or promotional affiliation with any sponsor or instructor covered under the contractor's review and approval/denial process;

(ii) Employ at least one staff member having a valid 01-General Administrator or 01-General Master Electrician Certificate. This staff member:

(A) Is responsible for reviewing and determining an application's approval or denial; and

(B) Must sign the written notification provided to applicants for all approvals and denials;

(iii) Receive, review, and process all applications as required in this section;

(iv) Allow the department access to the contractor's facilities during normal working hours to audit the contractor's ability to conform to the contract requirements;

(v) Treat all applications as proprietary information;

(vi) Respond to and attempt to resolve complaints contesting the review or approval/denial process performed by the applicant;

(vii) Notify the department within ten working days of any change in business status or ability to conform to this section;

(viii) Maintain one copy, original or electronic, of all applications and associated materials for a period of three years from the date of receipt.

[Statutory Authority: RCW 19.28.006, 19.28.010, 19.28.031, 19.28.041, 19.28.061, 19.28.101, 19.28.131, 19.28.161, 19.28.171, 19.28.191, 19.28.201, 19.28.211, 19.28.241, 19.28.251, 19.28.281, 19.28.311, 19.28.321, 19.28.400, 19.28.420, 19.28.490, 19.28.551. 06-24-041, § 296-46B-970, filed 11/30/06, effective 12/31/06; 05-10-024, § 296-46B-970, filed 4/26/05, effective 6/30/05. Statutory Authority: Chapter 19.28 RCW. 04-21-086, § 296-46B-970, filed 10/20/04, effective 11/22/04. Statutory Authority: RCW 19.28.006, 19.28.010, 19.28.031, 19.28.041, 19.28.061, 19.28.101, 19.28.131, 19.28.161, 19.28.171, 19.28.191, 19.28.201, 19.28.211, 19.28.241, 19.28.251, 19.28.271, 19.28.311, 19.28.321, 19.28.400, 19.28.420, 19.28.490, 19.28.551, 2003 c 399, 2003 c 211, 2003 c 78, and 2003 c 242. 04-12-049, § 296-46B-970, filed 5/28/04, effective 6/30/04. Statutory Authority: RCW 19.28.006, 19.28.010, 19.28.031, 19.28.041, 19.28.061, 19.28.101, 19.28.131, 19.28.161, 19.28.171, 19.28.191, 19.28.201, 19.28.211, 19.28.241, 19.28.251, 19.28.271, 19.28.311, 19.28.321, 19.28.400, 19.28.420, 19.28.490, 19.28.551, 2002 c 249, chapters 34.05 and 19.28 RCW. 03-09-111, § 296-46B-970, filed 4/22/03, effective 5/23/03.]

WAC 296-46B-971 Training schools. (1) The department must evaluate and approve training school programs in the electrical trade as regulated by chapter 19.28 RCW for equivalency to hours of supervised work experience. Approved training programs must be from a Washington state public community or technical college, or a not-for-profit nationally accredited technical or trade school licensed

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by the work force training and education coordinating board under chapter 28C.10 RCW.

(2) The minimum total hours for an electrical technical training program must be determined per RCW 19.28.191.

(3) Training school programs must be approved before their graduates may request credit for equivalent work experience hours toward journeyman or specialty electrician certification. Until December 31, 2003, existing electrical training programs, in effect after January 1, 2000, may apply for retroactive approval of their program to determine the number of hours that will be credited for the program graduates. After December 31, 2003, all training programs must be approved by the department prior to beginning instruction.

(4) Training schools must submit the curriculum of each journeyman or specific specialty electrical training program to the department for approval. The curriculum must include a detailed description of each course that is included in the total training hours required by RCW 19.28.191. The curriculum must be reviewed by the department whenever significant changes in program content or course length are implemented or at an interval not to exceed three years. After department review, the program may be renewed. In evaluating the relevance of the curriculum, the department will consider the following criteria:

(a) Scope of work for the appropriate electrician certification.

(b) Understanding whole systems related to and integrated with electrical equipment installation, maintenance, troubleshooting, and appliance repair (e.g., refrigeration, pumps, hydraulics, thermodynamics, compressed air, and similar systems).

(c) Courses not directly related to electrical technical instruction or specific scope of work, but required to complete the specific training program (i.e., mathematics, technical writing, business, safety, first aid, ergonomics, etc.), must not exceed ten percent of the total student/instructor contact time of the program.

(5) Within thirty days after beginning a program, the program sponsor must supply the department with a roster of individuals enrolled in the program. Within thirty days after each graduation cycle, approved training school programs must provide the department with a roster of individuals that have successfully completed the program. The roster must show each student's name, date of completion, Washington training or electrician certificate number or student identification number, and the training program title. An individual must provide a copy of the certificate of completion or proof of graduation from the electrical training program when making application to the department for an electrician examination.

(6) All school training activities involving electrical work or appliance repair done outside of in-school lab facilities must be done under a valid Washington electrical contractor's license. All students performing such work must have a valid training certificate and work under a supervising journeyman or specialty electrician in a ratio, per RCW 19.28.161, in compliance with RCW 19.28.161.

(7) Individuals in a two-year electrical construction trade training program for journeyman electrician must obtain the additional two years of work experience required in new

industrial or commercial installation prior to the beginning, or after the completion, of the technical school program.

All student electrical training hours obtained when working for contractors or other employers in intern programs arranged by the school must be evaluated as part of the training program hours. Additional work experience credit gained in an intern program is not allowed.

This does not prohibit trainees in a training program for specialty electricians from having concurrent employment and obtaining additional specialty work experience while attending school. All such concurrent work must be documented in an affidavit of experience per WAC 296-46B-965 (5), (6), (7), and (8).

The following supervision requirements must be met when working as an intern or student:

(a) Intern when working for contractors or other employers as a:

(i) General electrician, there must be not more than one noncertified individual for every certified master journeyman electrician or journeyman electrician.

(ii) Specialty electrician, there must be not more than two noncertified individuals for every certified master specialty electrician working in that electrician's specialty, specialty electrician working in that electrician's specialty, master journeyman electrician, or journeyman electrician.

(b) Student when working for a public community or technical college, or not-for-profit nationally accredited trade or technical school licensed by the work force training and education coordinating board under chapter 28C.10 RCW as a journeyman or specialty electrician in the training program, the ratio requirements are one certified master specialty electrician working in that electrician's specialty, specialty electrician working in that electrician's specialty, master journeyman electrician, or journeyman electrician working as a specialty electrician to no more than four students enrolled in and working as part of an electrical construction program. All such work will be considered to be an integral part of the training program and work experience credit will not be allowed except as a part of the program.

When the ratio of certified electricians to noncertified individuals on a job site is one certified electrician to three or four noncertified individuals, the certified electrician must:

(i) Directly supervise and instruct the noncertified individuals and the certified electrician may not directly make or engage in an electrical installation; and

(ii) Be on the same job site as the noncertified individual for a minimum of one hundred percent of each working day.

The public community or technical colleges, or not-for-profit nationally accredited trade or technical schools must be an appropriately licensed electrical contractor when performing work outside the classroom.

(8) The department will use the criteria in this section to evaluate the hours of credit that may be allowed for United States armed forces experience and training in the electrical construction, electrical maintenance, and appliance repair trades. See WAC 296-46B-940(20).

[Statutory Authority: RCW 19.28.006, 19.28.010, 19.28.031, 19.28.041, 19.28.061, 19.28.101, 19.28.131, 19.28.161, 19.28.171, 19.28.191, 19.28.201, 19.28.211, 19.28.241, 19.28.251, 19.28.271, 19.28.311, 19.28.321, 19.28.400, 19.28.420, 19.28.490, 19.28.551, 2002 c 249, chapters 34.05 and 19.28 RCW. 03-09-111, § 296-46B-971, filed 4/22/03, effective 5/23/03.]

WAC 296-46B-975 Electrical audit. General.

(1) The department may audit the employment records of the electrical contractor or employer to verify the employment status of trainees, assigned administrators, or assigned master electricians.

(2) Every employer or contractor must keep a record of trainee, assigned administrator/master electrician employment so the department may obtain the information it needs to verify electrical trainee, assigned administrator, or assigned master electrician status and trainee work experience. Upon the request of the department's auditors or agents, these records must be made available to the department for inspection within seven business days.

(3) Any information obtained from the contractor or employer during the audit is confidential and is not open to public inspection under chapter 42.17 RCW.

Trainee hours.

(4) The time period covered by a trainee audit will not exceed five years prior to the period included in the last affidavit verifying trainee hours is submitted.

(5) An employer or contractor must maintain payroll records, time cards, or similar records to verify:

(a) The number of hours the trainee worked as a supervised trainee;

(b) The type of electrical work the trainee performed; and

(c) Who provided the trainee's supervision.

(6) The department's audit may include, but will not be limited to, the following:

(a) An audit to determine whether the trainee was employed by the contractor or employer during the period for which the hours were submitted, the actual number of hours the trainee worked, the category of electrical work performed, and who provided the trainee's supervision; and

(b) An audit covering a specific time period and examining a contractor's or employer's books and records which may include their reporting of the trainee's payroll hours required for industrial insurance, employment security or prevailing wage purposes.

Administrator/master electrician - status.

(7) The time period covered by an administrator/master electrician audit will not exceed five years prior to the beginning of the audit.

(8) Every employer or contractor must maintain payroll records, time cards, or similar records to verify the work relationship and status of the assigned administrator or master electrician so the department may obtain the information it needs to verify the contractor-administrator/master electrician relationship. Upon the request of the department's auditors or agents, these records must be made available to the department for inspection within seven business days.

(9) The department's audit may include, but will not be limited to, the following:

(a) An audit to determine whether the assigned administrator or assigned master electrician was employed by the contractor or employer during the period assigned which may include their reporting of the assigned administrator's/master electrician's payroll hours required for employment security, prevailing wage, worker's compensation, etc.; and

(b) An audit to determine the full-time supervisory status of the assigned administrator/master electrician.

[Statutory Authority: RCW 19.28.006, 19.28.010, 19.28.031, 19.28.041, 19.28.061, 19.28.101, 19.28.131, 19.28.161, 19.28.171, 19.28.191, 19.28.201, 19.28.211, 19.28.241, 19.28.251, 19.28.271, 19.28.311, 19.28.321, 19.28.400, 19.28.420, 19.28.490, 19.28.551, 2002 c 249, chapters 34.05 and 19.28 RCW. 03-09-111, § 296-46B-975, filed 4/22/03, effective 5/23/03.]

WAC 296-46B-980 Enforcement—Installations, licensing, and certification requirements. (1) The department inspects the electrical worksites of individuals, employers, and employees with respect to the methods and installation requirements of chapter 19.28 RCW and this chapter. The department's electrical inspectors and electrical auditors make electrical work inspections. The department's electrical inspectors, electrical auditors, and compliance officers make electrical licensing/certification inspections.

(2) The department ensures that individuals, employers, and employees comply with the electrical licensing and certification requirements of chapter 19.28 RCW and this chapter. To do this, inspections are made by the department's electrical inspectors/auditors and compliance officers.

Compliance officers or electrical inspectors/auditors determine whether:

(a) Each person or entity advertising to do electrical work or doing electrical work on an electrical worksite has a proper license, certificate, or temporary electrician permit;

(b) The ratio, per RCW 19.28.161, of certified journeyman/specialty electricians to the certified trainees on the job site is correct; and

(c) Each certified trainee is directly supervised by an individual who possesses an appropriate certificate of competency or temporary electrician permit for the type of electrical work being performed.

[Statutory Authority: RCW 19.28.006, 19.28.010, 19.28.031, 19.28.041, 19.28.061, 19.28.101, 19.28.131, 19.28.161, 19.28.171, 19.28.191, 19.28.201, 19.28.211, 19.28.241, 19.28.251, 19.28.271, 19.28.311, 19.28.321, 19.28.400, 19.28.420, 19.28.490, 19.28.551, 2002 c 249, chapters 34.05 and 19.28 RCW. 03-09-111, § 296-46B-980, filed 4/22/03, effective 5/23/03.]

WAC 296-46B-985 Penalties for false statements or material misrepresentations. (1) A person who knowingly makes a false statement or material misrepresentation on an application, statement of hours, or signed statement to the department may be referred to the county prosecutor for criminal prosecution under RCW 9A.72.020, 9A.72.030, and 9A.72.040. The department may also file a civil action under RCW 19.28.131 or 19.28.271 and may revoke or suspend a certificate under RCW 19.28.241 or 19.28.341.

(2) The department may file a civil action under RCW 19.28.131 or 19.28.271 and may revoke or suspend a certificate of competency under RCW 19.28.341 or 19.28.241 for inaccurate or false reporting of continuing education units on the administrator, master electrician, electrician, or training certificate renewal form.

(3) If the department determines that a course sponsor has issued an inaccurate or incomplete course application or attendance/completion roster, the department may suspend or revoke the course approval and deny future approval of a continuing education course(s) by the course sponsor.

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(4) The department may file a civil action under RCW 19.28.271 against both the trainee and the contractor, apprentice training director, or other entity verifying the training hours and may subtract up to two thousand hours of employment from a trainee's total hours if the department determines a false statement or material misrepresentation has been made in an affidavit of experience.

[Statutory Authority: RCW 19.28.006, 19.28.010, 19.28.031, 19.28.041, 19.28.061, 19.28.101, 19.28.131, 19.28.161, 19.28.171, 19.28.191, 19.28.201, 19.28.211, 19.28.241, 19.28.251, 19.28.281, 19.28.311, 19.28.321, 19.28.400, 19.28.420, 19.28.490, 19.28.551. 06-24-041, § 296-46B-985, filed 11/30/06, effective 12/31/06. Statutory Authority: RCW 19.28.006, 19.28.010, 19.28.031, 19.28.041, 19.28.061, 19.28.101, 19.28.131, 19.28.161, 19.28.171, 19.28.191, 19.28.201, 19.28.211, 19.28.241, 19.28.251, 19.28.271, 19.28.311, 19.28.321, 19.28.400, 19.28.420, 19.28.490, 19.28.551, 2002 c 249, chapters 34.05 and 19.28 RCW. 03-09-111, § 296-46B-985, filed 4/22/03, effective 5/23/03.]

WAC 296-46B-990 Failure to comply with the electrical contractor licensing, administrator certification, or electrician certification laws. General.

(1) If the compliance officer or electrical inspector/auditor determines that an individual, employer, or employee has violated chapter 19.28 RCW or this chapter, the department will issue a citation that describes the violation.

Suspension or revocation - of an electrical contractor's license, administrator's certificate, master electrician's certificate of competency, electrician's certificate of competency, temporary electrician's permit, or training certificate.

(2) The department may revoke or suspend, for such time as it determines appropriate, an electrical contractor's license, administrator's certificate, master electrician's certificate of competency, electrician's certificate of competency, temporary electrician's permit, temporary specialty electrician's permit, or training certificate if:

(a) The license, certificate, or permit was obtained through error or fraud;

(b) The license, certificate, or permit holder is judged to be incompetent to work in the electrical construction trade as a master electrician, journeyman electrician, specialty electrician, electrical technician, temporary electrician, temporary specialty electrician, or electrical trainee;

(c) For serious noncompliance as described below. See RCW 19.28.241 and 19.28.341 for other grounds and procedures.

(d) A temporary electrician permit or temporary specialty electrician permit holder has violated any of the provisions of chapter 19.28 RCW or any rule adopted under chapter 19.28 RCW;

(e) The license or certificate holder incompletely or inaccurately reported continuing education units on an application for renewal; or

(f) The certificate holder falsely, incompletely, or inaccurately reported previous work experience.

The department will deny an application for any license/certificate during the period of revocation or suspension of the same or another license/certificate under chapter 19.28 RCW.

(3) For the purposes of this section, serious noncompliance includes, but is not limited to, any of the following:

(a) Failure to correct a serious violation. A serious violation is a violation of chapter 19.28 RCW or chapter 296-46B WAC that creates a hazard of fire or a danger to life safety. A serious violation is also a violation that presents imminent danger to the public. Imminent danger to the public is present when installations of wire and equipment that convey or utilize electric current have been installed in such a condition that a fire-hazard or a life-safety hazard is present. Imminent danger to the public is also present when unqualified, uncertified, or fraudulently certified electricians or administrators; or unlicensed or fraudulently licensed contractors are continuously or repeatedly performing or supervising the performance of electrical work covered under chapter 19.28 RCW. For the purposes of this section, a certified electrician is considered qualified, provided the electrician is working within his or her certification;

(b) The license or certificate was obtained through error or fraud;

(c) Submitting a fraudulent document to the department;

(d) Continuous noncompliance with the provisions of chapter 19.28 RCW or this chapter. For the purposes of this section, continuous noncompliance will be defined as three or more citations demonstrating a disregard of the electrical law, rules, or regulations within a period of three years, or where it can be otherwise demonstrated that the contractor, master electrician, electrician, or administrator has continuously failed to comply with the applicable electrical standards;

(e) Failure to make any books or records, or certified copies thereof, available to the department for an audit to verify the hours of experience submitted by an electrical trainee;

(f) Making a false statement or material misrepresentation on an application, statement of hours, or signed statement required by the department;

(g) The certificate holder falsely or inaccurately reported continuing education units on an application for renewal;

(h) Installing a shortened rod/pipe grounding electrode, improper splicing of conductors in conduits/raceways or concealed within walls, or installing a fake equipment grounding conductor.

For any act of serious noncompliance, the person, firm, partnership, corporation, or other entity may be referred to the county prosecutor for criminal prosecution under chapter 9A.72 RCW. The department may also file a civil action under chapter 19.28 RCW.

(4) Before a license, certificate, or temporary electrician permit is revoked or suspended, the certificate holder will be given written notice of the department's intention to suspend or revoke. Notification will be sent by registered mail to the certificate holder's last known address. The notification will list the allegations against the certificate holder, and provide the certificate holder with the procedures necessary to request a hearing before the electrical board as described in WAC 296-46B-995.

Confiscation - of an electrical contractor's license, administrator certificate, electrician certificate of competency, temporary electrician permit, or training certificate.

(5) The department may confiscate a license, certificate, or temporary electrician permit that is counterfeit, revoked, expired, suspended, or altered. The individual may be referred to the county prosecutor for criminal prosecution

under chapter 9A.72 RCW. The department may also file a civil action under chapter 19.28 RCW.

[Statutory Authority: RCW 19.28.006, 19.28.010, 19.28.031, 19.28.041, 19.28.061, 19.28.101, 19.28.131, 19.28.161, 19.28.171, 19.28.191, 19.28.201, 19.28.211, 19.28.241, 19.28.251, 19.28.271, 19.28.311, 19.28.321, 19.28.400, 19.28.420, 19.28.490, 19.28.551, 2003 c 399, 2003 c 211, 2003 c 78, and 2003 c 242. 04-12-049, § 296-46B-990, filed 5/28/04, effective 6/30/04. Statutory Authority: RCW 19.28.006, 19.28.010, 19.28.031, 19.28.041, 19.28.061, 19.28.101, 19.28.131, 19.28.161, 19.28.171, 19.28.191, 19.28.201, 19.28.211, 19.28.241, 19.28.251, 19.28.271, 19.28.311, 19.28.321, 19.28.400, 19.28.420, 19.28.490, 19.28.551, 2002 c 249, chapters 34.05 and 19.28 RCW. 03-09-111, § 296-46B-990, filed 4/22/03, effective 5/23/03.]

WAC 296-46B-995 Electrical board—Appeal rights and hearings. General.

(1) Chapter 19.28 RCW provides the authority for the duties and responsibilities of the electrical board. Except as provided in chapter 19.28 RCW and this chapter, all proceedings will be conducted according to chapter 34.05 RCW the Administrative Procedure Act and chapter 10-08 WAC, Model rules of procedure. See chapter 34.05 RCW the Administrative Procedure Act for specific definitions not described in this chapter.

(2) See RCW 19.28.311 for the composition of the electrical board.

(3) The board adopts the current edition of the "*Roberts' Rules of Order, Newly Revised*."

(4) The board will hold regular meetings on the last Thursday of January, April, July, and October of each year per RCW 19.28.311.

(5) The director or the chairperson of the board may call a special meeting at any time.

(6) Each board member must be notified in writing of the agenda, date, time, and place of each regular and special meeting. "Writing" includes by electronic mail, also known as "e-mail," if the member has provided an e-mail address for such notice.

(7) The board or department may elect to have an appeal heard by the office of administrative hearings either tape recorded or transcribed by a court reporter; and the board may so elect regarding hearings or board reviews heard by the board as a whole.

(8) A majority of the board constitutes a quorum for purposes of rendering any decision.

(a) If a majority does not attend a hearing or board review on an appeal, the board may either continue the hearing or board review to a date certain or may hear the testimony and arguments.

(b) If the board hears the testimony and arguments, the members of the board who are absent may make their decisions after hearing the tape recording or reading the transcript, of the hearing or board review.

(c) If the board selects the method in subsection (8)(b) of this section, at the time of the hearing, the board shall set a date certain for the absent members to complete review of the record and for the board as a whole to vote on the decision. The vote in subsection (8)(b) and (c) of this section may occur by U.S. mail, facsimile or by electronic mail and shall be determined by the board at the hearing; the members' votes shall be public record.

(9) All filings and documents for any matter before the board must be submitted to the chief electrical inspector, as secretary to the board, 7273 Linderson Way, P.O. Box 44460, Olympia, WA 98504-4460. The filings may be submitted by ordinary mail, certified or registered mail, or by personal delivery.

(10) All hearings before the board as a whole shall be held on regularly scheduled meeting dates, as listed in subsection (4) of this section, unless the board determines that an alternate date is necessary. All notices of appeal, with a certified check payable to the department in the sum of two hundred dollars if required, must be received in the office of the chief electrical inspector, as secretary to the board, at least thirty days before the regularly scheduled board meeting at which the hearing would occur. The appellant must submit any written argument, briefs testimony or documents for the board's consideration at least twenty days prior to the scheduled hearing.

Appeals

(11) Appeals of penalties issued by the department.

(a) A party may appeal a penalty issued by the department, pursuant to chapter 19.28 RCW and this chapter, to the board. The appeal shall be assigned to the office of administrative hearings.

(b) The appeal must be filed within twenty days after the notice of the decision or penalty is given to the assessed party either by personal service or by certified mail, return receipt requested, sent to the last known address of the assessed party and shall be made by filing a written notice of appeal with the chief electrical inspector, as secretary to the board. The request for an appeal must be accompanied with a certified check payable to the department in the sum of two hundred dollars.

(12) Appeals of proposed decisions issued by the office of administrative hearings.

(a) A party may appeal a proposed decision issued by the office of administrative hearings pursuant to chapter 19.28 RCW to the board. The appeal must be filed within twenty days after service of the decision and must be made by filing a written notice of appeal with the chief electrical inspector, as secretary to the board.

(b) The notice of appeal of a proposed decision must be received in the office of the chief electrical inspector, as secretary to the board, at least thirty days before a regularly scheduled board meeting. All parties must submit any written argument, briefs testimony or documents for the board's consideration at least twenty days prior to the scheduled hearing.

(13) Appeals of suspension, revocation, or nonrenewal.

(a) An appeal of the suspension or revocation of a license or certificate of competency under RCW 19.28.241 and 19.28.341 or of nonrenewal of a license or certificate of competency under this chapter will be heard by the board in accordance with chapter 34.05 RCW and not assigned to the office of administrative hearings. The board will conduct the hearing and may elect to have the assistance of an administrative law judge in the proceeding.

(b) The notice of appeal, with the certified check payable to the department in the sum of two hundred dollars for appeals of a revocation or suspension of a contractor's or administrator's license, must be filed within twenty days after

the notice of suspension or revocation is served on the subject of said action, either by personal service or by certified mail, return receipt requested, sent to the last known address of the subject and shall be filed by written notice of appeal with the chief electrical inspector, as secretary to the board.

(14) Appeals of decisions on installation.

(a) A party may seek board review for disputes relating to the interpretation and application of electrical/telecommunications installation or maintenance standards under RCW 19.28.111, 19.28.480, and 19.28.531. The board will conduct the hearing and may elect to have the assistance of an administrative law judge in the proceeding.

(b) The notice of appeal, with the certified check payable to the department in the sum of two hundred dollars, must be received in the office of the chief electrical inspector, as secretary to the board, at least thirty days before a regularly scheduled board meeting. All parties must submit any written argument, briefs testimony or documents for the board's consideration at least twenty days prior to the scheduled hearing.

(15) Appeals of a continuing education class or instructor for denials or revocations.

A party may appeal a decision issued by the department, pursuant to WAC 296-46B-970 (3)(e)(vi), if the department acts as the contractor pursuant to WAC 296-46B-970 (2)(i) to the superior court per RCW 34.05.542(3).

(16) Appeals pertaining to engineer approval or electrical testing laboratory recognition and accreditation.

(a) A party may appeal a decision issued by the department pursuant to WAC 296-46B-997 or 296-46B-999. The appeal will be heard by the board in accordance with chapter 34.05 RCW and not assigned to the office of administrative hearings. The board will conduct the hearing and may elect to have the assistance of an administrative law judge in the proceeding.

(b) The notice of appeal, with the certified check payable to the department in the sum of two hundred dollars for appeals pertaining to engineer approval or recognition and accreditation of an electrical testing laboratory, must be filed within twenty days after the notice of the department's decision is served on the subject of said action, either by personal service or by certified mail, return receipt requested, sent to the last known address of the subject and shall be filed by written notice of appeal with the chief electrical inspector, as secretary to the board.

(17) Judicial review of final decisions of the board.

A party may seek judicial review of a final order of the board within thirty days after service of the decision. Appeals of final decisions and orders must be done in accordance with chapter 34.05 RCW.

(18) If appeal(s) according to subsections (11), (12), (13), and (15) of this section are not filed or the appeal is not filed timely, the proposed decision or action becomes final with no further action on the part of the department or the board.

(19) Appeals - general requirements.

(a) Appeals according to subsections (11), (12), or (15) of this section must specify the contentions of the appellant, and must for subsection (12) of this section specify to which conclusions of law and findings of fact the party takes exception. The appeal will be based on the record of the hearing. The board shall not grant a hearing de novo.

(b) In appeals under subsections (12), (13), (14), and (15) of this section, the issues to be adjudicated must be made as precise as possible, in order that the board may proceed promptly to conduct the hearing on relevant and material matter only.

(c) In all appeals of chapter 19.28 RCW and this chapter, the appellant has the burden of proof by a preponderance of the evidence.

Appearance and practice before board.

(20) No party may appear as a representative in proceedings other than the following:

(a) Attorneys at law qualified to practice before the supreme court of the state of Washington;

(b) Attorneys at law qualified to practice before the highest court of record of another state, if the attorneys at law of the state of Washington are permitted to appear as representatives before administrative agencies of the other state, and if not otherwise prohibited by Washington law; or

(c) An owner, officer, partner, or full-time employee of a firm, association, organization, partnership, corporation, or other entity who appears for the firm, association, organization, partnership, corporation or other entity.

(21) All persons appearing in proceedings as a representative must conform to the standards of ethical conduct required of attorneys before the courts of Washington. If a person does not conform to these standards, the board may decline to permit the person to appear as a representative in any proceeding before the board.

[Statutory Authority: RCW 19.28.006, 19.28.010, 19.28.031, 19.28.041, 19.28.061, 19.28.101, 19.28.131, 19.28.161, 19.28.171, 19.28.191, 19.28.201, 19.28.211, 19.28.241, 19.28.251, 19.28.281, 19.28.311, 19.28.321, 19.28.400, 19.28.420, 19.28.490, 19.28.551. 06-24-041, § 296-46B-995, filed 11/30/06, effective 12/31/06; 06-05-028, § 296-46B-995, filed 2/7/06, effective 5/1/06. Statutory Authority: RCW 19.28.006, 19.28.010, 19.28.031, 19.28.041, 19.28.061, 19.28.101, 19.28.131, 19.28.161, 19.28.171, 19.28.191, 19.28.201, 19.28.211, 19.28.241, 19.28.251, 19.28.271, 19.28.311, 19.28.321, 19.28.400, 19.28.420, 19.28.490, 19.28.551, 2003 c 399, 2003 c 211, 2003 c 78, and 2003 c 242. 04-12-049, § 296-46B-995, filed 5/28/04, effective 6/30/04. Statutory Authority: RCW 19.28.006, 19.28.010, 19.28.031, 19.28.041, 19.28.061, 19.28.101, 19.28.131, 19.28.161, 19.28.171, 19.28.191, 19.28.201, 19.28.211, 19.28.241, 19.28.251, 19.28.271, 19.28.311, 19.28.321, 19.28.400, 19.28.420, 19.28.490, 19.28.551, 2002 c 249, chapters 34.05 and 19.28 RCW. 03-09-111, § 296-46B-995, filed 4/22/03, effective 5/23/03.]

WAC 296-46B-997 Engineer approval. (1) This section describes the methods required to obtain recognition and accreditation of professional engineers registered under chapter 18.43 RCW to approve industrial utilization equipment. This section provides assurance to the general consuming public that electrical products have been tested for safety and identified for their intended use.

(2) Industrial utilization equipment is considered to be safe when it is certified by an engineer accredited by the department.

(a) The department may declare industrial utilization equipment unsafe if:

(i) The equipment is not being manufactured or produced in accordance with all standards of design and construction and all terms and conditions set out in the certification report for the equipment referred to in this chapter;

(ii) The equipment has been shown by field experience to be unduly hazardous to persons or property;

(iii) An examination of the equipment or of the certification report for the equipment shows that the equipment does not comply with all applicable standards; or

(iv) An examination of the certification report or the equipment shows that the equipment cannot be installed in accordance with this chapter.

(b) When the department declares industrial utilization equipment unsafe, the department will notify the product owner and the certifying engineer in writing.

Accreditation - general.

(3) The department's chief electrical inspector's office reviews requests for accreditation. Applicants must submit supporting data to document and verify the requirements of this section have been met.

(4) The accreditation of an engineer will be valid for the period of three years.

(5) On-site inspection of an engineer's facilities.

(a) On-site inspection of the facility(ies) may be required during the initial application process or the renewal process. Representative(s) of the department will evaluate for compliance with accreditation criteria.

(b) The applicant must pay all costs associated with the on-site inspection.

(6) For purposes of chapter 19.28 RCW, all engineers who certify industrial utilization equipment offered for sale in the state of Washington must be accredited by the department.

(7) Fees are payable as required in WAC 296-46B-911.

(8) The engineer must apply for renewal of accreditation at least thirty days prior to the accreditation expiration date. The department will renew accreditation for the period of three years or notify the renewing engineer of the department's reason(s) of refusal following receipt of the completed form and renewal fee.

(9) The department accepts or denies engineer accreditation for engineers seeking to evaluate industrial utilization equipment within the state. Accreditation is determined when an engineer provides evidence to the department that all the requirements of this chapter are met. Accreditation is determined by the department and prior to making a determination, the department may require information and documentation to be provided by the engineer.

(a) Accreditation is subject to review when deemed necessary by the department. The engineer must pay all costs associated with on-site review.

(b) Every accredited engineer must continue to satisfy all the conditions specified in this chapter during the period of the accreditation. An engineer must furnish the department an annual report detailing the extent of its activities for the year. The report must include, but not be limited to:

(i) The number of industrial utilization equipment items approved;

(ii) Organizational structure of the engineer's company;

(iii) Statement of ownership of the engineer's company; and

(iv) Reports of litigation, which in any way were the result of or may affect any accreditation or testing of products covered by this chapter.

(c) The department will notify the applicant of the accreditation results. A letter of accreditation from the department is proof of the accreditation of the engineer.

(10) The engineer will be approved to certify industrial utilization equipment.

Suspension or revocation.

(11) The department may suspend, revoke, or refuse to renew the department's accreditation of any engineer found to be in noncompliance with requirements of this chapter, the laws of the state of Washington, or submitting false information.

(12) The department will serve written notice of intent prior to suspension, revocation, or refusal to renew the accreditation of an engineer.

(13) An engineer, whose accreditation has been suspended, may not reapply for accreditation during the period of such suspension. An engineer, whose accreditation has been revoked, may reapply for accreditation no sooner than two years after the date of revocation of accreditation.

Business structure, practices, and personnel.

(14) The engineer must be an independent, third-party organization with no organizational, managerial, financial, design, or promotional affiliation with owners, manufacturers, suppliers, installers, or vendors of products covered under the engineer's certification or evaluation programs.

The engineer must have an adequate diversity of clients or activity so that the loss or award of a specific contract regarding certification or evaluation would not be a deciding factor in the financial well-being of the engineer.

(15) The engineer must adequately meet the following business practices:

(a) Perform the examinations, tests, evaluations, and inspections required under the certifications programs in accordance with the designated standards and procedures;

(b) Assure that reported values accurately reflect measured and observed data;

(c) Limit work to that for which competence and capacity is available;

(d) Treat test data, records, and reports as proprietary information;

(e) Respond to and attempt to resolve complaints concerning certifications and evaluation results;

(f) Maintain an independent relationship between its clients, affiliates, and other organizations so the engineer's capacity to give certifications and evaluations objectively and without bias is not adversely affected; and

(g) Notify the department within thirty calendar days should it become unable to conform to any of the requirements of this chapter.

(16) Engineers accredited under this chapter must notify the department within thirty calendar days of any of the following:

(a) Change in company name and/or address;

(b) Changes in major test equipment which affect the ability to perform work for which accredited; or

(c) Change in independent status.

(17) The engineer must develop and maintain a certification or evaluation program plan that includes, but is not limited to:

(a) The procedures and authority to ensure the product complies with the standard(s) established by the program;

(b) A quality control system;

(c) Verification and maintenance of facilities and/or equipment; or

(d) Sample selection as applicable for product certifications, and for component testing as necessary for evaluations.

The plan must demonstrate that the engineer has adequate facilities, and equipment to perform all certifications and testing for which it is accredited by the state of Washington. These elements must be contained in the engineer's operations control manual.

(18) The engineer must develop and maintain a quality control system adequate to assure the accuracy and technical integrity of its work as follows:

(a) The engineer's quality control system must include a quality control or engineer's operations control manual;

(b) The quality control or engineer's operations control manual must be adequate to guide a testing technician or inspector in conducting the inspection, evaluation, and/or test in accordance with the test methods and procedures required for the engineer's certification and/or evaluation program(s); and

(c) The engineer must have a current copy of the quality control or engineer operations control manual available for the engineer's use.

(19) The engineer must have training, technical knowledge, and experience adequate to perform the tests, examinations, and evaluations for the certification and/or evaluation activities for which recognition is sought.

(20) The engineer must:

(a) Provide adequate safeguards protecting the engineer's status from the influence or control of manufacturers, vendors, owners, or installers of electrical products certified or tested by the engineer; and

(b) Develop and maintain an adequate training program assuring that the engineer will be able to perform tasks properly and uniformly.

Recordkeeping and reporting - general.

(21) The engineer must develop and maintain records and reports of those testing, inspection, certification, and evaluation activities associated with each piece of industrial utilization equipment. The engineer must retain these records for a minimum of three years.

(22) The engineer must make available to the department, upon request, all records required by the department to verify compliance with this chapter.

(23) The engineer's evaluation report must include:

(a) Name and address of the engineer;

(b) Name of client;

(c) Address where the evaluated product is or will be installed;

(d) Designation of standards used to certify or test the product including edition and latest revision (e.g., UL 508, 16th Edition, Feb. 1993, Revision Oct. 9, 1997);

(e) Description of the overall product evaluated to include full nameplate data and equipment type;

(f) A statement as to whether or not the results comply with the requirements of the standard;

(g) Pertinent test evaluation data and identification of tests or inspections including anomalies;

(h) The engineer's stamp; and

(i) Any condition of acceptability or restrictions on use/relocation.

(24) Within thirty calendar days after affixing the evaluation mark, the engineer must submit a copy of the evaluation report to:

(a) The department's chief electrical inspector submitted electronically in a format approved by the department;

(b) Local electrical inspection office submitted electronically in a format approved by the department; and

(c) Client submitted in any format acceptable to the client and engineer.

[Statutory Authority: RCW 19.28.006, 19.28.010, 19.28.031, 19.28.041, 19.28.061, 19.28.101, 19.28.131, 19.28.161, 19.28.171, 19.28.191, 19.28.201, 19.28.211, 19.28.241, 19.28.251, 19.28.281, 19.28.311, 19.28.321, 19.28.400, 19.28.420, 19.28.490, 19.28.551. 06-05-028, § 296-46B-997, filed 2/7/06, effective 5/1/06.]

WAC 296-46B-998 Standards. (1) The standard(s) used, as the basis of electrical product certification, field evaluation, or department approval must be determined by the department to provide an adequate level of safety or define an adequate level of safety performance. Except for the reference of construction requirements to ensure the product can be installed in accordance with the National Electrical Code, field evaluations, by an approved laboratory, shall not use the National Electrical Code as standard for product evaluation.

(2) Generally, standards will be:

(a) Developed by a standards developing organization under a method providing for input and consideration of views of industry groups, experts, users, consumers, and governmental authorities, and others having broad experience in the electrical products safety field. A standard is used to control the quality and safety of a product;

(b) Compatible with and be maintained current with periodic revisions of applicable national codes and installation standards; and

(c) Approved by the department. The department will evaluate the proposed standard to determine that it provides an adequate level of safety.

(3) All ANSI safety designated electrical product standards may be deemed acceptable for their intended use without further qualification.

(4) If the product safety standard is not ANSI, the standard must be reviewed and approved by the department as an appropriate electrical product safety standard as a part of the field evaluation or department inspection process.

[Statutory Authority: RCW 19.28.006, 19.28.010, 19.28.031, 19.28.041, 19.28.061, 19.28.101, 19.28.131, 19.28.161, 19.28.171, 19.28.191, 19.28.201, 19.28.211, 19.28.241, 19.28.251, 19.28.281, 19.28.311, 19.28.321, 19.28.400, 19.28.420, 19.28.490, and 19.28.551. 05-10-024, § 296-46B-998, filed 4/26/05, effective 6/30/05. Statutory Authority: RCW 19.28.006, 19.28.010, 19.28.031, 19.28.041, 19.28.061, 19.28.101, 19.28.131, 19.28.161, 19.28.171, 19.28.191, 19.28.201, 19.28.211, 19.28.241, 19.28.251, 19.28.271, 19.28.311, 19.28.321, 19.28.400, 19.28.420, 19.28.490, 19.28.551, 2002 c 249, chapters 34.05 and 19.28 RCW. 03-09-111, § 296-46B-998, filed 4/22/03, effective 5/23/03.]

WAC 296-46B-999 Electrical testing laboratory requirements. General.

(1) This section describes the methods required to obtain recognition and accreditation of electrical product(s) certification and/or field evaluation laboratories by the state of Washington. This section provides assurance to the general consuming public that electrical products have been tested for safety and identified for their intended use.

(2) An electrical product is considered to be safe when it is either certified by a laboratory accredited by the department or labeled with a field evaluation mark by a laboratory accredited by the department.

(a) The department may declare electrical equipment unsafe if:

(i) The equipment is not being manufactured or produced in accordance with all standards of design and construction and all terms and conditions set out in the certification report for the equipment referred to in this chapter;

(ii) The equipment has been shown by field experience to be unduly hazardous to persons or property;

(iii) An examination of the equipment or of the certification report for the equipment shows that the equipment does not comply with all applicable standards; or

(iv) An examination of the certification report or the equipment shows that the equipment cannot be installed in accordance with this chapter.

(b) When the department declares an electrical product unsafe, the department will:

(i) Notify the product manufacturer and the appropriate testing laboratory in writing;

(ii) Notify the general public by:

(A) Report to the Consumer Product Safety Commission;

(B) A published article in the *Electrical Currents*;

(C) Internet web site posting; and/or

(D) News release.

Accreditation - general.

(3) The department's chief electrical inspector's office reviews requests for accreditation or evaluation. Applicants must submit supporting data to document and verify the requirements of this section have been met.

(4) The accreditation of a NRTL will be valid for the period of the laboratory's current OSHA NRTL accreditation. The accreditation of a non-NRTL will be valid for the period of five years from the date of the department's accreditation.

(5) On-site inspection of a laboratory.

(a) On-site inspection of the laboratory may be required during the initial application process or the renewal process. Technically qualified representative(s) of the department will evaluate for compliance with accreditation criteria.

(b) On-site inspection is not required for NRTL-recognized laboratories requesting approval as certification laboratories using standards for which NRTL recognition has been approved.

(c) The department may waive on-site inspection for:

(i) Laboratories recognized or accredited by another state determined to provide an accreditation program acceptable to the department; or

(ii) NRTL-recognized laboratories requesting approval as certification laboratories for using other standards for which NRTL recognition has not been approved.

(d) The applicant must pay all costs associated with the on-site inspection.

(6) For purposes of chapter 19.28 RCW, all laboratories which certify and/or field evaluate electrical products offered for sale in the state of Washington must be accredited by the department. A NRTL requesting approval as a certification laboratory will be approved for accreditation by the department upon completion of the application process.

(7) Fees are payable as required in WAC 296-46B-911.

(8) The laboratory must apply for renewal of accreditation at least thirty days prior to the accreditation expiration date. The department will renew accreditation for the period specified in subsection (4) of this section or notify the renewing laboratory of the department's reason(s) of refusal following receipt of the completed form and renewal fee. Accreditation may be renewed or refused for one or more electrical product category(ies).

(9) The department accepts or denies laboratory accreditation for all laboratories within the state. Accreditation is determined when a laboratory provides evidence to the department that all the requirements of this chapter are met. Accreditation is determined by the department and prior to making a determination, the department may require information and documentation to be provided by the laboratory.

(a) Accreditation is subject to review when deemed necessary by the department. The laboratory must pay all costs associated with on-site review.

(b) Every accredited laboratory must continue to satisfy all the conditions specified in this chapter during the period of the accreditation. A non-NRTL accredited laboratory must furnish the department an annual report detailing the extent of its activities for the year. The report must include, but not be limited to:

- (i) The number of factory inspections;
- (ii) Organizational structure of the laboratory;
- (iii) Statement of ownership of the laboratory;
- (iv) Laboratory equipment verification;
- (v) Client accreditation programs;
- (vi) Reports of litigation, which in any way were the result of or may affect any accreditation or testing of products covered by this chapter; or
- (vii) Assessment of recordkeeping (i.e., certification/evaluation plans, certification/evaluation reports).

(c) The department will notify the applicant of the accreditation results. A letter of accreditation from the department is proof of the accreditation of a laboratory.

(10) The laboratory will be approved to certify only those categories identified and authorized by the department. The department will approve and list electrical product category(ies) the laboratory is qualified to certify or evaluate. The accreditation letter will indicate the electrical product category(ies) for which accreditation is issued.

(11) The department may exclude specific electrical products from acceptance. When required, the laboratory must provide evidence, acceptable to the department, that the laboratory is qualified to certify or field evaluate the specific electrical product. Laboratory recognition as an NRTL for the standard(s) used to certify or field evaluate an electrical prod-

uct will be acceptable evidence. The standards used for certification or field evaluation must be determined by the department to be acceptable and applicable to the electrical product being certified or field evaluated.

Suspension or revocation.

(12) Any laboratory failing to comply with the requirements of this chapter or submitting false information may have accreditation revoked or suspended for one or more electrical product category(ies).

(13) The department may suspend, revoke, or refuse to renew the accreditation of any laboratory found to be in non-compliance with this chapter or the laws of the state of Washington.

(14) The department will serve written notice of intent prior to suspension, revocation, or refusal to renew the accreditation of a laboratory.

(15) The laboratory must immediately notify all manufacturers whose products are covered by the accreditation that such products manufactured subsequent to the departmental revocation and offered for sale in the state of Washington can no longer bear the laboratory's label that identified it as a certified product in the state of Washington. A laboratory, whose accreditation has been suspended, may not reapply for accreditation during the period of such suspension. A laboratory, whose accreditation has been revoked, may reapply for accreditation no sooner than one year after the date of revocation of accreditation.

Business structure, practices, and personnel.

(16) The laboratory must be an independent, third-party organization with no organizational, managerial, financial, design, or promotional affiliation with manufacturers, suppliers, installers, or vendors of products covered under its certification or evaluation programs.

The laboratory must have an adequate diversity of clients or activity so that the loss or award of a specific contract regarding certification or evaluation would not be a deciding factor in the financial well-being of the laboratory.

(17) The laboratory must adequately meet the following business practices:

(a) Perform the examinations, tests, evaluations, and inspections required under the certifications programs in accordance with the designated standards and procedures;

(b) Assure that reported values accurately reflect measured and observed data;

(c) Limit work to that for which competence and capacity is available;

(d) Treat test data, records, and reports as proprietary information;

(e) Respond and attempt to resolve complaints contesting certifications and evaluation results;

(f) Maintain an independent relationship between its clients, affiliates, and other organizations so the laboratory's capacity to give certifications and evaluations objectively and without bias is not adversely affected; and

(g) Notify the department within thirty calendar days should it become unable to conform to any of the requirements of this chapter.

(18) Laboratories accredited under this chapter must notify the department within thirty calendar days of any of the following:

- (a) Change in company name and/or address;
- (b) Changes in major test equipment which affect the ability to perform work for which accredited;
- (c) Changes in principal officers, key supervisory and responsible personnel in the company including the director of testing and engineering services, director of follow-up services, and the laboratory supervisor; or
- (d) Change in independent status.

(19) The laboratory must develop and maintain a certification or evaluation program plan that includes, but is not limited to:

- (a) The procedures and authority to ensure the product complies with the standard(s) established by the program;
- (b) A quality control system;
- (c) Adequate personnel to perform the certification or evaluation;
- (d) Verification and maintenance of facilities and/or equipment; or
- (e) Sample selection as applicable for product certifications, and for component testing as necessary for field evaluations.

The plan must demonstrate that the laboratory has adequate personnel, facilities, and equipment to perform all certifications and testing for which it is accredited by the state of Washington. These elements must be contained in the laboratory operations control manual.

(20) The laboratory must develop and maintain a quality control system adequate to assure the accuracy and technical integrity of its work as follows:

- (a) The laboratory's quality control system must include a quality control or laboratory operations control manual;
- (b) The quality control or laboratory operations control manual must be adequate to guide a testing technician or inspector in conducting the inspection, evaluation, and/or test in accordance with the test methods and procedures required for the laboratory's certification and/or evaluation program(s); and
- (c) The laboratory must have a current copy of its quality control or laboratory operations control manual available in the laboratory for use by laboratory personnel.

(21) Competent personnel who must have training, technical knowledge, and experience adequate to perform the tests, examinations, and evaluations for the certification and/or evaluation activities for which recognition is sought must staff the laboratory.

(22) The laboratory must:

- (a) Provide adequate safeguards protecting the employment status of personnel from the influence or control of manufacturers, vendors, or installers of electrical products certified or tested by the laboratory;
- (b) Develop and maintain a job description for each technical position category;
- (c) Ensure the competency of its staff to perform assigned tasks through individual yearly observation and/or examination by a person(s) qualified by the person who has technical responsibility for the laboratory;
- (d) Develop and maintain records of the results and dates of the observation or examination of personnel performance;

(e) Maintain information on the training, technical knowledge, and experience of personnel; and

(f) Develop and maintain an adequate training program assuring that new or untrained personnel will be able to perform assigned tasks properly and uniformly.

Recordkeeping and reporting - general.

(23) The laboratory must develop and maintain records and reports of those testing, inspection, certification, and evaluation activities associated with each program for which accreditation is sought. The laboratory must retain these records for a minimum of three years.

(24) The laboratory must make available to the department, upon request, all records required by the department to verify compliance with this chapter.

Recordkeeping and reporting - certification.

(25) Certification reports must contain, as applicable:

- (a) Name and address of the laboratory;
- (b) Pertinent data and identification of tests or inspections;
- (c) Name of client;
- (d) Appropriate product title;
- (e) Designation of standards used to certify or test the product including edition and latest revision (e.g., UL 508, 16th Edition, Feb. 1993, Revision Oct. 9, 1997);
- (f) Description and identification of the sample including, as necessary, where and how the sample was selected;
- (g) Identification of the test, inspection, or procedure as specified for certification or evaluation by the standard;
- (h) Known deviations, additions to, or exclusions from evaluation and certification activities in order to be appropriate for new or innovative products not contemplated by the standard;
- (i) Measurements, examinations, derived results, and identification of test anomalies;
- (j) A statement as to whether or not the results comply with the requirements of the standard;
- (k) Name, contact information, and signature of person(s) having responsibility for the report;
- (l) Raw data, calculations, tables, graphs, sketches, and/or photographs generated during certification or evaluation must be maintained if not included in the report;
- (m) Control forms documenting the receipt, handling, storage, shipping, and testing of samples;
- (n) Laboratory records of its quality control checks and audits for monitoring its test work associated with its certification programs, including:
 - (i) Records of products assurance (follow-up) test results; and
 - (ii) Records of detected errors and discrepancies and actions taken subsequent to such detection.
- (o) Record of written complaints and disposition thereof; and
- (p) A statement that records required by these criteria will be maintained for a minimum of three years after cessation of the certification or evaluation.

Recordkeeping and reporting - field evaluation.

(26) The evaluation report must include:

- (a) Name and address of the laboratory;
- (b) Name of client;
- (c) Address where the evaluated product is or will be installed;
- (d) Designation of standards used to certify or test the product including edition and latest revision (e.g., UL 508, 16th Edition, Feb. 1993, Revision Oct. 9, 1997);
- (e) Description and identification of the nonlisted and nonlabeled component(s) requiring evaluation by applicable standard(s);
- (f) Description of the overall product evaluated to include full nameplate data and equipment type;
- (g) A statement as to whether or not the results comply with the requirements of the standard;
- (h) Pertinent test evaluation data and identification of tests or inspections including anomalies;
- (i) Signature of person(s) having responsibility for the report;
- (j) Any condition of acceptability or restrictions on use/relocation;
- (k) Serial number(s) of the field evaluation label(s) applied must be included with the equipment identification; and
- (l) The labor and industries department file identification number;

(27) Within thirty calendar days after affixing the evaluation mark, the laboratory must submit a copy of the evaluation report to:

- (a) The department's chief electrical inspector submitted electronically in a format approved by the department;
- (b) Local electrical inspection office submitted electronically in a format approved by the department; and
- (c) Client submitted in any format acceptable to the client and testing laboratory.

Facilities and equipment.

(28) The laboratory must provide adequate evidence of the calibration, verification, and maintenance of the facilities and equipment specified for each certification or evaluation.

(29) Verification and maintenance of facilities and equipment must include as applicable, but not be limited to:

- (a) Equipment description;
- (b) Name of manufacturer;
- (c) Model, style, serial number, or other identification;
- (d) Equipment variables subject to calibration and verification;
- (e) Statement of the equipment's allowable error and tolerances of readings;
- (f) Calibration or verification procedure and schedule;
- (g) Dates and results of last calibrations or verifications;
- (h) Specified maintenance practices;
- (i) Calibration and/or verification of equipment used;
- (j) Name and contact information of personnel or outside contractor providing the calibration or verification service; and
- (k) Traceability to National Institute of Standards and Technology or other equivalent standard reference authority.

Standards.

(30) The laboratory must have copies available, for laboratory personnel use, of applicable standards and other doc-

uments referred to or used in performing each certification or test for which approval is sought.

(31) If a laboratory desires to use a standard other than an ANSI standard, the department will evaluate the proposed standard to determine that it provides an adequate level of safety. The National Electrical Code, NFPA 70, will not be allowed to be the primary standard used to evaluate a product.

Product certification.

(32) The electrical product certification program must contain test procedure(s), standard(s) used, certification agreement(s), method(s) of identification of products, follow-up inspection, and other laboratory procedures and authority necessary to ensure that the product complies with the standards (requirements) established by the program.

(33) All components of certified or tested products must be labeled or evaluated for compliance with all standards and conditions of use applicable to such components.

(34) The laboratory must publish an *Annual Product Directory* identifying products that are authorized to bear the laboratory's certification mark. The products directory must briefly describe the program, the products covered, the name of the manufacturer or vendor of the certified products, and the identification of the published standards or the compiled requirements on which the program is based. The product directory must be available to the public. Supplemental up-to-date information must be available to the public at the office of the laboratory during normal business hours.

Certification laboratory/manufacturer - agreement.

(35) Measures to provide for manufacturer compliance with the provisions of the product standard and laboratory control of the use of the certification mark must be embodied in an agreement between the manufacturer and the certification laboratory. The certification agreement must:

- (a) Require the manufacturer to provide information and assistance as needed by the laboratory to conduct the necessary product conformity and production assurance evaluation;
- (b) Allow the laboratory's representative(s) access to the manufacturer's facilities during working hours for inspection and may allow audit activities without prior notice;
- (c) Restrict the manufacturer's application of certification marks to products that comply with requirements of the product standard;
- (d) Secure the manufacturer's agreement to the publication of notice by the certification laboratory for any product already available in the marketplace that does not meet the safety standard;
- (e) Require reevaluation of products whenever the standard covering the product is revised;
- (f) Require the laboratory to notify the manufacturer's personnel responsible for and authorized to institute product recall in the case of a hazard;
- (g) Provide for control of certification marks by the laboratory;
- (h) Require that the laboratory provide the manufacturer with a report of original product evaluation. The report must document conformity with applicable product standards by test results and other data; and

(i) Require the identification of the manufacturer(s) of the product and the location(s) where the product is produced.

Certification mark.

(36) The laboratory owns the certification mark.

(37) The certification mark must be registered as a certification mark with the United States Patent and Trademark Office.

(38) The certification mark must:

(a) Not be readily transferable from one product to another;

(b) Be directly applied to each unit of production in the form of labels or markings suitable for the environment and use of the product. When the physical size of the unit does not permit individual marking, markings may be attached to the smallest package in which the unit is marketed;

(c) Include the name or other appropriate identification of the certification laboratory;

(d) Include the product category; and

(e) The laboratory must have a system of controls and records for all marks. The records must include marks removed or otherwise voided. See WAC 296-46B-999(25).

(39) The certification mark may be applied to the product prior to authorizing the use of a certification mark on a product. The laboratory must:

(a) Determine by examination and/or tests that representative samples of the product comply with the requirements (standards). Components of certified products must comply with the applicable safety requirements (standards) or be listed. Evaluation of the product design must be made on representative production samples or on prototype product samples with subsequent verification that factory productions are the same as the prototype;

(b) Determine that the manufacturer has the necessary facilities, test equipment, and control procedures to ensure that continuing production of the product complies with the requirements; and

(c) If the certification mark is not applied at the manufacturing facility, the laboratory must provide prior notification to the department of its intent to affix the certification mark in the field.

Certification laboratory product - assurance/follow up.

(40) To verify continued product acceptability, the laboratory must develop and maintain a factory follow-up inspection program and manual to determine continued compliance of certified products with the applicable standard.

(41) The follow-up inspection file must include the:

(a) Conditions governing the use of the certification mark on products;

(b) Identification of the products authorized for certification;

(c) Identification of manufacturer and plant location at which manufacture and certification are authorized;

(d) Description, specifications, and requirements applicable to the product;

(e) Description of processes needed for control purposes;

(f) Description of the manufacturer's quality assurance program when used as part of the follow-up program;

(g) Description of inspections and tests to be conducted by the manufacturer and the laboratory; and

(h) Description of follow-up tests to be conducted in the laboratory.

(42) Follow-up procedures and activities must include:

(a) Periodic inspections at the factory with testing at the factory or certification laboratory of representative samples selected from production and, if appropriate, from the market;

(b) Periodic auditing or surveillance of the manufacturer's quality assurance program through the witnessing of manufacturer's tests, review of the manufacturer's records, and verification of the manufacturer's produced data;

(c) Investigation of alleged field failures upon department request; and

(d) Procedures for control of the use of the certification mark by:

(i) Keeping records of the release and use of certification marks;

(ii) Removal of marks from noncomplying products;

(iii) Return or destruction of unused marks when the authority to use the marks is terminated; and

(iv) Legal action.

(43) The frequency of laboratory follow-up inspections must not be less than four times per year during production, unless adequate data is provided to the department to justify less frequent inspections. If there is no production during the year, at least one follow-up inspection is to be completed. The frequency of follow-up inspections must be sufficient to provide a reasonable check on the method(s) the manufacturer exercises to assure that the product bearing the certification mark complies with the applicable standards.

Field evaluation - requirements.

(44) The field evaluation laboratory may perform evaluations on any products or product categories previously approved by the department. NRTL recognition may be accepted by the department as a basis for approval to perform field evaluations. Since OSHA does not review or recognize laboratories for field evaluation purposes, laboratories seeking accreditation from the department for field evaluation may be required to provide additional justification of capability such as, but not limited to: Recordkeeping, employee standards and proficiency, equipment requirements, and other requirements described in this chapter.

(45) The laboratory must request permission from the department in writing two working days prior to conducting any field evaluation of an electrical product to be installed in any jurisdiction in the state. Requests must be made using a department-supplied form.

(46) The field evaluation process must be completed within six months following department approval. If the field evaluation is not completed within six months following department approval, the laboratory must request permission from the department in writing to continue the evaluation process. If this secondary permission is granted to the laboratory, the department may require the equipment to be placed out-of-service except as necessary to complete the field evaluation process.

(47) The scope of a field evaluation will depend on the status of the item to be evaluated as follows:

(a) A new piece of equipment must have a complete evaluation of all components and the assembly as provided by the manufacturer. For example: An industrial machine with a control panel, remote motors, sensors, controls, and other utilization equipment; and

(b) A product that has been modified internally or by an addition need have only those portions evaluated that were affected by the modification. For example: A switchboard with multiple sections that has a section added would only need the new section, the one section immediately adjacent, and any control modifications evaluated.

(48) Each unit that receives a field evaluation mark applied by the field evaluation laboratory must have sufficient inspections and/or testing completed to ensure it is in essential conformance with the applicable product standard(s).

(49) The laboratory may perform the preliminary evaluation in the manufacturer's facility. Final evaluation and acceptance of the product must be made on-site at the location of final installation, unless waived by the department.

Field evaluation mark.

(50) Only laboratory personnel may apply the field evaluation mark after final acceptance of the product. The field evaluation label must be applied on-site at the location of the final installation, unless waived by the department.

(51) The field evaluation laboratory must have a system of controls and records for all field evaluation marks it applies. The records must include labels removed or otherwise voided.

(52) A field evaluated product may be relocated or fed from a different power source if not prohibited by the field evaluation mark or the field evaluation report.

(53) The field evaluation mark must:

(a) Not be readily transferable from one product to another;

(b) Be directly applied by the laboratory personnel to each unit of production in the form of labels or markings suitable for the environment and use of the product;

(c) Include the name or other appropriate identification of the certification laboratory; and

(d) Include a unique evaluation laboratory reference number.

(54) The field evaluation laboratory must have a system of controls and records for all field evaluation marks it applies. The records must include labels removed or otherwise voided. See subsection (26) of this section.

[Statutory Authority: RCW 19.28.006, 19.28.010, 19.28.031, 19.28.041, 19.28.061, 19.28.101, 19.28.131, 19.28.161, 19.28.171, 19.28.191, 19.28.201, 19.28.211, 19.28.241, 19.28.251, 19.28.281, 19.28.311, 19.28.321, 19.28.400, 19.28.420, 19.28.490, 19.28.551. 06-05-028, § 296-46B-999, filed 2/7/06, effective 5/1/06; 05-10-024, § 296-46B-999, filed 4/26/05, effective 6/30/05. Statutory Authority: RCW 19.28.006, 19.28.010, 19.28.031, 19.28.041, 19.28.061, 19.28.101, 19.28.131, 19.28.161, 19.28.171, 19.28.191, 19.28.201, 19.28.211, 19.28.241, 19.28.251, 19.28.271, 19.28.311, 19.28.321, 19.28.400, 19.28.420, 19.28.490, 19.28.551, 2003 c 399, 2003 c 211, 2003 c 78, and 2003 c 242. 04-12-049, § 296-46B-999, filed 5/28/04, effective 6/30/04. Statutory Authority: RCW 19.28.006, 19.28.010, 19.28.031, 19.28.041, 19.28.061, 19.28.101, 19.28.131, 19.28.161, 19.28.171, 19.28.191, 19.28.201, 19.28.211, 19.28.241, 19.28.251, 19.28.271, 19.28.311, 19.28.321, 19.28.400, 19.28.420, 19.28.490, 19.28.551, 2002 c 249, chapters 34.05 and 19.28 RCW. 03-09-111, § 296-46B-999, filed 4/22/03, effective 5/23/03.]

(2007 Ed.)

Chapter 296-49A WAC DIRECTOR'S FACTORY ASSEMBLED STRUCTURES ADVISORY BOARD

WAC

296-49A-010	What definitions apply to this chapter?
296-49A-020	What is the purpose of these rules?
296-49A-030	What is the purpose of the board?
296-49A-040	Who are the members and officers of the board?
296-49A-050	When does the board meet?
296-49A-060	How are board meetings conducted?
296-49A-070	What are the duties of the board?
296-49A-080	Who can speak at board meetings?
296-49A-090	Can a person appearing before the board solicit business?
296-49A-100	What standards of ethical conduct are expected of board members and persons appearing before the board?
296-49A-110	What statute governs the adoption of FAS rules and regulations?

WAC 296-49A-010 What definitions apply to this chapter? "Board" is the director's factory assembled structures advisory board.

"Department" is the Washington state department of labor and industries.

"Director" is the director of the department of labor and industries.

"Section" is the factory assembled structures (FAS) section of the department.

[Statutory Authority: RCW 43.22.340 and 43.22.420. 97-16-043, § 296-49A-010, filed 7/31/97, effective 12/1/97.]

WAC 296-49A-020 What is the purpose of these rules? The primary purpose of these rules is to establish a uniform means of communication between the department and persons, firms or corporations engaged in the manufacture of factory assembled structures. Generally, this communication will involve either proposed WAC rule revisions or the operation of the section.

[Statutory Authority: RCW 43.22.340 and 43.22.420. 97-16-043, § 296-49A-020, filed 7/31/97, effective 12/1/97.]

WAC 296-49A-030 What is the purpose of the board? The purpose of the board, as authorized by RCW 43.22.420, is to advise the director on all matters pertaining to the enforcement of chapter 43.22 RCW including but not limited to standards of body and frame design, construction and plumbing, heating and electrical installations, minimum inspection procedures and the adoption of rules and regulations pertaining to the manufacture of factory assembled structures, manufactured (mobile) homes, commercial coaches, recreational vehicles, and recreational park trailers.

[Statutory Authority: RCW 43.22.340 and 43.22.420. 97-16-043, § 296-49A-030, filed 7/31/97, effective 12/1/97.]

WAC 296-49A-040 Who are the members and officers of the board? The board has nine members. Each is appointed by the director to a four-year term. The members must represent consumer interests, regulated industries and allied professionals. Consequently, the composition of the board will be:

- Two members representing consumers;
- Two members representing manufactured housing;
- Two members representing factory built structures;

- One member representing recreational vehicles and recreational park trailers;
- One member representing building officials; and
- One member who will either be an architect or an engineer.

The board will elect a chairperson and vice-chairperson. The department's chief prefab building specialist shall serve as secretary of the board.

According to RCW 43.03.050 and 43.03.060, each board member shall be paid travel expenses. Those expenses will be paid out of department appropriations upon the presentation of a voucher approved by the director or the director's designee.

[Statutory Authority: RCW 43.22.340 and 43.22.420. 97-16-043, § 296-49A-040, filed 7/31/97, effective 12/1/97.]

WAC 296-49A-050 When does the board meet? The board holds regular quarterly meetings on the third Thursday of February, May, August and November. If needed, the director may call special meetings. Regular and special meetings are open to the public.

[Statutory Authority: RCW 43.22.340 and 43.22.420. 97-16-043, § 296-49A-050, filed 7/31/97, effective 12/1/97.]

WAC 296-49A-060 How are board meetings conducted? The board must adopt written rules of procedure governing its internal management. These rules must include *Roberts' Rules of Order, Revised*. Upon written request, copies of these rules of procedure must be provided to all interested persons.

[Statutory Authority: RCW 43.22.340 and 43.22.420. 97-16-043, § 296-49A-060, filed 7/31/97, effective 12/1/97.]

WAC 296-49A-070 What are the duties of the board?

(1) Every three years the board must review existing FAS rules and recommend revisions if needed. Also, the board must review any new rules and regulations proposed by the director and make recommendations regarding their adoption.

(2) The board may periodically develop administrative procedures, organizational plans and rules for improving the operation of the section and submit them to the director for consideration.

(3) Upon the request of the director, the board will assist in the administrative interpretation of national codes and Washington state rules and regulations regarding all matters pertaining to the enforcement of chapter 43.22 RCW and the manufacture of factory assembled structures, manufactured (mobile) homes, commercial coaches, recreational vehicles, and recreational park trailers. This interpretative assistance will include but will not be limited to standards of body and frame design, construction and plumbing, heating and electrical installations, and minimum inspection procedures.

However, the board will neither function as a board of appeals nor will it render decisions regarding the application or interpretation of any adopted rule or regulation to any person, firm or corporation engaged in the business of manufacturing factory assembled structures.

(4) At any board meeting, the board must consider any written proposals made by any person, firm or corporation

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regarding new rules and regulations or changes in administrative procedures related to the section.

However, these written proposals must be submitted to the board's secretary at least fifteen days prior to the meeting so that they can be included on the meeting agenda and in the meeting packet distributed to board members. If the parties submitting these proposals wish to address them at that meeting, their proposals must be accompanied by a written request to address the board.

[Statutory Authority: RCW 43.22.340 and 43.22.420. 97-16-043, § 296-49A-070, filed 7/31/97, effective 12/1/97.]

WAC 296-49A-080 Who can speak at board meetings? Any person, firm or corporation can speak at board meetings. **However**, those persons, firms and corporations wishing to formally address the board regarding specific proposals relating to any FAS rule adoptions, amendments or repeals or changes in the section's administrative procedures must be in good ethical standing with the board. (See WAC 296-49A-100.)

[Statutory Authority: RCW 43.22.340 and 43.22.420. 97-16-043, § 296-49A-080, filed 7/31/97, effective 12/1/97.]

WAC 296-49A-090 Can a person appearing before the board solicit business? The board considers it unethical for anyone appearing before the board to use any kind of solicitor to solicit business or to solicit business through circulars, advertisements or by personal communications or interviews unwarranted by personal relations. It is permissible to publish or circulate business cards.

[Statutory Authority: RCW 43.22.340 and 43.22.420. 97-16-043, § 296-49A-090, filed 7/31/97, effective 12/1/97.]

WAC 296-49A-100 What standards of ethical conduct are expected of board members and persons appearing before the board? Anyone serving on the board or appearing before it must adhere to the standards described in "*Ethics and the Appearance of Fairness*," *State of Washington Boards and Commissions Membership Handbook*. Failure to conform to these standards may result in forfeiting the opportunity to either appear before the board or serve as a member.

[Statutory Authority: RCW 43.22.340 and 43.22.420. 97-16-043, § 296-49A-100, filed 7/31/97, effective 12/1/97.]

WAC 296-49A-110 What statute governs the adoption of FAS rules and regulations? All FAS rules and regulations will be adopted according to chapter 34.05 RCW, the Administrative Procedure Act.

[Statutory Authority: RCW 43.22.340 and 43.22.420. 97-16-043, § 296-49A-110, filed 7/31/97, effective 12/1/97.]

Chapter 296-52 WAC

SAFETY STANDARDS FOR POSSESSION, HANDLING, AND USE OF EXPLOSIVES

WAC

PART A PURPOSE, SCOPE, AND APPLICATION

296-52-60005 Implementation of the Washington State Explosives Act.

(2007 Ed.)

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296-52-60015	Coverage.	296-52-65030	Site plan.
296-52-60020	Exemptions.	296-52-660	Storage license.
STATE AND LOCAL GOVERNMENT JURISDICTIONS			
296-52-60030	The department.	296-52-66005	Responsibility to obtain a storage license.
296-52-60035	Other government entities.	296-52-66010	Storage applicant information.
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296-52-60045	Responsibility to obtain an explosives license.	296-52-66015	Storage site inspections.
296-52-60050	Unlicensed activities.	296-52-66020	Demonstration of handling and storage experience.
296-52-60055	Drug use.	296-52-66030	Storage license number.
296-52-60060	License revocation, suspension, and surrender.	296-52-66035	Storage limit.
296-52-60065	Violation appeals.	296-52-66040	Annual storage inspection.
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296-52-60080	Entry and access to explosive areas.	296-52-66050	Moving a licensed magazine.
296-52-60085	Abandonment of explosives.	296-52-66053	Altering or destroying a licensed magazine.
296-52-60090	Firearms.	296-52-66057	Transfer, sale or lease of a magazine or mobile storage site.
296-52-60095	Fire.	296-52-66060	Reporting changes in conditions.
296-52-60100	Daylight blasting.	PART C	
296-52-60105	Notification—Blasting near utilities.	USE OF EXPLOSIVE MATERIALS	
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296-52-60130	Definitions.	296-52-67025	Age of explosives.
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EXPLOSIVE LICENSING			
296-52-61005	Types of explosive licenses.	296-52-67030	Blast site storage.
296-52-61010	License applicants must provide this information.	296-52-67035	Day box storage.
296-52-61015	License applicants must complete department forms.	296-52-67040	Attendants must be present.
296-52-61020	License fees.	296-52-67045	Handling explosives.
296-52-61025	Verification of applicant information.	296-52-67050	Trainee supervision.
296-52-61030	Applicant participation.	296-52-67055	Storms.
296-52-61035	Criminal records.	296-52-67060	Extraneous electricity and radio frequency (RF) transmitters.
296-52-61040	Reasons why applicants may be disqualified.	296-52-67065	Vibration and damage control.
296-52-61045	License terms.	296-52-67070	Storage at blast sites.
296-52-61050	License renewal.	296-52-67075	Blast area precautions.
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296-52-62005	Responsibility to obtain a dealer's license.	296-52-67080	Drilling.
296-52-62010	Dealer applicant information.	296-52-67085	Loading blast holes.
296-52-62025	Prohibit explosives items from sale or display in these areas.	296-52-67090	Initiation systems.
296-52-62030	Container labeling.	296-52-67095	Use of safety fuse with detonators.
296-52-62035	Authorized agent information.	296-52-67100	Use of detonating cord.
296-52-62040	Verification of customer identity.	296-52-67105	Firing the blast.
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PURCHASER'S LICENSE			
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296-52-63010	Applicant information.	BLASTING AGENTS	
296-52-63020	Authorized agents.	296-52-67125	Transportation, storage, and use.
296-52-63025	Explosive order deliveries.	296-52-67130	Fixed location mixing.
296-52-63030	Notify the department of blaster changes.	296-52-67135	Bulk delivery/mixing vehicles.
BLASTER'S LICENSE			
296-52-64005	Responsibility to obtain a blaster's license.	296-52-67140	Bulk storage bins.
296-52-64020	General qualifications for blasters.	296-52-67145	Transportation of blasting agents.
296-52-64030	List A qualifications.	WATER-GEL AND EMULSION EXPLOSIVES AND BLASTING AGENTS	
296-52-64035	List B qualifications.	GENERAL	
296-52-64040	List C qualifications.	Note: Water-gels and emulsions must be transported, stored, and used in the same way as explosives or blasting agents according to product classification unless stated otherwise in WAC 296-52-67150, Water-gel and emulsion explosives and blasting agents, through WAC 296-52-67170, Bulk delivery/mixing vehicles.	
296-52-64045	Application.	296-52-67160	Types and classifications.
296-52-64050	Blaster license applicant information.	296-52-67165	Fixed location mixing.
296-52-64055	Blaster license testing.	296-52-67170	Bulk delivery/mixing vehicles.
296-52-64065	Blaster license limits.	UNDERWATER BLASTING OPERATIONS	
296-52-64075	Blaster license disclosure.	296-52-67180	Separation distance from vessels and people.
296-52-64080	Purchaser disclosure.	296-52-67185	Swimming and diving activities.
296-52-64085	Changes to a blaster's license classification.	296-52-67190	Initiation systems.
296-52-64090	Blaster license renewal.	296-52-67195	Loading tubes and casings.
296-52-64095	List A and B renewal qualifications.	296-52-67200	Multiple charges.
296-52-64100	List C renewal qualifications.	UNDERGROUND BLASTING OPERATIONS	
296-52-650	Manufacturer's license.	296-52-67210	Storage.
296-52-65005	Responsibility to obtain a manufacturer's license.	296-52-67215	Separation distance: Electrical storms.
296-52-65010	Manufacturer applicant information.	296-52-67220	Proper fume class use.
296-52-65015	Manufacturing site inspections.	296-52-67225	Combustible gases or dusts.
296-52-65020	Conditions of a manufacturer's license.	296-52-67230	Initiating systems.
		296-52-67235	Firing the blast.
		296-52-67240	Returning to the blast.
		296-52-67245	High speed tunneling: Central primer house.

PART D

TRANSPORTATION OF EXPLOSIVE MATERIALS

Note: Requirements for transportation of blasting agents are located at WAC 296-52-67145, Transportation of blasting agents.

SCOPE

296-52-68010
296-52-68015
296-52-68020
296-52-68025
296-52-68030

Public highways.
Job sites and off-highway roads.
Safety precautions.
Transportation of workers.
Cargo.

TRANSPORTATION VEHICLES

296-52-68040
296-52-68045
296-52-68050
296-52-68055
296-52-68060
296-52-68065

Vehicle strength and condition.
Open top vehicles.
Vehicle placards.
Vehicle fire protection.
Operation of vehicles transporting explosives.
Transporting detonators and explosives in the same vehicle.

296-52-68075
296-52-68080
296-52-68085

Powder cars, vehicles, and conveyances.
Notification—Hoist operator.
Underground transportation.

PART E

STORAGE OF EXPLOSIVE MATERIALS

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296-52-69010
296-52-69015
296-52-69020
296-52-69025
296-52-69030
296-52-69035
296-52-69040
296-52-69045
296-52-69050
296-52-69055
296-52-69060
296-52-69065
296-52-69070
296-52-69080
296-52-69085
296-52-69090
296-52-69095

Detonators.
Explosives.
Exempt explosives.
Storage facilities.
Quantity and distance tables.
Storage within magazines.
Storage limits.
Notification of fire safety authority.
Magazine repairs.
Inventory.
Inspection.
Precautions for areas surrounding magazine.
Deteriorated explosives.
Explosives recovered from misfires.
Blast site storage.
Multiple magazines.
Blasting agents and supplies.
Ammonium nitrate.

QUANTITY AND DISTANCE TABLES

296-52-69105
296-52-69110
296-52-69115
296-52-69120
296-52-69125
296-52-69130

Table H-20—Table of distances for storage of explosives.
Table H-21—Quantity and distance table for separation between magazines.
Table H-22—Separation distances of ammonium nitrate and blasting agents from explosives or blasting agents.
Table H-23—Quantity and distance tables for manufacturing buildings.
Table H-24—Low explosives.
Table of distances for the storage of display fireworks (except bulk salutes).

PART F

MAGAZINE CONSTRUCTION

296-52-700
296-52-70005
296-52-70010
296-52-70015
296-52-70020
296-52-70025
296-52-70030
296-52-70035
296-52-70040
296-52-70045
296-52-70050
296-52-70055
296-52-70060
296-52-70065
296-52-70070

Magazine construction.
Type 1 magazines: Permanent storage facilities.
Building construction for Type 1 magazines.
Igloos, army-type structures, tunnels, and dugouts.
Type 2 magazines: Portable field storage.
Construction for Type 2 magazines.
Type 3 magazines: Indoor storage facilities.
Storage facilities for detonators.
Construction for Type 3 magazines.
Type 4 magazines: Blasting agent, low explosive, or nonmass detonating detonator storage facilities.
Construction for Type 4 magazines.
Type 5 magazines: Blasting agent storage facilities.
Construction for Type 5 magazines.
Explosives day box.
Detonator day box.

HEATING SYSTEMS

296-52-70080
296-52-70085

Magazine heating system requirements.
Lighting.

PART G

MISCELLANEOUS

296-52-710

Exemptions.

AMMUNITION

296-52-71015
296-52-71020
296-52-71025

Quantity limits.
Storage with Division 1.1, 1.2, or 1.3 explosives.
Separation from flammable materials.

SMALL ARMS SMOKELESS POWDER

296-52-71035
296-52-71040
296-52-71045

Transportation.
Shipping container.
Storage.

SMALL ARMS AMMUNITION PRIMERS

296-52-71055
296-52-71060
296-52-71065

Shipping containers.
Separation from flammable materials.
Storage.

BLACK POWDER

296-52-71075
296-52-71080

Shipping containers.
Storage.

EXPLOSIVES AT PIERS, RAILWAY STATIONS, RAILWAY CARS, AND

VESSELS NOT OTHERWISE SPECIFIED IN THIS CHAPTER

296-52-71090
296-52-71095
296-52-71100
296-52-71105
296-52-720

Delivery to carriers.
Hours of transfer.
Storage in route.
Railway cars.
Appendix A, sample explosives-blasting ordinance for local jurisdictions, nonmandatory.
Appendix B, sample format for a blast record, nonmandatory.

PART H

AVALANCHE CONTROL

296-52-800
296-52-802
296-52-803
296-52-805
296-52-807
296-52-809

Avalanche control.
Acceptable warning signs for typical avalanche control devices (duds).
Storage, makeup, and use of explosives for avalanche control blasting.
Hand charge makeup methods.
Avalanche control blasting.
Retrieving misfired explosives (duds).

DISPOSITION OF SECTIONS FORMERLY CODIFIED IN THIS CHAPTER

296-52-010

Introduction. [Statutory Authority: Chapters 42.30 and 43.22 RCW, RCW 49.17.040, 49.17.050 and 49.17.240. 78-07-052 (Order 78-10), § 296-52-010, filed 6/28/78; Order 70-4, § 296-52-010, filed 4/29/70.] Repealed by 86-10-044 (Order 86-24), filed 5/6/86. Statutory Authority: RCW 49.17.040 and 49.17.050.

296-52-012

Incorporation of standards of national organizations and federal agencies. [Order 75-41, § 296-52-012, filed 12/19/75.] Repealed by 86-10-044 (Order 86-24), filed 5/6/86. Statutory Authority: RCW 49.17.040 and 49.17.050.

296-52-020

Purpose. [Statutory Authority: RCW 49.17.040 and 49.17.050. 82-02-003 (Order 81-32), § 296-52-020, filed 12/24/81; Order 70-4, § 296-52-020, filed 4/29/70.] Repealed by 86-10-044 (Order 86-24), filed 5/6/86. Statutory Authority: RCW 49.17.040 and 49.17.050.

296-52-025

Variance and procedure. [Statutory Authority: RCW 49.17.040 and 49.17.050. 82-02-003 (Order 81-32), § 296-52-025, filed 12/24/81; Order 75-41, § 296-52-025, filed 12/19/75.] Repealed by 86-10-044 (Order 86-24), filed 5/6/86. Statutory Authority: RCW 49.17.040 and 49.17.050.

296-52-027

Equipment approval by nonstate agency or organization. [Order 75-41, § 296-52-027, filed 12/19/75.] Repealed by 86-10-044 (Order 86-24), filed 5/6/86. Statutory Authority: RCW 49.17.040 and 49.17.050.

296-52-030

Definitions. [Statutory Authority: RCW 49.17.040 and 49.17.050. 85-01-022 (Order 84-24), § 296-52-030, filed 12/11/84; 81-07-048 (Order 81-4), § 296-52-030, filed 3/17/81; Order 75-41, § 296-52-030, filed 12/19/75; Order 70-4, § 296-52-030, filed 4/29/70.]

	Repealed by 86-10-044 (Order 86-24), filed 5/6/86. Statutory Authority: RCW 49.17.040 and 49.17.050.		by 86-10-044 (Order 86-24), filed 5/6/86. Statutory Authority: RCW 49.17.040 and 49.17.050.
296-52-040	User's (blaster's) license. [Statutory Authority: RCW 49.17.040 and 49.17.050. 85-01-022 (Order 84-24), § 296-52-040, filed 12/11/84; 82-02-003 (Order 81-32), § 296-52-040, filed 12/24/81; Order 70-4, § 296-52-040, filed 4/29/70.] Repealed by 86-10-044 (Order 86-24), filed 5/6/86. Statutory Authority: RCW 49.17.040 and 49.17.050.	296-52-167	Water gel (slurry) explosives and blasting agents. [Statutory Authority: RCW 49.17.040 and 49.17.050. 82-02-003 (Order 81-32), § 296-52-167, filed 12/24/81; Order 75-41, § 296-52-167, filed 12/19/75.] Repealed by 86-10-044 (Order 86-24), filed 5/6/86. Statutory Authority: RCW 49.17.040 and 49.17.050.
296-52-043	Use of explosives and blasting agents. [Statutory Authority: RCW 49.17.040 and 49.17.050. 85-01-022 (Order 84-24), § 296-52-043, filed 12/11/84; 82-08-026 (Order 82-10), § 296-52-043, filed 3/30/82; 81-07-048 (Order 81-4), § 296-52-043, filed 3/17/81; Order 76-6, § 296-52-043, filed 3/1/76; Order 75-41, § 296-52-043, filed 12/19/75.] Repealed by 86-10-044 (Order 86-24), filed 5/6/86. Statutory Authority: RCW 49.17.040 and 49.17.050.	296-52-170	Storage magazine license. [Order 70-4, § 296-52-170, filed 4/29/70.] Repealed by 86-10-4 (Order 86-24), filed 5/6/86. Statutory Authority: RCW 49.17.040 and 49.17.050.
296-52-050	Transportation. [Statutory Authority: RCW 49.17.040 and 49.17.050. 82-02-003 (Order 81-32), § 296-52-050, filed 12/24/81; 81-07-048 (Order 81-4), § 296-52-050, filed 3/17/81; Order 75-41, § 296-52-050, filed 12/19/75; Order 70-4, § 296-52-050, filed 4/29/70.] Repealed by 86-10-044 (Order 86-24), filed 5/6/86. Statutory Authority: RCW 49.17.040 and 49.17.050.	296-52-180	Storage magazine license fees. [Order 70-4, § 296-52-180, filed 4/29/70.] Repealed by 86-10-4 (Order 86-24), filed 5/6/86. Statutory Authority: RCW 49.17.040 and 49.17.050.
296-52-060	More stringent ordinances prevail. [Order 70-4, § 296-52-060, filed 4/29/70.] Repealed by 86-10-4 (Order 86-24), filed 5/6/86. Statutory Authority: RCW 49.17.040 and 49.17.050.	296-52-190	Dealer's license. [Order 76-6, § 296-52-190, filed 3/1/76; Order 70-4, § 296-52-190, filed 4/29/70.] Repealed by 86-10-044 (Order 86-24), filed 5/6/86. Statutory Authority: RCW 49.17.040 and 49.17.050.
296-52-080	Temporary permit for existing storage facilities. [Order 70-4, § 296-52-080, filed 4/29/70.] Repealed by 86-10-4 (Order 86-24), filed 5/6/86. Statutory Authority: RCW 49.17.040 and 49.17.050.	296-52-200	Annual inspection. [Order 70-4, § 296-52-200, filed 4/29/70.] Repealed by 86-10-4 (Order 86-24), filed 5/6/86. Statutory Authority: RCW 49.17.040 and 49.17.050.
296-52-090	Construction of magazines. [Statutory Authority: RCW 49.17.040 and 49.17.050. 85-01-022 (Order 84-24), § 296-52-090, filed 12/11/84; 82-08-026 (Order 82-10), § 296-52-090, filed 3/30/82; 81-07-048 (Order 81-4), § 296-52-090, filed 3/17/81; Order 75-41, § 296-52-090, filed 12/19/75; Order 70-4, § 296-52-090, filed 4/29/70.] Repealed by 86-10-044 (Order 86-24), filed 5/6/86. Statutory Authority: RCW 49.17.040 and 49.17.050.	296-52-220	Purchaser's license. [Order 70-4, § 296-52-220, filed 4/29/70.] Repealed by 86-10-4 (Order 86-24), filed 5/6/86. Statutory Authority: RCW 49.17.040 and 49.17.050.
296-52-095	Storage of explosives. [Statutory Authority: RCW 49.17.040 and 49.17.050. 85-01-022 (Order 84-24), § 296-52-095, filed 12/11/84; 81-07-048 (Order 81-4), § 296-52-095, filed 3/17/81; Order 75-41, § 296-52-095, filed 12/19/75.] Repealed by 86-10-044 (Order 86-24), filed 5/6/86. Statutory Authority: RCW 49.17.040 and 49.17.050.	296-52-230	Unlawful access to explosives. [Order 70-4, § 296-52-230, filed 4/29/70.] Repealed by 86-10-4 (Order 86-24), filed 5/6/86. Statutory Authority: RCW 49.17.040 and 49.17.050.
296-52-100	Quantity and distance tables for storage. [Order 75-41, § 296-52-100, filed 12/19/75; Order 70-4, § 296-52-100, filed 4/29/70.] Repealed by 86-10-044 (Order 86-24), filed 5/6/86. Statutory Authority: RCW 49.17.040 and 49.17.050.	296-52-260	Coal mining code unaffected. [Order 70-4, § 296-52-260, filed 4/29/70.] Repealed by 86-10-4 (Order 86-24), filed 5/6/86. Statutory Authority: RCW 49.17.040 and 49.17.050.
296-52-110	Limit on storage quantity. [Order 70-4, § 296-52-110, filed 4/29/70.] Repealed by 86-10-4 (Order 86-24), filed 5/6/86. Statutory Authority: RCW 49.17.040 and 49.17.050.	296-52-270	Shipments out-of-state. [Order 70-4, § 296-52-270, filed 4/29/70.] Repealed by 86-10-4 (Order 86-24), filed 5/6/86. Statutory Authority: RCW 49.17.040 and 49.17.050.
296-52-120	Quantity and distance tables for factory buildings. [Order 70-4, § 296-52-120, filed 4/29/70.] Repealed by 86-10-4 (Order 86-24), filed 5/6/86. Statutory Authority: RCW 49.17.040 and 49.17.050.	296-52-330	Explosives containers to be marked—Penalty. [Order 70-4, § 296-52-330, filed 4/29/70.] Repealed by 86-10-4 (Order 86-24), filed 5/6/86. Statutory Authority: RCW 49.17.040 and 49.17.050.
296-52-140	Quantity and distance table for separation between magazines. [Order 75-41, § 296-52-140, filed 12/19/75; Order 70-4, § 296-52-140, filed 4/29/70.] Repealed by 86-10-044 (Order 86-24), filed 5/6/86. Statutory Authority: RCW 49.17.040 and 49.17.050.	296-52-350	Small arms ammunition, primers, and propellants—Transportation regulations. [Order 70-4, § 296-52-350, filed 4/29/70.] Repealed by 86-10-4 (Order 86-24), filed 5/6/86. Statutory Authority: RCW 49.17.040 and 49.17.050.
296-52-150	Storage of blasting caps with other explosives prohibited. [Statutory Authority: RCW 49.17.040 and 49.17.050. 82-02-003 (Order 81-32), § 296-52-150, filed 12/24/81; Order 70-4, § 296-52-150, filed 4/29/70.] Repealed by 86-10-044 (Order 86-24), filed 5/6/86. Statutory Authority: RCW 49.17.040 and 49.17.050.	296-52-360	Small arms ammunition, primers, and propellants—Separation from flammable materials. [Order 70-4, § 296-52-360, filed 4/29/70.] Repealed by 86-10-4 (Order 86-24), filed 5/6/86. Statutory Authority: RCW 49.17.040 and 49.17.050.
296-52-160	License for manufacturing. [Statutory Authority: RCW 49.17.040 and 49.17.050. 85-01-022 (Order 84-24), § 296-52-160, filed 12/11/84; Order 70-4, § 296-52-160, filed 4/29/70.] Repealed by 86-10-044 (Order 86-24), filed 5/6/86. Statutory Authority: RCW 49.17.040 and 49.17.050.	296-52-370	Smokeless propellants and black powder, transportation, storage and display requirements. [Order 76-6, § 296-52-370, filed 3/1/76; Order 70-4, § 296-52-370, filed 4/29/70.] Repealed by 86-10-044 (Order 86-24), filed 5/6/86. Statutory Authority: RCW 49.17.040 and 49.17.050.
296-52-165	Blasting agents. [Statutory Authority: RCW 49.17.040 and 49.17.050. 82-02-003 (Order 81-32), § 296-52-165, filed 12/24/81; Order 76-6, § 296-52-165, filed 3/1/76; Order 75-41, § 296-52-165, filed 12/19/75.] Repealed	296-52-380	Small arms ammunition primers, transportation, storage, and display requirements. [Order 76-6, § 296-52-380, filed 3/1/76; Order 70-4, § 296-52-380, filed 4/29/70.] Repealed by 86-10-044 (Order 86-24), filed 5/6/86. Statutory Authority: RCW 49.17.040 and 49.17.050.
		296-52-390	Storage of ammonium nitrate. [Statutory Authority: RCW 49.17.040 and 49.17.050. 82-02-003 (Order 81-32), § 296-52-390, filed 12/24/81; Order 76-6, § 296-52-390, filed 3/1/76; Order 75-41, § 296-52-390, filed 12/19/75; Order 70-4, § 296-52-390, filed 4/29/70.] Repealed by 86-10-044 (Order 86-24), filed 5/6/86. Statutory Authority: RCW 49.17.040 and 49.17.050.
		296-52-400	Enforcement. [Statutory Authority: RCW 49.17.040 and 49.17.050. 85-01-022 (Order 84-24), § 296-52-400, filed 12/11/84; Order 70-4, § 296-52-400, filed 4/29/70.] Repealed by 86-10-044 (Order 86-24), filed 5/6/86. Statutory Authority: RCW 49.17.040 and 49.17.050.
		296-52-401	Scope and application. [Statutory Authority: Chapter 49.17 RCW. 95-07-014, § 296-52-401, filed 3/6/95, effective 4/20/95; 92-17-022 (Order 92-06), § 296-52-401, filed 8/10/92, effective 9/10/92; 88-23-054 (Order 88-25), § 296-52-401, filed 11/14/88. Statutory Author-

- ity: RCW 49.17.040 and 49.17.050. 86-10-044 (Order 86-24), § 296-52-401, filed 5/6/86.] Repealed by 02-03-125, filed 1/23/02, effective 3/1/02. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.
- 296-52-405 Incorporation of standards of national organizations and federal agencies. [Statutory Authority: RCW 49.17.040 and 49.17.050. 86-10-044 (Order 86-24), § 296-52-405, filed 5/6/86.] Repealed by 02-03-125, filed 1/23/02, effective 3/1/02. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.
- 296-52-409 Variance and procedure. [Statutory Authority: Chapter 49.17 RCW. 95-07-014, § 296-52-409, filed 3/6/95, effective 4/20/95. Statutory Authority: RCW 49.17.040 and 49.17.050. 86-10-044 (Order 86-24), § 296-52-409, filed 5/6/86.] Repealed by 02-03-125, filed 1/23/02, effective 3/1/02. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.
- 296-52-413 Equipment approval by nonstate agency or organization. [Statutory Authority: Chapter 49.17 RCW. 95-07-014, § 296-52-413, filed 3/6/95, effective 4/20/95. Statutory Authority: RCW 49.17.040 and 49.17.050. 86-10-044 (Order 86-24), § 296-52-413, filed 5/6/86.] Repealed by 02-03-125, filed 1/23/02, effective 3/1/02. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.
- 296-52-417 Definitions. [Statutory Authority: Chapter 49.17 RCW. 95-07-014, § 296-52-417, filed 3/6/95, effective 4/20/95; 91-03-044 (Order 90-18), § 296-52-417, filed 1/10/91, effective 2/12/91; 90-03-029 (Order 89-20), § 296-52-417, filed 1/11/90, effective 2/26/90. Statutory Authority: RCW 49.17.040 and 49.17.050. 86-10-044 (Order 86-24), § 296-52-417, filed 5/6/86.] Repealed by 02-03-125, filed 1/23/02, effective 3/1/02. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.
- 296-52-419 Basic legal obligations. [Statutory Authority: Chapter 49.17 RCW. 95-07-014, § 296-52-419, filed 3/6/95, effective 4/20/95; 90-03-029 (Order 89-20), § 296-52-419, filed 1/11/90, effective 2/26/90; 88-23-054 (Order 88-25), § 296-52-419, filed 11/14/88.] Repealed by 02-03-125, filed 1/23/02, effective 3/1/02. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.
- 296-52-421 Licenses—Information verification. [Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-094, § 296-52-421, filed 8/17/99, effective 12/1/99. Statutory Authority: Chapter 49.17 RCW. 95-07-014, § 296-52-421, filed 3/6/95, effective 4/20/95; 88-23-054 (Order 88-25), § 296-52-421, filed 11/14/88. Statutory Authority: RCW 49.17.040 and 49.17.050. 86-10-044 (Order 86-24), § 296-52-421, filed 5/6/86.] Repealed by 02-03-125, filed 1/23/02, effective 3/1/02. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.
- 296-52-423 Revoking or suspending licenses. [Statutory Authority: Chapter 49.17 RCW. 95-07-014, § 296-52-423, filed 3/6/95, effective 4/20/95; 88-23-054 (Order 88-25), § 296-52-423, filed 11/14/88.] Repealed by 02-03-125, filed 1/23/02, effective 3/1/02. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.
- 296-52-425 Dealer's license. [Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-094, § 296-52-425, filed 8/17/99, effective 12/1/99. Statutory Authority: Chapter 49.17 RCW. 95-07-014, § 296-52-425, filed 3/6/95, effective 4/20/95; 88-23-054 (Order 88-25), § 296-52-425, filed 11/14/88. Statutory Authority: RCW 49.17.040 and 49.17.050. 86-10-044 (Order 86-24), § 296-52-425, filed 5/6/86.] Repealed by 02-03-125, filed 1/23/02, effective 3/1/02. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.
- 296-52-429 License for manufacturing. [Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-094, § 296-52-429, filed 8/17/99, effective 12/1/99. Statutory Authority: Chapter 49.17 RCW. 95-07-014, § 296-52-429, filed 3/6/95, effective 4/20/95; 88-23-054 (Order 88-25), § 296-52-429, filed 11/14/88. Statutory Authority: RCW 49.17.040 and 49.17.050. 86-10-044 (Order 86-24), § 296-52-429, filed 5/6/86.] Repealed by 02-03-125, filed 1/23/02, effective 3/1/02. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.
- 296-52-433 Purchaser's license. [Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-094, § 296-52-433, filed 8/17/99, effective 12/1/99. Statutory Authority: Chapter 49.17 RCW. 95-07-014, § 296-52-433, filed 3/6/95, effective 4/20/95; 88-23-054 (Order 88-25), § 296-52-433, filed 11/14/88. Statutory Authority: RCW 49.17.040 and 49.17.050. 86-10-044 (Order 86-24), § 296-52-433, filed 5/6/86.] Repealed by 02-03-125, filed 1/23/02, effective 3/1/02. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.
- 296-52-437 User's (blaster's) license. [Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-094, § 296-52-437, filed 8/17/99, effective 12/1/99. Statutory Authority: Chapter 49.17 RCW. 95-07-014, § 296-52-437, filed 3/6/95, effective 4/20/95; 88-23-054 (Order 88-25), § 296-52-437, filed 11/14/88. Statutory Authority: RCW 49.17.040 and 49.17.050. 86-10-044 (Order 86-24), § 296-52-437, filed 5/6/86.] Repealed by 02-03-125, filed 1/23/02, effective 3/1/02. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.
- 296-52-441 Storage magazine license requirements. [Statutory Authority: Chapter 49.17 RCW. 95-07-014, § 296-52-441, filed 3/6/95, effective 4/20/95; 88-23-054 (Order 88-25), § 296-52-441, filed 11/14/88. Statutory Authority: RCW 49.17.040 and 49.17.050. 86-10-044 (Order 86-24), § 296-52-441, filed 5/6/86.] Repealed by 02-03-125, filed 1/23/02, effective 3/1/02. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.
- 296-52-445 Licenses and inspections. [Statutory Authority: Chapter 49.17 RCW. 88-23-054 (Order 88-25), § 296-52-445, filed 11/14/88. Statutory Authority: RCW 49.17.040 and 49.17.050. 86-10-044 (Order 86-24), § 296-52-445, filed 5/6/86.] Repealed by 02-03-125, filed 1/23/02, effective 3/1/02. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.
- 296-52-449 Storage magazine license fees. [Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-094, § 296-52-449, filed 8/17/99, effective 12/1/99. Statutory Authority: Chapter 49.17 RCW. 95-07-014, § 296-52-449, filed 3/6/95, effective 4/20/95; 88-23-054 (Order 88-25), § 296-52-449, filed 11/14/88. Statutory Authority: RCW 49.17.040 and 49.17.050. 86-10-044 (Order 86-24), § 296-52-449, filed 5/6/86.] Repealed by 02-03-125, filed 1/23/02, effective 3/1/02. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.
- 296-52-453 Construction of magazines. [Statutory Authority: Chapter 49.17 RCW. 95-07-014, § 296-52-453, filed 3/6/95, effective 4/20/95. Statutory Authority: RCW 49.17.040 and 49.17.050. 86-10-044 (Order 86-24), § 296-52-453, filed 5/6/86.] Repealed by 02-03-125, filed 1/23/02, effective 3/1/02. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.
- 296-52-457 Storage of caps with other explosives prohibited. [Statutory Authority: RCW 49.17.040 and 49.17.050. 86-10-044 (Order 86-24), § 296-52-457, filed 5/6/86.] Repealed by 02-03-125, filed 1/23/02, effective 3/1/02. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.
- 296-52-461 Storage of explosives. [Statutory Authority: Chapter 49.17 RCW. 95-07-014, § 296-52-461, filed 3/6/95, effective 4/20/95; 92-17-022 (Order 92-06), § 296-52-461, filed 8/10/92, effective 9/10/92; 90-03-029 (Order 89-20), § 296-52-461, filed 1/11/90, effective 2/26/90. Statutory Authority: RCW 49.17.040 and 49.17.050. 86-10-044 (Order 86-24), § 296-52-461, filed 5/6/86.] Repealed by 02-03-125, filed 1/23/02, effective 3/1/02. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.
- 296-52-465 Storage of ammonium nitrate. [Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 01-11-038, § 296-52-465, filed 5/9/01, effective 9/1/01. Statutory Authority: Chapter 49.17 RCW. 95-07-014, § 296-52-465, filed 3/6/95, effective 4/20/95; 91-03-044 (Order 90-18), § 296-52-465, filed 1/10/91, effective 2/12/91. Statutory Authority: RCW 49.17.040 and 49.17.050. 86-10-044 (Order 86-24), § 296-52-465, filed 5/6/86.] Repealed by 02-03-125, filed 1/23/02, effective 3/1/02. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.
- 296-52-469 Storage of blasting agents and supplies. [Statutory Authority: Chapter 49.17 RCW. 95-07-014, § 296-52-469, filed 3/6/95, effective 4/20/95. Statutory Authority: RCW 49.17.040 and 49.17.050. 86-10-044 (Order 86-24), § 296-52-469, filed 5/6/86.] Repealed by 02-03-125, filed 1/23/02, effective 3/1/02. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.

296-52-473	Quantity and distance tables for storage. [Statutory Authority: RCW 49.17.040 and 49.17.050. 86-10-044 (Order 86-24), § 296-52-473, filed 5/6/86.] Repealed by 90-03-029 (Order 89-20), filed 1/11/90, effective 2/26/90. Statutory Authority: Chapter 49.17 RCW.	49.17.050. 86-10-044 (Order 86-24), § 296-52-501, filed 5/6/86.] Repealed by 02-03-125, filed 1/23/02, effective 3/1/02. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.
296-52-477	Quantity and distance table for separation between magazines. [Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-094, § 296-52-477, filed 8/17/99, effective 12/1/99. Statutory Authority: Chapter 49.17 RCW. 95-07-014, § 296-52-477, filed 3/6/95, effective 4/20/95; 90-03-029 (Order 89-20), § 296-52-477, filed 1/11/90, effective 2/26/90. Statutory Authority: RCW 49.17.040 and 49.17.050. 86-10-044 (Order 86-24), § 296-52-477, filed 5/6/86.] Repealed by 02-03-125, filed 1/23/02, effective 3/1/02. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.	296-52-505 Coal mining code unaffected. [Statutory Authority: RCW 49.17.040 and 49.17.050. 86-10-044 (Order 86-24), § 296-52-505, filed 5/6/86.] Repealed by 02-03-125, filed 1/23/02, effective 3/1/02. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.
296-52-481	Recommended separation distances of ammonium nitrate and blasting agents from explosives or blasting agents. [Statutory Authority: Chapter 49.17 RCW. 95-07-014, § 296-52-481, filed 3/6/95, effective 4/20/95; 90-03-029 (Order 89-20), § 296-52-481, filed 1/11/90, effective 2/26/90. Statutory Authority: RCW 49.17.040 and 49.17.050. 86-10-044 (Order 86-24), § 296-52-481, filed 5/6/86.] Repealed by 02-03-125, filed 1/23/02, effective 3/1/02. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.	296-52-509 Small arms ammunition, primers, propellants and black powder. [Statutory Authority: Chapter 49.17 RCW. 95-07-014, § 296-52-509, filed 3/6/95, effective 4/20/95; 90-03-029 (Order 89-20), § 296-52-509, filed 1/11/90, effective 2/26/90. Statutory Authority: RCW 49.17.040 and 49.17.050. 86-10-044 (Order 86-24), § 296-52-509, filed 5/6/86.] Repealed by 02-03-125, filed 1/23/02, effective 3/1/02. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.
296-52-485	Quantity and distance tables for manufacturing buildings. [Statutory Authority: RCW 49.17.040 and 49.17.050. 86-10-044 (Order 86-24), § 296-52-485, filed 5/6/86.] Repealed by 02-03-125, filed 1/23/02, effective 3/1/02. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.	296-52-510 Explosives at piers, railway stations, and cars or vessels not otherwise specified in this standard. [Statutory Authority: Chapter 49.17 RCW. 90-03-029 (Order 89-20), § 296-52-510, filed 1/11/90, effective 2/26/90.] Repealed by 02-03-125, filed 1/23/02, effective 3/1/02. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.
296-52-487	Low explosives. [Statutory Authority: Chapter 49.17 RCW. 95-07-014, § 296-52-487, filed 3/6/95, effective 4/20/95; 88-23-054 (Order 88-25), § 296-52-487, filed 11/14/88.] Repealed by 02-03-125, filed 1/23/02, effective 3/1/02. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.	296-52-550 Appendix I—IME two-compartment transportation units (mandatory). [Statutory Authority: Chapter 49.17 RCW. 95-07-014, § 296-52-550, filed 3/6/95, effective 4/20/95.] Repealed by 02-03-125, filed 1/23/02, effective 3/1/02. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.
296-52-489	Transportation. [Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 01-11-038, § 296-52-489, filed 5/9/01, effective 9/1/01. 99-17-094, § 296-52-489, filed 8/17/99, effective 12/1/99. Statutory Authority: RCW 49.17.040. 98-19-056, § 296-52-489, filed 9/15/98, effective 11/8/98. Statutory Authority: Chapter 49.17 RCW. 95-07-014, § 296-52-489, filed 3/6/95, effective 4/20/95; 92-17-022 (Order 92-06), § 296-52-489, filed 8/10/92, effective 9/10/92; 91-03-044 (Order 90-18), § 296-52-489, filed 1/10/91, effective 2/12/91; 88-23-054 (Order 88-25), § 296-52-489, filed 11/14/88. Statutory Authority: RCW 49.17.040 and 49.17.050. 86-10-044 (Order 86-24), § 296-52-489, filed 5/6/86.] Repealed by 02-03-125, filed 1/23/02, effective 3/1/02. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.	296-52-552 Appendix II—Radio frequency warning signs (mandatory). [Statutory Authority: Chapter 49.17 RCW. 95-07-014, § 296-52-552, filed 3/6/95, effective 4/20/95.] Repealed by 02-03-125, filed 1/23/02, effective 3/1/02. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.
296-52-493	Use of explosives and blasting agents. [Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 86-10-044 (Order 86-24), § 296-52-493, filed 5/6/86.] Repealed by 02-03-125, filed 1/23/02, effective 3/1/02. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.	296-52-555 Appendix III—ATF regulations. [Statutory Authority: Chapter 49.17 RCW. 95-07-014, § 296-52-555, filed 3/6/95, effective 4/20/95.] Repealed by 02-03-125, filed 1/23/02, effective 3/1/02. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.
296-52-497	Blasting agents. [Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 01-11-038, § 296-52-497, filed 5/9/01, effective 9/1/01. Statutory Authority: Chapter 49.17 RCW. 95-07-014, § 296-52-497, filed 3/6/95, effective 4/20/95; 91-03-044 (Order 90-18), § 296-52-497, filed 1/10/91, effective 2/12/91. Statutory Authority: RCW 49.17.040 and 49.17.050. 86-10-044 (Order 86-24), § 296-52-497, filed 5/6/86.] Repealed by 02-03-125, filed 1/23/02, effective 3/1/02. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.	296-52-66055 Transfer or lease of a magazine or mobile storage site. [Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-66055, filed 1/23/02, effective 3/1/02.] Repealed by 06-19-074, filed 9/19/06, effective 12/1/06. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.
296-52-501	Water gel (slurry) explosives and blasting agents. [Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 01-11-038, § 296-52-501, filed 5/9/01, effective 9/1/01. Statutory Authority: Chapter 49.17 RCW. 95-07-014, § 296-52-501, filed 3/6/95, effective 4/20/95. Statutory Authority: RCW 49.17.040 and 49.17.050.	296-52-9001 Appendix Figure 1—Application for user's (blaster's) license. [Statutory Authority: RCW 49.17.040 and 49.17.050. 82-02-003 (Order 81-32), § 296-52-9001, filed 12/24/81; Order 75-41, Appendix Figure 1 (codified as WAC 296-52-9001), filed 12/19/75; Order 70-4, Appendix Figure 1, filed 4/29/70.] Repealed by 85-01-022 (Order 84-24), filed 12/11/84. Statutory Authority: RCW 49.17.040 and 49.17.050.
		296-52-9002 Appendix Figure 2—Request for inspection. [Statutory Authority: RCW 49.17.040 and 49.17.050. 82-02-003 (Order 81-32), § 296-52-9002, filed 12/24/81; Order 70-4, Appendix Figure 2 (codified as WAC 296-52-9002), filed 4/29/70.] Repealed by 85-01-022 (Order 84-24), filed 12/11/84. Statutory Authority: RCW 49.17.040 and 49.17.050.
		296-52-9003 Appendix Figure 3—Application for license to manufacture explosives. [Statutory Authority: RCW 49.17.040 and 49.17.050. 82-02-003 (Order 81-32), § 296-52-9003, filed 12/24/81; Order 70-4, Appendix Figure 3 (codified as WAC 296-52-9003), filed 4/29/70.] Repealed by 85-01-022 (Order 84-24), filed 12/11/84. Statutory Authority: RCW 49.17.040 and 49.17.050.
		296-52-9004 Appendix Figure 4—Application for license to operate a storage magazine for explosives. [Order 75-41, Appendix Figure 4 (codified as WAC 296-52-9004), filed 12/19/75; Order 70-4, Appendix Figure 4, filed 4/29/70.] Repealed by 85-01-022 (Order 84-24), filed 12/11/84. Statutory Authority: RCW 49.17.040 and 49.17.050.
		296-52-9005 Appendix Figure 5—Application for dealer's license. [Statutory Authority: RCW 49.17.040 and 49.17.050. 82-02-003 (Order 81-32), § 296-52-9005, filed 12/24/81; Order 70-4, Appendix Figure 5 (codified as WAC 296-52-9005), filed 4/29/70.] Repealed by 85-01-022 (Order 84-24), filed 12/11/84. Statutory Authority: RCW 49.17.040 and 49.17.050.

- 296-52-9006 Appendix Figure 6—Application for license to purchase explosives. [Statutory Authority: RCW 49.17.040 and 49.17.050. 82-02-003 (Order 81-32), § 296-52-9006, filed 12/24/81; Order 75-41, Appendix Figure 6 (codified as WAC 296-52-9006), filed 12/19/75; Order 70-4, Appendix Figure 6, filed 4/29/70.] Repealed by 85-01-022 (Order 84-24), filed 12/11/84. Statutory Authority: RCW 49.17.040 and 49.17.050.
- 296-52-9007 Appendix Figure 7—Dealer's record. [Statutory Authority: RCW 49.17.040 and 49.17.050. 82-02-003 (Order 81-32), § 296-52-9007, filed 12/24/81; Order 70-4, Appendix Figure 7 (codified as WAC 296-52-9007), filed 4/29/70.] Repealed by 85-01-022 (Order 84-24), filed 12/11/84. Statutory Authority: RCW 49.17.040 and 49.17.050.

PART A PURPOSE, SCOPE, AND APPLICATION

WAC 296-52-60005 Implementation of the Washington State Explosives Act. This chapter places into effect the Washington State Explosives Act (chapter 70.74 RCW (Revised Code of Washington)).

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-60005, filed 1/23/02, effective 3/1/02.]

WAC 296-52-60010 Purpose and intent. The purpose of this chapter is to define minimum requirements for the prevention and control of hazards related to the possession, handling, and use of explosives in order to:

- Protect the safety and health of the general public
- Protect the safety and health of explosive industry employees covered under the Washington Industrial Safety and Health Act (chapter 49.17 RCW)
- Develop, support, and maintain safe and healthy use of explosives in Washington state.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-60010, filed 1/23/02, effective 3/1/02.]

WAC 296-52-60015 Coverage. This chapter applies to:

- Any person, partnership, company, corporation, government agency, or other entity
- All aspects of explosives, blasting agents, and pyrotechnics including:
 - Manufacture
 - Sale
 - Possession
 - Purchase
 - Use
 - Storage
 - Transportation
 - Avalanche control
- Display fireworks.

Note: Class A and B display fireworks are partially exempt from the requirements of this chapter (see WAC 296-52-60020 (5)).

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. 06-19-074, § 296-52-60015, filed 9/19/06, effective 12/1/06. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-60015, filed 1/23/02, effective 3/1/02.]

WAC 296-52-60020 Exemptions. (1) **The following are exempt from this chapter:**

- (a) Explosives or blasting agents transported by railroad, water, highway, or air under the jurisdiction of the Federal

Department of Transportation (DOT), the Washington state utilities and transportation commission, and the Washington state patrol.

- (b) Laboratories of schools, colleges, and similar institutions if confined to the purpose of instruction or research and if the quantity does not exceed one pound.

- (c) Explosives in the forms prescribed by the official United States Pharmacopoeia.

- (d) The transportation, storage, and use of explosives or blasting agents in the normal and emergency operations of:

- The United States agencies and departments including the regular United States military departments on military reservations
- Arsenal, navy yards, depots, or other establishments owned by, operated by, or on behalf of, the United States
- The duly authorized militia of any state
- The emergency operations of any state department or agency, any police, or any municipality or county

- (e) A hazardous devices technician when they are carrying out:

- Normal and emergency operations
- Handling evidence
- Operating and maintaining a specially designed emergency response vehicle that carries no more than ten pounds of explosive materials
- When conducting training and whose employer possesses the minimum safety equipment prescribed by the Federal Bureau of Investigation (FBI) for hazardous devices work

Note: A hazardous devices technician is a person who is a graduate of the FBI Hazardous Devices School and who is employed by a state, county, or municipality.

- (f) The importation, sale, possession, and use of fireworks, signaling devices, flares, fuses, and torpedoes.

- (g) Reserved.

- (h) Any violation under this chapter if any existing ordinance of any city, municipality, or county is more stringent.

(2) **Noncommercial military explosives.** Storage, handling, and use of noncommercial military explosives are exempt from this chapter while they are under the control of the United States government or military authorities.

- (3) **Import, sale, possession, or use of:**

- Consumer fireworks
- Signaling devices
- Flares
- Fuses
- Torpedoes

(4) **Consumer fireworks.** Fireworks classified as Division 1.4 explosives by U.S. DOT and regulated through the State fireworks law (chapter 70.77 RCW) and the fireworks administrative code (chapter 212-17 WAC) by the Washington state fire marshal.

Note: Consumer fireworks are classified as fireworks UN0336 and UN0337 by U.S. DOT (49 CFR 72.101).

(5) **Partial exemption—Division 1.1, 1.2, or 1.3 display fireworks.** Display fireworks are fireworks classified as Division 1.1, 1.2, or 1.3 explosives by US DOT. Users of Division 1.1, 1.2, or 1.3 display fireworks must comply with all storage or storage related requirements (for example, licensing, construction, and use) of this chapter.

Note: Display fireworks are classified as fireworks UN0333, UN0334, or UN0335 by U.S. DOT (49 CFR 172.101).

(6) Conditional exemption small arms explosive materials. Public consumers possessing and using:

- Black powder, under five pounds
- Smokeless powder, under fifty pounds
- Small arms ammunition
- Small arms ammunition primers

– Unless these materials are possessed or used illegally or for a purpose inconsistent with small arms use.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. 06-19-074, § 296-52-60020, filed 9/19/06, effective 12/1/06; 03-06-073, § 296-52-60020, filed 3/4/03, effective 8/1/03. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-60020, filed 1/23/02, effective 3/1/02.]

STATE AND LOCAL GOVERNMENT JURISDICTIONS

WAC 296-52-60030 The department. (1) **Administration and enforcement.** The director of labor and industries administers and enforces all activities governed by the Washington State Explosives Act through chapter 296-52 WAC using the full resources of the department.

(2) **Authority to enter, inspect, and issue penalties.** The department may enter and inspect any location, facility, or equipment and issue penalties for any violation whenever the director has reasonable cause to think there are:

- Explosives
- Blasting agents
- Explosive materials

(3) **Unlicensed activities.** Whenever the director requests an unlicensed person to surrender explosives, improvised devices, or their component parts, he may request the attorney general to apply to the county superior court in which the illegal practice was carried out for a temporary restraining order or other appropriate assistance.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-60030, filed 1/23/02, effective 3/1/02.]

WAC 296-52-60035 Other government entities. (1) **Law enforcement authorities.** The department:

- Acknowledges the legal obligation of other law enforcement agencies to enforce specific aspects or sections of the Washington State Explosives Act under local ordinances and with joint and shared authority granted by RCW 70.74.201

- Will cooperate with all other law enforcement agencies in carrying out the intent of the Washington State Explosives Act and chapter 296-52 WAC

(2) **Local government authorities.**

(a) This chapter does not prevent local jurisdictions from adopting and administering local regulations relating to explosives. Examples of local jurisdictions/regulations include:

- City or county government explosive ordinances
- Other government authorities such as the Washington utilities and transportation commission, the Washington state patrol, or Washington administrative codes.

(b) Local regulations must not diminish or replace any regulation of this chapter.

(2007 Ed.)

Note: A nonmandatory sample-blasting ordinance for local jurisdictions is included in Appendix B.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-60035, filed 1/23/02, effective 3/1/02.]

BASIC LEGAL OBLIGATIONS

WAC 296-52-60045 Responsibility to obtain an explosives license. Anyone manufacturing, purchasing, selling, offering for sale, using, possessing, transporting, or storing any explosive, improvised device, or components intended to be assembled into an explosive or improvised device must have a valid license issued by the department.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-60045, filed 1/23/02, effective 3/1/02.]

WAC 296-52-60050 Unlicensed activities. Upon notice from the department or any law enforcement agency having jurisdiction, an unlicensed person manufacturing, offering for sale, selling, possessing, purchasing, using, storing, or transporting any explosives, improvised device, or components of explosives or improvised devices must immediately surrender those explosive materials to the department or the law enforcement agency having jurisdiction.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-60050, filed 1/23/02, effective 3/1/02.]

WAC 296-52-60055 Drug use. Explosives must not be handled by anyone under the influence of:

- Alcohol
- Narcotics
- Prescription drugs and/or narcotics that endanger the worker or others
- Other dangerous drugs

Note: This chapter does not apply to persons taking prescription drugs and/or narcotics as directed by a physician provided their use will not endanger the blaster, workers, or any other people.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-60055, filed 1/23/02, effective 3/1/02.]

WAC 296-52-60060 License revocation, suspension, and surrender. (1) **Revocation.** The department:

(a) Will revoke and not renew the manufacturer, dealer, purchaser, blaster, or storage license of any person as a result of a disqualifying condition identified in WAC 296-52-61040, Applicant disqualifications.

(b) May revoke the license of any person who has:

- (i) Repeatedly violated the requirements of this chapter
- (ii) Had a license suspended twice under this chapter

(2) **Suspension.** The department may suspend the license of any person for a period up to six months for any violation of this chapter.

(3) **Surrender.** Revoked or suspended licenses must be surrendered immediately to the department after the chapter violators have been notified.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-60060, filed 1/23/02, effective 3/1/02.]

WAC 296-52-60065 Violation appeals. An appeal of a citation, issued for a violation of a requirement of this chap-

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ter, which results in a license suspension or revocation (WAC 296-52-60060) may be filed with the department.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-60065, filed 1/23/02, effective 3/1/02.]

BASIC HAZARD PRECAUTIONS

WAC 296-52-60075 Hazards to life. Explosives or blasting agents must not be stored, handled, or transported if they could create a hazard to life.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-60075, filed 1/23/02, effective 3/1/02.]

WAC 296-52-60080 Entry and access to explosive areas. Only the owner, owner's authorized agent, the director, or law enforcement officer(s) acting in an official capacity may enter into an:

- Explosives manufacturing building
- Magazine
- Vehicle
- Other common carrier containing explosives.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-60080, filed 1/23/02, effective 3/1/02.]

WAC 296-52-60085 Abandonment of explosives. Explosives or improvised devices must not be abandoned.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-60085, filed 1/23/02, effective 3/1/02.]

WAC 296-52-60090 Firearms. Firearms cannot be discharged at or against any:

- (1) Magazine.
- (2) Explosives manufacturing building.
- (3) Explosives material.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-60090, filed 1/23/02, effective 3/1/02.]

WAC 296-52-60095 Fire. (1) Magazines/buildings. Flame or flame producing devices must not be ignited within fifty feet of any magazine or explosives manufacturing building.

(2) Explosives handling.

(a) All sources of fire or flame, including smoking and matches, are prohibited within one hundred feet of the blast site while explosives are being handled or used.

(b) Explosives must not be handled near:

- (i) Open flames
- (ii) Uncontrolled sparks

OR

(iii) Energized electric circuits

(3) Fire incident precautions. In the event of a fire:

(a) All employees must be removed to a safe area
 (b) The fire area must be guarded against intruders
 (c) The fire must not be fought where there is danger of contact with explosives.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-60095, filed 1/23/02, effective 3/1/02.]

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WAC 296-52-60100 Daylight blasting. Blasting operations must be conducted during daylight hours whenever possible.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-60100, filed 1/23/02, effective 3/1/02.]

WAC 296-52-60105 Notification—Blasting near utilities. Whenever blasting is being conducted in the vicinity of gas, electric, water, fire alarm, telephone, telegraph, and steam utilities, the blaster in charge must notify appropriate utility representatives:

- (1) At least twenty-four hours in advance of blasting.
- (2) Of the specific location and intended time of blasting.
- (3) To confirm the verbal notice with a written notice.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-60105, filed 1/23/02, effective 3/1/02.]

MISCELLANEOUS

WAC 296-52-60115 Explosive industry employers. In addition to the requirements of this chapter:

(1) Explosive industry employers must comply with other applicable WISHA requirements:

- Chapter 296-800 WAC, Safety and health core rules
- Chapter 296-24 WAC, General safety and health standards
- Chapter 296-62 WAC, General occupational health standards
- Chapter 296-155 WAC, Safety standards for construction
- Other industry specific standards that may apply

(2) Manufacturers of explosives or pyrotechnics must comply with WISHA safety standards for process safety management of highly hazardous chemicals, chapter 296-67 WAC.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-60115, filed 1/23/02, effective 3/1/02.]

WAC 296-52-60120 Variance from a chapter requirement. The director may approve a variance from a chapter requirement pursuant to RCW 49.17.080 or 49.17.090:

- After an application for a variance is received,
- After the department has conducted an investigation,
- When conditions exist that make the requirement impractical to use, and
- When equivalent means of protection are provided.

Note: Variance application forms may be obtained from and should be submitted to: Department of Labor and Industries, WISHA Services Division, Post Office Box 44650, Olympia, WA 98504-4650.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-60120, filed 1/23/02, effective 3/1/02.]

WAC 296-52-60125 Using standards from national organizations and federal agencies. To be in compliance with WISHA rules, the information provided in this section must be followed when safety and health standards from national organizations and federal agencies are referenced in WISHA rules.

- The edition of the standard specified in the WISHA rule must be used.
- Any edition published after the edition specified in the WISHA rule may be used.

Note: The federal and national consensus standards referenced in the WISHA rules are available through the issuing organization and the local or state library.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-60125, filed 1/23/02, effective 3/1/02.]

WAC 296-52-60130 Definitions. Aerial blaster in charge means a person who:

- Is fully qualified, by means of training and experience in explosives use
- Is adequately trained, experienced, and capable of recognizing hazardous conditions throughout the blast area
- Is in charge of:
 - The blast process
 - All aspects of explosives and blasting agent storage, handling, and use as recommended by the manufacturer and as required by this chapter
- Is in a position of authority:
 - To take prompt corrective action in all areas of the blast operation
 - Over all other blasters at the blast sight
- Has a minimum of five missions under the supervision of a licensed aerial blaster in charge
- Successfully completes a written exam for aerial blaster in charge.

Alien means any person who is not a citizen or national of the United States.

American Table of Distances means the American Table of Distances for Storage of Explosives as revised and approved by Institute of the Makers of Explosives (IME).

Approved storage facility means a facility for the storage of explosive materials which is in compliance with the following chapter:

- Storage licensing (WAC 296-52-660)
- Storage of explosive materials (WAC 296-52-690)
- Magazine construction (WAC 296-52-700).

ATF means the Bureau of Alcohol, Tobacco, Firearms and Explosives.

Attended, as attending explosives, means the physical presence of an authorized person within the field of vision of explosives. The said attendant shall be awake, alert, and not engage in activities which may divert their attention so that in case of an emergency the attendant can get to the explosives quickly and without interference, except for brief periods of necessary absence, during which absence simple theft of explosives is not ordinarily possible.

Authorized, approved, or approval means authorized, approved, or approval by:

- The department
- Any other approving agency
- An individual as specified in this chapter.

Authorized agent means a person delegated by a licensed purchaser, who possesses a basic knowledge of explosives handling safety, to order and receive explosives on the purchaser's behalf.

Authorized agent list means a current list of agents the purchaser has authorized to order or receive explosives on their behalf.

Authorized person means a person approved or assigned by an employer, owner, or licensee to perform a specific type of duty or be at a specific location at the job site.

Avalanche means the sliding or falling of a large amount of snow down a steep slope which has a destructive force due to its mass.

Avalanche control pack means a specially designed and constructed pack for carrying explosives.

Avalanche control route means a route or specific path which is used by an authorized person in order to control the occurrence of avalanches.

Avalauncher means a device like a cannon which is used for avalanche control blasting. It has a rotating base calibrated for pointing and the barrel is mounted on an elevating mechanism. It uses a compressed gas to propel a projectile containing an explosive charge and detonating means. The gas source is connected to the gun by high pressure hose with in-line control valves and pressure gauges ahead of the trigger mechanism.

Barricades

• **Barricade** means effectively screening a building containing explosives by means of a natural or artificial barrier from a magazine, another building, a railway, or highway.

• **Artificial barricade** means a barricade of such height that a straight line from the top of any sidewall of the building containing explosives to the eave line of any magazine or other building or to a point twelve feet above the center of a railway or highway shall pass through such barrier, an artificial mound or properly revetted wall of earth with a minimum thickness of three feet.

• **Natural barricade** means any natural hill, mound, wall, or barrier composed of earth, rock, or other solid material at least three feet thick.

Blast area means the area of a blast that is effected by:

- Flying rock missiles
- Gases
- Concussion.

Blast pattern means the plan of the drill holes laid out and a display of the burden distance, spacing distance, and their relationship to each other.

Blast site means the area where explosive material is handled during loading and fifty feet in all directions from loaded blast holes or holes to be loaded.

Blaster means a person trained and experienced in the use of explosives and licensed by the department.

Blaster in charge means a licensed blaster who is:

- Fully qualified, by means of training and experience in explosives use
- Adequately trained, experienced, and capable of recognizing hazardous conditions throughout the blast area
- In charge of:
 - The blast process
 - All aspects of explosives and blasting agent storage, handling, and use as recommended by the manufacturer and as required by this chapter
- In a position of authority:
 - To take prompt corrective action in all areas of the blast operation

- Over all other blasters at the blast area

Blaster's license means an individual license issued by the department under the provisions of chapter 296-52 WAC.

Blasting agent means any material or mixture consisting of a fuel and oxidizer:

- That is intended for blasting
- Not otherwise defined as an explosive
- If the finished product, as mixed for use or shipment, cannot be detonated by means of a number 8 test blasting cap when unconfined

- A number 8 test blasting cap is one containing two grams of a mixture of eighty percent mercury fulminate and twenty percent potassium chlorate, or a blasting cap of equivalent strength. An equivalent strength cap comprises 0.40-0.45 grams of PETN base charge pressed in an aluminum shell with bottom thickness not to exceed 0.03 of an inch, to a specific gravity of not less than 1.4 g/cc., and primed with standard weights of primer depending on the manufacturer

Blasting cap or cap when used in connection with the subject of explosives shall mean detonator.

Blockholing means the breaking of boulders by firing a charge of explosives that has been loaded in a drill hole.

Buildings that are not inhabited means a building(s) which has no one in it while explosives are being made up in an adjacent explosives makeup room or while explosives are being held in an adjacent day box or hand charge storage facility.

Competent person means a person who:

- Is capable of identifying existing hazardous and the forecasting of hazards of working conditions which might be unsanitary or dangerous to personnel or property
- Has authorization to take prompt corrective action to eliminate such hazards.

Consumer fireworks means:

- Any small firework device:
 - Designed to produce visible effects by combustion
 - That must comply with the construction, chemical composition, and labeling regulations of the U.S. Consumer Product Safety Commission (Title 16 CFR, Parts 1500 and 1507),
- A small device designed to produce audible effects which include, but are not limited to:

- Whistling devices
- Ground devices containing 50 mg or less of explosive materials
- Aerial devices containing 130 mg or less of explosive materials

Note: Fused set pieces containing components, which, together, exceed 50 mg of salute powder are not included.

Conveyance means any unit used for transporting explosives or blasting agents, including, but not limited to:

- Trucks
- Trailers
- Rail cars
- Barges
- Vessels.

Day box means a box which:

- Is a temporary storage facility for storage of explosive materials
- Is not approved for unattended storage of explosives

- May be used at the worksite during working hours to store explosive materials, provided the day box is:

- Constructed as required (WAC 296-52-70065, Explosives day box)
- Marked with the word "explosives"
- Used in a manner that safely separates detonators from other explosives
- Guarded at all times against theft

Dealer means any person who purchases explosives or blasting agents for the sole purpose of resale and not for use or consumption.

Detonating cord means a round flexible cord containing a center core of high explosive and used to initiate other explosives.

Detonator means any device containing any initiating or primary explosive that is used for initiating detonation and includes, but is not limited to:

- Electric and electronic detonators of instantaneous and delay types

- Detonators for use with safety fuses, detonating cord delay connectors, and nonelectric instantaneous delay detonators which use detonating cord, shock tube, or any other replacement for electric leg wires.

Discharge hose means a hose with an electrical resistance high enough to limit the flow of stray electric currents to safe levels, but not high enough to prevent drainage of static electric charges to the ground. Hose not more than 2 megohms resistance over its entire length and of not less than 5,000 ohms per foot meets the requirement.

Display fireworks means large fireworks:

- Designed primarily to produce visible or audible effects by combustion, deflagration, or detonation, and include, but are not limited to:
 - Salutes containing more than 2 grains (130 mg) of explosive materials
 - Aerial shells containing more than 40 grams of pyrotechnic compositions
 - Other display pieces, which exceed the limits of explosive materials for classification as "consumer fireworks"
 - Fused set pieces containing components, which together exceed 50 mg of salute powder

Dud means an unexploded deployed charge which still has its initiation system in place.

Electric detonator means a blasting detonator designed for and capable of detonation by means of electric current.

Electric blasting circuitry consists of these items:

- **Bus wire.** An expendable wire used in parallel or series, or in parallel circuits, which are connected to the leg wires of electric detonators.

- **Connecting wire.** An insulated expendable wire used between electric detonators and the leading wires or between the bus wire and the leading wires.

- **Leading wire.** An insulated wire used between the electric power source and the electric detonator circuit.

- **Permanent blasting wire.** A permanently mounted insulated wire used between the electric power source and the electric detonator circuit.

Electric delay detonators means detonators designed to detonate at a predetermined time after energy is applied to the ignition system.

Electronic detonator means a detonator that utilizes stored electrical energy as a means of powering an electronic timing delay element/module that provides initiation energy for firing the base charge.

Emulsion means an explosive material containing:

- Substantial amounts of oxidizer dissolved in water droplets, surrounded by an immiscible fuel
- Droplets of an immiscible fuel surrounded by water containing substantial amounts of oxidizer.

Explosives means:

- Any chemical compound or mechanical mixture:
 - Commonly intended or used for the purpose of producing an explosion
 - That contains any oxidizing and combustible units or other ingredients in proportions, quantities or packing that an ignition by fire, friction, concussion, percussion, or detonation of any part of the compound or mixture may cause sudden generation of highly heated gases resulting in gaseous pressures capable of producing destructive effects on contiguous objects or of destroying life or limb
- All material classified as Division 1.1, 1.2, 1.3, 1.4, 1.5, or 1.6 explosives by U.S. DOT
- For the purposes of public consumer use, the following are not considered explosives unless they are possessed or used for a purpose inconsistent with small arms use or other legal purposes:
 - Small arms ammunition
 - Small arms ammunition primers
 - Smokeless powder, not exceeding fifty pounds
 - Black powder, not exceeding five pounds

Explosive actuated power devices means any tool or special mechanized device, which is activated by explosives and does not include propellant actuated power devices.

Explosives classifications. Explosives classifications include, but are not limited to:

- Division 1.1 and Division 1.2 explosives (possess mass explosion or detonating hazard):
 - Dynamite
 - Nitroglycerin
 - Picric acid
 - Lead azide
 - Fulminate of mercury
 - Black powder (exceeding 5 pounds)
 - Detonators (in quantities of 1,001 or more)
 - Detonating primers
- Division 1.3 explosives (possess a minor blast hazard, a minor projection hazard, or a flammable hazard):
 - Propellant explosives
 - Smokeless powder (exceeding fifty pounds)
- Division 1.4 explosives:
 - Explosives that present a minor explosion hazard
 - Includes detonators that will not mass detonate in quantities of 1,000 or less
- Division 1.5 explosives:
 - Explosives with a mass explosion hazard but are so insensitive that there is little probability of initiation
 - ANFO and most other blasting agents are in this division
- Division 1.6 explosives:
 - Explosives that are extremely insensitive and do not have a mass explosion hazard

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Explosives exemption. The exemption for small arms ammunition, small arms ammunition primers, smokeless powder, not exceeding fifty pounds, and black powder, not exceeding five pounds:

- Applies to public consumer use only
- Does not apply to the employer employee relationship covered under the Washington Industrial Safety and Health Act.

Explosives international markings.

- The department will accept U.S. DOT and/or ATF international identification markings on explosives and/or explosives containers or packaging
- This exception is under the authority of RCW 70.74.020(3) and in lieu of Washington state designated markings (as defined by RCW 70.74.010(4) (Division 1.1, 1.2, and 1.3) and required by RCW 70.74.300).

Explosives manufacturing building means any building or structure, except magazines:

- Containing explosives where the manufacture of explosives, or any processing involving explosives, is conducted
- Where explosives are used as a component part or ingredient in the manufacture of any article or device.

Explosives manufacturing plant means all lands with buildings used:

- In connection with the manufacturing or processing of explosives
- For any process involving explosives
- For the storage of explosives
- To manufacture any article or device where explosives are used as a component part or ingredient in the article or device.

Fireworks means any composition or device:

- Designed to produce a visible or an audible effect by combustion, deflagration, or detonation
- Which meets the definition of "consumer fireworks" or "display fireworks."

Forbidden or not acceptable explosives means explosives which are forbidden or not acceptable for transportation by common carriers by rail freight, rail express, highway, or water in accordance with the regulations of the Federal Department of Transportation (DOT).

Fuel means a substance, which may react with oxygen to produce combustion.

Fuse (safety). See "safety fuse."

Fuse igniter means a special pyrotechnic device intended to be used to ignite safety fuses.

Hand charge means an explosive charge with a cap and fuse assembly inserted in place.

Handler means any individual who handles explosives or blasting agents for the purpose of transporting, moving, or assisting a licensed blaster in loading, firing, blasting, or disposal.

Note: This does not include employees of a licensed manufacturer engaged in manufacturing process, drivers of common carriers, or contract haulers.

Hand loader means any person who engages in the non-commercial assembly of small arms ammunition for personal use; specifically, any person who installs new primers, powder, and projectiles into cartridge cases.

Highway means roads, which are regularly and openly traveled by the general public and includes public streets,

alleys, roads, or privately financed, constructed, or maintained roads.

Improvised device means a device, which is:

- Fabricated with explosives
- Fabricated with destructive, lethal, noxious, pyrotechnic, or incendiary chemicals, and designed, or has the capacity to disfigure, destroy, distract, and harass.

Inhabited building means:

- A building which is regularly occupied, in whole or in part, as a habitat for human beings
- Any church, schoolhouse, railroad station, store, or other building where people assemble.

Note: This does not mean any building or structure occupied in connection with the manufacture, transportation, storage, or use of explosives.

Low explosives means explosive materials, which can be caused to deflagrate when, confined. This includes:

- Black powder, safety fuses, igniters, igniter cords, fuse lighters, and display fireworks defined as Division 1.2 or Division 1.3 explosives by U.S. DOT (49 CFR Part 173).

Note: This does not apply to bulk salutes.

Magazine means any building, structure, or container approved for storage of explosive materials.

Note: This does not apply to an explosive manufacturing building.

Manufacturer means any person engaged in the business of manufacturing explosive materials for purposes of sale or distribution or for his or her own use.

EXEMPTIONS: The following exemptions are restricted to materials and components, which are not classified (by U.S. DOT) as explosives until after they are mixed. With this restriction, the definition of manufacturer *does not* include:

- Inserting a detonator into a cast booster or a stick of high explosive product to make a primer for loading into a blast hole
- The act of mixing on the blast site, either by hand or by mechanical apparatus, binary components, ammonium nitrate, fuel oil, and/or emulsion products to create explosives for immediate down blast hole delivery.

Misfire means the complete or partial failure of an explosive charge to explode as planned.

Mudcap (also known as bulldozing and dobbing) means covering the required number of cartridges that have been placed on top of a boulder with a three or four-inch layer of mud, which is free from rocks or other material that could cause a missile hazard.

No-light means the failure of a safety fuse to ignite.

Nonelectric delay detonator means a detonator with an integral delay element in conjunction with and capable of being detonated by a:

- Detonation impulse
- Signal from miniaturized detonating cord
- Shock tube.

Oxidizer means a substance that yields oxygen readily to stimulate the combustion of organic matter or other fuel.

Permanent magazines means magazines that:

- Are fastened to a foundation
- Do not exceed permanent magazine capacity limits (RCW 70.74.040)
- Are approved and licensed
- Are left unattended.

Person means any individual, firm, partnership, corporation, company, association, person or joint stock association or trustee, receiver, assignee, or personal representative of that entity.

Person responsible, for an explosives magazine, means:

- The person legally responsible for a magazine that actually uses the magazine
- The person is responsible for the proper storage, protection, and removal of explosives, and may be the owner lessee, or authorized operator.

Portable (field) magazines means magazines that are:

- Designed to be unattended
- Not permanently fastened to a foundation
- Constructed or secured to make sure they cannot be lifted, carried, or removed easily by unauthorized persons
- Limited to the capacity of explosives required for efficient blasting operation
- Approved and licensed.

Possess means the physical possession of explosives in one's hand, vehicle, magazine, or building.

Primary blasting means the blasting operation that dislodged the original rock formation from its natural location.

Primer means a unit, package, cartridge, or container of explosives inserted into or attached to a detonator or detonating cord to initiate other explosives or blasting agents.

Propellant actuated power device means any tool, special mechanized device, or gas generator system, which is actuated by a propellant and releases and directs work through a propellant charge.

Public utility transmission systems means:

- Any publicly owned systems regulated by:
 - The utilities and transportation commission
 - Municipalities
 - Other public regulatory agencies, which include:
 - Power transmission lines over 10 kV, telephone cables, or microwave transmission systems
 - Buried or exposed pipelines carrying water, natural gas, petroleum, or crude oil or refined products and chemicals

Purchaser means any person who buys, accepts, or receives explosives or blasting agents.

Pyrotechnics, commonly referred to as fireworks, means any combustible or explosive compositions or manufactured articles designed and prepared for the purpose of producing audible or visible effects.

Qualified person means a person who has successfully demonstrated the ability to solve or resolve problems relating to explosives, explosives work, or explosives projects by:

- Possession of a recognized degree or certificate
- Professional standing
- Extensive knowledge, training, and experience.

Railroad means any type of railroad equipment that carries passengers for hire.

Safety fuse (for firing detonators) means a flexible cord containing an internal burning medium by which fire is conveyed at a continuous and uniform rate.

Secondary blasting means using explosives, mudcapping, or blockholing to reduce oversize material to the dimension required for handling.

Shock tube means a small diameter plastic tube:

- Used for initiating detonators

• That contains a limited amount of reactive material so energy, transmitted through the tube by means of a detonation wave, is guided through and confined within the walls of the tube.

Small arms ammunition means any shotgun, rifle, pistol, or revolver cartridge, and cartridges for propellant actuated power devices and industrial guns.

Note: This does not mean military type ammunition containing explosive bursting incendiary, tracer, spotting, or pyrotechnic projectiles.

Small arms ammunition primers means small percussion sensitive explosive charges encased in a detonator or capsule used to ignite propellant power or percussion detonators used in muzzle loaders.

Smokeless powder means solid chemicals or solid chemical mixtures that function by rapid combustion.

Special industrial explosive devices means explosive actuated power devices and propellant-actuated power devices.

Special industrial explosives materials means shaped materials and sheet forms and various other extrusions, pellets, and packages of high explosives, which include:

- Dynamite
- Trinitrotoluene (TNT)
- Pentaerythritol tetranitrate (PETN)
- Hexahydro-1, 3, 5-trinitro-s-triazine (RDX)
- Other similar compounds used for high-energy-rate forming, expanding, and shaping in metal fabrication, and for dismemberment and quick reduction of scrap metal.

Springing means the creation of a pocket in the bottom of a drill hole by the use of a moderate quantity of explosives so that larger quantities of explosives may be inserted.

Sprung hole means a drilled hole that has been enlarged by a moderate quantity of explosives to allow for larger quantities of explosives to be inserted into the drill hole.

Stemming means a suitable inert incombustible material or device used to confine or separate explosives in a drill hole or cover explosives in mudcapping.

Trailer means semi-trailers or full trailers, as defined by U.S. DOT, which are:

- Built for explosives
- Loaded with explosives
- Operated in accordance with U.S. DOT regulations.

U.S. DOT means the United States Department of Transportation.

Vehicle means any car, truck, tractor, semi-trailer, full trailer, or other conveyance used for the transportation of freight.

Water-gels or emulsion explosives. These explosives:

- Comprise a wide variety of materials used for blasting. Two broad classes of water-gels are those which:
 - Are sensitized by material classed as an explosive, such as TNT or smokeless powder
 - Contain no ingredient classified as an explosive which are sensitized with metals, such as aluminum, or other fuels
 - Contain substantial proportions of water and high proportions of ammonium nitrate, some ammonium nitrate is in the solution in the water, and may be mixed at an explosives plant, or the blast site immediately before delivery into the drill hole.

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[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. 06-19-074, § 296-52-60130, filed 9/19/06, effective 12/1/06; 05-08-110, § 296-52-60130, filed 4/5/05, effective 6/1/05; 03-06-073, § 296-52-60130, filed 3/4/03, effective 8/1/03. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-60130, filed 1/23/02, effective 3/1/02.]

PART B EXPLOSIVE LICENSING

WAC 296-52-61005 Types of explosive licenses.

Type of License	Where to Look for Requirements
Dealer's	WAC 296-52-620
Purchaser's	WAC 296-52-630
Blaster's	WAC 296-52-640
Manufacturer's	WAC 296-52-650
Storage	WAC 296-52-660

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-61005, filed 1/23/02, effective 3/1/02.]

WAC 296-52-61010 License applicants must provide this information. (1) Applicants must provide the following information to the department:

- An individual must provide:
 - Their name, address, and citizenship.
- A partnership must provide:
 - The name, address, and citizenship for each partner
 - The name and address of the applicant.
- An association or corporation must provide:
 - The name, address, and citizenship for each officer and director
 - The name and address of the applicant.

(2) Applicants must:

- Meet the requirements of WAC 296-52-610, Explosives licensing
- Meet any license specific requirements
- Provide their Social Security number (RCW 26.23.150)
- Provide any information requested by the department before a new or renewal license will be issued.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-61010, filed 1/23/02, effective 3/1/02.]

WAC 296-52-61015 License applicants must complete department forms. Applications must be completed on department forms.

- License application forms may be obtained from and submitted to:

Department of Labor and Industries, WISHA Services Division
Post Office Box 44655,
Olympia, WA 98504-4655.

Note: Purchaser and blaster license applications may also be obtained from explosive dealers or department service locations. (You will find a complete list of L&I service locations at www.lni.wa.gov.)

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-61015, filed 1/23/02, effective 3/1/02.]

WAC 296-52-61020 License fees. Applicable license fees must be included with new or renewal explosives license applications.

Type of License	Fee
Dealer's License	25.00
Purchaser's License	5.00

Type of License	Fee
Blaster's License	5.00
Manufacturer's License	25.00
Storage License	(See table below)

Explosive Materials STORAGE LICENSE FEES <i>RCW 70.74.140 applies</i>			
EXPLOSIVES Maximum Weight (pounds) of explosives permitted in each magazine or mobile site.	DETONATORS Maximum Number of detonators permitted in each magazine or mobile site.	FEE (for each magazine or mobile site)	
		Annual	Permanent Storage License for Two Years
200	133,000	10.00	20.00
1,000	667,000	25.00	50.00
5,000	3,335,000	35.00	70.00
10,000	6,670,000	45.00	90.00
50,000	33,350,000	60.00	120.00
300,000	200,000,000	75.00	150.00

Note: License fees will not be refunded when a license is revoked or suspended for cause.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. 05-08-110, § 296-52-61020, filed 4/5/05, effective 6/1/05. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-61020, filed 1/23/02, effective 3/1/02.]

WAC 296-52-61025 Verification of applicant information. The department will verify license application statements before an explosives license is issued.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-61025, filed 1/23/02, effective 3/1/02.]

WAC 296-52-61030 Applicant participation. Applicants:

- Must cooperate and assist the department in all aspects of the application review
- Must provide all information requested by the department to:
 - Verify application statements
 - Help with any questions
- Must furnish their fingerprints to the department on department forms
 - Fingerprinting and criminal history record information checks are required for management officials directly responsible for explosives operations
- May be required to pay a fee to the law enforcement agency providing fingerprint research services (RCW 70.74.360).

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-61030, filed 1/23/02, effective 3/1/02.]

WAC 296-52-61035 Criminal records. The Washington state patrol will provide any criminal records to the director upon request.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-61035, filed 1/23/02, effective 3/1/02.]

WAC 296-52-61040 Reasons why applicants may be disqualified. (1) Licenses will not be issued for the manufacture, retail sale or purchase of explosives to any applicant who is any of the following:

- Does not provide proof of a valid explosive license or permit issued by the Bureau of Alcohol, Tobacco, Firearms, and Explosives (ATF)

- Under twenty-one years of age
- Whose license is suspended or revoked, except as provided in this section

- Convicted in any court of a crime punishable by imprisonment for a term exceeding one year

- Legally determined at the time of application to be:
 - Mentally ill
 - Insane
 - Committed to a mental institution
 - Incompetent due to any mental disability or disease at the time of application.

Note: The department will not reissue a license until competency has been legally restored.

- Physically ill or disabled, and cannot use explosives safely. Disqualifying disabilities may include, but are not limited to:

- Blindness
- Deafness
- Epileptic or diabetic seizures or coma.

Note: The department will not reissue a license until the applicant's physical ability is verified by a qualified physician through the appeal process (WAC 296-52-60065, Violation appeals).

- Who is an alien, unless:
 - They are lawfully admitted for permanent residence
 - They are in lawful nonimmigrant status
- Who has been dishonorably discharged from the United States armed forces
- Who has renounced their citizenship from the United States.

(2) A user (blaster) license will not be issued if the applicant is denied a receiver or employee possessor designation by ATF.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. 06-19-074, § 296-52-61040, filed 9/19/06, effective 12/1/06; 03-10-037, § 296-52-61040, filed 4/30/03, effective 5/24/03. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-61040, filed 1/23/02, effective 3/1/02.]

WAC 296-52-61045 License terms. All licenses, including storage licenses, are valid for one year from the date of issue, unless revoked or suspended by the department prior to the expiration date.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. 05-08-110, § 296-52-61045, filed 4/5/05, effective 6/1/05. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-61045, filed 1/23/02, effective 3/1/02.]

WAC 296-52-61050 License renewal. An explosives license must be renewed before the expiration date of the license.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-61050, filed 1/23/02, effective 3/1/02.]

DEALER'S LICENSE

WAC 296-52-62005 Responsibility to obtain a dealer's license. Any person, firm, partnership, corporation, or public agency wanting to purchase explosives (including black powder and blasting agents) for resale, must have a valid dealer's license issued by the department and a valid license or permit issued by the ATF.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060. 03-10-037, § 296-52-62005, filed 4/30/03, effective 5/24/03. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-62005, filed 1/23/02, effective 3/1/02.]

WAC 296-52-62010 Dealer applicant information. The dealer applicant must:

- Give the reason they want to participate in the business of dealing in explosives
- Provide information required by WAC 296-52-61010, License applicants must provide this information
- Provide other pertinent information required by the department.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. 05-08-110, § 296-52-62010, filed 4/5/05, effective 6/1/05. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-62010, filed 1/23/02, effective 3/1/02.]

WAC 296-52-62025 Prohibit explosives items from sale or display in these areas. Explosives, improvised devices, or blasting agents cannot be sold, displayed, or exposed for sale on any:

- Highway
- Street
- Sidewalk
- Public way

OR

- Public place.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-62025, filed 1/23/02, effective 3/1/02.]

WAC 296-52-62030 Container labeling. Any package, cask, or can containing any explosive, nitroglycerin, dynamite, or black and/or smokeless powder put up for sale or

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delivered to any warehouse worker, dock, depot, or common carrier, must be properly labeled with its explosive classification.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-62030, filed 1/23/02, effective 3/1/02.]

WAC 296-52-62035 Authorized agent information. A dealer must make sure the purchaser provides a list of people on their authorized agent list with the following information:

- Name
- Address
- Driver's license number or valid identification
- Social Security number (as required by RCW 26.23.-150)
- Place of birth
- Date of birth.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-62035, filed 1/23/02, effective 3/1/02.]

WAC 296-52-62040 Verification of customer identity. (1) Orders.

(a) An order for explosives can be placed:

- In person
- By telephone

OR

- In writing

(b) The dealer must receive proper authorization and identification from the person placing the order to verify the person is either the:

- Purchaser

OR

- Purchaser's authorized agent

Note: This requirement does not apply to licensed common carrier companies when the common carrier:

- Is transferring explosive materials from the seller to the purchaser

AND

- Complies with transfer practices of the state and federal U.S. DOT regulations.

(2) **Deliveries.** The dealer must:

(a) Not distribute explosive materials to an unauthorized person.

(b) Make sure the recipient is the purchaser or the purchaser's authorized agent.

(c) Verify the recipient's identity from a photo identification card (for example, driver's license).

(d) Obtain the:

(i) Purchaser's magazine license number when explosives are delivered to a storage magazine.

(ii) Legal signature of the purchaser or the purchaser's authorized agent on a receipt documenting the explosives were received.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-62040, filed 1/23/02, effective 3/1/02.]

WAC 296-52-62045 Recordkeeping and reporting.

(1) **Sale documentation.** A dealer must document the following information when an explosive materials order is placed. A dealer's record must include the:

- Date explosive materials were sold
- Purchaser's name and license number

- Name of the person authorized by the purchaser to physically receive the explosive materials
- Kind of explosive materials sold
- Amount of explosive materials sold
- Date code

Note: Black powder sales less than five pounds are not required to be reported to the department.

(2) **Retention of records and receipts.** Dealers must keep:

- Signed receipts for a minimum of one year from the date explosives were purchased
- Records of explosives purchased and sold for a minimum of five years

(3) **Monthly report.**

• A monthly report of the dealer's records must be submitted to the department at the following address:

Department of Labor and Industries

WISHA Services Division

Post Office Box 44655

Olympia, WA 98504-4655

• Dealer records must be received by the 10th day of each month.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-62045, filed 1/23/02, effective 3/1/02.]

PURCHASER'S LICENSE

WAC 296-52-63005 Responsibility to obtain a purchaser's license. Any person, firm, partnership, corporation, or public agency wanting to purchase explosives or blasting agents must have a valid purchaser's license or permit issued by the department and a valid license issued by the ATF.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060. 03-10-037, § 296-52-63005, filed 4/30/03, effective 5/24/03. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-63005, filed 1/23/02, effective 3/1/02.]

WAC 296-52-63010 Applicant information. Applicants must provide the following information to the department:

- The reason explosives or blasting agents will be used
- The location where explosives or blasting agents will be used
- The kind of explosives or blasting agents to be used
- The amount of explosives or blasting agents to be used
- An explosives storage plan:
 - Documenting proof of ownership of a licensed storage magazine

OR

– With a signed authorization to use another person's licensed magazine

OR

– With a signed statement certifying that the explosives will not be stored

- An authorized agent list, if the purchaser chooses to authorize others to order or receive explosives on their behalf
- The identity and current license of the purchaser's blaster

• Information required by WAC 296-52-61010, License applicants must provide this information

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- Any other pertinent information requested by the department.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. 05-08-110, § 296-52-63010, filed 4/5/05, effective 6/1/05. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-63010, filed 1/23/02, effective 3/1/02.]

WAC 296-52-63020 Authorized agents. (1) Required information.

The purchaser must provide the following written information for people on their authorized agent list:

- Legal name
- Address
- Driver's license number or other valid identification
- Date of birth
- Place of birth.

(2) **List distribution.** The purchaser must provide a current authorized agent list to:

- The department when applying for a new or renewal license
- Any dealer the purchaser plans to order explosive materials from, prior to placing the order.

(3) **Notification of list changes.** The purchaser must make sure the dealer's and department's authorized agent lists are updated as changes occur.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-63020, filed 1/23/02, effective 3/1/02.]

WAC 296-52-63025 Explosive order deliveries. (1) Receiver identification. Any person receiving explosives purchased from a dealer must:

- Provide proper identification and prove to the satisfaction of the dealer that they are:

– The purchaser

OR

– Their authorized agent

- Sign their legal signature on the dealer's receipt.

(2) **Delivery locations.** Explosives must be delivered into:

- Authorized magazines
- Approved temporary storage

OR

- Handling areas.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-63025, filed 1/23/02, effective 3/1/02.]

WAC 296-52-63030 Notify the department of blaster changes. The purchaser must:

- Notify the department when the licensed blaster changes
- Provide their current blaster's license number to the department.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-63030, filed 1/23/02, effective 3/1/02.]

BLASTER'S LICENSE

WAC 296-52-64005 Responsibility to obtain a blaster's license. No one may conduct a blasting operation without a valid blaster's license issued by the department.

(2007 Ed.)

Note: A blaster's license is not required for a "hand loader."

Blaster license classifications table. The following information shows classification for blasting licenses.

• **Classification list assignment.** Classification list assignment is determined by the use of single or multiple series charges; and the knowledge, training, and experience required to perform the type of blasting competently and safely.

• **Multiple list applications.** When an applicant wants to apply for multiple classifications and the classifications desired are from two or more classification table lists:

- All classifications must be requested on the application

– Qualifying documentation for all classifications being applied for must be included in the applicant's resume (WAC 296-52-64050, Applicant information). Training and experience may fulfill qualification requirements in multiple classifications.

• **Request classifications not lists.** Applicants must request specific classifications (not list designations) on their blaster application. Licenses are not issued or endorsed for Classification Table lists A, B, or C.

• **License additions.** To add a classification to an existing license, see WAC 296-52-64085, Changes to a blaster's license classification.

License Classifications Table					
LIST A		LIST B		LIST C	
AB	Aerial Blasting	DE	Demolition	BT	Bomb Technician*
AG	Agriculture	SB	Surface Blasting*	UL	Unlimited*
AV	Avalanche Control	UB	Underground Blasting		
ED	Explosives Disposal*	UW	Underwater Blasting		
FO	Forestry*				
LE	Law Enforcement*				
IO	Industrial Ordnance				
SE	Seismographic				
TS	Transmission Systems				
WD	Well Drilling				

* Detailed classification information.

• **Aerial blasting.** Will require experience and passing aerial blasting test.

• **Bomb technician.** Disposal of bombs, illegal fireworks and explosive devices.

• **Explosives disposal.** Disposal of explosive materials by licensed blasters.

• **Forestry.** Includes logging, trail building, and tree top-ping.

• **Law enforcement.** Diversionary devices, explosive detection K-9 dog handlers, crowd control devices (stingers) requires taking a handlers test. Tactical entry (breaching) requires taking the tactical entry test.

• **Surface blasting.** Includes construction, quarries, and surface mining.

• **Unlimited.** Includes all classifications except underground blasting and law enforcement.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. 06-19-074, § 296-52-64005, filed 9/19/06, effective 12/1/06; 05-08-110, § 296-52-64005, filed 4/5/05, effective 6/1/05. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-64005, filed 1/23/02, effective 3/1/02.]

WAC 296-52-64020 General qualifications for blasters. (1) **Physical condition.** An applicant must be in good physical condition.

(2) **Drug use.** An applicant cannot be addicted to narcotics, intoxicants, or similar types of drugs.

Note: This rule does not apply to physician prescribed drugs and/or narcotics when taken as directed if their use will not place the blaster, or other employees in danger.

(3) **Knowledge, experience, and performance in transportation, storage, handling, and use of explosives.** A blaster applicant must:

- Have working knowledge of state and local explosives laws and regulations

• Have adequate blaster training, experience, and knowledge

• Be able to:

- Safely perform the type of blasting to be used

AND

- Recognize hazardous conditions

• Be competent in the use of each type of blasting method to be used

• Have the ability to understand and give written and oral directions.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-64020, filed 1/23/02, effective 3/1/02.]

WAC 296-52-64030 List A qualifications. To be considered for a blaster's license, limited to one or more List A classifications, an applicant must have a minimum of forty hours documented training accrued during the previous six years.

The training must include a minimum of one of these three requirements:

• Eight hours basic blaster safety classroom training and thirty-two hours classification specific field training experience under a qualified blaster

• Sixteen hours basic blaster safety classroom training and twenty-four hours classification specific field training experience under a qualified blaster

• Twelve months classification specific field training experience.

Aerial blasting classification shall require:

• Standard avalanche control blaster's license

• Experience requirement of five missions under the supervision of a licensed aerial blaster

• Successful completion of a written exam.

Note: Additional personnel on board with a standard avalanche control blaster's license may log each mission toward the aerial blasting endorsement experience requirement.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. 06-19-074, § 296-52-64030, filed 9/19/06, effective 12/1/06. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-64030, filed 1/23/02, effective 3/1/02.]

WAC 296-52-64035 List B qualifications. To be considered for a blaster's license, which includes one or more List B classifications, the applicant must meet one of the following requirements listed below:

- Eighteen months of documented blasting experience which includes a minimum of twelve months of documented experience in List A and six months documented blasting experience in each classification being applied for in List B
- Twelve months of documented blasting experience in the past six years in the specific classification being applied for in List B.

Note: Up to eighty hours of classroom training may be substituted for experience.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-64035, filed 1/23/02, effective 3/1/02.]

WAC 296-52-64040 List C qualifications. (1) Unlimited classification. To be considered for unlimited classification, the applicant must submit a detailed resume documenting:

- Experience in the majority of the classifications in Lists A and B
- A minimum of five years of continuous full time blasting experience in the explosives industry where blasting has been the applicant's primary responsibility during the previous five years.

(2) **Bomb technician.** To be considered for a bomb technician classification, the applicant must:

- Submit a copy of the certificate of graduation from the FBI Hazardous Devices School (HDS) basic course in Redstone, Alabama.
- Submit a copy of the applicant's FBI Bomb Technician Certification identification card. The FBI Bomb Technician Certification card must bear a date that indicates that it is current at the time of application.
- Submit a letter from the applicant's law enforcement agency's head (chief or sheriff) stating that the applicant is a full-time employee assigned to perform bomb technician duties as part of an FBI accredited bomb squad.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. 05-08-110, § 296-52-64040, filed 4/5/05, effective 6/1/05. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-64040, filed 1/23/02, effective 3/1/02.]

WAC 296-52-64045 Application.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-64045, filed 1/23/02, effective 3/1/02.]

WAC 296-52-64050 Blaster license applicant information. An applicant for a blaster's license must provide the following information to the department:

- The application must be signed by the blasting course instructor and the qualified blaster the applicant trained under
- A detailed resume of blasting training and experience

- Satisfactory evidence of competency in handling explosives
- Information required by WAC 296-52-61010, License applicants must provide this information.

Note: The department may request additional information for the classification being applied for upon review of a blaster's resume.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. 05-08-110, § 296-52-64050, filed 4/5/05, effective 6/1/05. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-64050, filed 1/23/02, effective 3/1/02.]

WAC 296-52-64055 Blaster license testing. List A and B applicants must pass a written test prepared and administered by the department. List C applicants are exempt from testing.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-64055, filed 1/23/02, effective 3/1/02.]

WAC 296-52-64065 Blaster license limits. (1) A blaster's license documents:

- (a) The classifications the blaster is authorized to perform
- (b) Any limitations imposed on the licensee.
- (2) The licensee cannot:
 - (a) Perform blasting for which they are not licensed
 - OR**
 - (b) Exceed the limits specified on the license.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-64065, filed 1/23/02, effective 3/1/02.]

WAC 296-52-64075 Blaster license disclosure. A blaster must provide their blaster's license and a valid identification card to the department or other law enforcement representatives upon request.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-64075, filed 1/23/02, effective 3/1/02.]

WAC 296-52-64080 Purchaser disclosure. A blaster may be required to verify the name of the explosives purchaser.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-64080, filed 1/23/02, effective 3/1/02.]

WAC 296-52-64085 Changes to a blaster's license classification. Additional blaster classifications may be added to a license. Applicants must:

- Submit a detailed resume which documents blasting experience in the specific classification being applied for
- Pass a written exam prepared and administered by the department.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-64085, filed 1/23/02, effective 3/1/02.]

WAC 296-52-64090 Blaster license renewal. The following requirements are for license renewal:

- General applicant qualifications, WAC 296-52-64020, General qualifications, apply.
- Renewal qualifications include the requirements of WAC 296-52-64090 License renewal, through WAC 296-52-64100, List C renewal qualifications.

- Training, experience, and responsibility requirements must be accrued during the one year before the application is submitted.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. 05-08-110, § 296-52-64090, filed 4/5/05, effective 6/1/05. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-64090, filed 1/23/02, effective 3/1/02.]

WAC 296-52-64095 List A and B renewal qualifications. The following requirements are for List A and B renewal qualifications:

(1) An application for a license renewal must include documentation of:

- Blasting experience, by providing a minimum of one blast record

OR

- Successful completion of eight hours of basic blaster's classroom training. The blasting course instructor must witness the submitted documentation.

(2) List A or B applicants who do not meet the minimum classification qualifications must pass a written exam administered by the department.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. 05-08-110, § 296-52-64095, filed 4/5/05, effective 6/1/05. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-64095, filed 1/23/02, effective 3/1/02.]

WAC 296-52-64100 List C renewal qualifications. The following requirements are for List C renewal qualifications:

(1) **Unlimited classification.** To be considered for a renewal of an unlimited license, an applicant must submit a detailed resume documenting:

- Experience in the majority of classification in List A and B

- Full-time blasting experience in the explosives industry, where blasting has been the applicant's primary responsibility.

(2) **Bomb technician.** To be considered for a renewal of the bomb technician classification, an applicant must:

- Have continuous employment as a law enforcement bomb technician accrued during the previous year

- Submit a copy of their FBI Bomb Technician Certification identification card bearing the name of the person making application and an expiration date that indicates that the card is current and valid as of the date of renewal

- Submit a letter from the applicant's law enforcement agency's head (chief or sheriff) stating that the applicant is a full-time employee assigned to perform bomb technician duties as part of an FBI accredited bomb squad.

Note: • If the applicant's card has expired at the time of renewal, they need to show that they are enrolled in the next available course at Redstone, Alabama.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. 05-08-110, § 296-52-64100, filed 4/5/05, effective 6/1/05. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-64100, filed 1/23/02, effective 3/1/02.]

WAC 296-52-650 Manufacturer's license.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-650, filed 1/23/02, effective 3/1/02.]

(2007 Ed.)

WAC 296-52-65005 Responsibility to obtain a manufacturer's license. Any person, firm, partnership, corporation, or public agency wanting to manufacture explosives or blasting agents, or use any process involving explosives as a component part in the manufacture of any device, article, or product must have a valid manufacturer's license from the department and a valid permit or license issued by the ATF.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. 05-08-110, § 296-52-65005, filed 4/5/05, effective 6/1/05; 03-10-037, § 296-52-65005, filed 4/30/03, effective 5/24/03. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-65005, filed 1/23/02, effective 3/1/02.]

WAC 296-52-65010 Manufacturer applicant information. The manufacturer applicant must provide the following information to the department:

- The reason the applicant wants to manufacture explosives

- The manufacturing or processing location

- The kind of explosives manufactured, processed, or used

- The distance that the explosives manufacturing building is located, or intended to be located, from other buildings, magazines, inhabited buildings, railroads, highways, and public utility transmission systems

- A site plan. The site plan must:

- Include the distance each manufacturing building is located from:

- Other buildings on the premises where people are employed

- Other occupied buildings on adjoining property

- Buildings where customers are served

- Public highways

- Utility transmission systems

- Demonstrate compliance with:

- Applicable requirements of the Washington State Explosives Act

- The separation distance requirements of this chapter

- Identify and describe all natural or artificial barricades used to influence minimum required separation distances

- Identify the nature and kind of work being performed in each building

- Specify the maximum amount and kind of explosives or blasting agents to be permitted in each building or magazine at any one time

- Information required by WAC 296-52-61010, License applicants must provide this information

- Other pertinent information required by the department.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. 05-08-110, § 296-52-65010, filed 4/5/05, effective 6/1/05. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-65010, filed 1/23/02, effective 3/1/02.]

WAC 296-52-65015 Manufacturing site inspections. The department will:

- Inspect all manufacturing or processing locations:

- Before they are placed in operation or service

AND

- Prior to licensing

- Schedule inspections:

- Once a complete application is received

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- At the earliest available and mutually agreeable date.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-65015, filed 1/23/02, effective 3/1/02.]

WAC 296-52-65020 Conditions of a manufacturer's license. The department will issue a license to the manufacturer applicant(s) provided:

(1) The required inspection confirms that the site plan is accurate and the facilities comply with applicable regulations of the department.

(2) The applicant(s) or operating superintendent and employees are sufficiently trained and experienced in the manufacture of explosives.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-65020, filed 1/23/02, effective 3/1/02.]

WAC 296-52-65025 Annual inspection. The department will inspect manufacturing or processing locations annually.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-65025, filed 1/23/02, effective 3/1/02.]

WAC 296-52-65030 Site plan. The site plan must include:

(1) A copy of the site plan and manufacturer's license must be posted in the main office of each manufacturing plant.

(2) The site plan must be maintained and updated to reflect the current status of manufacturing facilities, occupancy changes, or other pertinent information.

(3) Notifying the department:

- When a significant change occurs in the site plan
- For a consultation before changing operations if the change is of such nature or magnitude that compliance with requirements of this chapter is questionable.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-65030, filed 1/23/02, effective 3/1/02.]

WAC 296-52-660 Storage license.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-660, filed 1/23/02, effective 3/1/02.]

WAC 296-52-66005 Responsibility to obtain a storage license. Any person, firm, partnership, corporation, or public agency wanting to store explosive materials must have a valid license from the department.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. 05-08-110, § 296-52-66005, filed 4/5/05, effective 6/1/05; 03-10-037, § 296-52-66005, filed 4/30/03, effective 5/24/03. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-66005, filed 1/23/02, effective 3/1/02.]

WAC 296-52-66010 Storage applicant information. Applicants must provide the following information to the department:

- The address or a legal description of the existing or proposed magazine or mobile storage site must be clearly identified
- The reason explosive materials will be stored
- The kind of explosives or blasting agents that will be stored

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- The maximum quantity of explosive materials that are or will be stored

- Identify the total weight, in pounds, of all explosive materials to be stored on site

- The distance that the magazine is located or intended to be located from other magazines, inhabited buildings, explosives manufacturing buildings, railroads, highways, and public utility transmission systems

- How long the storage license is needed

- Information required by WAC 296-52-61010, License applicants must provide this information

- Any other pertinent information requested by the department.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. 05-08-110, § 296-52-66010, filed 4/5/05, effective 6/1/05. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-66010, filed 1/23/02, effective 3/1/02.]

WAC 296-52-66015 Storage site inspections. The department will:

- Inspect magazines, mobile-storage sites, and manufacturing plants:

– Before being placed in operation or service

– Prior to licensing

- Will schedule inspections:

– Once a complete application is received

– At the earliest available and mutually agreeable date.

Note: See WAC 296-52-66040, Annual storage inspection, for mobile storage site qualifications.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-66015, filed 1/23/02, effective 3/1/02.]

WAC 296-52-66020 Demonstration of handling and storage experience. Applicants or officers, agents, or employees of the applicant, must demonstrate satisfactory experience in:

- Handling explosives

- The storage requirements for any type of explosive materials to be stored.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-66020, filed 1/23/02, effective 3/1/02.]

WAC 296-52-66030 Storage license number. The storage license number must:

(1) Be permanently affixed on the inside and outside of each storage magazine.

(2) Stay with each magazine throughout its life.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-66030, filed 1/23/02, effective 3/1/02.]

WAC 296-52-66035 Storage limit. A storage license documents the storage limits imposed on the licensee. Storage cannot exceed the limits specified on the license.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-66035, filed 1/23/02, effective 3/1/02.]

WAC 296-52-66040 Annual storage inspection. Magazines, mobile storage sites, and manufacturing plants will be inspected annually.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-66040, filed 1/23/02, effective 3/1/02.]

WAC 296-52-66045 Mobile storage sites. Semi-trailers or other mobile facilities used to transport blasting agents on site or on highways are considered adequate for blasting agent storage, provided they meet:

(1) U.S. DOT requirements for transportation of blasting agents.

(2) The requirements of Table H-20, Table of Distances for Storage of Explosives with respect to inhabited buildings, passenger railways, and public highways.

(3) The requirements of Table H-22, Separation Distances of Ammonium Nitrate and Blasting Agents from Explosives or Blasting Agents with respect to one another.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-66045, filed 1/23/02, effective 3/1/02.]

WAC 296-52-66050 Moving a licensed magazine. (1) When a magazine is moved the owner of the magazine must notify the department with:

- (a) The license number of the magazine
- (b) The new location of the magazine

(2) A magazine may be moved on a job site within a reasonable distance from the original location stated on the application without notifying the department, provided the:

- (a) New location complies with the requirements of this chapter and the Washington State Explosives Act
- (b) Magazine can be quickly located for an inspection.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. 06-19-074, § 296-52-66050, filed 9/19/06, effective 12/1/06. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-66050, filed 1/23/02, effective 3/1/02.]

WAC 296-52-66053 Altering or destroying a licensed magazine. (1) When a magazine is altered, the licensee must notify the department with:

- The license number of the magazine.
- The specific alterations made to the magazine.

(2) When a magazine is destroyed, the licensee must notify the department with the license number of the magazine.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. 06-19-074, § 296-52-66053, filed 9/19/06, effective 12/1/06.]

WAC 296-52-66057 Transfer, sale or lease of a magazine or mobile storage site. (1) When a magazine or mobile storage site is leased, the owner of the magazine or mobile storage site must notify the department with:

- (a) The magazine license number or site license number
- (b) The name of the individual or company leasing the magazine or mobile storage site

(2) When a magazine or mobile storage site is transferred or sold from one entity to another, the previous owner/licensee shall notify the department with:

- (a) The magazine license number or site license number
 - (b) The date of the sale or transfer
 - (c) The name of the individual or company to whom the magazine or mobile storage site was sold or transferred to
 - (d) Who will be licensing the magazine or mobile storage site
 - (e) The name of the contact person and phone number.
- (3) A new owner/licensee of a magazine or mobile storage site:

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(a) Is responsible for the safe operation of the magazine or mobile storage site

(b) They must also:

- Submit a magazine storage application to the department
- Pay the license fee for a minimum of one year
- Obtain a storage license prior to storing explosive materials in the magazine or at the mobile storage site

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. 06-19-074, § 296-52-66057, filed 9/19/06, effective 12/1/06.]

WAC 296-52-66060 Reporting changes in conditions.

Any change in conditions around a magazine, mobile storage site, or manufacturing plant that could adversely affect compliance with any requirement of this chapter must be promptly reported to the department. Examples of reportable changes include:

- (1) Construction of occupied buildings.
- (2) Public utilities transmission systems.
- (3) Roads or railroads that have been built closer to the manufacturing plant or magazine.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-66060, filed 1/23/02, effective 3/1/02.]

PART C

USE OF EXPLOSIVE MATERIALS

WAC 296-52-67010 Blaster in charge responsibilities. The blaster in charge is responsible for all aspects of explosives use and must:

- (1) Carry a current license with the correct blaster classification for the type of blasting being performed.
- (2) Comply with all federal, state, and local government regulations.
- (3) Meet the general license qualifications identified in WAC 296-52-64020, General qualifications.
- (4) Use every reasonable precaution to ensure the safety of the general public and workers. Reasonable precautions include the use of:

(a) Blast area surveys.

(b) Warning signal posters, which must be posted in suitable locations. Table T-1 shows the information that must be on the poster.

TABLE T-1	
WARNING SIGNAL	A 1 minute series of long blasts 5 minutes prior to blast signal.
BLAST SIGNAL	A series of short blasts 1 minute prior to the shot.
ALL CLEAR SIGNAL	A prolonged blast following the inspection of the blast.

(c) Flags and barricades.

(d) Blasting mats or other suitable protective material.

(5) Exercise and apply independent professional judgment regarding blasting activities, when following instructions from others could result in an illegal act or affect the outcome of a blast.

(6) **Blast operation activities.** The blaster in charge must:

- Have authority over all blasters and be able to promptly correct all actions taken in any area of the blast operation

- Manage the blast operation properly for any type of blasting being performed
- Control blast activities associated with a blast
- Supervise explosive material activities, which include:
 - Keeping a running inventory of all explosives and blasting agents stored at the blast area
 - Supervising all on-site transportation, storage, loading, and firing of explosives
- Notify local jurisdictions when blasting may affect them
- Designate safe locations for personnel during the blast
- Designate a method to determine when all personnel are accounted for in designated safe locations
- Make sure blast observers are able to communicate with the blaster in charge
- Make sure all possible exits to the blast site are observed immediately prior to each blast
- Distribute explosives in the shot
- Be present when a charge is detonated
- Personally detonate the charge or give an order to a designated blaster to detonate the charge

(7) **Notification - Blast incidents.** The blaster in charge must notify the department within twenty-four hours when:

- (a) A misfire is not cleared
- (b) Vibration and air blast limits cause injury or property damage

(c) Flyrock causes injury or property damage

(8) **Blast records.** The blaster in charge must:

- (a) Keep an accurate inventory of all explosives and blasting agents stored at the blast operation
- (b) Keep a blast record with the following information:
 - Name of the company or contractor
 - Exact location of the blast
 - Date and time of detonation
 - Name, signature, and license number of the blaster in charge

- Type of material blasted
- Type of explosives used
- Number of holes, burden, and spacing
- Diameter and depth of holes
- Total amount of each type of explosives used
- Maximum amount of explosives per delay period within eight milliseconds
- Maximum number of hole per delay period within eight milliseconds

- Method of firing
- Type of circuit
- Direction, distance in feet, and identification of the nearest dwelling, house, public building, school, church, or commercial/institutional building not owned or leased by the blaster in charge conducting the blasting

- Weather conditions
- Type and height (or length) of stemming
- A statement indicating whether blast mats or other fly-rock protection were used
- Type of initiation system used
- Type of delay periods used
- Seismograph records and readings, if required or used, must accurately identify the:
 - Name of the person and business analyzing the record
 - Exact location of the seismograph

- Distance of the seismograph from the blast
- Sketch of the blast pattern. The sketch must include the:
 - Number of hole
 - Burden
 - Spacing distance delay pattern
- Sketch of the hole profile if decking was used
- General comments which include:
 - Unusual conditions/situations during the blast
 - The calculated scale distance number
 - Misfires
- Complete and sign each blast record
- Retain blast records for a minimum of three years
- Make sure blast records are available for department inspection.

Note: A nonmandatory sample blast record can be found in Appendix B. You may use this format or create your own but all the information in this section must be included.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-67010, filed 1/23/02, effective 3/1/02.]

GENERAL EXPLOSIVES RULES

WAC 296-52-67020 Black powder. Black powder, including black powder manufactured for muzzle loading firearms, cannot be used for blasting.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-67020, filed 1/23/02, effective 3/1/02.]

WAC 296-52-67025 Age of explosives. The oldest explosive of the kind needed for a blast, must be used first.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-67025, filed 1/23/02, effective 3/1/02.]

WAC 296-52-67030 Blast site storage. Explosive materials at blast sites must be attended.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-67030, filed 1/23/02, effective 3/1/02.]

WAC 296-52-67035 Day box storage. A day box used for temporary storage of explosive materials at a job site during working hours at a job site must be:

(1) Constructed in accordance with WAC 296-52-70065, Explosives day box and WAC 296-52-70070, Detonator day box.

(2) Fire, weather, and theft resistant.

(3) Marked with the word "EXPLOSIVES."

(4) Safely separates detonators from other explosives.

(5) Attended to at all times against theft.

(6) On ground which slopes away from the day box for proper drainage.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-67035, filed 1/23/02, effective 3/1/02.]

WAC 296-52-67040 Attendants must be present. An authorized attendant must be:

(1) Physically present.

(2) Awake.

(3) Alert.

(4) Able to see the explosives at all times.

(5) Able to reach the explosives quickly, without interference.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-67040, filed 1/23/02, effective 3/1/02.]

WAC 296-52-67045 Handling explosives. Explosives must:

- Be handled by only competent and authorized personnel
- Be delivered and issued only to a purchaser or a purchaser's authorized agent
- Be delivered into authorized magazines, approved temporary storage, or handling areas
- Be carried to the blast site from the main storage magazines by the blaster or blaster's helper in special insulated containers, day boxes, or original U.S. DOT shipping containers
- Never be carried in pockets or clothing, including detonators.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-67045, filed 1/23/02, effective 3/1/02.]

WAC 296-52-67050 Trainee supervision. Trainees and inexperienced personnel must work under the direct supervision of a fully qualified licensed blaster who knows the sites:

- Blasting method
- Safety procedures
- Blasting signals.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-67050, filed 1/23/02, effective 3/1/02.]

WAC 296-52-67055 Storms. (1) **Dust storms.** Blasting operations must be completely stopped and all personnel removed from the blast area if a heavy dust storm approaches or is present because it could cause static lightning.

(2) **Thunderstorms.** Blasting operations must stop and all personnel be removed from the blast area if a thunderstorm approaches or is present.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-67055, filed 1/23/02, effective 3/1/02.]

WAC 296-52-67060 Extraneous electricity and radio frequency (RF) transmitters. Precautions must be taken to prevent unintended electric detonator discharge from extraneous electricity and radio frequency (RF) transmitters. The following are sources of common hazards for extraneous electricity and RF transmissions:

(1) **Extraneous electricity.** Common hazardous sources of extraneous electricity include:

- Adjacent power lines
- Dust storms
- Lightning storms

(2) **RF transmission sources.** Common hazardous sources of RF transmissions include:

- **Mobile transmitters**
 - Citizen band (CB)
 - Side band radio
 - VHF (FM) radio
 - UHF cellular telephones
 - Radar
- **Fixed location transmitters**
 - Base stations for CB

- Side band or FM radio communications
- UHF cellular telephone transmitters and service extension repeater systems
- AM and FM (commercial) radio broadcast transmitters
- TV broadcast transmitters and repeater system transmitters

- Surface scan and radio navigation beacons

• **Low flying aircraft** (in particular military aircraft) create the most common serious RF exposures. These highly unpredictable mobile transmitters are very powerful and transmit on a broad spectrum of frequencies, which include, but are not limited to:

- Radar
- Laser
- All common communications bands

Note: The two most dangerous examples are:

- Low flying automatic terrain following guidance systems
- Airplanes which are equipped to jam all common radar and communications frequencies for a distance of several miles around the airborne transmitters.

(3) **Transportation.** Transportation of explosives must meet these requirements:

• **Public highways.** The Washington utilities and transportation commission (UTC) and Washington state department of transportation (WSDOT) require compliance with ANSI D6.1-1988, Uniform Traffic Control Devices

• **Private roads.** You do not have to comply with ANSI on private roads under department jurisdiction if required warning signs are properly placed when electric detonators are present

(4) **Site survey.** The blaster in charge must conduct or assign a designated appointee to conduct an accurate survey of the entire blast area, to determine:

• The clearance points where roads or right of ways enter and exit the required clearance zone

• If the one thousand-foot clearance zone needs adjusting to maintain the permissible clearance zone at all times, if the blast area moves as the job progresses

(5) **Clearance zones.**

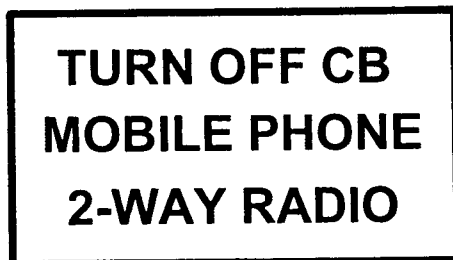
Required clearance zones for:	Number of feet
Construction operations	1000 feet
Demolition operations	1000 feet
General industry operations, not subject to construction requirements	350 feet

(6) RF-transmitter warning signs.

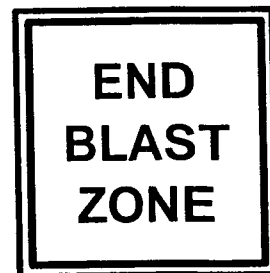
RF-TRANSMITTER WARNING SIGNS



W22-1
48" X 48"



42" X 36"



W22-3
42" X 36"

(a) RF-transmitter warning-sign specifications.

Signs must:

- Be a specific size. See the signs above for sign dimensions
- Have a "construction" orange background
- Have black letters and borders
- Use all upper case letters that are at least the size shown above

Note: Larger signs may be required where the highway speed limit is more than fifty-five miles per hour.

(b) Posting warning signs must:

- Be adequately placed to warn:
 - All transmitter users against the use of:
 - Radio frequency transmitters
 - CBs
 - Mobile phones
 - Two-way radios
- All users of routes into the electric detonator clearance zone
 - Be prominently displayed when an electric detonator initiation system is being used during blasting operations and when the electric detonators have been removed from the original U.S. DOT approved shipping container
 - Be posted at the beginning of the blast zone minimum clearance point saying:

"TURN OFF CB, MOBILE PHONE, 2-WAY RADIO"

(c) Blast zone signs.

- The "BLAST ZONE 1,000 FEET" sign must be posted one thousand feet before the "TURN OFF CB, MOBILE PHONE, 2-WAY RADIO" sign

• The one thousand-foot separation distance limit may be reduced (not less than three hundred feet) in very slow vehicle travel zones (such as off-road construction right of ways, rock pits, or quarries)

(d) An "END BLAST ZONE" sign must be posted outside the blasting zone clearance limits.

(e) Signs must be covered or removed when blasting operations are not being conducted.

(7) **Voltage identification.** Electrical transmission and distribution line voltage must be accurately identified.

(8) **System clearance identification.** The required clearance for each system must be accurately identified.

(9) **RF transmitters.** Mobile RF transmitters must be deenergized or disconnected when they are less than one hundred feet from electric detonators that are not fully contained in their original U.S. DOT shipping containers.

Note: Fixed location RF transmitters represent a higher level of hazard to both storage and blasting operations involving electric detonators because the transmitters are more powerful and transmit dangerous levels of RF exposure over much greater distances.

(10) Prevention of radio frequency hazards:

(a) Electric detonators in storage or at blasting operations must meet the appropriate distance table requirements published in the IME Publication Number 20, 1988, "*Safety Guide for the Prevention of Radio Frequency Hazards in the Use of Commercial Electric Detonators (Blasting Caps)*."

(b) If it is necessary to conduct blasting operations inside the required separation distances specified in the IME Pamphlet Number 20, 1988:

- Storage and use of electric detonators is prohibited on the site
- Only detonating cord, safety fuse, shock tube, or other approved nonelectric systems can be used.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-67060, filed 1/23/02, effective 3/1/02.]

WAC 296-52-67065 Vibration and damage control.

(1) Ground vibration - maximum limits.

Either Table 8-A or Table 8-B can be used to determine the maximum limits of ground vibration for any dwelling, public building, school church, commercial site, cofferdams, piers, underwater structures, or institutional building nearby the blasting site. The methods used for monitoring vibration and calculating frequency must be included in the blast plan.

Table 8-A PEAK PARTICLE VELOCITY LIMITS	
Distance from blasting site	Maximum allowable peak particle velocity ¹
0 to 300 ft (91.4 m)	1.25 in/sec (31.75 mm/sec)
301 to 5000 ft (91.5 m to 1524 m)	1.00 in/sec (25.4 mm/sec)
5001 ft (1525 m) and beyond	0.75 in/sec (19 mm/sec)

¹Peak particle velocity must be measured in three mutually perpendicular directions and the maximum allowable limits must apply to each of these measurements.

(a) Frequency versus particle velocity graphics. In lieu of Table 8-A, a blasting operation has the option to use the graphs shown in Figure 8a or 8b to limit peak particle velocity based upon the frequency of the blast vibration. If either of the graphs in Figure 8a or 8b is used to limit vibration levels, the methods used for monitoring vibration and calculating frequency must be included in the blast plan.

Figure 8a
Alternative Blasting Level Criteria

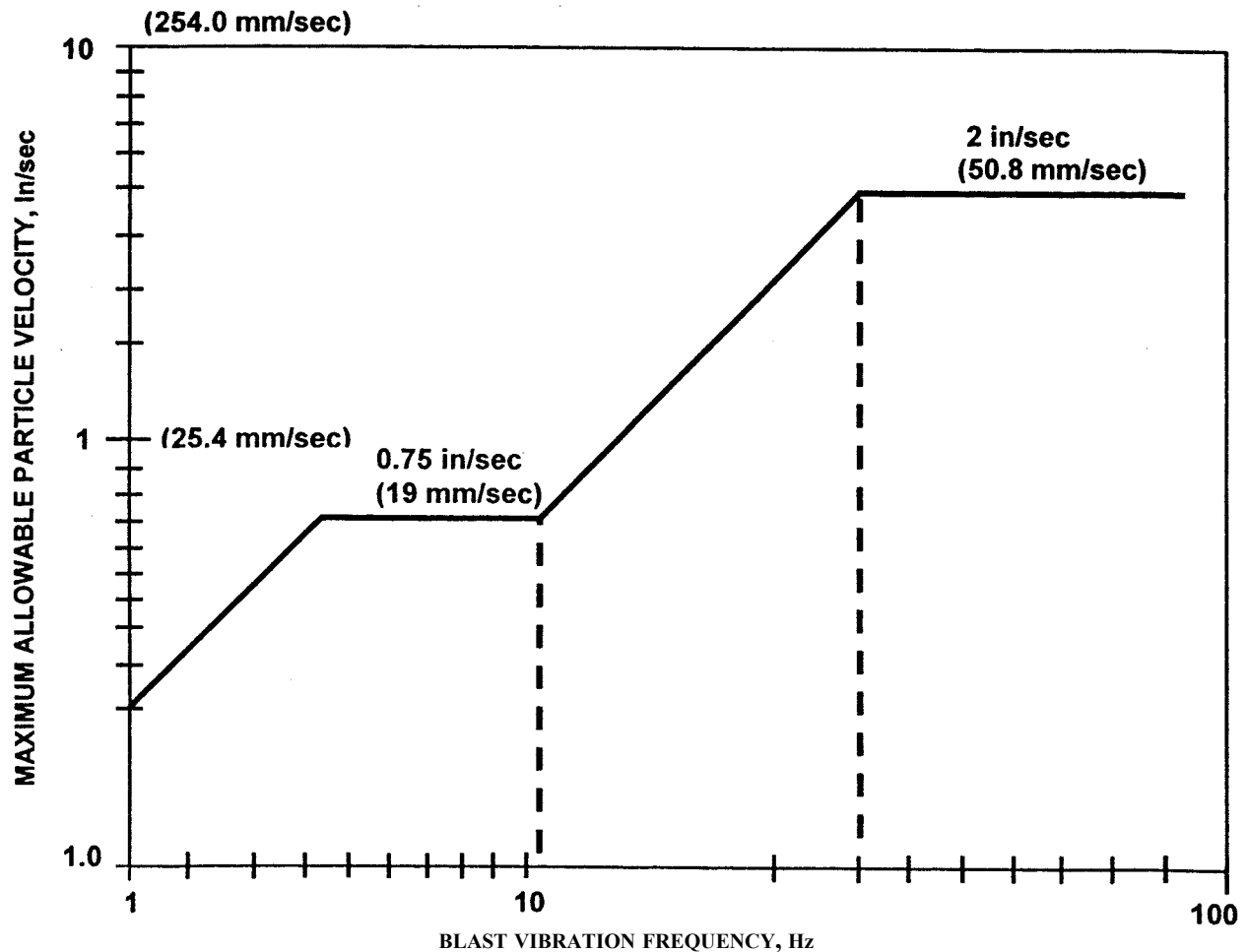
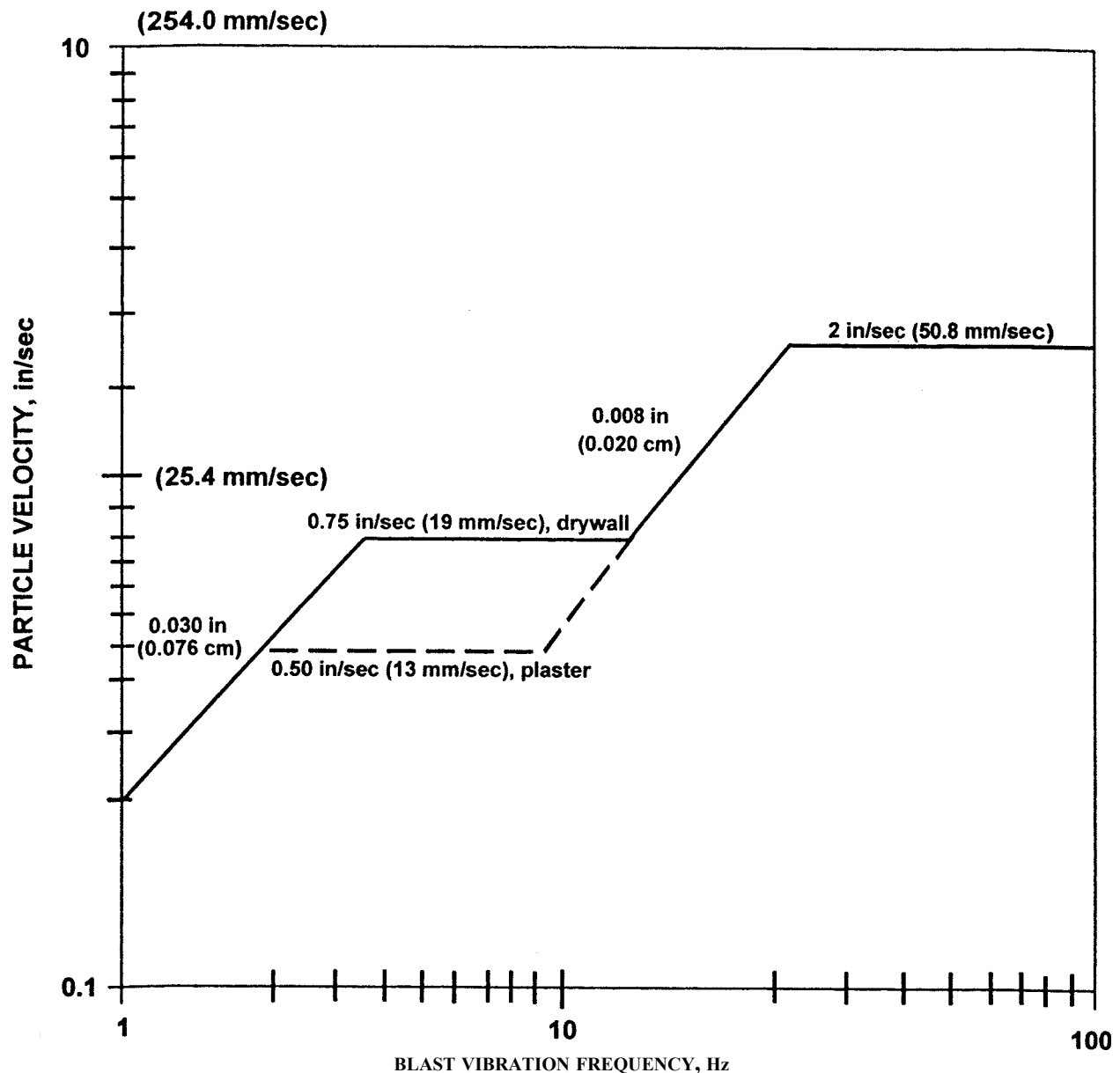


Figure 8b
Alternative Blasting Level Criteria



(b) Scaled distance equations. Unless a blasting operation uses a seismograph to monitor a blast to assure compliance with Table 8-A or Figures 9a or 8b, the operation must comply with the scaled distance equations shown in Table 8-B.

Table 8-B
SCALED-DISTANCE EQUATIONS

Distance from Blasting Site	Scaled Distance Equation
0 to 300 ft (91.4 m)	$W \text{ (lbs)} = (d \text{ (ft)}/50)^2$ or $W \text{ (kg)} = (d \text{ (m)}/22.6)^2$
301 to 5000 ft (92 m to 1524 m)	$W \text{ (lbs)} = (d \text{ (ft)}/55)^2$ or $W \text{ (kg)} = (d \text{ (m)}/24.9)^2$
5001 ft (1524 m) and beyond	$W \text{ (lbs)} = (d \text{ (ft)}/65)$ or $W \text{ (kg)} = (d \text{ (m)}/29.4)^2$

Key:

W = The maximum weight of explosives in pounds (or kilograms) that can be detonated per delay interval of 8 milliseconds or greater.

d = The distance in feet (or meters) from the blast to the nearest dwelling, public building, school, church, commercial, or institutional building not owned, leased, or contracted by the blasting operation, or on property where the owner has not given a written waiver to the blasting operation.

Note: To convert English Units of scaled distances (ft/lb²) to metric units (m/kg²) divide by a factor of 2.21.

(2) **Air blast - Maximum limits.** Air blast must not exceed the maximum limits listed in Table 8-C. Use Table 8-C to determine maximum air blast limits at any dwelling, public building, school, church, commercial, or institutional building not owned, leased, contracted, or on the property where the owner has not provided a written waiver to the blasting operation.

Table 8-C

AIR-BLAST LIMITS

Lower Frequency of Measuring System in Hz (+ or - 3 decibels)	Measurement Level in Decibels
0.1 Hz or Lower	Flat Response 134 Peak
2 Hz or Lower	Flat Response 133 Peak
6 Hz or Lower	Flat Response 129 Peak
C-Weighted	Slow Response 105 Peak dBC

(3) Flyrock outside the blast area:

(a) **Uncontrolled flyrock.** Flyrock traveling in the air or along the ground cannot be cast from the blast area in an uncontrolled manner, which could result in personal injury or property damage. Uncontrolled flyrock (airborne or along the ground), that could cause personal injury or property damage, is not allowed from the blast area.

(b) **Contract or written waiver.** Flyrock cannot be propelled from the blast area onto property where the blasting operation has not contracted or received a written waiver from the owner.

(c) **Use of protective material.** When blasting in congested areas or close to a structure, railway, highway, or any other installation that could be damaged, the blast must be covered, before firing, with a mat or other protective material that will prevent fragments from being thrown.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060. 03-06-073, § 296-52-67065, filed 3/4/03, effective 8/1/03. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-67065, filed 1/23/02, effective 3/1/02.]

WAC 296-52-67070 Storage at blast sites. (1) Packaging materials. Empty boxes, paper, and fiber packing materials that have previously contained explosive materials must be:

- Disposed of in a safe manner

OR

- Reused in accordance with U.S. DOT hazardous materials regulations

(2) **Opening fiberboard cases.** Nonsparking metallic slitters may be used for opening fiberboard cases.

(3) **Deteriorating explosives.** Deteriorating explosives must be carefully set aside and disposed of according to the manufacturer's specifications.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-67070, filed 1/23/02, effective 3/1/02.]

WAC 296-52-67075 Blast area precautions. (1) Warning signs. Blast area warning signs must:

- (a) Be set up at all entrances to the blast area.

- (b) Have lettering a minimum of four inches high and on a contrasting background.

(2) **Loaded stumps.** All loaded stumps must be marked for identification.

(3) **Lock out.** Cables close to the blast area must be deenergized and locked out by the blaster in charge.

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[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-67075, filed 1/23/02, effective 3/1/02.]

WAC 296-52-67080 Drilling. (1) Unexploded charges.

- (a) Drilling cannot begin:

- (i) When there is danger of drilling into a charged or mis-fired hole.

- (ii) Until all remaining butts of old holes are examined for unexploded charges.

- (b) Unexploded charges must be refired before work proceeds.

(2) **Distance limits during drilling.** Blasters cannot load or use explosives closer than:

- (a) The length of the steel being used for drilling

OR

- (b) Within fifty feet of drilling operations, whichever is greater.

(3) **Prior to loading drill holes.**

- (a) Holes must be checked prior to loading to determine depth and conditions.

- (b) Drill holes that have contained explosives or blasting agents cannot be deepened.

- (c) Drill holes must be large enough to allow unobstructed or free insertion of explosive cartridges.

(4) **Enlarging or springing a drill hole.**

- (a) A drill hole cannot be sprung when it is near a loaded hole.

- (b) A minimum of two hours must pass after a charge has exploded in a drill hole that was enlarged or "sprung," before loading another charge of explosives into the hole.

Note: You do not have to wait two hours if the sprung hole is thoroughly wet down with water before it is loaded.

- (c) Flashlight batteries cannot be used as a power source for springing holes.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. 05-08-110, § 296-52-67080, filed 4/5/05, effective 6/1/05. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-67080, filed 1/23/02, effective 3/1/02.]

WAC 296-52-67085 Loading blast holes. (1) Power lines and portable electric cables. Power lines and portable electric cables must be kept at a safe distance from explosives or blasting agents being loaded into drill holes.

(2) **Equipment, machinery, and tools.**

- Any machine or tool not being used to load holes must be removed from the immediate loading area

- Equipment cannot be operated within fifty feet of loaded holes except when:

- It is needed to add burden or mats

- Tracking drills out of the loading area

- (3) **Holes that may be loaded.** Only holes that will be fired in the next blasting round may be loaded.

(4) **Tamping.**

- (a) A primer must never be tamped.

- (b) Tamping must be done with wood rods or approved plastic tamping poles that do not have exposed metal parts.

- (c) Nonsparking metal connectors may be used for jointed poles.

- (d) Violent tamping must be avoided.

[Title 296 WAC—p. 1109]

(5) **Pneumatic loading.** When loading blasting agents pneumatically over primed boosters:

- A semiconductive delivery hose must be used
- Equipment must be bonded and grounded

(6) **Stemming.** All blast holes in open work must be stemmed to:

- (a) The collar.

OR

- (b) A point, which will confine the charge.

(7) **Attendance of holes.** Loaded holes must be attended or protected.

(8) **Unused explosives.** After loading, all remaining explosives and detonators must be immediately returned to an authorized magazine or day box.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-67085, filed 1/23/02, effective 3/1/02.]

WAC 296-52-67090 Initiation systems. (1) General initiation rules.

(a) Training and supervision.

(i) The blaster in charge must provide adequate on-the-job training and supervision in the safe use of initiation systems.

(ii) All members of the blasting crew must be instructed, by the blaster in charge, in the safe use of the initiation system to be used and its system components.

(b) **Manufacturer recommendations.** All initiation systems and system components must be used in accordance with manufacturer recommendations and instructions.

(c) Vehicle use precautions.

(i) Explosives bulk trucks or other vehicles operated on a blast site cannot tread on:

- (A) Tubing
- (B) Connectors

OR

- (C) Any surface delay component

(ii) If a vehicle must pass over loaded blast holes. Precautions must be made to consolidate tubing, connectors, or any surface delay component at the collar of the hole to prevent vehicle contact.

(d) **Connecting the firing line.** Firing lines cannot be connected to the blast initiating device until all personnel are:

- (i) Accounted for
- (ii) Removed from the blast danger area

OR

Are in a blast shelter or other location that provides equivalent protection

(e) **Visual inspection.** The blaster in charge must visually inspect the initiation system to make sure it is assembled according to the manufacturer's recommendations, before firing the shot.

(f) Explosives not used:

(i) Unused detonators or short capped fuses cannot be placed in holes that may be used for blasting.

(ii) Unused detonators must be removed from the work area and disposed of or stored in a licensed magazine.

(iii) Loose cartridges of explosives, detonators, primers, and capped fuses that are not used by the end of the work shift must be returned to and locked in their magazines.

(2) Nonelectric initiation systems.

(a) **Shock tube lines.** When a nonelectric shock tube initiation system is used:

(i) Spools of shock tube lines cannot be spooled from trucks or equipment.

(ii) The shock tube line must:

(A) Be free of knots and tight kinks

(B) Be free of cuts or abrasions that could expose the core to moisture

(C) Not be stretched

(D) Be neat and orderly

(iii) Tie ins must be kept neat and clean.

(iv) Unused lead line must be sealed to prevent moisture and dirt from entering the tube.

(v) Care must be taken to avoid hitting the tube with a shovel when the shock tube is being covered.

(vi) The end of the detonator must be pointed toward the front of the shot to minimize the chance of shrapnel flying to the rear of the blast where the shock tube will be lit.

(b) **Surface connector blocks.** Nonelectrical tubes must:

(i) Be secured properly in surface connector blocks.

(ii) Never exceed the rated capacity of tubes in surface connector blocks.

(c) **Splicing line.** A knot must be tied in the tubes to take the strain off of the splice.

(d) **Detonator cord.** If a detonator cord is used for surface tie in:

(i) All lines must be kept taut.

(ii) Connections to nonelectrical units must be at ninety degree angles.

(e) Equipment and personnel.

(i) Equipment cannot roll over shock tubes.

(ii) All unnecessary equipment and personnel must be removed from the blast area during loading.

(3) Electric initiating systems.

(a) **Survey of extraneous currents.** A survey to evaluate extraneous currents must be conducted:

(i) By the blaster in charge before adopting any system of electrical firing.

(ii) To eliminate all currents before holes are loaded.

(b) **Detonator compatibility, style, function, and manufacture.** In any single blast using electric detonators, all detonators must be:

(i) Compatible with each other.

(ii) Of the same style or function.

(iii) From the same manufacturer.

(c) Wire capacity and gauge.

(i) Connecting wires and lead wires must:

(A) Be insulated single solid wires with sufficient current carrying capacity

(B) Not be less than twenty gauge (American wire gauge) solid core insulated wire

(ii) Firing line or lead wires must:

(A) Be made of solid single wires with sufficient current carrying capacity

(B) Not be less than fourteen gauge (American wire gauge) solid core insulated wire

Note: Bus wires, depends on the size of the blast, fourteen gauge (American wire gauge) copper is recommended.

(d) Lead wires.

(i) **Shunting.** You must shunt the ends of lead wires that will be connected to a firing device by twisting them together before they are connected to leg or connecting wires.

(ii) **Control.** The blaster in charge must keep control of shunted lead wires until loading is completed and the leg wires are attached.

(iii) **Attachment.** Lead wires must be attached by the blaster in charge when it is time to fire the shot.

(e) **Detonator leg wires.** Electric detonator leg wires must:

(i) Be kept shunted (short circuited) until they are connected into the circuit for firing.

(ii) Not be separated (except for testing) until all holes are loaded and the loader is ready to connect the leg wires to the connecting or lead wires.

(f) Circuits.

(i) Blasting circuits or power circuits must be used in electric blasting and according to the electric detonator manufacturer's recommendations.

(ii) Care must be taken to make sure an adequate quantity of delivered current is available according to the manufacturer's recommendations, when firing a circuit of electric detonators.

(iii) A power circuit used for firing electric detonators cannot be grounded.

(iv) The firing switch must be designed so the firing lines to the detonator circuit automatically short circuit when the switch is in the "off" position.

(v) The firing switch must be locked in the "open" or "off" position at all times, except when firing from a power circuit.

(g) **Firing line insulation.** The insulation on all firing lines must be adequate and in good condition when firing electrically.

(h) Testing.

(i) The firing line must be checked at the terminals with an approved testing device before being connected to the blasting machine or other power sources.

(ii) The circuit, including all detonators, must be tested with an approved testing device before being connected to the firing line.

(i) **Switch keys.** The blaster in charge is the only person who is allowed to have firing switch keys in their possession.

(j) **Blasting machines.** A nonelectric system must be used if these requirements cannot be satisfied:

(i) Blasting machines must be in good condition.

(ii) The efficiency of the blasting machine must be tested periodically to make sure it delivers power at its rated capacity.

(iii) Responsible person.

- The blaster in charge must be in charge of blasting machines

- The blaster in charge must connect the lead wires to the blasting machine and must fire the shot

(iv) Connections.

- When firing with blasting machines, connections must be made according to the manufacturer of the electric detonator's recommendations

- All connections must be made from the drill hole back to the source of the firing current

- Lead wires must remain shunted and not connected to the blasting machine or other source of current until the charge is ready to fire

- The number of electric detonators connected to a blasting machine cannot exceed the blasting machine's rated capacity

(v) **Series circuit.** In primary blasting, a series circuit cannot contain more detonators than the manufacturer's recommended limits for electric detonators.

(vi) **Circuit testing.** A blaster in charge must use blasting testers specifically designed to test circuits to charged holes.

(vii) **Blasting near power lines.** Whenever lead or blasting wires could be thrown over live overhead powerlines, communication lines, utility services, or other services or structures by the force of an explosion, care must be taken to make sure:

(A) The total length of wires are short enough so they will not hit the lines

(B) The wires are securely anchored to the ground

(C) The owners or operators of the utilities in the blast area are notified

(viii) **Disconnecting lead wires.** After firing an electric blast from a blasting machine, lead wires must be immediately disconnected from the machine and short-circuited.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. 06-19-074, § 296-52-67090, filed 9/19/06, effective 12/1/06. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-67090, filed 1/23/02, effective 3/1/02.]

WAC 296-52-67095 Use of safety fuse with detonators. (1) Restricted or prohibited use.

(a) Safety fuse and detonators, used for conventional blasting, must be in the following:

(i) When extraneous electricity or radio frequency transmissions make the use of electric detonators and wire systems dangerous.

(ii) When overhead electric transmission lines cannot be deenergized and there is danger that blasting wires may be thrown onto the overhead lines during a blast.

(iii) For avalanche control hand charges.

(iv) For specialized applications when detonators and fuses are more suitable than electric or other nonelectric initiation systems.

(b) **Mudcap charges.** A detonator and fuse cannot be used for firing mudcap charges, unless the charges are separated to prevent one charge from dislodging other charges in the blast.

(c) **Drop fuse method.** Dropping or pushing a primer or any explosive with a lighted fuse attached is prohibited.

(d) Damaged fuses.

(i) Deteriorated or damaged fuses cannot be used.

(ii) It is prohibited to hang fuses on nails or other objects, which causes sharp bends in the fuse.

(2) Fuse length. Fuses:

(a) Must be cut long enough to reach beyond the collar of the drill hole.

(b) Must be three feet or longer.

(3) Fuse burning rate.

(a) Safety fuse burning rates must be:

(i) Measured.

- (ii) Posted in conspicuous locations.
 - (iii) Brought to the attention of all workers.
 - (b) A fuse must burn between forty and fifty-five seconds per foot or it cannot be used.
 - (4) **Blaster safety.** When blasting with safety fuses, the length and burning rate of the fuse must allow sufficient time for the blaster to reach a place of safety.
 - (5) **Fuse capping.**
 - (a) **Capping location.** Fuses:
 - (i) Must not be capped in any magazine or near any possible source of ignition.
 - (ii) Must be capped in a place designated for this purpose.
 - (iii) Must be capped at least one hundred feet from any storage magazine.
 - (b) **Fuse ends.** Before capping a safety fuse, a short length must be cut from the end of the supply reel to guarantee a freshly cut end in each detonator.
 - (6) **Crimpers.**
 - (a) **Design.** The design of detonator crimpers used for attaching detonators to safety fuses must be approved.
 - (b) **Condition.** Crimpers must be in good repair.
 - (c) **Accessibility.** Crimpers must be accessible for use.
 - (7) **Waterproofing.** The joint between the detonator and fuse must be waterproofed with a compound for use in wet locations.
 - (8) **Primers.**
 - (a) **Site selection.** Primers must:
 - (i) Not be made in magazines or near possible sources of ignition.
 - (ii) Be made in a place designated for this purpose.
 - (iii) Be made a minimum of one hundred feet from any storage magazine.
 - (b) **Making primers.** When making primers:
 - (i) Make only enough for one day's use.
 - (ii) Only nonsparking skewers must be used for punching the hole in the cartridge to insert the capped fuse.
 - (iii) A detonator cannot be inserted in explosives without first making a hole in the cartridge of proper size or using a standard detonator crimper.
 - (c) **Storage.** Primers must:
 - (i) Be stored in a box type magazine.
 - (ii) Not be stored in magazines where other explosives are stored.
 - (9) **Hand lighting.**
 - (a) No one may light more than twelve fuses at a time when hand lighting devices are used.
 - (b) Two fuses may be considered one fuse when two or more grouped safety fuses are lit as a single fuse by:
 - (i) An igniter cord
- OR**
- (ii) Other similar fuse lighting devices.
 - (c) When multiple detonators and blasting is done by hand lighting methods, at least two people must be present.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-67095, filed 1/23/02, effective 3/1/02.]

WAC 296-52-67100 Use of detonating cord. (1) **Cord selection.** Care must be taken to select a detonating cord consistent with the:

- Type and physical condition of the drill hole

- Stemming
- Type of explosives used

(2) **Handling.** A detonating cord must be handled and used with:

- The same respect and care given to other explosives
- Care to avoid damaging or severing the cord during and after loading and hooking up

(3) **Calculating quantity and distance.**

- For quantity and distance purposes, a detonating fuse (up to sixty grains per foot) should be calculated as equivalent to nine pounds of high explosives per one thousand feet
- Heavier cord loads should be rated proportionally

(4) **Trunk lines.**

• Detonators for firing the trunk line cannot be brought to the loading area or attached to the detonating cord until everything else is ready for the blast

- All detonating cord trunk lines and branch lines must be free of loops, sharp kinks, or angles that direct the cord back toward the oncoming line of detonation

- Trunk lines in multiple row blasts must make one or more complete loops, with cross ties between loops at intervals less than two hundred feet

(5) **Connections.**

(a) **Detonating cord.** All detonating cords must be:

- (i) Competent and positive in accordance with the manufacturer's recommended specifications.
- (ii) Kept at right angles to the trunk lines.
- (iii) Inspected before firing the blast.

(b) **Knots.**

(i) Knot or other cord-to-cord connections must be made with a detonating cord where the explosive core is dry.

(ii) All detonator cord knots must be tight.

(c) **Connecting detonators.**

(i) A detonator or electric detonator must be taped or securely attached along the side or end of the detonating cord. The detonator end containing the explosive charge must be pointed in the direction of the detonation.

(ii) Manufacturer's recommendations must be followed when short interval delay electric detonators are used with a detonating cord.

(iii) Manufacturer's recommendations must be followed when detonating cord millisecond delay connectors are used with a detonating cord.

(iv) The line of detonating cord extending from a drill hole or a charge must be cut from the supply spool before loading the remainder of the drill hole or placing additional charges.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-67100, filed 1/23/02, effective 3/1/02.]

WAC 296-52-67105 Firing the blast. (1) A code of blasting signals, equivalent to Table T-1, must be posted in one or more conspicuous places at the blast area and all employees must familiarize themselves with the code of blasting signals and use it. Warning signs must be placed at suitable locations, see WAC 296-52-67075(1), Warning signs.

(2) All charges must be covered with blasting mats or other protective material before firing, where blasting may cause injury or damage by flying rock or debris.

(3) Before a blast is fired, the blaster in charge must give a loud warning signal after they have verified all surplus explosives are in a safe place and all employees, vehicles, and equipment are at a safe distance or under sufficient cover.

(4) Flaggers must be safely stationed on highways that pass through the danger zone, to stop traffic during blasting operations on highways that pass.

(5) The blaster in charge must set the time of the blast and conduct all blasting operations so no shots will be fired without their approval.

TABLE T-1	
WARNING SIGNAL	A 1 minute series of long blasts 5 minutes prior to blast signal.
BLAST SIGNAL	A series of short blasts 1 minute prior to the shot.
ALL CLEAR SIGNAL	A prolonged blast following the inspection of the blast.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-67105, filed 1/23/02, effective 3/1/02.]

WAC 296-52-67110 Precautions after firing. (1) **Immediately after firing.** Immediately after firing, the blaster in charge must:

(a) Disconnect the firing line from the blasting machine.
 (b) Lock the power switches in the "open" or "off" position.

(c) Carefully trace all wires and search for unexploded charges.

(2) **Post blast inspection.** The blaster in charge must perform an inspection of the area and surrounding rubble to determine if all charges have been exploded before employees are allowed to return to the operation.

(3) **Misfires.**

(a) **Misfire found.** Misfires must be:

(i) Immediately reported to their supervisor.

(ii) Recorded on the blast record.

(iii) Reported to the department within twenty-four hours if not cleared.

(b) **Responsible person.** A blaster in charge must be present and direct the handling of all misfires.

(c) **Termination of work.**

(i) All work must stop, except activities needed to remove the misfire hazard.

(ii) Drilling, digging, or picking is not permitted until:

(A) All misfired holes have been detonated

OR

(B) The blaster in charge determines work can proceed

(d) **Evacuation precautions.** The following evacuation precautions must be taken in the event of a misfire:

(i) If a misfire is found, the blaster in charge must make sure safeguards are in place to keep all employees or other personnel from the danger zone, except those needed to remove the misfire hazard.

(ii) Workers cannot return to misfired holes for at least:

(A) Thirty minutes when electric blasting caps are used

(B) One hour when detonators and fuses are used

(e) **Charged or misfired holes.**

(i) Attempts cannot be made to remove explosives from any charged or misfired hole.

(ii) A new primer must be connected and the hole refired.

(f) **Refiring hazard.** If refiring a misfired hole presents a hazard, explosives may be:

(i) Removed by washing out the explosives with water

OR

(ii) Removed with air, if the misfire is under water.

(4) **Burning holes.**

(a) Everyone in the endangered area must move to a safe location when explosives are suspected of burning in a hole.

(b) No one, under any circumstances, may return to the hole:

(i) Until the danger has passed

OR

(ii) For at least one hour after the hole has been found.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-67110, filed 1/23/02, effective 3/1/02.]

WAC 296-52-67115 Excavation work in pressurized air locks. (1) **Receiving, handling, storing, and transportation.**

(a) The blaster in charge or powder person is responsible for the receipt, unloading, storage, and on-site transportation of explosives and detonators.

(b) Explosives in transit cannot be left unattended.

(c) Detonators and explosives for each round must be taken directly from the magazines to the blasting zone and immediately loaded.

(2) **Wet holes.** Explosives appropriate for use in wet holes must be:

(a) Water resistant

AND

(b) Fume Class 1 or other approved explosives.

(3) **Bonding.** All metal pipes, rails, air locks, and steel tunnel linings must be:

(a) Electrically bonded together and grounded at or near the portal or shaft.

(b) Cross bonded together at not less than one thousand-foot intervals throughout the length of the tunnel.

(4) **Air locks.**

(a) No one is allowed to enter the air lock when detonators or explosives are brought in, except:

(i) The blaster in charge.

(ii) The powder person.

(iii) The lock tender.

(iv) Employees needed to carry explosive materials.

(b) Primers, detonators, and explosives must be taken separately into pressure working locks.

(c) Material, supplies, or equipment cannot be brought into air locks with explosive materials.

(d) Detonators and explosives not used after loading a round must be removed from the working chamber before connecting the connecting wires.

(5) **Grounding.** Each air supply pipe must be grounded at its delivery end.

(6) **Mixed face.**

(a) Light charges and light burdens must be used for each hole when tunnel excavation in rock face is approaching or is in mixed face.

(b) Advance drilling must be done when tunnel excavation in rock face approaches mixed face to determine the:

(i) General nature and extent of rock cover

AND

- (ii) Distance to soft ground as excavation advances.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-67115, filed 1/23/02, effective 3/1/02.]

BLASTING AGENTS

WAC 296-52-67125 Transportation, storage, and use. Unless otherwise specified in this part, blasting agents must be transported, stored, and used in the same manner as explosives.

Note: Water-gels are covered in WAC 296-52-67150, Water-gel and emulsion explosives and blasting agents, through WAC 296-52-67170, Bulk delivery/mixing vehicles.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-67125, filed 1/23/02, effective 3/1/02.]

WAC 296-52-67130 Fixed location mixing. (1) Building location. Buildings or other facilities used for manufacturing blasting agents must meet the separation distance requirements of Table H-21 for inhabited buildings, passenger railroads, and public highways.

(2) **Building construction.** Buildings used for mixing blasting agents must be constructed of noncombustible material or sheet metal on wood studs and be well ventilated.

(3) **Determining distance.** When determining the distances separating highways, railroads, and inhabited buildings from potential explosions (Table H-20), the sum of all masses that may propagate (i.e., lie at distances less than specified in Table H-22) from either individual or combined donor masses are included in the sum. However, when the ammonium nitrate is included, only fifty percent of its weight must be used because of its reduced blast effects.

(4) **Heat sources.**

(a) **Internal heating units.** Properly designed and located heating units that do not depend on combustion processes may be used in the building.

(b) **External heating units.** All direct sources of heat must be located outside the mixing building.

(5) **Mixing plant floors** must be made of nonabsorbent materials such as concrete.

(6) **Electrical equipment.**

(a) Electrical switches, controls, motors, and lights located in the mixing room must:

- (i) Comply with the requirements of WAC 296-800-280.
- (ii) Be located outside the mixing room.

(b) The frame of the mixer and all other equipment must be:

- (i) Electrically bonded.
- (ii) Provided with a continuous path to ground.

(7) **Internal combustion engines.**

(a) **Location.** All internal combustion engines used for electric power generation must be:

- (i) Located outside the mixing plant building.

OR

- (ii) Properly ventilated and isolated by a firewall.

(b) **Exhaust systems.** Engine exhaust systems must be positioned so spark emission does not become a hazard to any material in or adjacent to the plant.

(8) **Mixing equipment.** Equipment used for mixing blasting agents must comply with the following:

- (a) **Design.** The design of the mixer must:

- Minimize the possibility of frictional heating, compaction, and confinement

- Have the bearings and drive assemblies mounted outside the mixer and protected against the accumulation of dust

- Have the surfaces accessible for cleaning

(b) **Construction.** Mixing and packaging equipment must be constructed of materials compatible with the fuel ammonium nitrate composition.

(c) **Fire precautions.** The following fire precautions must be followed:

- (i) **Mixer fuel oil flow.** In case of fire:

- (A) Appropriate means to prevent the flow of fuel oil to the mixer must be provided

- (B) An automatic spring-loaded shutoff valve with fusible link must be installed in gravity flow systems

(ii) **Flame/spark producing devices.** Smoking, matches, open flames, spark-producing devices, and firearms (except firearms carried by law enforcement bomb squad members or qualified guards), are not allowed inside or within fifty feet of any facility used for mixing blasting agents.

(9) **Blasting agent compositions.** The following are requirements for determining blasting agent compositions:

(a) **Determining sensitivity.** The sensitivity of the blasting agent must be determined by means of a Number 8 test detonator at regular intervals and after every change in formulation.

(b) **Handling precautions.** Precautions must be taken when handling:

- Small particle oxidizers, such as crushed ammonium nitrate prills or fines, may be more sensitive than coarser products and must be handled with greater care

- Solid fuels must be used in a manner to minimize dust explosion hazards

- Metal powders, such as aluminum, must be:

- Kept dry

OR

- Stored in moisture resistant or weather tight containers or bins

(c) **Use restrictions.** The following cannot be used:

- (i) Crude and crankcase oil

- (ii) Hydrocarbon liquid fuel with a flash point lower than the 125°F minimum for Number 2 diesel fuel oil

OR

- (iii) Peroxides and chlorates.

(10) **Fuel oil storage.**

(a) **Facilities.** Fuel oil storage facilities must be:

- (i) Independent structures

OR

- (ii) Located at a site away from the manufacturing building.

(b) **Surrounding area.** In order to prevent oil from draining toward a manufacturing building in the event of a tank rupture, the surrounding grounds must slope away from the building.

(11) **Safety precautions.** Safety precautions at mixing plants must include these requirements:

(a) **Floor construction.** Floors must be constructed to eliminate floor drains and piping where molten materials could flow and be confined, in case of fire.

(b) **Mixing/packaging room.** The floors and equipment of the mixing and packaging room must be cleaned regularly and thoroughly to prevent accumulation of oxidizers, fuels, and other sanitizers.

(c) **Housekeeping.** The following housekeeping requirements must be followed:

(i) **Mixing plant.** The mixing and packaging plant must:

(A) Be cleaned regularly and thoroughly to prevent excessive accumulation of dust

(B) Safely dispose of empty ammonium nitrate bags daily

(ii) **Surrounding area.** The land surrounding the mixing plant must be kept clear of brush, dried grass, leaves, and other materials for a minimum of twenty-five feet.

(d) **Welding.**

(i) Welding or open flames are not permitted in or around the mixing or storage area of the plant unless:

(A) The equipment or area has been completely washed

AND

(B) All oxidizer material has been removed

(ii) Before welding or repairing hollow shafts:

(A) Oxidizer materials must be removed from the inside and outside of the shaft

AND

(B) The shaft must be vented with a minimum 1/2-inch diameter opening

(e) **Explosives.** Explosives are not permitted inside or within fifty feet of any facility used for mixing blasting agents.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-67130, filed 1/23/02, effective 3/1/02.]

WAC 296-52-67135 Bulk delivery/mixing vehicles.

Note: This section applies to both off-highway operations and public highway transportation.

(1) **Vehicles.** These vehicle requirements must be followed:

(a) **Strength.** A bulk delivery vehicle must be strong enough to carry a load without difficulty.

(b) **Mechanical condition.** A bulk delivery vehicle must be in good mechanical condition.

(c) **Body.** A bulk vehicle body for delivering and mixing blasting agents must:

(i) Be constructed of noncombustible materials.

(ii) Have closed bodies if they are used to transport bulk premixed blasting agents.

(d) **Mixing system parts.**

(i) All moving parts of the mixing system must be designed to prevent heat buildup.

(ii) Shafts or axles which contact the product must have outboard bearings with a minimum of one-inch clearance between the bearings and the outside of the product container. Special attention must be given to the clearances on all moving parts.

(e) **Welding.**

(i) Welding or open flames are not permitted in or around the mixing or storage area of the plant unless the equipment or area has been completely washed and all oxidizer material removed.

(ii) Before welding or repairing hollow shafts:

(A) All oxidizer material must be removed from the inside and outside of the shaft

AND

(B) The shaft must be vented with a minimum 1/2-inch diameter opening

(2) **Vehicle operation.** Operation of bulk delivery and mixing vehicles must comply with WAC 296-52-680, Transportation of explosive material, U.S. DOT placard requirements, and these requirements:

(a) **Driver training.** The vehicle driver must be:

(i) Trained in the safe operation of the vehicle, mixing, conveying, and related equipment.

(ii) Familiar with the load being delivered and general procedures for handling emergencies.

(b) **Cargo and containers.** Cargo and containers must:

(i) Haul either detonators or other explosives, but not both, it is permitted on bulk trucks provided a special wood or nonferrous-lined container is installed for explosives.

(ii) Be U.S. DOT specified shipping containers, according to 49 CFR Chapter 1.

(c) **Moving a vehicle in the blast area.** When moving a vehicle in the blast area:

(i) The driver must exercise caution to avoid driving the vehicle onto or dragging hoses over firing lines, cap wires, or explosive materials

AND

(ii) A second person must help guide the vehicle driver's movements.

(3) **Pneumatic loading.** Pneumatic loading from bulk delivery vehicles into blast holes primed with electric detonators or other static sensitive systems must comply with these requirements:

(a) A positive grounding device must be used to prevent accumulation of static electricity.

(b) A discharge hose must:

(i) Have a resistance range that will prevent conducting stray currents

OR

(ii) Be conductive, to bleed off static buildup.

(c) A qualified person must evaluate all static sensitive systems to determine if they will adequately dissipate static under potential field conditions.

(4) **Repairs.** Bulk delivery vehicle repair must comply with the requirements of this section.

(5) **Prohibited activities.** The following are prohibited:

(a) In-transit mixing of materials.

(b) While in or about bulk vehicles in the process of the mixing, transferring or down-the-hole loading of water-gels at or near the blasting site:

(i) Smoking

AND

(ii) Carrying flame producing devices including matches and firearms near bulk vehicles in the process of mixing, transferring, or down-the-hole loading of water-gels, at or near the blast site.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-67135, filed 1/23/02, effective 3/1/02.]

WAC 296-52-67140 Bulk storage bins. (1) **Construction.** A bin, including supports, must be:

(a) Waterproof.

(b) Constructed of compatible materials.

(c) Adequately supported and braced to withstand the combined force of all loads, including impact from product movement within the bin and accidental vehicle contact with the support legs.

(2) **Discharge gates.** A bin discharge gate must be designed to lock and close tightly to prevent leakage of the stored product and to lock.

(3) **Loading manways.** Bin loading manways or access hatches must be hinged or attached to the bin and designed to lock.

(4) **Electric conveyors.** An electrically driven conveyor used for loading or unloading bins must:

(a) Comply with the requirements of WAC 296-800-280, Basic electrical rules.

(b) Be designed to minimize corrosion damage.

(5) **Separation distances.** The following separation distances must be followed:

(a) **Blasting agent bins.** Bins containing blasting agents must meet the distance requirements of:

(i) Table H-20, in reference to separation from inhabited buildings, passenger railroads, and public highways

OR

(ii) Table H-22, in reference to separation from other explosives and blasting agent storage facilities.

(b) **Ammonium nitrate bins.** Bins containing ammonium nitrate must meet the distance requirements of Table H-22 in reference to separation of blasting agent and explosives storage.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-67140, filed 1/23/02, effective 3/1/02.]

WAC 296-52-67145 Transportation of blasting agents. (1) **Public highways.** The following must comply with the United States Department of Transportation's (U.S. DOT) requirements:

(a) Packaging, marking, and labeling containers of blasting agents that are being transported on public highways.

(b) Vehicles must follow placard regulations for transporting blasting agents on public highways.

(2) **Transporting blasting agents and explosives together.** Transportation of blasting agents with explosives in the same vehicle must meet the requirements of WAC 296-52-68060, Operation of vehicles transporting explosives.

(3) **Vehicles.** Vehicles transporting blasting agents must be in safe operating condition at all times.

(4) **Prohibited activities.** The following activities are prohibited:

(a) Carrying matches, firearms, acids, or other corrosive liquids, in the bed or body of any vehicle containing blasting agents.

(b) Allowing anyone who is smoking or under the influence of intoxicants, narcotics, or other dangerous drugs to ride, drive, load, or unload a vehicle, containing blasting agents.

(c) Transporting or carrying blasting agents on any public vehicle that has paying customers.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-67145, filed 1/23/02, effective 3/1/02.]

[Title 296 WAC—p. 1116]

WATER-GEL AND EMULSION EXPLOSIVES AND BLASTING AGENTS

GENERAL

Note: Water-gels and emulsions must be transported, stored, and used in the same way as explosives or blasting agents according to product classification unless stated otherwise in WAC 296-52-67150, Water-gel and emulsion explosives and blasting agents, through WAC 296-52-67170, Bulk delivery/mixing vehicles.

WAC 296-52-67160 Types and classifications. (1) **Contains explosive substance.** Water-gel and emulsion explosive materials that contain a substance classified as an explosive must be classified as an explosive.

(2) **Contains no explosive substance.** Water-gel and emulsion explosive materials that do not contain any substance classified as an explosive or as cap-sensitive (as defined under "blasting agent" in WAC 296-52-60130, Definitions) must be classified as an explosive.

Note: Water-gel formulas, which are tested and classified as a U.S. DOT Division 1.2 or 1.3 explosives do not require bullet resistant magazines.

(3) **Contains blasting agent substance.** Water-gel and emulsion explosive materials that do not contain any substance classified as an explosive and are not cap-sensitive (as defined under "blasting agent" in WAC 296-52-60130, Definitions) must be classified as blasting agents.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060. 03-06-073, § 296-52-67160, filed 3/4/03, effective 8/1/03. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-67160, filed 1/23/02, effective 3/1/02.]

WAC 296-52-67165 Fixed location mixing. (1) **Buildings.**

(a) **Locations.**

(i) **Separation distance tables.** Buildings or other facilities used for manufacturing emulsions and water-gels must meet the separation distance requirements of Table H-21 for:

(A) Inhabited buildings

(B) Passenger railroads

(C) Public highways

(ii) **Determining distance.** When determining the distances separating highways, railroads, and inhabited buildings from potential explosions (Table H-20), the sum of all masses that may propagate (i.e., lie at distances less than specified in Table H-22) from either individual or combined donor masses are included in the sum. However, when ammonium nitrate must be included, only fifty percent of its weight must be used because of its reduced blast effects.

(b) **Construction.** Buildings used for the manufacture of water-gels or emulsions must:

(i) Be constructed of noncombustible material or sheet metal on wood studs.

(ii) Have mixing plant floors made of nonabsorbent materials, such as concrete.

(iii) Be well ventilated.

(c) **Heat sources.** Heating units that are designed to be independent of the combustion process within the heating unit, may be used within processing buildings or compartments if they:

(i) Have temperature and safety controls

(2007 Ed.)

AND

(ii) Are located away from combustible materials and the finished product.

(d) Internal combustion engines.

(i) **Location.** All internal combustion engines used for electric power generation must be:

(A) Located outside the mixing plant building

OR

(B) Properly ventilated and isolated by a firewall

(ii) **Exhaust systems.** Engine exhaust systems must be located to prevent spark emissions from becoming a hazard to any materials, in or near the plant.

(e) Fuel oil storage.

(i) **Facilities.** Fuel oil storage facilities must be:

(A) Independent structures

(B) Located away from the manufacturing building

(ii) **Surrounding area.** In order to prevent oil from draining toward a manufacturing building in the event of a tank rupture, the surrounding grounds must slope away from the building.

(2) Storage of water-gel and emulsion ingredients.

(a) **Explosive ingredients.** Ingredients must be stored with compatible materials.

(b) Nitrate water solutions.

(i) Nitrate water solutions can be stored in tank cars, tank trucks, or fixed tanks without quantity or distance limitations.

(ii) Spills or leaks which may contaminate combustible materials must be cleaned up immediately.

(c) **Metal powders.** Metal powders, for example, aluminum, must be:

(i) Kept dry

AND

(ii) Stored in containers or bins that are moisture resistant or weather tight.

(d) **Solid fuels.** Solid fuels must be used in a way that minimizes dust explosion hazards.

(e) **Peroxides and chlorates.** Peroxides and chlorates cannot be used.

(3) **Mixing equipment.** Mixing equipment must comply with these requirements:

(a) **Design.** The design of processing equipment, including mixers, pumps, valves, conveying, and other related equipment, must:

(i) Be compatible with the relative sensitivity of other materials being handled.

(ii) Minimize the possibility of frictional heating, compaction, overloading, and confinement.

(iii) Prevent the introduction of foreign objects or materials.

(iv) Be designed to permit regular and periodic flushing, cleaning, dismantling, and inspection.

(b) **Handling procedures.** Equipment handling procedures must be designed to prevent the introduction of foreign objects or materials.

(c) Housekeeping.

(i) A cleaning and collection system for dangerous residues must be provided.

(ii) The mixing, loading, and ingredient transfer areas, where residues or spilled materials may accumulate, must be cleaned periodically.

(d) **Electrical equipment.** Electrical equipment must:

(i) Comply with the requirements of WAC 296-800-280, Basic electrical rules, including wiring, switches, controls, motors, and lights.

(ii) Have appropriate overload protection devices for all electric motors and generators.

(iii) Be electrically bonded with electrical generators, motors, proportioning devices, and all other electrical enclosures.

(iv) Have grounding conductors effectively bonded to:

(A) The service entrance ground connection

OR

(B) All equipment ground connections in a manner to provide a continuous path to ground

(4) **Mixing facility fire prevention.** Mixing facilities must comply with these fire prevention requirements:

(a) All direct sources of heat must only come from units located outside of the mixing building.

(b) A daily visual inspection must be made of the mixing, conveying, and electrical equipment to make sure they are in good operating condition.

(c) A systematic maintenance program must be conducted on a regular schedule.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. 05-08-110, § 296-52-67165, filed 4/5/05, effective 6/1/05. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-67165, filed 1/23/02, effective 3/1/02.]

WAC 296-52-67170 Bulk delivery/mixing vehicles.

(1) **Vehicle design.** The design of bulk delivery/mixing vehicles must comply with these requirements:

(a) **Public highways.** Vehicles used for the bulk transportation of emulsion, water-gels, or ingredients classified as dangerous commodities on public highways, must meet:

(i) U.S. DOT regulations, including placard requirements

AND

(ii) WAC 296-52-680, Transportation of explosive materials.

(b) **Power supply.** When electric power is supplied by a self-contained motor generator located on the vehicle, the generator must be separate from where the water-gel is discharged.

(c) **Parking brakes and chocks.** The following are requirements for parking breaks and chocks:

(i) A positive action parking brake, which will engage the wheel brakes on at least one axle, must be:

(A) Provided on vehicles equipped with air brakes

(B) Used during bulk delivery operations

(ii) Wheel chocks must supplement parking brakes whenever conditions require.

(2) **Vehicle operation.** Operation of bulk delivery and mixing vehicles must comply with these requirements:

(a) **Driver training.** The vehicle driver must be:

(i) Trained in the safe operation of the vehicle and mixing, conveying, and related equipment.

(ii) Familiar with the supplies being delivered and emergency procedures.

Pneumatic loading.

(b) **Cargo and containers.**

(i) Hauling either detonators or other explosives is permitted on bulk trucks provided a special wood or nonferrous lined container is installed for explosives.

(ii) Detonators and explosives must be in U.S. DOT specified shipping containers, according to 49 CFR Chapter 1.

(c) **Moving a vehicle in the blast area.** When moving a vehicle in the blasting area:

(i) The driver must exercise caution to avoid driving the vehicle onto or dragging hoses over firing lines, cap wires, or explosive materials.

AND

(ii) A second person must help guide the vehicle driver's movements.

(d) **Transfer locations.** The location chosen to transfer water-gel or other ingredients from a support vehicle to the drill hole loading vehicle, must be removed from the blast hole site if the drill holes are loaded or are in the process of being loaded.

(e) **Prohibited activities.** The following are prohibited:

(i) In-transit mixing of materials.

(ii) Smoking.

AND

Carrying flame-producing devices including matches and firearms near bulk vehicles in the process of mixing, transferring, or down-the-hole loading of water-gels, at or near the blast site.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-67170, filed 1/23/02, effective 3/1/02.]

UNDERWATER BLASTING OPERATIONS

WAC 296-52-67180 Separation distance from vessels and people. (1) A blast cannot be fired while any moving vessel is within one thousand five hundred feet of the blasting area.

(2) People on board vessels or crafts moored or anchored within one thousand five hundred feet must be notified before a blast is fired.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-67180, filed 1/23/02, effective 3/1/02.]

WAC 296-52-67185 Swimming and diving activities.

(1) A blast cannot be fired while any swimmers or divers are in the vicinity of the blasting area.

(2) If swimming and diving activities are in progress, a signaling arrangement must be agreed upon to communicate blast warnings prior to blasting.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-67185, filed 1/23/02, effective 3/1/02.]

WAC 296-52-67190 Initiation systems. Water resistant initiation systems must be used for underwater blasting.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-67190, filed 1/23/02, effective 3/1/02.]

WAC 296-52-67195 Loading tubes and casings. (1) When a tube is necessary, loading must be done through a nonsparking loading tube.

(2) Loading tubes and casings must be the same type of metal to prevent electric transient currents from occurring as a result of a galvanic reaction of the metals and water.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-67195, filed 1/23/02, effective 3/1/02.]

WAC 296-52-67200 Multiple charges. (1) When more than one charge is placed underwater, a float device must be attached to an element of each charge to make sure it will be released when the charge is fired.

(2) Blasting flags must be displayed.

(3) Misfires must be handled according to the requirements of WAC 296-52-67110(3), Misfires.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-67200, filed 1/23/02, effective 3/1/02.]

UNDERGROUND BLASTING OPERATIONS

WAC 296-52-67210 Storage. (1) **Permanent storage.** The following are requirements for permanent storage:

(a) Explosives or blasting agents cannot be permanently stored in an underground operation until at least two exit routes are developed.

(b) Permanent underground storage magazines:

(i) Must be a minimum of three hundred feet from any shaft, adit, or active underground working area.

(ii) Containing detonators must be a minimum of fifty feet away from any magazine containing other explosives or blasting agents.

(2) **Tunnels, shafts, or caissons.** Detonators and explosives cannot be stored or kept in tunnels, shafts, or caissons.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-67210, filed 1/23/02, effective 3/1/02.]

WAC 296-52-67215 Separation distance: Electrical storms. When an electrical storm is approaching, explosives at the adit, or the top of any shaft leading to where people are working, must be moved to a distance equal to the distance required for inhabited buildings (Table H-20), unless this would create a greater hazard.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-67215, filed 1/23/02, effective 3/1/02.]

WAC 296-52-67220 Proper fume class use. (1) **Fume Class 1.** Fume Class 1 explosives must be used for underground operations, as specified by the IME.

(2) **Fume Classes 2 and 3.** Explosives complying with the requirements of fume Class 2 and 3 may be used if adequate ventilation is provided.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-67220, filed 1/23/02, effective 3/1/02.]

WAC 296-52-67225 Combustible gases or dusts. Explosives cannot be loaded or used underground where combustible gases or combustible dusts exist unless approved by the Mine Safety and Health Administration (MSHA).

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-67225, filed 1/23/02, effective 3/1/02.]

WAC 296-52-67230 Initiating systems. (1) Electric systems.

(a) **Safety switch.** A safety switch must be:

(i) Placed at intervals in the permanent firing line when firing from a power circuit.

(ii) Made:

(A) So it can only be locked in the "off position"

OR

(B) With a short-circuiting arrangement of the firing lines to the detonator circuit

(b) **Lighting gap.** A lighting gap must be:

(i) At least five feet ahead (in the firing system) of the main firing switch, between the switch and power source.

(ii) Bridged by a flexible jumper cord just before firing the blast.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-67230, filed 1/23/02, effective 3/1/02.]

WAC 296-52-67235 Firing the blast. (1) Employee evacuation. The blaster must make sure all employees are out of the blast area before firing a blast.

(2) **Guarding entrances.** All entrances:

(a) Leading into the blasting area must be carefully guarded.

(b) To any working place where a drift, raise, or other opening is about to hole through must be carefully guarded.

(3) **Warning signals.** A warning must be given before firing an underground blast. See Table T-1 for signaling requirements.

TABLE T-1	
WARNING SIGNAL	A 1 minute series of long blasts 5 minutes prior to blast signal.
BLAST SIGNAL	A series of short blasts 1 minute prior to the shot.
ALL CLEAR SIGNAL	A prolonged blast following the inspection of the blast.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-67235, filed 1/23/02, effective 3/1/02.]

WAC 296-52-67240 Returning to the blast. (1) Smoke and fumes. The blaster in charge must wait a minimum of fifteen minutes to allow smoke and fumes to clear before returning to the shot.

(2) **Muck pile.** Workers cannot return to work until the muck pile has been watered down.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-67240, filed 1/23/02, effective 3/1/02.]

WAC 296-52-67245 High speed tunneling: Central primer house.

Note: The following requirements apply when primers are made up at a central primer house for use in high speed tunneling:

(1) **Primers.**

(a) Only enough primer must be made for each round of blasting.

(b) Primers must be placed in separate containers and bins, categorized by the degree of delay in preventing physical impact.

(2) **Separation of explosives in magazines.** Explosives transported in the same magazine must be separated by:

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(a) One-quarter inch steel

AND

(b) Covered on each side by four inches of hardwood planking or equivalent protection.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-67245, filed 1/23/02, effective 3/1/02.]

PART D**TRANSPORTATION OF EXPLOSIVE MATERIALS**

Note: Requirements for transportation of blasting agents are located at WAC 296-52-67145, Transportation of blasting agents.

SCOPE

WAC 296-52-68010 Public highways. Transportation of explosives on public highways are:

• Regulated by:

– United States Department of Transportation (U.S. DOT) (49 CFR, Parts 100 - 199)

– The Washington utilities and transportation commission

• Administered and enforced by the Washington state patrol.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-68010, filed 1/23/02, effective 3/1/02.]

WAC 296-52-68015 Job sites and off-highway roads.

The transportation rules in this chapter apply to:

• On job sites and off highway roads

• Privately financed, constructed, or maintained roads

Note: These rules do not apply to state or interstate highway systems.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-68015, filed 1/23/02, effective 3/1/02.]

WAC 296-52-68020 Safety precautions. No one may:

• Smoke or carry matches, or any other flame producing device, while in or near a vehicle transporting explosives

• Carry firearms or ammunition while in or near a vehicle transporting explosives, except guards or commissioned law enforcement officers

• Drive, load, or unload a vehicle transporting explosives in a careless or reckless manner.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-68020, filed 1/23/02, effective 3/1/02.]

WAC 296-52-68025 Transportation of workers. Only authorized personnel properly trained in the safe handling of explosives will be allowed in vehicles transporting explosives, provided seat belts are available for all occupants.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-68025, filed 1/23/02, effective 3/1/02.]

WAC 296-52-68030 Cargo. Materials and supplies cannot be placed in the cargo space of vehicles or conveyance containing:

• Explosives

• Detonating cord

OR

- Detonators.

Note: It is okay to transport safety fuses and properly secured nonsparking equipment in cargo spaces.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-68030, filed 1/23/02, effective 3/1/02.]

TRANSPORTATION VEHICLES

WAC 296-52-68040 Vehicle strength and condition.

All vehicles used for transporting explosives must:

- Be strong enough to carry the load without difficulty
- Be in good mechanical condition
- Have a tight floor in the cargo compartment(s)
- Not have any exposed spark producing metal inside the vehicle, which could come in contact with explosives.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-68040, filed 1/23/02, effective 3/1/02.]

WAC 296-52-68045 Open top vehicles. (1) Locations of use. While loaded with explosives, open top vehicles must only be used on:

- The job site

OR

- Roads that are closed to public travel

(2) **Containers.** Explosives being transported in open top vehicles or trailers must be transported in:

- The original U.S. DOT approved shipping container or box

OR

- A day box or portable magazine that complies with the requirements of this chapter

(3) **Securing containers.** Explosive containers, boxes, day boxes, or portable magazines must be fastened to the bed of the vehicle or trailer.

(4) **Loading.** Packages of explosives cannot be loaded above the sides on open top vehicles.

(5) **Tarpaulins (tarps).**

• If an explosives transportation vehicle or trailer does not have a fully enclosed cargo area with nonsparking interior, the cargo bed and all explosive cargo must be covered with a flame and moisture proof tarp or other effective protection against moisture and sparks

• Whenever tarps are used for covering explosives, both the tarp and the explosives container must be fastened to the body of the truck bed with rope, wire, or other equally efficient tie downs.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-68045, filed 1/23/02, effective 3/1/02.]

WAC 296-52-68050 Vehicle placards. All vehicles transporting explosives material must have placards. They must:

- Be displayed as specified by U.S. DOT
- Remain on the vehicle until all explosives have been removed.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-68050, filed 1/23/02, effective 3/1/02.]

[Title 296 WAC—p. 1120]

WAC 296-52-68055 Vehicle fire protection. (1) Fire extinguishers.

• **Driver training.** The driver must be trained to use the fire extinguishers on the vehicle

• **Equipment specifications.** Vehicles used for transporting explosive materials must be equipped with fire extinguishers according to the gross vehicle weight:

– Less than 14,000 pounds: A minimum of two multi-purpose dry-chemical extinguishers having a combined capacity of at least 4-A:20-B:C

– 14,000 pounds or greater: A minimum of two multi-purpose drychemical extinguishers having a combined capacity of at least 4-A:70-B:C

• **Laboratory approval.** Only fire extinguishers approved by a nationally recognized testing laboratory can be used on vehicles carrying explosives

• **Condition and location.** Fire extinguishers must be filled, ready for immediate use, and easily reached

• **Inspection.** A competent person must inspect fire extinguishers periodically. You must comply with the requirements of WAC 296-800-30020, Inspect and test all portable fire extinguishers

(2) **Vehicle inspection.** Any motor vehicle used for transporting explosives must have a safety inspection. The inspection must verify that:

- Fire extinguishers are filled and in working order
- All electrical wiring is protected and securely fastened to prevent short circuiting
- Chassis, motor, pan, and underside of body are reasonably clean and free of excess oil and grease
- Fuel tank and feedline are secure and have no leaks
- Tires are checked for proper inflation and defects
- Brakes, lights, horn, windshield wipers, and steering apparatus are functioning properly
- The vehicle is in proper condition in every other respect and acceptable for handling explosives

(3) **Vehicle repair/servicing.** Motor vehicles or conveyances carrying explosives, blasting agents, or blasting supplies cannot be repaired or serviced inside a garage or shop when carrying explosive material.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-68055, filed 1/23/02, effective 3/1/02.]

WAC 296-52-68060 Operation of vehicles transporting explosives. (1) Authorized explosives transportation. Explosives may only be transported by a:

- Licensed manufacturer
 - Blaster
 - Purchaser, seller, or their designated representative
- OR
- Contract carrier for hire who complies with all requirements for transportation of hazardous materials

(2) **Driver qualifications.**

(a) Vehicles transporting explosives must be driven by a responsible licensed driver who is:

- At least twenty-one years old
- Physically fit
- Careful
- Capable
- Reliable
- Able to read and write the English language

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- Not addicted to or under the influence of intoxicants, narcotics, or other dangerous drugs. (This does not apply to people taking prescription drugs and/or narcotics as directed by a physician, as long as use of the prescription drug does not endanger the worker or others.)

(b) The driver must be:

- Familiar with all:
 - Traffic regulations
 - Department of Transportation (U.S. DOT) and other state laws in the transportation of explosives and hazardous material laws

- Aware of:

- What they are carrying
- Safety precautions for the explosives being transported

(3) **Parking - Division 1.1 or 1.2 explosives.** A vehicle that contains Division 1.1 or 1.2 explosives cannot be parked:

- On or within five feet of the traveled portion of a public street or highway
- On private property, including fueling or eating facilities, without the knowledge and consent of the person. The person in charge must be aware of the hazardous materials in the vehicle

OR

- Within three hundred feet of a bridge, tunnel, dwelling, building, or place where people work, congregate, or assemble

Exemption: These restrictions do not apply when:

- Routine operations require the vehicle be parked for a brief period of time
- It is impractical to park the vehicle any other place

(4) **Vehicle attendance.** A vehicle transporting any quantity of Division 1.1 or 1.2 explosives must be attended at all times by a driver or other representative of the vehicle carrier, exceptions are:

- A vehicle containing explosive materials may be left unattended for a period not to exceed forty-eight hours provided:

- The vehicle is parked in a designated parking lot, which complies with NFPA Std. 498 and the appropriate distance table for the type and quantity of explosives.

- The parking lot must:

- Be correctly bermed, walled, or fenced, and gated to prevent unauthorized entry
- Be inspected and approved by the department
- Provide a full-time, continuous security patrol when explosives are present

- An explosives delivery truck does not need to be attended when it only contains Division 1.5 and no high explosives, provided the:

- Vehicle is locked so it cannot be moved
- Cargo compartments are locked to prevent theft
- Vehicle is parked according to all applicable storage distance requirements
- Vehicle is located in a secured area that restricts entry of unauthorized personnel

(5) **Attendant.**

(a) An authorized attendant must be physically present and able to see the explosives at all times.

(b) In an emergency, the attendant must be able to quickly get to the explosives without interference.

(c) The attendant must:

- Be awake
- Be alert
- Not be engaged in activities, which could divert their attention

- Be aware of the division of the explosive material and its dangers

- Be instructed in the methods and procedures used to protect the public

- Be familiar with the particular vehicle being driven
- Be trained in the use of the vehicle
- Have authorization and be able to move the vehicle if required

(6) **Loading precautions.** A vehicle must comply with U.S. DOT loading regulations in order to transport explosives in the same vehicle body with the following items:

- Spark producing metal
- Spark producing tools
- Oils
- Matches
- Firearms
- Electric storage batteries
- Flammable substances
- Acids
- Oxidizing materials

OR

- Corrosive compounds

(7) **Congested areas.** Vehicles transporting explosives must avoid congested areas and heavy traffic.

(8) **Disabled vehicles.**

- A qualified person must be present before explosives can be transferred from a disabled vehicle to another vehicle
- If a vehicle becomes disabled in a congested area, you must promptly notify local fire and police authorities. In a remote area they may be notified if necessary.

(9) **Explosives delivery and issue.** Delivery and issue of explosives must be made:

- Only by and to authorized people
- Into authorized magazines or authorized temporary storage or handling areas.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060. 03-06-073, § 296-52-68060, filed 3/4/03, effective 8/1/03. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-68060, filed 1/23/02, effective 3/1/02.]

WAC 296-52-68065 Transporting detonators and explosives in the same vehicle. (1) Fuse type detonators, detonators with a safety fuse, or detonators with a metal clad mild detonating fuse, cannot be transported in the same vehicle or trailer with other explosives, unless they comply with U.S. DOT hazardous material regulations for:

- Packaging
- Separation
- Transportation

(2) Detonators rated as nonmass detonating by U.S. DOT may be transported in the same vehicle or trailer with other explosives when the:

- Detonators are carried in U.S. DOT approved shipping containers

OR

- Truck or trailer complies with the requirements of IME Safety Library Publication Number 22, May 1993.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-68065, filed 1/23/02, effective 3/1/02.]

WAC 296-52-68075 Powder cars, vehicles, and conveyances. In underground blasting operations, explosives and blasting agents must be hoisted, lowered, or transported in a powder car.

(1) **State approval.** A state-approved powder car or conveyance must be used underground.

(2) **Two-unit compartments.** Compartments for transporting detonators and explosives together on the same conveyance must be physically separated by a:

- Distance of twenty-four inches

OR

- Solid partition a minimum of six inches thick

(3) **Auxiliary lights prohibited.** Auxiliary lights that are powered by an electrical system on a truck bed are prohibited.

(4) **Daily inspection.** The powder car or conveyance must be inspected daily for:

- Properly working lights
- Properly working brakes
- External damage to electrical circuitry

(5) **Weekly inspection.** Weekly inspections must:

• Be conducted on the electrical system, to assess electrical hazards

- Include a written inspection certification record that:

– Contains the date of inspection, the serial number, or other positive identification of the unit being inspected, and the signature of the person performing the inspection
– Is kept on file for the duration of the job

(6) **Explosives warning sign.** Powder cars or conveyance built for transporting explosives or blasting agents must have signs posted on each side of the car that:

- State "EXPLOSIVES"
- Use letters a minimum of four inches high
- Have a background color that sharply contrasts with the letters.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-68075, filed 1/23/02, effective 3/1/02.]

WAC 296-52-68080 Notification—Hoist operator. Hoist operators must be notified before explosives or blasting agents are transported in a shaft conveyance.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-68080, filed 1/23/02, effective 3/1/02.]

WAC 296-52-68085 Underground transportation.

(1) **Explosives and blasting agents.** These requirements must be followed when transporting explosives and blasting agents underground:

- **Companion items.**

– Explosives or blasting agents cannot be transported in the same shaft conveyance with other materials, supplies, or equipment

– Detonators and other explosives cannot be transported in the same shaft conveyance

• **Manual transportation.** Explosives or blasting agents that are not in their original containers must be placed in a suitable container when transported manually

[Title 296 WAC—p. 1122]

• **Car or conveyance.** The car or conveyance containing explosives or blasting agents must be pulled and not pushed

- **Locomotives.** Explosives or blasting agents must:

– Not be transported on any locomotive

– Be separated by a minimum of two car lengths from the locomotive

• **Riding on a conveyance.** When transporting explosives or blasting agents, no one can ride on:

- A shaft conveyance

OR

– Any other conveyance, except the operator, helper, or powder person

• **Crew haul trips.** Explosives or blasting agents cannot be transported on a crew haul trip

• **Disposition at arrival.** All explosives or blasting agents that are transported underground must immediately be taken to the place of use or storage

(2) **Quantity limit.** The quantity of explosives or blasting agents taken to an underground loading area cannot exceed the amount estimated to be necessary for the blast.

(3) **Unloading primers at the blast site.** Primers must be:

• Unloaded after drilling has been completed and the holes in the round are ready for loading

- Unloaded from the powder car at the face or heading

• Removed from the powder car for only the exact number being used for the round

• The powder car must be removed from the tunnel after the charge has been loaded

(4) **Electric detonators.** Wires on electric detonators must be kept shunted until wired to the bus wires.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-68085, filed 1/23/02, effective 3/1/02.]

PART E

STORAGE OF EXPLOSIVE MATERIALS

WAC 296-52-69005 Detonators. Detonators must not be stored in magazines where other explosives are stored.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-69005, filed 1/23/02, effective 3/1/02.]

WAC 296-52-69010 Explosives. All Division 1.1, 1.2, 1.3, and 1.4 explosives, special industrial explosives, and any newly developed unclassified explosives, must be kept in magazines that meet the requirements of RCW 70.74.120 and this chapter, unless the explosives are:

- In the manufacturing process
- Being physically handled
- Being used at the blast site

OR

- Being transported to a place of storage or use.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060. 03-06-073, § 296-52-69010, filed 3/4/03, effective 8/1/03. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-69010, filed 1/23/02, effective 3/1/02.]

WAC 296-52-69015 Exempt explosives. Explosives exempt from these storage requirements are:

(2007 Ed.)

Type of Explosive	Exempted Amount
Stocks of: • Small arms ammunition, • Propellant-actuated power cartridges, and • Small arms ammunition primers	Quantities less than 750,000
Smokeless powder	Quantities less than 150 pounds
Black powder (as used in muzzle-loading firearms)	Quantities less than 5 pounds
Explosive-actuated power devices	Quantities less than 50 pounds net weight of explosives
Fuse lighters and igniters	(not applicable)
Safety fuses (except cordeau detonant fuses)	(not applicable)

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060. 03-06-073, § 296-52-69015, filed 3/4/03, effective 8/1/03. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-69015, filed 1/23/02, effective 3/1/02.]

WAC 296-52-69020 Storage facilities. Explosives, except as specified in WAC 296-52-69015, and detonators in quantities of more than one thousand must be stored in permanent Type 1 magazines or approved and licensed magazines.

Note 1: Components storage.

Any two components which when mixed and become capable of detonation by a #8 detonator must be stored in a licensed approved magazine. Each component of two component explosives when unmixed must be stored in separate locked containers.

Note 2: Electro magnetic radiation precautions.

Blasting operations or storage of electrical detonators are prohibited in the area of operation radio frequency (RF) transmitter stations except where the clearances (WAC 296-52-67060, Extraneous electricity and radio frequency (RF) transmitters) can be observed.

Note 3: Detonators, electric detonators, detonating primers, and primed cartridges.

Detonators, electric detonators, detonating primers, and primed cartridges cannot be stored together or in the same magazine with other explosives.

Note 4: Ammonium perchlorate rocket motors.

Ammonium perchlorate rocket motors in 62.5 grams amounts or greater, but not to exceed fifty pounds in total weight of explosives, may be stored in an attached garage of a single-family residence if the living area is separated by a fire wall with one-hour minimum fire resistance.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. 05-08-110, § 296-52-69020, filed 4/5/05, effective 6/1/05. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-69020, filed 1/23/02, effective 3/1/02.]

WAC 296-52-69025 Quantity and distance tables. All explosive manufacturing buildings and magazines that store explosives or blasting agents (except small arms ammunition and smokeless powder), must meet the requirements as specified in:

- Table H-20, Distances for Storage of Explosives
- Table H-21, Distance Table for Separation between Magazines

(2007 Ed.)

• Table H-22, Separation Distance of Ammonium Nitrate and Blasting Agent from Explosives or Blasting Agents.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-69025, filed 1/23/02, effective 3/1/02.]

WAC 296-52-69030 Storage within magazines. (1) Storage materials. Magazines cannot be used for storage of metal tools or any commodity other than:

- Explosives
- Blasting agents
- Blasting supplies

(2) Black powder.

• Black powder must be stored separately from other explosives in a magazine

• Kegs must be stored on end, bungs down, on sides, seams down

(3) Age/or date mark. Explosives that are not already age/or date marked by the manufacturer, must be marked with the manufacturing date before being stored in the magazine.

Note: Unidentified explosives confiscated by law enforcement may be marked with the confiscation date, if the manufacturer's date is unknown.

(4) Grades and brands.

• Identical grades and brands of explosives must be stored together, with the brands and grade marks showing

• Explosive materials must be stored so they can be easily checked and counted

(5) Package placement. Explosive packages must be:

- Placed right side up
- Stacked so they are stable

(6) Ventilation. Explosive material cannot be:

- Stored where they could interfere with ventilation

OR

- Placed less than two inches from the interior walls

Note: Nonsparking lattice or other nonsparking material may be used to prevent contact of stored explosive material with interior walls.

(7) Housekeeping.

• Magazine floors must be:
– Regularly swept and the sweepings properly disposed of

– Kept clean and dry

– Free of grit, paper, and used packages or rubbish

• Brooms and other cleaning tools cannot have any spark producing metal parts

• Floors stained with nitroglycerin must be cleaned according to the manufacturer's instructions

(8) Unpacking or repacking explosives.

• Containers of explosives (except for fiberboard or other nonmetal containers) cannot be unpacked or repacked:

– In a magazine

– Within fifty feet of a magazine

OR

– Near other explosives

• Opened packages of explosives must be securely closed before returning them to a magazine

• Tools used for opening packages of explosives must be constructed of nonsparking materials

• A wood wedge and a fiber, rubber, or wood mallet must be used for opening or closing wooden crates of explosives.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-69030, filed 1/23/02, effective 3/1/02.]

WAC 296-52-69035 Storage limits. More than 300,000 pounds of explosive materials or 20,000,000 of detonators cannot be stored in the same storage magazine.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-69035, filed 1/23/02, effective 3/1/02.]

WAC 296-52-69040 Notification of fire safety authority. Any person who stores explosive material must notify the local fire safety authority, who has jurisdiction over the area where the explosive material is stored.

(1) The local fire safety authority must be notified:

- Orally, on the first day explosive materials are stored
- In writing, within forty-eight hours, from the time the explosive material was stored

(2) The notification must include the following for each site where explosive material is stored:

- Type of explosives
- Magazine capacity
- Location.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-69040, filed 1/23/02, effective 3/1/02.]

WAC 296-52-69045 Magazine repairs. Before beginning repair activities that could cause sparks or fire:

- All explosives must be removed from the magazine under repair and placed in another magazine or a safe distance away
- Explosives must be properly guarded until they are returned to the magazine
- The floor must be cleaned before beginning repairs inside a magazine.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-69045, filed 1/23/02, effective 3/1/02.]

WAC 296-52-69050 Inventory. (1) A qualified person must be:

- Responsible for the magazine at all times
- At least twenty-one years old
- Held responsible for the enforcement of all safety requirements

(2) Explosives must:

- Be accounted for at all times
- Be kept in a locked magazine when not in use
- Not be easily accessed by unauthorized persons

(3) Inventory and use records must be kept up to date for all explosives.

(4) Any person responsible for explosives who discovers a theft or loss of explosives must report the incident to local law enforcement within twenty-four hours.

(5) Law enforcement agencies must report a theft or loss of explosives to the department immediately.

(6) Other people who know of attempted or actual unauthorized magazine entry must report this information to local law enforcement.

[Title 296 WAC—p. 1124]

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-69050, filed 1/23/02, effective 3/1/02.]

WAC 296-52-69055 Inspection. (1) **Weekly inspection.**

(a) The person or company responsible for the contents of the magazine must inspect the magazine at least every seven days to determine whether there has been an unauthorized:

- Attempted entry into the magazine

OR

- Removal of explosives from the magazine

(b) The person doing the inspection must be familiar with the magazine and its contents.

Note: This inspection does not need to be an inventory.

(2) **Inspection documentation.**

(a) The person doing the inspection must sign one of the following documents after completing the inspection:

- A weekly inspection log
- An inventory sheet

OR

- Other record

(b) Weekly inspection records must be kept for at least one year.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-69055, filed 1/23/02, effective 3/1/02.]

WAC 296-52-69060 Precautions for areas surrounding magazine. (1) **Firearms.** Only qualified guards and qualified law enforcement officers are allowed to carry firearms inside or within fifty feet of a magazine.

(2) **Area maintenance.** The area surrounding magazines must:

- Be kept clear of rubbish, brush, dry grass, or trees, except live trees more than ten feet tall, for a minimum of twenty-five feet in all directions
- Be free of volatile materials for a minimum of fifty feet from outdoor magazine
- Have the ground around storage facilities slope away for drainage; living foliage does not need to be removed

(3) **Fire sources.** Smoking, matches, open flames, and spark producing devices are not permitted:

- In any magazine
- Within fifty feet of an outdoor magazine

OR

- In any room containing an indoor magazine

(4) **Warning sign.**

(a) **Access routes.** All normal access routes to explosive material storage facilities, except Class 3 (1.4) magazines, must be posted with warning signs that read:

DANGER
NEVER FIGHT EXPLOSIVE FIRES
EXPLOSIVES ARE STORED ON THIS SITE
CALL _____

(b) **Sign specifications and placement.** Signs must:

- (i) Be contrasting in color
- (ii) Have the pin stroke of the letters a minimum of three inches (75 mm) high and one-half inch (12.5 mm) wide
- (iii) Be placed so a bullet passing through the sign will not strike a magazine

(2007 Ed.)

(iv) Not be attached to magazines

(c) **Transportation placards.** Placards required by the U.S. Department of Transportation (DOT) (49 CFR) for transporting blasting agents must be displayed on all Class 5 magazines where blasting agents are stored.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-69060, filed 1/23/02, effective 3/1/02.]

WAC 296-52-69065 Deteriorated explosives.

• Explosives must be immediately destroyed, according to the manufacturer's recommendations, whenever they are suspected of deteriorating to the point they are:

- Unstable
- Dangerous
- Leaking nitroglycerine

• Only a licensed blaster may destroy explosives.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-69065, filed 1/23/02, effective 3/1/02.]

WAC 296-52-69070 Explosives recovered from misfires.

• **Storage.** Explosives recovered from misfires must be placed in a separate licensed magazine until they can be disposed of according to the manufacturer's recommendations

• **Detonator use.** Detonators suspected of being defective cannot be reused

• **Disposal.** The blaster in charge must dispose of explosives and detonators according to the manufacturer's recommendations.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-69070, filed 1/23/02, effective 3/1/02.]

WAC 296-52-69080 Blast site storage. (1) Location.

Temporary storage for explosives at blast sites must be located away from:

- Inhabited buildings
- Railways
- Highways
- Other magazines

(2) **Separation distance.** A distance must be maintained between magazines and the blast site. This distance must be a minimum of:

- One hundred fifty feet when the quantity of explosives is greater than twenty-five pounds
- Fifty feet when the quantity of explosives is twenty-five pounds or less.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-69080, filed 1/23/02, effective 3/1/02.]

WAC 296-52-69085 Multiple magazines. (1) Separation distance. When two or more storage magazines are located on the same property, each magazine must comply with the minimum quantity of explosives and separation distance requirements for:

- Magazines (Table H-21)
- Inhabited buildings, railways, and highways (Table H-20)

(2) **Distances that do not meet requirements.** If the separation distance between two or more magazines is less than the distance required (Table H-21), the magazines must:

- Be considered one magazine

AND

• Comply with the minimum distance requirements for inhabited buildings, railways, and highways (Table H-20)

(3) **Distance of grouped magazines to other magazines.** Each magazine in a group must comply with minimum magazine distance requirements (Table H-21) in relation to other magazines not considered part of the group.

(4) **Quantity of explosives.**

(a) **Magazine group.** The total quantity of explosives stored in a magazine group (two or more) must:

- Be considered one magazine
- Not exceed the requirements of Table H-21 for one magazine

(b) **Detonator magazine.** The quantity of explosives contained in a detonator magazine takes precedence over the minimum magazine distance requirements (Table H-21) when determining the separation distance required between a detonator magazine and magazines that contain other types of explosives.

(c) **Detonator strength.** Strengths of blasting and electric detonators:

- Up to #8 detonators must be rated as one and one-half pounds of explosives per one thousand detonators
- Detonators greater than #8 must be computed on the combined weight of explosives.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-69085, filed 1/23/02, effective 3/1/02.]

WAC 296-52-69090 Blasting agents and supplies. (1) Storage.

Note: You may store blasting agents with nonexplosive blasting supplies.

(a) When stored with explosives, blasting agents or ammonium nitrate must be stored as required in magazine construction.

(b) When computing the total quantity of explosives, the mass of blasting agents and one-half the mass of ammonium nitrate must be included when determining the distance requirements.

(c) When stored separately from explosives, blasting agents and ammonium nitrate must be stored as required in this chapter

OR

Warehouses which are:

- One story without basements
- Noncombustible or fire resistant
- Constructed so there are no open floor drains and piping where molten materials could flow and be trapped in case of fire

- Weather resistant
- Well ventilated
- Equipped with a strong door which is securely locked except when open for business

(d) Semi-trailer or full trailer vans used for highway or on-site transportation of blasting agents. They must:

- Comply with location requirements for inhabited buildings, passenger railways, and public highways in Table H-20
- Be in accordance with the distance requirements in Table H-22

- Have substantial means for locking and the trailer doors must be kept locked except during the time of placement or removal of blasting agents

(e) Storage warehouses for blasting agents:

- Must comply with the location requirements for inhabited buildings, passenger railways, and public highways in Table H-20

- Must be in accordance with the distance requirements in Table H-22

(f) Combustible materials, flammable liquids, corrosive acids, chlorates, or nitrates cannot be stored in warehouses used for blasting agents unless they are separated by a fire resistant wall with a minimum of one-hour fire resistance.

(g) A competent person, at least twenty-one years old, must supervise every warehouse used for the storage of blasting agents.

(2) **Combustible materials.** These activities and items are prohibited within fifty feet (15.2 m) of any warehouse used for storing blasting agents:

- Smoking
- Matches
- Open flames
- Spark producing devices
- Fire-arms

(3) **Housekeeping.** The interiors of warehouses used for storing blasting agents must be:

- Kept clean, and free from debris and empty containers
- All spilled materials must be promptly cleaned.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-69090, filed 1/23/02, effective 3/1/02.]

WAC 296-52-69095 Ammonium nitrate. (1) Storage.

(a) Ammonium nitrate storage requirements do not apply to:

- The transportation of ammonium nitrates while under the jurisdiction of and in compliance with U.S. DOT regulations (see 49 CFR, Part 173)
- The storage of ammonium nitrates while under the jurisdiction of and in compliance with U.S. Coast Guard (see 49 CFR, Parts 146-149)
- The storage of ammonium nitrate and ammonium nitrate mixtures, which are more sensitive than allowed by the bulletin

"Definition and test procedures for ammonium nitrate fertilizers" from the Fertilizer Institute 501 2nd St. NE, Washington, DC 20006.

This definition limits the contents of organic materials, metals, sulfur, etc., in products that may be classified ammonium nitrate fertilizer.

- The production of ammonium nitrate or the storage of ammonium nitrate on the premises of the producing plant, if no hazards are created to the employees or public

- The standards for ammonium nitrate (nitrous oxide grade) that are found in the:

"Specifications, properties and recommendations for packaging, transportation, storage and use of ammonium nitrate," from the Compressed Gas Association, Inc., 1235 Jefferson Davis Highway, Suite 1004, Arlington, VA 22202-4100.

(b) Ammonium nitrate storage requirements apply to:

- Anyone, in addition to the owner or lessee of any building, premises, or structure having or storing ammonium nitrate in quantities of one thousand pounds (425 kg) or more

- Ammonium nitrate in the form of crystals, flakes, grains, or prills including fertilizer grade, dynamite grade, nitrous oxide grade, technical grade, and other mixtures containing sixty percent or more ammonium nitrate by weight

Note: The approval of large quantity storage is based on the fire and explosion hazards, including exposure to toxic vapors from burning or decomposing ammonium nitrate.

(c) Storage buildings housing ammonium nitrate must:

- Have adequate ventilation or be self-ventilating in the event of a fire

- Have fire resistant walls when the exposed side of a storage building is within fifty feet (15.2 m) of a combustible building, forest, piles of combustible materials, and similar exposure hazards. Other suitable means of exposure protection such as a freestanding wall may be used instead of a fire resistant wall

- Have roof coverings that are Division 1.4 or better as defined in Roof Coverings, NFPA 203M-1970

- Have flooring of noncombustible material or be protected against saturation by ammonium nitrate. In case of fire, the floor must not have open drains, traps, tunnels, pits, or pockets into which molten ammonium nitrate could flow and be confined

- Be dry and free from water seepage through the roof, walls, and floors

- Not have basements, unless the basements are open on at least one side

- Not be over one story in height

Note: The continued use of an existing storage building or structure may be approved in cases where continued use will not constitute a hazard to life or adjoining property.

Bags, drums, and other containers of ammonium nitrate must:

(d) Comply with specifications and standards required for use in interstate commerce (see 49 CFR, Chapter 1). Containers used on the premises in the actual manufacturing or processing do not need to comply.

- Not be used for storage when the temperature of the ammonium nitrate exceeds 130°F (54.4°C)

- Not be stored within thirty inches (76 cm) of the storage building walls and partitions

- Not be stacked higher than twenty feet (6.1 m) in height, twenty feet (6.1 m) in width, and fifty feet (15.2 m) in length. When buildings are constructed of noncombustible materials or protected by automatic sprinklers, there are no stacking height restrictions

- Never be stacked closer than thirty-six inches (.09 m) below the roof or overhead supporting and spreader beams

- Be separated by aisles a minimum of 3 feet wide. There must be one main aisle in the storage area a minimum of four feet (1.2 m) wide

(e) Bulk ammonium nitrate must be stored:

- In warehouses with adequate ventilation or be capable of adequate ventilation in case of fire

- In structures that are not more than forty feet (12.2 m) high, unless:

- They are constructed of noncombustible material

OR

- Have adequate facilities for fighting a roof fire
- In clean bins that are free of materials that could cause contamination

- In bins or piles that are clearly identified by signs reading "AMMONIUM NITRATE" in letters a minimum of two inches (5 cm) high

- In bins or piles sized and arranged so all material is moved periodically to minimize the possibility of caking

- Adequately separated from easily combustible fuels. Bins cannot be made of galvanized iron, copper, lead, and zinc because of the:

- Corrosive and reactive properties of ammonium nitrate
- AND**

- To avoid contamination
- In tightly constructed wooden and aluminum bins that are protected against saturation from ammonium nitrate
- In tightly constructed partitions that divide the ammonium nitrate from other products to avoid contamination
- Where the temperature of the product does not exceed 130°F (54.4°C)

- No higher than thirty-six inches (0.9 m) below the roof or overhead supporting and spreader beams if stacked in piles. Stack limits (height and depth), should be determined by the pressure setting tendency of the product

(f) Bulk ammonium nitrate when caked, cannot be broken up or loosed by the use of dynamite, other explosives or blasting agents.

(g) Bulk ammonium nitrate cannot be stored with:

- LP Gas on the premises except when such storage complies with WAC 296-24-475, Storage and handling of liquefied petroleum gases

- Sulfur and finely divided metals in the same building except when such storage complies with this chapter and NFPA standard 495, Explosives Materials Code

- Explosives and blasting agents in the same building except on the premises of manufacturers, distributors, and user of explosives or blasting agents

- When explosives or blasting agents are stored in separate buildings, other than on the approval of manufacturers, distributors, and user, they must be separated from the ammonium nitrate by the distances and/or barricades specified in Table H-22 or a minimum of fifty feet (15.2 m)

- With flammable liquids, such as gasoline, kerosene, solvents, and light fuel oils on the premises except when such storage conforms to WAC 296-24-330, Flammable and combustible liquids, and when walls, sills or curbs are provided in accordance with WAC 296-52-69095, Ammonium nitrate

(2) Contaminants must be stored in a separate building from ammonium nitrate

OR

Be separated by an approved firewall of not less than one-hour fire resistance rating which should extend to the underside of the roof. Alternatively, the contaminants may be separated by a minimum of thirty feet (9.1 m), instead of using walls. These contaminants are:

- Organic chemicals
- Acids
- Other corrosive materials
- Materials that may require blasting during processing or handling
- Compressed flammable gases

- Flammable and combustible materials
- Other substances including:

Animal fats	Baled cotton	Baled rags	Baled scrap paper
Bleaching powder	Burlap or cotton bags	Caustic soda	Coal
Coke	Charcoal	Cork	Camphor
Excelsior	Fibers of any kind	Fish oil	Fish meal
Foam rubber	Hay	Lubricating oil	Linseed oil
Other oxidizable or drying oils	Naphthalene	Oakum	Oiled clothing
Oiled paper	Oiled textiles	Paint	Straw
Sawdust	Wood shavings	Vegetable oil	

(3) Housekeeping requirements must have:

- Electrical installations, which meet the requirements of chapter 296-24 WAC, Part L, Electrical, and WAC 296-800-280, Basic electrical rules, for ordinary locations and be designed to minimize damage from corrosion

- Adequate lightning protections in areas where lightning storms are prevalent (see NFPA 78-1992, Lightning Protection Code)

- Procedures to prevent unauthorized personnel from entering the ammonium nitrate storage area

(4) Fire protection must provide:

- Water supplies and fire hydrants

- Suitable fire control devices, such as a small hose or portable fire extinguishers, throughout the warehouse and in the loading/unloading areas. These devices must comply with the requirements of WAC 296-800-300, Portable fire extinguishers, and WAC 296-24-602, Standpipe and hose systems

- Approved sprinkler systems installed according to WAC 296-24-607, Automatic sprinkler systems

- Two thousand five hundred tons (two thousand two hundred seventy metric) or less of bagged ammonium nitrate may be stored in a structure that does not have an automatic sprinkler system.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060. 03-06-073, § 296-52-69095, filed 3/4/03, effective 8/1/03. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-69095, filed 1/23/02, effective 3/1/02.]

QUANTITY AND DISTANCE TABLES

WAC 296-52-69105 Table H-20—Table of distances for storage of explosives.

Table H-20
Table of Distances for Storage of Explosives

Quantity of Explosive		Distances (in Feet)					
(In Pounds)		Inhabited Buildings		Public Highways with Traffic Volume 3,000 or Less Vehicles Per Day		Passenger Railways and Public High- ways: With Traffic Volume of More Than 3,000 Vehicles Per Day	
Over	Not Over	Barricaded	Unbarricaded	Barricaded	Unbarricaded	Barricaded	Unbarricaded
0	5	70	140	30	60	51	102
5	10	90	180	35	70	64	128
10	20	110	220	45	90	81	162
20	30	125	250	50	100	93	186
30	40	140	280	55	110	103	206
40	50	150	300	60	120	110	220
50	75	170	340	70	140	127	254
75	100	190	380	75	150	139	278
100	125	200	400	80	160	150	300
125	150	215	430	85	170	159	318
150	200	235	470	95	190	175	350
200	250	255	510	105	210	189	378
250	300	270	540	110	220	201	402
300	400	295	599	120	240	221	442
400	500	320	640	130	260	238	476
500	600	340	680	135	270	253	506
600	700	355	710	145	290	266	532
700	800	375	750	150	300	278	556
800	900	390	780	155	310	289	578
900	1,000	400	800	160	320	300	600
1,000	1,200	425	850	165	330	318	636
1,200	1,400	450	900	170	340	336	672
1,400	1,600	470	940	175	350	351	702
1,600	1,800	490	980	180	360	366	732
1,800	2,000	505	1,010	185	370	378	756
2,000	2,500	545	1,090	190	380	408	816
2,500	3,000	580	1,160	195	390	432	864
3,000	4,000	635	1,270	210	420	474	948
4,000	5,000	685	1,370	225	450	513	1,026
5,000	6,000	730	1,460	235	470	546	1,092
6,000	7,000	770	1,540	245	490	573	1,146
7,000	8,000	800	1,600	250	500	600	1,200
8,000	9,000	835	1,670	255	510	624	1,248
9,000	10,000	865	1,730	260	520	645	1,290
10,000	12,000	875	1,750	270	540	687	1,374
12,000	14,000	885	1,770	275	550	723	1,446
14,000	16,000	900	1,800	280	560	756	1,512
16,000	18,000	940	1,880	285	570	786	1,572
18,000	20,000	975	1,950	290	580	813	1,626
20,000	25,000	1,055	2,000	315	630	876	1,752
25,000	30,000	1,130	2,000	340	680	933	1,866
30,000	35,000	1,205	2,000	360	720	931	1,962
35,000	40,000	1,275	2,000	380	760	1,026	2,000
40,000	45,000	1,340	2,000	400	800	1,068	2,000
45,000	50,000	1,400	2,000	420	840	1,104	2,000
50,000	55,000	1,460	2,000	440	880	1,140	2,000
55,000	60,000	1,515	2,000	455	910	1,173	2,000
60,000	65,000	1,565	2,000	470	940	1,206	2,000
65,000	70,000	1,610	2,000	485	970	1,236	2,000
70,000	75,000	1,655	2,000	500	1,000	1,263	2,000
75,000	80,000	1,695	2,000	510	1,020	1,293	2,000
80,000	85,000	1,730	2,000	520	1,040	1,317	2,000
85,000	90,000	1,760	2,000	530	1,060	1,344	2,000
90,000	95,000	1,790	2,000	540	1,080	1,368	2,000
95,000	100,000	1,815	2,000	545	1,090	1,392	2,000
100,000	110,000	1,835	2,000	550	1,100	1,437	2,000
110,000	120,000	1,855	2,000	555	1,110	1,479	2,000
120,000	130,000	1,875	2,000	560	1,120	1,521	2,000
130,000	140,000	1,890	2,000	565	1,130	1,557	2,000
140,000	150,000	1,900	2,000	570	1,140	1,593	2,000
150,000	160,000	1,935	2,000	580	1,160	1,629	2,000
160,000	170,000	1,965	2,000	590	1,180	1,662	2,000
170,000	180,000	1,990	2,000	600	1,200	1,695	2,000
180,000	190,000	2,010	2,010	605	1,210	1,725	2,000
190,000	200,000	2,030	2,030	610	1,220	1,755	2,000
200,000	210,000	2,055	2,055	620	1,240	1,782	2,000

Quantity of Explosive		Distances (in Feet)					
(In Pounds)		Inhabited Buildings		Public Highways with Traffic Volume 3,000 or Less Vehicles Per Day		Passenger Railways and Public Highways: With Traffic Volume of More Than 3,000 Vehicles Per Day	
Over	Not Over	Barricaded	Unbarricaded	Barricaded	Unbarricaded	Barricaded	Unbarricaded
210,000	230,000	2,100	2,100	635	1,270	1,836	2,000
230,000	250,000	2,155	2,155	650	1,300	1,890	2,000
250,000	275,000	2,215	2,215	670	1,340	1,950	2,000
275,000	300,000	2,275	2,275	690	1,380	2,000	2,000

Note 1: Terms used in Table H-20 are found in WAC 296-52-60130, Definitions.

Note 2: Source of table data is BATF (6/90) 55.218.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-69105, filed 1/23/02, effective 3/1/02.]

WAC 296-52-69110 Table H-21—Quantity and distance table for separation between magazines.

Note: This table applies to the permanent storage of commercial explosives only. It does not apply to:

- Explosives handling
- Explosives transportation
- Temporary storage of explosives
- Bombs, projectiles, or other heavily encased explosives

Magazines containing detonators and electric detonators must be separated from:

(1) Other magazines with similar contents.

OR

(2) Magazines containing explosives.

Note: Definitions of barricade including artificial and natural barricade can be found in WAC 296-52-60130, Definitions.

Table H-21

QUANTITY AND DISTANCE TABLE FOR SEPARATION BETWEEN MAGAZINES CONTAINING EXPLOSIVES		Separation Distance in Feet Between Magazines	
Pounds Over	Pounds Not Over	Not Barricaded	Barricaded
2	5	12	6
5	10	16	8
10	20	20	10
20	30	22	11
30	40	24	12
40	50	28	14
50	75	30	15
75	100	32	16
100	125	36	18
125	150	38	19
150	200	42	21
200	250	46	23
250	300	48	24
300	400	54	27
400	500	58	29
500	600	62	31
600	700	64	32
700	800	66	33
800	900	70	35
900	1,000	72	36
1,000	1,200	78	39
1,200	1,400	82	41
1,400	1,600	86	43
1,600	1,800	88	44
1,800	2,000	90	45
2,000	2,500	98	49
2,500	3,000	104	52
3,000	4,000	116	58

QUANTITY AND DISTANCE TABLE FOR SEPARATION BETWEEN MAGAZINES CONTAINING EXPLOSIVES		Separation Distance in Feet Between Magazines	
Pounds Over	Pounds Not Over	Not Barricaded	Barricaded
4,000	5,000	122	61
5,000	6,000	130	65
6,000	7,000	136	68
7,000	8,000	144	72
8,000	9,000	150	75
9,000	10,000	156	78
10,000	12,000	164	82
12,000	14,000	174	87
14,000	16,000	180	90
16,000	18,000	188	94
18,000	20,000	196	98
20,000	25,000	210	105
25,000	30,000	224	112
30,000	35,000	238	119
35,000	40,000	248	124
40,000	45,000	258	129
45,000	50,000	270	135
50,000	55,000	280	140
55,000	60,000	290	145
60,000	65,000	300	150
65,000	70,000	310	155
70,000	75,000	320	160
75,000	80,000	330	165
80,000	85,000	340	170
85,000	90,000	350	175
90,000	95,000	360	180
95,000	100,000	370	185
100,000	110,000	380	195
110,000	120,000	410	205
120,000	130,000	430	215
130,000	140,000	450	225
140,000	150,000	470	235
150,000	160,000	490	245
160,000	170,000	510	255
170,000	180,000	530	265
180,000	190,000	550	275
190,000	200,000	570	285
200,000	210,000	590	295
210,000	230,000	630	315
230,000	250,000	670	335
250,000	275,000	720	360
275,000	300,000	770	385

Note: With site-specific department approval, a stand of mature timber may qualify as a natural barricade. The timber must be dense enough so the area requiring protection cannot be seen from the magazine when the trees are bare of leaves.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-69110, filed 1/23/02, effective 3/1/02.]

WAC 296-52-69115 Table H-22—Separation distances of ammonium nitrate and blasting agents from explosives or blasting agents.

Table H-22

TABLE OF SEPARATION DISTANCES OF AMMONIUM NITRATE AND BLASTING AGENTS
FROM EXPLOSIVES OR BLASTING AGENTS¹

Donor weight		Minimum separation distance of receptor when barricaded ² (ft.)		Minimum thickness of artificial barricades ⁵ (in.)
Pounds over	Pounds not over	Ammonium nitrate ³	Blasting agent ⁴	
	100	3	11	12
100	300	4	14	12
300	600	5	18	12
600	1,000	6	22	12
1,000	1,600	7	25	12
1,600	2,000	8	29	12
2,000	3,000	9	32	15
3,000	4,000	10	36	15
4,000	6,000	11	40	15
6,000	8,000	12	43	20
8,000	10,000	13	47	20
10,000	12,000	14	50	20
12,000	16,000	15	54	25
16,000	20,000	16	58	25
20,000	25,000	18	65	25
25,000	30,000	19	68	30
30,000	35,000	20	72	30
35,000	40,000	21	76	30
40,000	45,000	22	79	35
45,000	50,000	23	83	35
50,000	55,000	24	86	35
55,000	60,000	25	90	35
60,000	70,000	26	94	40
70,000	80,000	28	101	40
80,000	90,000	30	108	40
90,000	100,000	32	115	40
100,000	120,000	34	122	50
120,000	140,000	37	133	50
140,000	160,000	40	144	50
160,000	180,000	44	158	50
180,000	200,000	48	173	50
200,000	220,000	52	187	60
220,000	250,000	56	202	60
250,000	275,000	60	216	60
275,000	300,000	64	230	60

Note 1: These distances apply to the separation of storage. Table H-20 must be used in determining separation distances from inhabited buildings, passenger railways, and public highways.

Note 2: When the ammonium nitrate and/or blasting agent is not barricaded, the distances shown in the table must be multiplied by six. These distances allow for the possibility of high velocity metal fragments from mixers, hoppers, truck bodies, sheet metal structures, metal containers, and the like which may enclose the "donor." When ammonium nitrate is stored in a bullet resistant magazine it is recommended explosives or where the storage is protected by a bullet resistant wall, distances, and barricade thickness in excess of those prescribed in Table H-20 are not required.

Note 3: The distances in the table apply to ammonium nitrate that passes the insensitivity test prescribed in the definition of ammonium nitrate fertilizer promulgated by the Fertilizer Institute, and ammonium nitrate failing to pass a test must be stored at separation distances determined by competent per-

sons. (Definition and Test Procedures for Ammonium Nitrate Fertilizer, the Fertilizer Institute, formerly the National Plant Food Institute, November 1964.)

Note 4: These distances apply to nitro-carbo-nitrates and blasting agents, which pass the insensitivity test prescribed in the U.S. DOT regulations.

Note 5: Acceptable barricades include either natural or artificial barricades as defined in WAC 296-52-60130, Definitions.

Note 6: When the ammonium nitrate must be counted in determining the distances to be maintained from inhabited buildings, passenger railways, and public highways, it may be counted at one-half its actual weight because its blast effect is lower.

Note 7: Guide to use of table of recommended separation distances of ammonium nitrate and blasting agents from explosives or blasting agents.

(a) Sketch the location of all potential donors and acceptor materials together with the maximum amount of material to be allowed in the area. (Potential donors are high explosives,

blasting agents, and combination of masses of detonating materials. Potential acceptors are high explosives, blasting agents, and ammonium nitrate.)

(b) Consider each donor mass in combination with each acceptor mass. If the masses are closer than table allowance, distances measured between nearest edges, the combination of masses becomes a new potential donor of weight equal to the total mass. When individual masses are considered as donors, distances to potential acceptors must be measured between edges. When combined masses within propagating distance of each other are considered as a donor, the appropriate distance to the edge of potential acceptors must be computed as a weighted distance from the combined masses:

(i) Calculation of weighted distance from combined masses:

Let $M_2, M_3 \dots M_n$ be donor masses to be combined.

M_1 is a potential acceptor mass.

D_{12} is distance from M_1 to M_2 (edge to edge).

D_{13} is distance from M_1 to M_3 (edge to edge), etc.

To find weighted distance $D_{1(2,3 \dots n)}$ from combined masses to M_1 , add the products of the individual masses and distances and divide the total by the sum of the masses:

$$\frac{D_{1(2,3 \dots n)} = \frac{M_2 \times D_{12} + M_3 \times D_{13} + \dots + M_n \times D_{1n}}{M_2 + M_3 + \dots + M_n}$$

Propagation is possible if either an individual donor mass is less than the tabulated distance from an acceptor or a combined mass is less than the weighted distance from an acceptor.

(c) When determining the distances separating highways, railroads, and inhabited buildings from potential explosions (as prescribed in Table H-20), the sum of all masses which may propagate (i.e., lie at distances less than prescribed in the table) from either individual or combined donor masses are included. However, the ammonium nitrate must be included, only 50 percent of its weight must be used because of its reduced blast effects. In applying Table H-21, distances from highways, railroads, and inhabited buildings, distances are measured from the nearest edge of potentially explodable material.

(d) When all or part of a potential acceptor comprises explosives Class A as defined in U.S. DOT regulations, storage in bullet resistant magazines is required. Safe distances to stores in bullet resistant magazines may be obtained from the inter-magazine distances described in Table H-21.

(e) Barricades cannot have line of sight openings between potential donors and acceptors, which permit blast or missiles to move directly between masses.

(f) Good housekeeping practices must be maintained around any bin containing ammonium nitrate or blasting agent. This includes keeping weeds and other combustible materials cleared within twenty-five feet of the bin. Accumulation of spilled product on the ground must be prevented.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-69115, filed 1/23/02, effective 3/1/02.]

WAC 296-52-69120 Table H-23—Quantity and distance tables for manufacturing buildings. Explosives manufacturing plants that have buildings and magazines, where workers are regularly employed, must meet the quantity and separation distance requirements of Table H-23, intraexplosives plant quantity and distance table.

(1) **Explosives manufacturing buildings.** Explosives manufacturing buildings must be located away from manufacturing and nonmanufacturing buildings as required by Table H-23.

(2) **Magazines.** Magazines must be located away from manufacturing and nonmanufacturing buildings as required by Table H-23.

(2007 Ed.)

Table H-23

EXPLOSIVES		Distance Feet
Pounds Over	Pounds Not Over	Separate Building or Within Substantial Dividing Walls
10	25	40
25	50	60
50	100	80
100	200	100
200	300	120
300	400	130
400	500	140
500	750	160
750	1,000	180
1,000	1,500	210
1,500	2,000	230
2,000	3,000	260
3,000	4,000	280
4,000	5,000	300
5,000	6,000	320
6,000	7,000	340
7,000	8,000	360
8,000	9,000	380
9,000	10,000	400
10,000	12,500	420
12,500	15,000	450
15,000	17,500	470
17,500	20,000	490
20,000	25,000	530
25,000	30,000	560
30,000	35,000	590
35,000	40,000	620
40,000	45,000	640
45,000	50,000	660
50,000	55,000	680
55,000	60,000	700
60,000	65,000	720
65,000	70,000	740
70,000	75,000	770
75,000	80,000	780
80,000	85,000	790
85,000	90,000	800
90,000	95,000	820
95,000	100,000	830
100,000	125,000	900
125,000	150,000	950
150,000	175,000	1,000
175,000	200,000	1,050
200,000	225,000	1,100
225,000	250,000	1,150
250,000	275,000	1,200
275,000	300,000	1,250

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-69120, filed 1/23/02, effective 3/1/02.]

WAC 296-52-69125 Table H-24—Low explosives. (1)

Use Table H-24 for: Magazines that are restricted to:

- Division 1.2 or 1.3
- Division 1.4, low explosives

[Title 296 WAC—p. 1131]

- Low explosives classified by BATF
- (2) Detonators cannot be stored with low explosives.

Table H-24

TABLE OF DISTANCES FOR STORAGE OF LOW EXPLOSIVES

Pounds		From inhabited building distance (feet)	From public railroad and highway distance (feet)	From above ground magazine (feet)
Over	Not Over			
0	1,000	75	75	50
1,000	5,000	115	115	75
5,000	10,000	150	150	100
10,000	20,000	190	190	125
20,000	30,000	215	215	145
30,000	40,000	235	235	155
40,000	50,000	250	250	165
50,000	60,000	260	260	175
60,000	70,000	270	270	185
70,000	80,000	280	280	190
80,000	90,000	295	295	195
90,000	100,000	300	300	200
100,000	200,000	375	375	250
200,000	300,000	450	450	300

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060. 03-06-073, § 296-52-69125, filed 3/4/03, effective 8/1/03. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-69125, filed 1/23/02, effective 3/1/02.]

WAC 296-52-69130 Table of distances for the storage of display fireworks (except bulk salutes).

Net weight of fireworks (pounds)	Distance between magazine and inhabited building, passenger railway, or public highway (feet)	Distance between magazine (feet)
0-1,000	150	100
1,001-5,000	230	150
5,001-10,000	300	200
Above 10,000	Use Table H-20	

- Note 1: The net weight is the weight of all pyrotechnic compositions, and explosive materials and fuse only.
- Note 2: For the purposes of applying this table, the term magazine also includes fireworks shipping buildings for display fireworks.
- Note 3: For fireworks storage magazines in use prior to (2000) the distances in this table may be halved if properly barricaded between the magazine and potential receptor sites.
- Note 4: This table does not apply to the storage of bulk salutes. Use Table H-20 for storage of bulk salutes.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060. 03-06-073, § 296-52-69130, filed 3/4/03, effective 8/1/03.]

**PART F
MAGAZINE CONSTRUCTION**

WAC 296-52-700 Magazine construction. Construction of explosive storage magazines must comply with the requirements of this part and the Bureau of Alcohol, Tobacco, and Firearms (BATF) regulations.

Note: Construction requirements for blasting agent bulk storage bins are located in WAC 296-52-67140, Bulk storage bins.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-700, filed 1/23/02, effective 3/1/02.]

WAC 296-52-70005 Type 1 magazines: Permanent storage facilities. A Type 1 storage facility must be:

- A permanent structure such as:
 - A building

- An igloo
- An army-type structure
- A tunnel

OR

- A dugout

• Bullet resistant, fire resistant, weather resistant, theft resistant, and well ventilated.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. 05-08-110, § 296-52-70005, filed 4/5/05, effective 6/1/05. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-70005, filed 1/23/02, effective 3/1/02.]

WAC 296-52-70010 Building construction for Type 1 magazines. All building-type storage facilities must:

- Be constructed of masonry, wood, metal, or a combination of these materials
- Have no openings except for entrances and ventilation
- Have the ground around the facility slope away for drainage

(1) **Wall construction.**

(a) **Masonry wall construction.** Masonry wall construction must:

- Consist of brick, concrete, tile, cement block, or cinder block

- Be at least eight inches thick

(b) **Hollow masonry construction.** Hollow masonry construction must:

- Have all hollow spaces filled with well tamped coarse dry sand

OR

- Have weak concrete (a mixture of one part cement to eight parts sand with enough water to dampen the mixture) while tamping in place

AND

- Have interior walls covered with a nonsparking material

(c) **Fabricated metal wall construction.**

• Metal wall construction must be securely fastened to a metal framework and consist of one of the following types of metal:

- Sectional sheets of steel (at least number 14 gauge)

OR

- Aluminum (at least number 14 gauge)

• Metal wall construction must:

- Be lined with brick, solid cement blocks, and hardwood at least four inches thick or material of equivalent strength

- Have a minimum of six-inch sand fill between interior and exterior walls

- Have interior walls constructed of or covered with a nonsparking material

(d) **Wood frame wall construction.**

• Exterior wood walls must be covered with iron or aluminum at least number 26 gauge

- Inner walls, made of nonsparking materials must be constructed with a space:

- A minimum of six inches between the outer and inner walls

AND

- Filled with coarse dry sand or weak concrete

(2) **Floors.** Floors must be:

(a) Constructed of a nonsparking material.

(b) Strong enough to hold the weight of the maximum quantity to be stored.

(3) Foundation.

- Foundations must be constructed of brick, concrete, cement block, stone, or wood posts

- If piers or posts are used instead of a continuous foundation, the space under the building must be enclosed with metal

(4) Roof.

(a) Roofs must be covered with no less than number 26 gauge iron or aluminum fastened to a 7/8-inch sheathing, except for buildings with fabricated metal roofs.

(b) If it is possible for a bullet to be fired directly through the roof at such an angle that it would strike a point below the top of the inner walls, storage facilities must be protected by one of the following two methods:

- A sand tray must be:
 - Located at the top of the inner wall covering the entire ceiling area, except the area necessary for ventilation.
 - Lined with a layer of building paper.
 - Filled with at least four inches of coarse dry sand.
- A fabricated metal roof must be constructed of 3/16-inch plate steel lined with four inches of hardwood or material of equivalent strength. For each additional 1/16-inch of plate steel, the hardwood or material of equivalent strength lining may be decreased one inch.

(5) Doors and hinges.

(a) All doors must be constructed of 1/4-inch plate steel and lined with three inches of hardwood or material of equivalent strength.

(b) Hinges and hasps must be installed so they cannot be removed when the doors are closed and locked by:

- Welding
- Riveting

OR

- Bolting nuts on the inside of the door

(6) Locks.

(a) Each door must be equipped with:

- Two mortise locks
- Two padlocks fastened in separate hasps and staples
- A combination of a mortise lock and a padlock
- A mortise lock that requires two keys to open

OR

- A three-point lock

(b) Padlocks must:

- Have a minimum of five tumblers
- Have a case hardened shackle at least 3/8 inches in diameter

- Be protected with a minimum of 1/4-inch steel hoods, constructed to prevent sawing or lever action on the locks, hasps, and staples

Note: These requirements do not apply to magazine doors that are adequately secured on the inside by means of a bolt, lock, or bar that cannot be operated from the outside.

(7) Ventilation.

- A two-inch air space must be left around ceilings and the perimeter of floors, except in doorways
- Foundation ventilators must be at least four inches by six inches

(2007 Ed.)

- Vents in the foundation, roof, or gables must be screened and offset

(8) Exposed metal.

- Sparking metal construction cannot be exposed below the tops of walls in storage facilities

- All nails must be blind nailed, countersunk, or nonsparking.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. 06-19-074, § 296-52-70010, filed 9/19/06, effective 12/1/06; 05-08-110, § 296-52-70010, filed 4/5/05, effective 6/1/05; 03-06-073, § 296-52-70010, filed 3/4/03, effective 8/1/03. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-70010, filed 1/23/02, effective 3/1/02.]

WAC 296-52-70015 Igloos, army-type structures, tunnels, and dugouts. These storage facilities must:

- Be constructed of reinforced concrete, masonry, metal, or a combination of these materials

- Have an earth mound covering of at least twenty-four inches on the top, sides, and rear unless the magazine meets the requirements of WAC 296-52-70010 (4)(b), Building construction for roofs

- Have interior walls and floors covered with a nonsparking material

- Be constructed according to the requirements of WAC 296-52-70005, Type 1 magazines: Permanent storage facilities, through WAC 296-52-70060, Construction.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. 05-08-110, § 296-52-70015, filed 4/5/05, effective 6/1/05. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-70015, filed 1/23/02, effective 3/1/02.]

WAC 296-52-70020 Type 2 magazines: Portable field storage. A Type 2 storage facility must:

- Be a box, trailer, semi-trailer, or other mobile facility. When an unattended vehicular magazine is used, the wheels must be removed or it must be effectively immobilized by kingpin locking devices or other methods approved by the department

- Be bullet resistant, fire resistant, weather resistant, theft resistant, and well ventilated

- Be a minimum of one cubic yard

- Be supported to prevent direct contact with the ground

- Have the ground around the magazine slope away for drainage or provide for other adequate drainage.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. 05-08-110, § 296-52-70020, filed 4/5/05, effective 6/1/05. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-70020, filed 1/23/02, effective 3/1/02.]

WAC 296-52-70025 Construction for Type 2 magazines. (1) Exterior, doors, and top openings.

(a) The exterior and doors must be constructed of at least 1/4-inch steel and lined with a minimum of three-inch hardwood.

(b) Magazines with top openings must have lids with water resistant seals or lids that overlap the sides by a minimum of one inch when closed.

(2) Hinges and hasps. Hinges and hasps must be installed so they cannot be removed when the doors are closed and locked by:

- Welding

- Riveting

OR

- Bolting nuts on the inside of the door

(3) Locks.

- (a) Each door must be equipped with:

- Two mortise locks
- Two padlocks fastened in separate hasps and staples
- A combination of mortise lock and a padlock
- A mortise lock that requires two keys to open

OR

- A three-point lock

- (b) Padlocks must have:

- A minimum of five tumblers and a case hardened shackle with a minimum of 3/8-inch diameter
- A minimum of 1/4-inch steel hoods constructed to prevent sawing or lever action on the locks, hasps, and staples

Note: These requirements do not apply to magazine doors that are adequately secured on the inside by means of a bolt, lock, or bar that cannot be operated from the outside.

(4) Ventilation.

- A two-inch air space must be left around ceilings and the perimeter of floors, except at doorways
- Foundation ventilators must be at least four inches by six inches
- Vents in the foundation, roof, or gables must be screened and offset

(5) Exposed metal.

- Sparking metal cannot be exposed below the top of walls in the storage facilities
- All nails must be blind nailed, countersunk, or nonsparking

Note: The following are nonmandatory construction alternatives for magazine exteriors:

- All steel and wood dimensions shown are actual thickness
- The manufacturer's represented thickness may be used to meet the concrete block and brick dimensions.

3/16

- 3/16-inch steel lined with an interior of 4-inch hardwood.

- 3/16-inch steel lined with:

An interior of 7 inches of softwood

OR

6 3/4 inches of plywood.

- 3/16-inch steel lined with:

An intermediate layer of 3-inch hardwood

AND

An interior lining of 3/4-inch plywood.

1/8

- 1/8-inch steel lined with an interior of 5-inch hardwood.

- 1/8-inch steel lined with an interior of 9-inch softwood.

- 1/8-inch steel lined with:

An intermediate layer of 4-inch hardwood

AND

An interior lining of 3/4-inch plywood.

- 1/8-inch steel lined with:

A first intermediate layer of 3/4-inch plywood.

A second intermediate layer of 3 5/8 inches well-tamped dry sand

OR

Sand/cement mixture.

An interior lining of 3/4-inch plywood.

- 5/8-inch steel lined with an interior of any type of non-sparking material.

- 1/2-inch steel lined with an interior of at least 3/8-inch plywood.

- 3/8-inch steel lined with an interior of 2-inch hardwood.

- 3/8-inch steel lined with an interior of:
3 inches softwood

OR

2 1/4 inches of plywood.

- 1/4-inch steel lined with:

An interior of 5 inches of softwood

OR

5 1/4 inches of plywood.

- Any type of structurally sound fire resistant material lined with:

An intermediate layer of 4-inch solid concrete block

OR

4-inch solid brick or concrete

AND

An interior lining of 1/2-inch plywood placed securely against the masonry lining.

- Standard 8-inch concrete block with voids filled with well tamped sand/cement mixture.

- Standard 8-inch solid brick.

- Any type of structurally sound fire resistant material lined with an intermediate 6-inch space filled with:

Well tamped dry sand

OR

Well tamped sand/cement mixture.

- Any type of fire resistant material lined with:

A first intermediate layer of 3/4-inch plywood,

A second intermediate layer of 3 5/8-inch well tamped dry sand

OR

Sand/cement mixture,

A third intermediate layer of 3/4-inch plywood,

A fourth intermediate layer of 2-inch hardwood

OR

14 gauge steel and an interior lining of 3/4-inch plywood,

8-inch thick solid concrete.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060, 05-08-110, § 296-52-70025, filed 4/5/05, effective 6/1/05. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-70025, filed 1/23/02, effective 3/1/02.]

WAC 296-52-70030 Type 3 magazines: Indoor storage facilities.

- Detonators in quantities of one thousand or less

- Ammonium perchlorate rocket motors in 62.5 gram amounts or greater, but not to exceed fifty pounds in total weight of explosives.

OR

- Diversionary devices intended for law enforcement use only, but not to exceed fifty pounds in total weight of explosives.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060, 05-08-110, § 296-52-70030, filed 4/5/05, effective 6/1/05. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-70030, filed 1/23/02, effective 3/1/02.]

WAC 296-52-70035 Storage facilities for detonators.

Storage facilities for detonators in quantities of one thousand or less:

- Must be fire resistant and theft resistant
- Must be locked in an uninhabited building
- May be less than one cubic yard
- Must be painted red and have an identification label in case of fire.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-70035, filed 1/23/02, effective 3/1/02.]

WAC 296-52-70040 Construction for Type 3 magazines. (1) Sides, bottoms, and covers must be constructed with a minimum of number 12 gauge metal and lined with a nonsparking material.

(2) Hinges and hasps must be attached so they cannot be removed from the outside.

(3) One steel padlock, which does not need to be protected by a steel hood, having a minimum of five tumblers and a case hardened shackle of a minimum of 3/8-inch diameter is sufficient for locking purposes.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. 05-08-110, § 296-52-70040, filed 4/5/05, effective 6/1/05. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-70040, filed 1/23/02, effective 3/1/02.]

WAC 296-52-70045 Type 4 magazines: Blasting agent, low explosive, or nonmass detonating detonator storage facilities. A Type 4 storage facility must:

- Be a building, an igloo, an army-type structure, a tunnel, a dugout, a box, a trailer, semi-trailer, or other mobile facility
- Be fire resistant, weather resistant, and theft resistant
- Have the ground around the facility slope away for drainage
- Have the wheels removed or effectively immobilized by kingpin locking devices or other methods approved by the department, when an unattended vehicular magazine is used.

Note: Test results show that electric detonators are not affected by sympathetic detonation. Therefore, a Type 4 storage facility meets the necessary requirements for storage of electric detonators.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. 06-19-074, § 296-52-70045, filed 9/19/06, effective 12/1/06; 05-08-110, § 296-52-70045, filed 4/5/05, effective 6/1/05. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-70045, filed 1/23/02, effective 3/1/02.]

WAC 296-52-70050 Construction for Type 4 magazines. (1) These magazines must be constructed of masonry, metal covered wood, fabricated metal, or a combination of these materials.

(2) **Foundations.** Foundations must be constructed of:

- Brick
- Concrete
- Cement block
- Stone
- Metal

OR

- Wood posts

(3) The space under the building must be enclosed with fire resistant material, if piers or posts replace continuous foundation.

(4) The walls and floors must be made or covered with a nonsparking material or lattice work.

(5) Doors must be metal or solid wood covered with metal.

(6) Hinges and hasps must be installed so they cannot be removed when the doors are closed and locked by:

- Welding
- Riveting

OR

- Bolting nuts on the inside of the door

(7) **Locks.**

(a) Each door must be equipped with:

- Two mortise locks
- Two padlocks fastened in separate hasps and staples
- A combination of a mortise lock and a padlock
- A mortise lock that requires two keys to open

OR

- A three-point lock

(b) Padlocks must:

- Have a minimum of five tumblers
- Have a case hardened shackle of a minimum of 3/8-inch diameter
- Be protected with a minimum of 1/4-inch steel hoods constructed to prevent sawing or lever action on the locks, hasps, and staples.

Note: These requirements do not apply to magazine doors that are adequately secured on the inside by means of a bolt, lock, or bar that cannot be operated from the outside.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. 05-08-110, § 296-52-70050, filed 4/5/05, effective 6/1/05. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-70050, filed 1/23/02, effective 3/1/02.]

WAC 296-52-70055 Type 5 magazines: Blasting agent storage facilities. A Type 5 storage facility must:

- Be a building, an igloo, an army-type structure, a tunnel, a dugout, a box, or a trailer, semi-trailer, or other mobile facility
- Be weather resistant and theft resistant
- Have the ground around the facility slope away for drainage
- Have the wheels removed or be effectively immobilized by kingpin locking devices or other methods approved by the department, when the unattended vehicular magazine is used.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. 05-08-110, § 296-52-70055, filed 4/5/05, effective 6/1/05. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-70055, filed 1/23/02, effective 3/1/02.]

WAC 296-52-70060 Construction for Type 5 magazines. (1) Doors must be constructed of solid wood or metal.

(2) Hinges and hasps must be installed so they cannot be removed when the doors are closed and locked by:

- Welding
- Riveting

OR

- Bolting nuts on the inside of the door

(3) Locks.

(a) Each door must be equipped with:

- Two mortise locks
- Two padlocks fastened in separate hasps and staples
- A combination of a mortise lock and a padlock
- A mortise lock that requires two keys to open

OR

- A three-point lock

(b) Padlocks must have:

- A minimum of five tumblers
- A case hardened shackle of a minimum of 3/8-inch

diameter

• Padlocks must be protected with a minimum of 1/4-inch steel hoods constructed to prevent sawing or lever action on the locks, hasps, and staples.

Note: Trailers, semi-trailers, and similar vehicular magazines. Each door may be locked with one 3/8-inch diameter steel padlock and does not need to be protected by a steel hood, if the door hinges and lock hasp are securely fastened to the magazine and to the doorframe. These requirements do not apply to magazine doors that are adequately secured on the inside by means of a bolt, lock, or bar that cannot be operated from the outside.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. 05-08-110, § 296-52-70060, filed 4/5/05, effective 6/1/05. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-70060, filed 1/23/02, effective 3/1/02.]

WAC 296-52-70065 Explosives day box. (1) A day box for explosives must:

- Be fire, weather, and theft resistant
- Be used in a manner that safely separates detonators from other explosives
- Be constructed of a minimum of number 12 gauge (.1046 inches) steel
- Be lined with at least either 1/2-inch plywood or 1/2-inch masonite-type hardboard
- Have doors that overlap the sides by a minimum of one inch

- Have appropriate ground slope for drainage

(2) Hinges and hasps must be attached by:

- Welding
- Riveting

OR

- Bolting nuts on the inside of the door

(3) One steel padlock, which does not need to be protected by a steel hood, having a minimum of five tumblers and a case hardened shackle of a minimum of 3/8-inch diameter is sufficient for locking purposes.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-70065, filed 1/23/02, effective 3/1/02.]

WAC 296-52-70070 Detonator day box. A detonator day box is a temporary storage facility for detonators in quantities of one thousand or less.

(1) **Construction materials.** Sides, bottoms, and covers must be:

- Constructed of number 12 gauge metal
 - Lined with a nonsparking material
- (2) Hinges and hasps must be attached by:

- Welding
- Riveting

OR

- Bolting nuts on the inside of the door

(3) A single five tumbler lock must be used to lock the detonator day box.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-70070, filed 1/23/02, effective 3/1/02.]

HEATING SYSTEMS

WAC 296-52-70080 Magazine heating system requirements. Magazine heating system requirements and the following apply:

(1) **Heat sources.** Magazines requiring heat must be heated by either:

- Hot water radiant heating

OR

• Air directed into the magazine building by hot water or low pressure steam (15 psig) coils located outside the magazine building

(2) **Heating systems.** Magazine heating systems must meet the following requirements:

(a) The radiant heating coils in the building must be installed where explosive materials or their containers cannot touch the coils and air is free to circulate between the coils and the explosive material containers.

(b) The heating ducts must be installed where the hot air released from a duct is not directed toward the explosive material or containers.

(c) The heating device used in connection with a magazine must have controls, to prevent the building temperature from exceeding 130°F.

(d) The electric fan or pump used in the heating system for a magazine must be:

- Mounted outside
- Separate from the wall of the magazine
- Grounded

(e) **Electric motor, device controls, and electric switch gear.**

(i) The electric fan motor and the controls for electrical heating devices used in heating water or steam must have overloads and disconnects which comply with the National Electrical Code, (NFPA Number 70-1992).

(ii) All electrical switch gear must be located a minimum distance of twenty-five feet from the magazine.

(f) **Water or steam heating source.**

(i) A heating source for water or steam must be separated from a magazine by a distance of at least:

- Twenty-five feet when the heating source is electrical
- Fifty feet when the heating source is fuel fired

(ii) The area between a heating unit and a magazine cannot contain combustible materials.

(g) The storage of explosive material containers in the magazine must allow for uniform air circulation, so temperature uniformity can be maintained throughout the explosive materials.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-70080, filed 1/23/02, effective 3/1/02.]

WAC 296-52-70085 Lighting. (1) Battery activated safety lights or lanterns may be used in explosive storage magazines.

(2) National Fire Protection Association (NFPA) Standards.

(a) Electric lighting used in an explosive storage magazine must meet National Electric Code (NEC) standards (NFPA 70-1992) for all magazine conditions.

(b) All electrical switches must:

- Be located outside the magazine
- Meet NEC standards.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-70085, filed 1/23/02, effective 3/1/02.]

PART G MISCELLANEOUS

WAC 296-52-710 Exemptions. These rules do not apply to in process storage and intraplant transportation during the manufacture of small arms ammunition, small arms primers, and smokeless powder.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060. 03-06-073, § 296-52-710, filed 3/4/03, effective 8/1/03. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-710, filed 1/23/02, effective 3/1/02.]

AMMUNITION

WAC 296-52-71015 Quantity limits. Quantity limitations are not imposed on the storage of small arms ammunition in warehouses, retail stores, and other general occupancy facilities, except those imposed by the limitations of the storage facility.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-71015, filed 1/23/02, effective 3/1/02.]

WAC 296-52-71020 Storage with Division 1.1, 1.2, or 1.3 explosives. Small arms ammunition cannot be stored with Division 1.1, 1.2, or 1.3 explosives.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. 05-08-110, § 296-52-71020, filed 4/5/05, effective 6/1/05; 03-06-073, § 296-52-71020, filed 3/4/03, effective 8/1/03. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-71020, filed 1/23/02, effective 3/1/02.]

WAC 296-52-71025 Separation from flammable materials. Small arms ammunition must be separated from flammable liquids, flammable solids (as classified in 49 CFR Part 172), and oxidizing materials by a:

- Fire resistant wall with a one-hour rating

OR

- Distance of twenty-five feet.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-71025, filed 1/23/02, effective 3/1/02.]

SMALL ARMS SMOKELESS POWDER

WAC 296-52-71035 Transportation. Quantities of small arms ammunition weighing more than fifty pounds must be transported according to federal Department of Transportation (U.S. DOT) regulations.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-71035, filed 1/23/02, effective 3/1/02.]

(2007 Ed.)

WAC 296-52-71040 Shipping container.

• Small arms smokeless powder (Division 1.2 or 1.3) must be packed, stored, and transported in U.S. DOT approved shipping containers.

• All smokeless powder must be stored in shipping containers made for smokeless powder (as required by 49 CFR 173.93).

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060. 03-06-073, § 296-52-71040, filed 3/4/03, effective 8/1/03. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-71040, filed 1/23/02, effective 3/1/02.]

WAC 296-52-71045 Storage. (1) Private residence or car.

• Twenty-five pounds or less of small arms smokeless powder, no restrictions

• Twenty-five to fifty pounds of small arms smokeless powder, they must be stored in a strong box or cabinet constructed of a minimum of 3/4-inch plywood or equivalent material, on all sides, top, and bottom

(2) Commercial stocks.

• Over twenty pounds but not more than one hundred pounds of small arms smokeless powder must be stored in portable wooden boxes with a minimum of one-inch thick walls

• Small arms smokeless powder not exceeding one hundred fifty pounds, must be stored in a nonportable storage cabinet with a minimum of one-inch thick wood walls

(3) Dealer's warehouse.

• A dealer's warehouse cannot hold more than one hundred fifty pounds of small arms smokeless powder

• Twenty to one hundred pounds of small arms smokeless powder must be stored in a minimum of one-inch thick portable or fixed wooden boxes

(4) Dealer's display.

• The dealer's display cannot exceed more than seventy-five pounds of small arms smokeless powder

• Small arms smokeless powder must be stored in one-pound containers

(5) **Magazines.** Small arms smokeless powder that exceed one hundred fifty pounds must be stored in approved licensed magazines. See Storage licensing, WAC 296-52-660, Storage of explosive materials, WAC 296-52-690, and Magazine construction, WAC 296-52-700.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060. 03-06-073, § 296-52-71045, filed 3/4/03, effective 8/1/03. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-71045, filed 1/23/02, effective 3/1/02.]

SMALL ARMS AMMUNITION PRIMERS

WAC 296-52-71055 Shipping containers. Small arms ammunition primers must be packed, stored, and transported in U.S. DOT approved shipping containers.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-71055, filed 1/23/02, effective 3/1/02.]

WAC 296-52-71060 Separation from flammable materials. Primers must be separate from flammable liquids, flammable solids, and oxidizing materials by a:

- Fire resistant wall with a one hour rating

OR

- Distance of twenty-five feet.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-71060, filed 1/23/02, effective 3/1/02.]

WAC 296-52-71065 Storage. (1) Private residence.

The maximum small arms ammunition primers permitted is ten thousand primers. No restrictions apply.

(2) **Private car.** The maximum small arms ammunition primers permitted is twenty-five thousand primers. No restrictions apply.

(3) **Dealer's display.** The maximum small arms ammunition primers permitted is ten thousand primers. No restrictions apply.

(4) Dealer's warehouse.

• The maximum small arms ammunition primers permitted is seven hundred fifty thousand primers

– No more than one hundred thousand small arms ammunition primers may be stored in one stack

– Stacks must be separated by at least fifteen feet

(5) **Magazines.** If there are more than seven hundred fifty thousand small arms ammunition primers, they must be stored in approved licensed magazines (see Storage licensing, WAC 296-52-660, Storage of explosive material, WAC 296-52-690, and Magazine construction, WAC 296-52-700).

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-71065, filed 1/23/02, effective 3/1/02.]

BLACK POWDER

WAC 296-52-71075 Shipping containers. Black powder, used in muzzleloading firearms must be packed, stored, and transported in U.S. DOT approved shipping containers.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-71075, filed 1/23/02, effective 3/1/02.]

WAC 296-52-71080 Storage. (1) Private residence.

No more than five pounds of black powder is permitted. No restrictions apply.

(2) **Private car.** No more than five pounds of black powder is permitted. No restrictions apply.

(3) **Dealer's warehouse.** No more than twenty-five pounds of black powder is permitted. Black powder must be stored in an appropriate container or cabinet, which is securely locked.

(4) **Magazine.** Quantities of black powder, as used in muzzleloading firearms, in excess of twenty-five pounds must be stored in licensed magazines (see Storage licensing, WAC 296-52-660, Storage of explosive materials, WAC 296-52-690, and Magazine construction, WAC 296-52-700).

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. 05-08-110, § 296-52-71080, filed 4/5/05, effective 6/1/05. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-71080, filed 1/23/02, effective 3/1/02.]

EXPLOSIVES AT PIERS, RAILWAY STATIONS, RAILWAY CARS, AND VESSELS NOT OTHERWISE SPECIFIED IN THIS CHAPTER

WAC 296-52-71090 Delivery to carriers. Explosives delivered to any carrier must comply with U.S. DOT regula-

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tions. Explosives cannot be delivered to any carrier unless the packaging is in compliance with U.S. DOT regulations.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-71090, filed 1/23/02, effective 3/1/02.]

WAC 296-52-71095 Hours of transfer. Explosives cannot be received between sunset and sunrise from any:

- Railway station
 - Truck terminal
 - Pier
 - Wharf
 - Harbor facility
- OR**
- Airport terminal.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-71095, filed 1/23/02, effective 3/1/02.]

WAC 296-52-71100 Storage in route. Explosives waiting for delivery or further transit at a railway facility, truck terminal, pier, wharf, harbor facility, or airport terminal must be:

- Stored in a safe place
- Isolated as much as practical
- In a manner that allows quick and easy removal.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-71100, filed 1/23/02, effective 3/1/02.]

WAC 296-52-71105 Railway cars. (1) Use of railway cars.

Explosives cannot be kept in a railway car unless:

- An emergency exists
- Permission has been granted by the local authority
- The railway car, its contents, and methods of loading are in compliance with U.S. DOT regulations (49 CFR Chapter 1)

(2) Warning signs for railway cars not in transit.

• Any railway car containing explosives must have warning signs attached to every side of the car when it is:

– Stopped in transit

OR

– At its designation

AND

– No longer considered in interstate commerce

• Warning signs must read "EXPLOSIVES—HANDLE CAREFULLY—KEEP FIRE AWAY."

The letters must be:

– Red

– At least one and one-half inches high

– On a white background.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-71105, filed 1/23/02, effective 3/1/02.]

WAC 296-52-720 Appendix A, sample explosives-blasting ordinance for local jurisdictions, nonmandatory.

Explosives-blasting ordinance for local jurisdictions

Be it ordained by the _____ (jurisdiction name).

(2007 Ed.)

Section 1: Permit required.

(1) A current and valid blasting permit issued by _____ (jurisdiction name) is required by companies or individuals who:

- Possess explosive materials (as defined by chapter 296-52 WAC, Safety standards for possessions and handling of explosives)
- Conduct an operation or activity requiring the use of explosive materials

OR

- Perform, order, or supervise the loading and firing of high explosive materials

(2) Anyone in _____ (jurisdiction name) who does not have a valid blasting permit cannot transport, sell, give, deliver, or transfer explosive materials.

(3) A blasting permit is required for every individual project requiring blasting explosives.

(4) A permit issued to any person, company, or corporation under this ordinance is nontransferable to any other person, company, or corporation.

(5) All blasting permits issued by _____ (jurisdiction name) must follow all federal, state, county, and city laws and regulations that apply to these activities with explosive materials:

- Obtaining
- Owning
- Transporting
- Storing
- Handling
- Using.

Section 2: Application contents.

(1) The proper administrative authority (____ name ____) or their designee, has the power and authority to issue blasting permits and requires persons, companies, or corporations who are issued permits to file an application that includes:

(a) A completed application form provided by _____ (jurisdiction name) specifying the name and address of the person, company or corporation applying for the permit, and the name and address of the blast site or the person who will actually supervise the blasting.

(b) A current and valid explosives license issued by the state of Washington department of labor and industries to one or more individuals working on the specific blasting project.

(c) A transportation plan according to Section 8.

(d) A blasting plan according to Section 10(1).

(e) A traffic control plan according to Section 10(2).

(f) A preblast; notification, inspection, and monitoring plan according to Section 10(3).

(g) Proof of insurance must be provided according to Section 4.

(2) _____ (jurisdiction name) will issue a permit within fourteen days of receiving an application that includes acceptable documentation of the above items 1 a through g through 7. If the permit is denied, it must be done within fourteen days of administering authority receipt and must include a list of reasons for denial as well as instructions for reapplication.

(2007 Ed.)

Section 3: Fee.

A permit fee is required for each permit issued. It should be:

- Valid for twelve months
- Follow the local fee schedule
- Renewable

Section 4: Liability insurance required.

(1) If the _____ (jurisdiction name) design requires approval, then coverage of one million dollars or more is required or other reasonable amount depending on the circumstances as determined by _____ (name of the proper administrative authority).

(2) The certificate must also state that the insurance company must give _____ (jurisdiction name) a minimum of ten days notice of cancellation of the liability insurance coverage.

(3) The _____ (name of the proper administrative authority) has the power and authority to limit the level of blasting. After examining all pertinent circumstances surrounding the proposed blasting, they may refuse to issue a permit, or suspend, or revoke an existing permit.

Section 5: Revocation.

The _____ (name of the proper administrative authority) has the power to revoke any permit if the permit holder does not follow the requirements of this chapter. The permit holder has twenty-four hours to remove all explosive materials after being notified that their permit has been revoked.

Section 6: Denial or revocation appeal.

Any person, company, or corporation whose blasting permit application is denied, suspended, or revoked by _____ (name of proper authority), may file a notice of appeal within ten days to _____ (name of the legislative body with jurisdiction over the administrator).

– The legislative body must schedule an appeals hearing within fourteen days.

Section 7: _____ (jurisdiction name) not to assume liability.

_____ (jurisdiction name) is not responsible for any damage caused by the person, company, or corporation blasting with _____ (jurisdiction name).

Section 8: Transportation of explosives (transportation plan).

(1) You must include a transportation plan that addresses the transportation of explosive materials within _____ (jurisdiction name) with your application for a blasting permit.

(2) The transportation plan must include the following information:

- (a) Route used for deliveries and returns
- (b) Hours of transportation
- (c) Maximum quantities of explosives being transported

(d) Types of vehicles being used. Vehicles must be in compliance with federal and state transportation regulations for transportation of explosive material.

Section 9: Storage of explosives.

(1) No overnight storage of explosive material is permitted within the limits of _____ (jurisdiction area) without specific amendments to the permit allowing storage. Blast holes loaded with explosives are to be shot on the day they are loaded.

(2) The required method of handling explosives in _____ (jurisdiction area) is as follows:

- (a) Same day delivery
- (b) Stand by during loading
- (c) Return of all unused explosive materials.

Section 10: Use of explosives.

(1) **Blasting plan.** A blasting plan for each project must be submitted to _____ and approved by the _____ (name of the proper administrative authority) or their designee prior to issuing a blasting permit. The plan must include additional documentation for the proposed blasting operation. For example, maps, site plans, and excavation drawings. The plan must include:

- (a) The location where the blast will occur
- (b) The approximate total amount of material to be blasted
- (c) The incremental volumes, per blast, of material to be blasted
- (d) The types and packaging of explosive materials to be used
- (e) The drill hole diameters, depths, patterns, subdrilling depths and drill hole orientation to be used
- (f) The initiation system, the incremental delay times, and the location of the primers in the explosive column
- (g) The stemming depths and stemming material for the various estimated depths of drill holes to be blasted
- (h) The approximate powder factors anticipated
- (i) The flyrock control procedures and equipment to be used
- (j) The maximum number of blasts that will be made in one day
- (k) The blast warning sound system and equipment to be used
- (l) The scheduled start date and finish date of blasting operations
- (m) Additional requirements as needed.

(2) **Traffic control plan.** A traffic control plan acceptable to _____ (jurisdiction name) detailing signing, flagging, temporary road closures, and detour routes for blasting operations must be filed before the blasting permit is issued.

(3) **Preblast notification plan.** A plan outlining preblast public notifications, structural inspections, and blast effect monitoring within a specified distance of the blasting is required before the blasting permit is issued.

(a) **Separation distance.** The distances from the blasting where the notification, preblast structural inspection, and blast monitoring is required must be determined by the scaled distance formulas described below. Blasting will not be per-

mitted until the notification and inspection requirements are completed.

(b) Scaled distance formulas.

(i) The distance from the blast within which:

- Notification of all occupied structures is required: $D_a = 90 w$
- Inspection of all occupied structures is required: $D_b = 75 w$
- Monitoring of selected structures is required: $D_c = 60 w$

(ii) In the above formulas:

- D_a , D_b , and D_c are the actual distances in feet from the closest point in the blast.
- w is the square root of the maximum weight of the explosives in pounds detonated with a minimum 8 millisecond from another detonation event.

(c) **Notification letter.** The preblast notification must consist of a letter advising all residents within the distance (specified in WAC 296-52-720 section 10 (3)(b)) of the blasts. The letter must include the intent of the blasting program, its anticipated impact on local residents, the proposed duration of blasting activities, and provide telephone numbers for public contact. Distribution of this notification must be made a minimum of seven days before the start of blasting. The source of the chart is 121.8507, Bureau of Mines, U.S. Department of Interior, 1980.

(d) **Preblast inspection.** A preblast inspection of resident's property must be offered to all residents within the distance (specified in WAC 296-52-720 section 10 (3)(b) above) of the blasting at no cost to the resident and will be performed by a qualified third party who is not an employee of the contractor. A copy of the individual inspection reports and a log of all photos taken are to be provided to _____ (jurisdiction name). Where inspections are not allowed by the resident or are not possible for other reasons, a certified letter must be sent to the occupant/owner at the unsurveyed address advising them of their right to a preblast inspection and the possible consequences of denying an inspection. The preblast inspection program for residences within the specified distance must be complete two days prior to the start of blasting and the _____ (name of the proper administrative authority) should be notified.

(4) **Blast-plan compliance inspections.** Blast-plan compliance inspections may be required for every blast until the operator can demonstrate an ability to safely blast according to the blast plan and control the extraneous effects of blasting such as flyrock, noise/air blast, and ground vibration. If more than two blasting inspections are required, an additional fee of _____ (insert dollar amount) per blast inspection will be assessed.

(5) **Monitoring.** All blasts which require monitoring by section 10 (3)(b) are to be monitored using blast monitoring equipment designed for the purpose and carrying a certificate of calibration dated within the previous twelve months. The blast monitors must record peak particle velocity and frequency in three orthogonal directions and air over pressure. Monitored shots in which the pounds detonated per an 8-millisecond time increment is less than ten pounds, one blast monitor is required. When ten or more pounds is detonated per an 8-millisecond time interval, two or more blast monitors are required. All blast-monitoring records are to be

signed and submitted to _____ (jurisdiction name) within twenty-four hours of each blast.

(6) **Maximum peak particle velocity.** The maximum peak particle velocity in any seismic trace at the dominant frequency allowed on any residential, business or public structure designed for human occupancy is to be determined by the chart in WAC 296-52-67065(1).

(7) **Air blast.** The maximum air blast over pressure permitted at the closest residential, business or public structure designed for human occupancy is not to exceed 133 dBL @ 2.0 Hz hi pass system per WAC 296-52-67065(3). The source of this regulation is 121.8485, Bureau of Mines, U.S. Department of Interior, 1980.

(8) **Utilities.** Whenever blasting is being conducted in close proximity to existing utilities, the utility owner must be notified a minimum of twenty-four hours in advance of blasting.

(9) **Blast report.** A signed blast report, on a form approved by the _____ (name of the proper administrative authority) or their designee, needs to be filed with _____ (jurisdiction name) within twenty-four hours of the blast. The report must include the following blast information:

- (a) Date, time, and location of the blast
 - (b) Number of drill holes
 - (c) Maximum, minimum and average drill hole depth
 - (d) Drill hole diameter
 - (e) Subdrill depth
 - (f) Total pounds of each type of explosive used
 - (g) A drill hole section schematic showing the loading of a typical hole
 - (h) Amount and type of stemming material
 - (i) Schematic showing the drill hole pattern
 - (j) Initiated delayed sequence
 - (k) Maximum pounds of explosives detonated in any eight millisecond time interval
 - (l) Type and size of any flyrock protection devices used, if any
 - (m) Comment regarding the outcomes of the blast.
- (10) _____ (jurisdiction name) must be notified immediately of any unplanned or unusual events that resulted from the blast. The permittee must also report any incident, damage claim, or neighbor annoyance report brought to the permittee's attention within twenty-four hours.

Section 11:

This ordinance will be in effect to preserve the health, peace, and safety of the citizens of _____ (jurisdiction name).

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-125, § 296-52-720, filed 1/23/02, effective 3/1/02.]

WAC 296-52-725 Appendix B, sample format for a blast record, nonmandatory.

Note: The sample blast record format is nonmandatory, but the information shown in the sample is required per WAC 296-52-67010(8), Blast records.

SAMPLE FORMAT FOR A BLAST RECORD*(Minimum Record Requirements)*Blast/Record Date _____ Blast # _____ Time of Blast _____ ☐ AM ☐ PM

Employer: _____

Blast-Site Location: _____

Blast Crew Members:

General Weather Conditions (Clouds & Ceiling, Humidity, Wind Speed/Direction, Temperature, etc.):

Type & Condition of Rock Blasted:

Number of Boreholes _____	Diameter _____ in.	Depth _____ ft.	Backfill _____
Borehole Water Depth _____	Burden _____ ft.	Spacing _____	
Number of Rows _____	Stemming _____ ft.	Stemming Material _____	
Non-Standard Pattern Details: _____			

**MAKE, TYPE and AMOUNT
Of Explosives Used**

_____ lb.

_____ lb.

_____ lb.

_____ lb.

_____ lb.

_____ lb.

Total Pounds in Blast = _____ lb.

Maximum boreholes per delay _____ Maximum loaded pounds per delay _____

Number of decks per borehole _____ Weight of explosives per deck _____

Distance, direction, and address of closest structure from blast site _____ ft.

Distance: _____ ft. Direction: _____ Address: _____

Calculated scaled distance $W = (D/(55/60/65))^2 =$ _____ Maximum lb. Per delay allowed in (USBM)

Distance, direction, and address of seismographs from the blasts site.

Distance: _____ ft. Direction: _____ Address: _____

Calibration dates of seismographs used:

Number _____ Date _____ Number _____ Date _____

Method used to measure distances (Laser RF, Optical RF, GPS, Tape, Wheel, Map)?

Other Method: _____

DETONATORS☐ Electric ☐ None

Manufacturer _____

Length _____

Delay Periods _____

of Units _____

☐ Cord _____

BLASTING RECORD	
SKETCH OF BLAST LAYOUT IDENTIFY SHOT LOCATION BY STATION OR BY DIRECTION AND DISTANCE TO KNOWN STRUCTURE OR OBJECT. SHOW NORTH ARROW. SHOW DELAY NUMBER BY HOLE AND WIRING/CORD/TUBING HOOKUP.	
<div style="display: flex; justify-content: space-between; margin-bottom: 10px;"> <div> BLAST LOCATION & BLAST NUMBER _____ </div> <div> DATE: ____/____/____ </div> </div> <div style="border: 1px solid black; width: 100%; height: 300px; margin-bottom: 10px;"> </div>	<div style="text-align: center; margin-bottom: 10px;"> TYPICAL HOLES </div> <div style="display: flex; align-items: center;"> <div style="writing-mode: vertical-rl; transform: rotate(180deg); font-size: small; margin-left: 10px;"> SHOW: Depth, Stemming, Decks, Water, Primer Locations, Subdrilling, etc. </div> </div>
BLAST COMMENTS including fragmentation, muckpile configuration, and flyrock (use additional paper if needed) <hr/> <hr/> <hr/> <hr/>	
<div style="display: flex; justify-content: space-between;"> <div> SIGNATURE (Blaster in charge): _____ </div> <div> Date: _____ </div> </div> <div style="display: flex; justify-content: space-between; margin-top: 10px;"> <div> License Number: _____ </div> <div> Expiration Date: _____ </div> </div>	

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060, 05-08-110, § 296-52-725, filed 4/5/05, effective 6/1/05. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050, 02-03-125, § 296-52-725, filed 1/23/02, effective 3/1/02.]

PART H AVALANCHE CONTROL

WAC 296-52-800 Avalanche control. (1) General.

(a) During periods of high avalanche danger, areas in avalanche paths shall not be opened for use until trained per-

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sonnel have evaluated conditions and determined whether avalanche control work is necessary.

(b) When avalanche control work is deemed necessary, areas in the potential avalanche path shall be closed until the risk of avalanches has been reduced to a level determined appropriate by trained personnel.

[Title 296 WAC—p. 1143]

(c) An avalanche shall not be purposely released until the avalanche path and potential runout zone are clear of personnel and vehicles.

(d) Avalanche guards, signs, and/or barricades shall be positioned at normal entrances to the avalanche path if there is any chance that personnel and vehicles will enter the danger zone during intentional release activities.

(e) During very unstable snow conditions, release of one avalanche may trigger sympathetic releases over a wide area. Avalanche workers shall consider such possibility and clear the appropriate areas of personnel and vehicles.

(2) Personnel and equipment.

(a) The avalanche control crew shall be adequately trained and physically capable for tasks which can be anticipated in their individual job assignments.

(b) No person shall accept or be given a job assignment which is beyond the individual's physical ability or training.

(c) On-slope assignments which include potential exposure to avalanche hazards shall only be conducted by fully qualified and fully equipped control crew members.

(d) The control crew may be split up into smaller groups (teams) to work on multiple areas simultaneously provided that each team consists of at least two qualified members.

(e) Each avalanche control crew or team shall have one or more designated rescue coordinators as is deemed necessary to maintain communications. Compliance with this requirement may be achieved by designating control crew teams to serve as each others' rescue coordinator provided that the teams are reasonably proximate to each other and do in fact maintain frequent communications.

(f) Each avalanche control crew member shall be equipped for continuous two-way communications to the avalanche crew coordinators.

(g) The avalanche crew or teams shall not be assigned to on-slope areas where they cannot maintain communications with their designated coordinator. This requirement may be met by the use of a relay person; however, if any team completely loses communications, they shall return directly to base via the safest route available.

(h) Each person on an avalanche control team shall be equipped with a shovel and an electronic transceiver before commencing on-slope control work. The transceiver shall be in the transmit position whenever personnel are performing on-slope job assignments.

(3) Avalanche rescue plan. All employers with avalanche control personnel shall have a written avalanche rescue plan. The plan shall require:

(a) All rescue personnel who will be assigned to on-slope activities shall:

- (i) Be competent skiers;
- (ii) Have a current first-aid card;
- (iii) Be thoroughly trained in the rescue plan details;

(b) A specific list of required equipment for rescue crew personnel including:

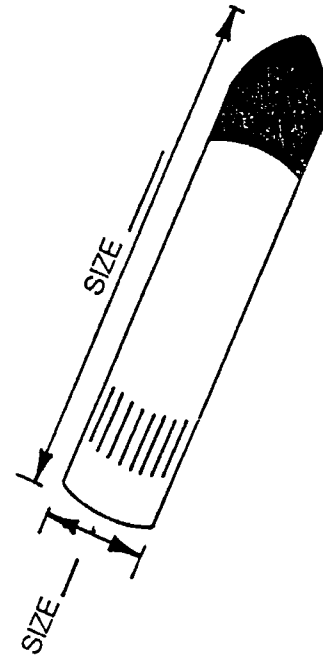
- (i) Probes;
- (ii) Belaying rope;
- (iii) Shovels;
- (iv) Two-way communication radios;
- (v) Electronic transceivers;
- (c) A list of rescue equipment locations;
- (d) Specific rescue procedures to be followed.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. 06-19-074, § 296-52-800, filed 9/19/06, effective 12/1/06.]

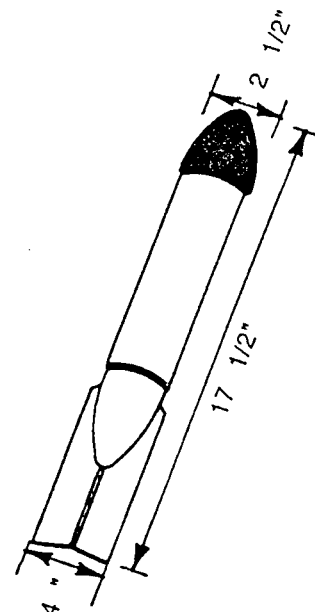
WAC 296-52-802 Acceptable warning signs for typical avalanche control devices (duds).

DANGER
EXPLOSIVES ON THE MOUNTAIN

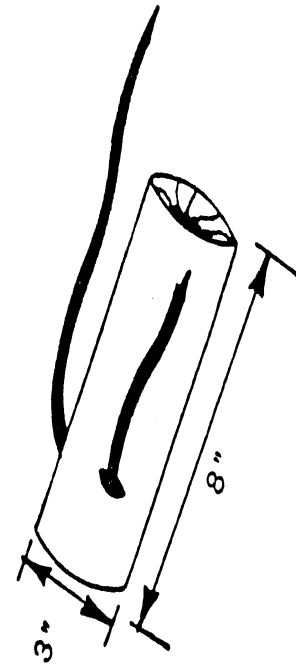
Unexploded warheads, projectiles, or hand charges used in avalanche control may be found in target areas or in avalanche runout zones.



UNEXPLODED WARHEADS
WARHEAD MAY BE DISTORTED
FROM IMPACT.



AVALAUNCHER PROJECTILE
RED OPAQUE BODY,
RED TRANSLUCENT FINS.



DYNAMITE HANDCHARGE
COLORED WRAPPING,
WILL USUALLY HAVE FUSE.

If you find an unexploded (dud) charge, do the following:

1. Do not disturb or touch!
2. Mark the location within 5 to 10 feet.
3. Immediately report the location.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. 06-19-074, § 296-52-802, filed 9/19/06, effective 12/1/06.]

WAC 296-52-803 Storage, makeup, and use of explosives for avalanche control blasting. (1) General.

(a) The storage, handling, and use of explosives and blasting agents used in avalanche control practices shall comply with this chapter and chapter 70.74 RCW.

(b) The minimum requirements published in chapter 296-52 WAC, Part H, shall be applicable to the storage, handling, and use of explosives and blasting agents in the endeavor of avalanche control.

(2) Management responsibility.

(a) Explosives and blasting agents shall not be stored in any regularly occupied areas or buildings except in compliance with this chapter.

(b) Explosives and blasting agents shall not be assembled or combined to form armed charges in any regularly occupied area or building except in compliance with this chapter.

(3) Personnel.

(a) Only fully qualified and licensed blasters shall be permitted to assemble or arm explosives components.

(2007 Ed.)

(b) Training shall include avalanche blasting experience so that the problems encountered in cold weather blasting are known factors.

(c) All training activities shall be conducted under the attended supervision of a fully qualified and licensed blaster.

(4) General requirements.

(a) Initiating systems for hand-placed or hand-thrown charges.

(i) The ignition system on single-unit hand-thrown charges shall consist of a nonelectric cap or shock tube and approved initiation system.

(ii) Multiple units combined to form a single hand-placed charge may use the above system, an approved detonating cord system or shock tube system. No other ignition system shall be permissible without specific approval by the department.

(iii) When using a shock tube system, after all charges are in place, connected to the shock tube trunk line and ready for initiation, the shock tube initiation tool shall be attached for firing.

(b) Multiple charge blasts.

(i) Detonating cord or shock tube system shall be used in lieu of blasting wire to connect multiple charge blasts.

(ii) When using detonating cord systems, after all charges are placed, connected to the detonating cord, and the charges are ready to be ignited, a safety fuse and cap shall be attached to the detonating cord. A fuse igniter may then be attached to ignite the safety fuse.

(c) Blasting caps shall be no larger than No. 8 except when recommended by the explosives manufacturer for a particular explosive used within a specific application.

(d) Electric blasting caps are not permitted.

(e) Safety fuse and shock tube.

(i) Only the highest quality safety fuse with excellent water resistance and flexibility shall be used.

(ii) Shock tube systems may be used in place of fuse cap and safety fuse systems.

(f) Fuse length.

(i) Safety fuse length shall be selected to permit the control team adequate escapement time from the blast area under all reasonable contingencies (falls, release of bindings, etc.)

(ii) In no instance shall a fuse length with less than ninety seconds burn time be permitted.

(iii) The burn time of each roll of safety fuse shall be checked prior to use.

(iv) Checked rolls shall be marked with the tested burn time.

(v) It is recommended that all hand charges be prepared for ignition with either one safety fuse and igniter or a double safety fuse and igniters.

Note: Standard safety fuse burns at a rate of forty to fifty-five seconds at two thousand five hundred meters elevation. This rate equates to approximately twenty-four inches fuse length for ninety second hand charge fuses at normal avalanche control elevations, but fuse burn rate should be checked before each use.

(5) Explosives.

(a) Explosives chosen shall have a safe shelf life of at least one operating season in the storage facilities in which it will be stored.

(b) Explosives chosen shall have excellent water and freezing resistance.

(c) Industrial primers (or boosters) that consist mainly of TNT or gelatin are the recommended explosives.

(6) Transporting explosives and hand charges.

(a) Hand charges or explosives components shall be transported in approved type avalanche control packs, in United States Department of Transportation-approved shipping containers or in licensed magazines.

(b) Criteria for avalanche control packs.

(i) The pack shall be constructed of water resistant material.

(ii) Packs shall be constructed with sufficient individual compartments to separate hand charges or explosives components from tools or other equipment or supplies which may be carried in the pack.

(iii) Each compartment used for hand charges or explosives components shall have an independent closure means.

(iv) If fuse igniters will be permitted to be carried on the avalanche control pack, a separate compartment with individual closure means shall be attached to the outside of the exterior of the pack.

(c) Use of avalanche control packs.

(i) Packs shall be inspected daily, prior to loading, for holes or faulty compartment closures. Defective packs shall not be used until adequately repaired.

(ii) Tools or other materials shall not be placed in any compartment which contains hand charges or explosives components.

(iii) Fuse igniters shall never be placed anywhere inside the pack when the pack contains hand charges or other explosives components.

(iv) Fuse igniters may be carried in a separate compartment attached to the outside of the pack exterior but preferably in a compartment attached to the front of the carrying harness. Another acceptable alternative is to carry the igniters in a jacket pocket completely separate from the pack.

(v) Hand charges or explosives components shall not be stored or left unattended in avalanche control packs. Unused hand charges shall be promptly disassembled at the end of individual control routes and all components returned to approved storage.

(vi) Individual control team members shall not carry more than thirty-five pounds of hand charges in avalanche control packs.

(vii) A hand charge or cap and fuse assembly which has a fuse igniter attached shall never be placed in an avalanche control pack for any reason.

(d) Whenever explosives or explosives components are transported in or on any vehicle powered by an internal combustion engine, provisions shall be made to ensure that said explosives or containers cannot come into contact with the hot exhaust system.

(e) Hand charges or explosives components shall not be transported in spark-producing metal containers.

(f) Hand charges shall not be transported on public roads and highways when such roads or highways are open to the public. Explosives components shall only be transported on public roads or highways in compliance with United States Department of Transportation regulations.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. 06-19-074, § 296-52-803, filed 9/19/06, effective 12/1/06.]

WAC 296-52-805 Hand charge makeup methods.

General. The department shall recognize two permissible methods concerning hand charges for avalanche control blasting. The descriptions and requirements for each method are contained in this section.

Note: A well-designed and constructed hand charge makeup room can enhance the correct assembly of explosive components and reduce the incidences of misfires from incorrect makeup or moisture.

(1) Method I. Makeup at the blast site.

(a) The ignition system shall consist of a nonelectrical blasting cap and highest quality water resistant safety fuse, or detonating cord, assembled as recommended by the manufacturer.

(b) Detonating cord shall be used to connect separated multiple-charge blasts.

(c) No other ignition system shall be permissible on hand-placed or hand-thrown avalanche control charges unless variance is granted by the department.

(d) Caps shall be installed on correct length fuses prior to being transported out onto control routes.

(e) Caps shall only be crimped with a crimper tool approved for that purpose.

(f) Assembling caps and fuses shall be done in a warm, dry, well-lighted environment. The location used for assembly shall not have flammable fuels, flammable gases, or explosives present where accidental detonation of the caps could create a secondary ignition or detonation hazard.

(g) Each cap shall be protected by a styrofoam shield or the equivalent before being placed in an avalanche control pack for transportation.

(h) A fuse igniter shall never be attached to a fuse until the fuse and cap assembly is installed in the hand charge at the blast site and the control crew is fully prepared to ignite the charge.

(i) All 1.1 explosives shall be attended as defined in this chapter at all times when the explosive is out of the Type 1 or 2 storage magazine.

(j) Disbursement of explosive charges from the Type 1 or 2 storage magazine into avalanche control packs shall be done outside the storage magazine. Records shall be maintained for all explosives disbursed.

(k) Caps, cap and fuse assemblies, armed hand charges, or fuse igniters shall not be carried into or stored in a Type 1 or 2 magazine which contains 1.1 explosives.

(2) Method II. Hand charge makeup room. This method is different from method I primarily in that the fuse and cap assembly is installed in the explosive charge while inside a special makeup room. The assembly procedure shall be as follows:

(a) Install caps on correct length fuses with an approved crimper tool before explosives are brought into the makeup room.

(b) The cap and fuse assemblies shall not be combined with explosives to form hand charges until just before the intended time of distribution.

(c) Only nonsparking skewers shall be used to punch holes in an explosives cartridge.

(d) The fuse shall be laced or taped in position after inserting the cap in the charge.

(e) Each hand charge shall be placed in an explosives box or avalanche control pack immediately after assembly is completed.

(f) No spark-producing metal tools shall be used to open explosives containers.

(g) Fuse igniters shall never be attached to a fuse or a hand charge until the hand charge is at the blast site and the control crew is fully prepared to ignite the charge.

(3) Makeup room requirements, procedures.

(a) Construction requirements.

(i) Makeup rooms located in accordance with the American Standard Quantity and Distance Tables for storage shall not require construction of reinforced concrete walls, floors, and doors. All other requirements of this chapter shall be applicable for such facilities.

(ii) Floors and walls. The floor and walls shall be constructed of reinforced concrete not less than eight inches thick. The rebar shall be not less than one-half inch diameter and shall be spaced on twelve-inch vertical and horizontal centers. The rebar shall be bent at a ninety degree angle and extend a minimum of twenty-four inches into the adjoining floor or wall to secure each floor and wall joint.

(iii) Roof. The roof is not limited to specific materials but shall provide both weather protection and standard snow loading protection for the region.

(iv) Access door(s).

(A) If a hinged door mounting is utilized, the hinge shall be mounted on the inside so that the door opens into the makeup room. In the fully closed position, in position to be locked, the door shall be a minimum of two inches larger than the access opening on all sides.

(B) If a flush door mounting is utilized, the door shall be mounted with a two-inch decreasing taper on all sides of both the door and the concrete access opening to form a wedge seal.

(C) If a sliding door mounting is utilized, the mounting apparatus shall be on the inside of the makeup room and the door shall be a minimum of two inches larger than the access opening when the door is fully closed.

(D) Makeup room door may be either:

(I) Constructed to the same structural integrity and mounting requirements of (A) through (C) of this subsection; or

(II) Constructed of plywood not less than two inches thick and overlaid on the outside with a steel plate not less than one-eighth inch thick.

(III) If a door which complies with (II) of this subsection is used, a berm or barricade shall be installed within six feet of the door. The berm or barricade shall extend at least as high as the top of the door and shall be a minimum of two feet wider than the door on both sides of the door.

(E) For security purposes, one steel padlock having at least five tumblers and a case hardened shackle of at least three-eighths inch diameter is sufficient for locking purposes. Hinges and hasps shall be attached so that they cannot be removed from the outside when in the closed position and with the lock in place.

(v) Interior finish. The inside of all makeup rooms shall be finished and equipped to the following minimum requirements:

(A) Construction shall be fire resistant and nonsparking up to the top of the walls. Nails or screws shall be counter-sunk, blind nailed, or covered.

(B) Lighting shall be by N.E.C. explosion-proof rated fixtures and all wiring shall be in sealed conduit.

(C) Control switches shall be outside the makeup room.

(D) No electrical outlet boxes are permissible inside the room.

(b) Restrictions.

(i) Smoking, matches, open flames, or flame- or spark-producing devices shall not be permitted inside the makeup room.

(ii) Flammable liquids or flammable compressed gases shall not be stored in the makeup room.

(iii) Signs limiting entry to authorized personnel shall be posted on the door(s).

(iv) A sign stating the occupancy rules shall be posted inside the makeup room where it is clearly legible upon entering the room. The sign shall post the following rules:

(A) Occupancy shall be restricted to specifically authorized personnel;

(B) Smoking, matches, flame- or spark-producing devices, tools or equipment shall not be permitted in the room at any time when explosives or explosive components are present; and

(C) Flammable fuels or compressed gases shall not be permitted inside the room nor stored within fifty feet of the room.

(v) Heating units shall be limited to:

(A) Forced air systems with the heating unit located outside the room.

(B) Steam systems of 15 psig or less.

(C) Hot water systems of 130°F or less.

(D) The radiant heating coils and piping for steam or hot water systems shall be protected so that explosives cannot come into contact with them.

(E) Heating ducts shall be installed so that the hot air does not discharge directly on explosives.

(F) The heating system used in a makeup room shall have controls which prevent the ambient room temperature from exceeding 130°F.

(vi) The makeup room shall be equipped with a portable fire extinguisher of at least 2A-20BC rating.

Note: For additional requirements relating to portable fire extinguishers see WAC 296-800-300.

(vii) Ventilation.

(A) The makeup room shall be equipped with a ventilation system capable of maintaining a minimum rate of three air exchanges per hour during all times when explosives are present in the room.

(B) Fans and controls shall be located outside the makeup room and shall be of a type approved for this service.

(C) The lighting circuit control shall also activate the ventilation fan and the ventilation fan shall be operated whenever personnel are in the room.

(D) Exhaust ventilation shall be arranged to discharge into outside air, not into an enclosed structure.

(viii) The floor or exterior walls may be constructed with duct openings for heating and ventilation purposes provided that:

(A) Each duct opening is not greater in volume than seventy-two square inches;

(B) The combined number of duct openings shall not exceed three;

(C) Duct openings shall be located within twelve inches of the floor or ceiling;

(D) The exhaust duct opening shall not be located on the wall above the makeup workbench.

(c) Practices and procedures.

(i) When explosives are present in the makeup room, entry into the makeup room shall be restricted to trained and authorized personnel.

(ii) The access door(s) to the makeup room shall be kept locked or bolted from the inside while employees are assembling explosives.

(iii) The entire makeup room shall be kept clean, orderly, and free of burnable rubbish.

(iv) Brooms and other cleaning utensils shall not have any spark-producing metal parts if used when explosives are present.

(v) Sweepings and empty explosives containers shall be disposed of as recommended by the explosives supplier.

(vi) Repair activities which utilize spark-producing tools shall not be conducted on any part of the makeup room while explosives are present.

(d) Storage of explosives.

(i) A makeup room shall not be used for the unattended storage of 1.1 explosives.

(ii) A makeup room which meets all requirements of this chapter may contain a Type 3 storage facility, for one thousand or less blasting caps.

(iii) A Type 3 storage facility shall be constructed according to the requirements in WAC 296-52-70030 through 296-52-70040.

(A) A Type 3 storage facility shall be fire resistant and theft resistant. It does not need to be bullet resistant and weather resistant if the locked makeup room provides protection from weather and bullet penetration.

(B) Sides, bottoms, and covers shall be constructed of not less than number twelve gauge metal and lined with a nonsparking material.

(C) Hinges and hasps shall be attached so that they cannot be removed from the outside.

(D) One steel padlock having at least five tumblers and a case-hardened shackle of at least three-eighths inch diameter is sufficient for locking purposes. The lock and hasp is not required to be equipped with a steel hood.

(e) Location.

(i) The makeup room shall be located in accordance with the American Quantity and Distance Separation Tables as adopted in chapter 70.74 RCW, Washington State Explosives Act and this chapter except under conditions as indicated in this section.

(ii) Where locating the makeup room in accordance with the quantity and distance separation table is impractical because of bad weather accessibility, rough terrain, or space availability:

(A) Upon application the department will issue a variance enabling location of the makeup room, by mutual agreement, at the safest possible location within the limitation of the individual base area.

(B) The safest possible location will be the location most isolated from assembly areas and buildings that are inhabited with application of additional protection measures such as:

(I) Berming.

(II) Locating natural obstructions or buildings that are not inhabited between the makeup room and assembly areas and buildings that are inhabited.

(III) Limitations on the total quantity of explosives in the makeup room at any one time.

(iii) Makeup rooms designed to hold the boxes of explosives awaiting makeup and the makeup explosives in avalanche control packs awaiting distribution may be located using the total quantity of explosives allowed at the makeup table at any one time as the referenced quantity of explosives provided.

(A) The makeup room is located in accordance with the American Quantity and Distance Separation Tables as adopted in chapter 70.74 RCW, Washington State Explosives Act and this chapter for the referenced quantity of explosives at the makeup table.

(I) This separation shall apply only to human proximity to the makeup room and only at such time as there are explosives in the makeup room.

(II) When the makeup room does not contain explosives the separation tables shall not apply.

(B) The concrete walls of the room are designed to withstand the explosion of the total amount of the referenced explosives.

(I) The concrete walls must be constructed in accordance with specifications designed and certified by a licensed engineer; or

(II) The concrete walls must be constructed to the specifications of Department of the Army TM5-1300 "Structures to Resist the Effects of Accidental Explosions" designed to produce walls which will withstand explosion of the referenced quantity explosives.

(C) The boxes of explosives awaiting makeup and the makeup explosives in avalanche control packs awaiting distribution are located behind separate concrete debris barrier walls which will ensure that detonation of these explosives will not occur if the explosives at the makeup table detonate.

(I) The concrete debris barrier wall must be constructed in accordance with specifications designed and certified by a licensed engineer; or

(II) The concrete debris barrier wall must be constructed to the specifications of Department of the Army TM5-1300 "Structures to Resist the Effects of Accidental Explosions" to produce a barrier which will not allow detonation of the explosives awaiting makeup and distribution should the referenced quantity of explosives detonate.

(III) Access from the makeup table to the area behind the concrete debris barrier walls shall not be doored. The concrete debris barrier walls will be designed so that the access way from the makeup table to the area behind the concrete debris barrier wall will deflect debris from an explosive blast by inherent design.

(D) The roof shall be designed so that the resistance to an interior explosive blast will be negligible.

(iv) A full containment makeup room may be located anywhere and must meet the following requirements:

(A) The makeup room must be constructed in accordance with a licensed explosive engineer's approved design.

(B) The total amount of explosives in the room at any time must not exceed the design limit of the room.

(C) The makeup room cannot be used for storage.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060, 06-19-074, § 296-52-805, filed 9/19/06, effective 12/1/06.]

WAC 296-52-807 Avalanche control blasting. (1) The employer shall ensure that all members of avalanche control blasting crews are competent ski mountaineers in good physical and mental condition.

(2) Each avalanche control blasting crew or team shall consist of a qualified and licensed blaster and at least one trained assistant.

(3) Untrained personnel may accompany blasting crews for training purposes but shall not participate in actual firing of charges until trained and authorized.

(4) The blaster in charge of each crew or team shall be responsible for all phases of preparation and placement of charges.

(5) Avalanche control blasting should be conducted during daylight hours whenever possible.

(6) Escape route.

(a) The avalanche control crew or team shall preplan the escape route before igniting any charge.

(b) The escape route shall be as safe and foolproof as possible and shall culminate behind a terrain barrier or at least one hundred feet from the blast site by the time of detonation.

(7) Hand-thrown charges.

(a) A blaster shall only work with one charge at a time.

(b) Before attaching the igniter, the blaster must:

(i) Be at the start of the escape route;

(ii) Check the runout zone for personnel;

(iii) Check the blast area for personnel.

(c) After the blaster attaches and activates the igniter:

(i) The blaster shall check to see that the fuse is ignited;

(ii) If the fuse did not ignite, no attempt shall be made to relight it. The blaster shall immediately remove the fuse cap from the charge to sidearm it. The fuse cap shall be treated as a misfire and be put in an appropriately safe place separate from all other explosive components. It shall not be approached for at least thirty minutes, after which time it shall be properly disposed of;

(iii) The practice of double fusing hand charges shall be allowed. An attempt shall be made to light both fuses. If only one of the two fuses lights, the charge shall be deployed as normal;

(iv) As soon as the fuse is ignited, the blaster shall promptly throw the charge into the target area;

(v) All personnel shall be in a safe place when the charge detonates.

(d) Where hand-thrown charges will slide down the hill on hard frozen snow or ice surface, charges shall be belayed with light cord.

(8) Hand charges thrown from ski lifts or trams.

(a) The number of charges thrown from ski lifts or trams shall be kept to a minimum.

(b) The lift operating crew shall be informed of the blasting plans.

(c) The lift crew shall stand by for emergency procedures such as transfer of lift onto auxiliary power, evacuation, etc.

(d) The lift crew and the blaster in charge shall be in direct radio contact at all times during the blasting operations.

(e) Only the avalanche control blasting crew and the essential lift operating personnel shall be on a lift or tram during blasting operations.

(f) The avalanche control blasting crew shall be traveling up slope when a charge is thrown.

(g) A charge shall always be thrown down slope and to the side, away from towers, haulropes and other equipment or facilities.

(h) The minimum distance from the blast target to the closest point of the lift shall be sixty feet.

(i) Hand charges shall not exceed 4.5 pounds of TNT equivalent.

(j) Fuses shall be timed and cut to such length that all personnel on the lift will have moved a minimum of three hundred feet from the blast target by the time of detonation.

(k) Precautions shall be taken to avoid tossing charges into any of the lift equipment, moving chairs, cables, towers, etc.

(9) Aerial avalanche control blasting.

(a) Blasting from aircraft shall require a written program approved by the Federal Aviation Administration and the director, or designee of the department of labor and industries.

(b) A written program shall include the following:

(i) Written procedures to be followed including provisions for safety in the avalanche runout zone and emergency rescue plans.

(ii) Hand charge makeup and handling procedures.

(iii) The type of explosives to be used.

(iv) The qualifications of all avalanche control personnel involved in aerial blasting must meet the requirements of WAC 296-52-64030.

(v) The specific locations where aircraft blasting is to take place.

(c) An aerial avalanche control team shall be established consisting of (at minimum) a pilot, a blaster in charge and an observer/controller.

(d) Blasting from an aircraft shall require the blaster in charge to be a licensed avalanche blaster with an endorsement for aerial blasting. The blaster in charge will be on board during each aerial blasting mission.

Note: Blasting from aircraft should only be used when it is determined that conventional methods are not the safest means to mitigate the existing avalanche hazard.

(10) Avalauncher requirements.

(a) Management shall develop a written training program and ensure that every person who will be authorized to work on an avalauncher firing team is thoroughly trained. Training shall include:

(i) All operating instructions;

(ii) Safety precautions;

(iii) Emergency procedures;

(iv) Securing requirements for the equipment.

(b) Each employer shall have a list of authorized operators listed on a posted operator's list.

(c) Only trained and authorized personnel shall be permitted to point and fire an avalauncher with explosive rounds.

(d) During firing of explosive loaded rounds, the firing team shall consist of two qualified operators and not more than one adequately trained helper.

(e) Operators must have a current state blasting license.

(f) Each operator shall individually check the elevation, pointing and pressure settings of the gun before each shot is fired.

(g) Operators shall attempt to determine and record whether or not each round which is fired actually explodes on contact.

(h) The approximate location of all known misfired explosives (or duds) shall be recorded.

(i) Initial shooting coordinates for each avalauncher mount shall be made during periods of good visibility.

(j) Testing shall include test firing in various wind conditions.

(k) The correct coordinates for the various conditions encountered shall be carefully recorded.

(l) When spotter personnel are used in the target area, shooting shall be conducted with nonexplosive projectiles.

(m) Firing of explosive avalauncher rounds shall only be conducted when personnel are not in the target area.

(n) The avalauncher apparatus shall be stored in a non-functional condition when not in use. This shall be accomplished by:

(i) Locking out the firing mechanism or gas source in accordance with the lockout requirements of this chapter; or

(ii) Disassembly of functional components rendering the gun inoperable and separate storage of components removed; or

(iii) Removal of the entire gun to secure storage.

(o) With established avalauncher mounts, each autumn when reinstalling guns, the following procedures shall be accomplished before the gun is considered operable:

(i) All components shall be carefully inspected by qualified personnel;

(ii) After assembly and installation, the gun shall first be test fired using a nonexplosive projectile;

(iii) The established firing coordinates shall be checked by test firing.

(11) Cornice control requirements.

(a) Cornice buildup hazards shall be evaluated regularly by qualified personnel, particularly after heavy snowfall periods which are accompanied by high wind or other snow transport weather conditions.

(b) Cornice hazards shall be controlled whenever the buildup appears to offer potential hazard to areas accessible by personnel.

(c) The control team shall establish the tension breakline of the cornice roof as accurately as conditions permit before starting any other control work on the cornice.

(d) The tension breakline shall be marked when necessary.

(e) Small lightly packed cornices may be kicked off with a ski, ski pole, or shovel by an unbelayed control team member

if the ridgeline can be clearly established and all work can be done from the safe side of the ridgeline.

(f) When working along an anticipated cornice breakline, control team members shall retreat back from the breakline to change work positions rather than traverse along the breakline.

(g) The following factors shall be given careful consideration before commencing control activities on any relatively larger cornice:

(i) The older and larger a cornice becomes, the more densely it compacts. Densely packed cornices release into larger blocks offering a higher level of danger to an extended runout zone. The control team leader shall therefore take highest level of precautions to assure that the runout zone is clear of personnel;

(ii) Larger size cornices result in increased suspended weight and leverage which may cause the breakline release fracture to occur behind the actual ridgeline. The actual ridgeline may also be obscured by the simple mass of larger cornices. Control team members shall stay off the cornice roof and must be protected by a secure belay when working near the suspected breakline;

(iii) All large cornices shall be released by explosives. Explosives shall be transported, made up and fired in accordance with the following requirements:

(A) The ignition system for single hand charge blasts shall be safety fuse and cap or a system approved by the department.

(B) Detonating cord or shock tube shall be used to connect multiple charge blasts.

(C) When detonating cord is used, one end shall be securely anchored where premature cornice collapse will not disturb the anchor. The fuse and cap shall be attached to the free end of the detonating cord after all charges are connected to the detonating cord.

(D) Safety fuse length shall be sufficient to permit adequate escapement time for all personnel from the area influenced by the blast. Safety fuse shall be not less than three feet long, approximately two minutes and twenty seconds, in all instances.

(h) Cornice control work on large cornices shall be conducted during daylight hours and preferably during favorable weather conditions. As a minimum, clear visibility shall exist across the full length of any cornice which the control team is attempting to release.

(12) Belaying practices.

(a) Belay rope shall be standard 11 mm mountaineering rope or the equivalent.

(i) Belay rope shall be inspected at not less than thirty-day intervals and maintained in excellent condition.

(ii) Defective belay rope shall not be used for belaying purposes.

(b) Adequate trees or other suitable natural belay anchors shall be used in preference to a human belay anchor when such natural anchors are available.

(c) The belay anchor position shall be as near to ninety degrees from the tension breakline as the terrain conditions will permit.

(d) With either a natural belay anchor or human belay anchor, the belay line shall be tended to keep slack out of the line.

(e) When either the belayed person or belay anchor needs to change position, the belayed person shall retreat back from the cornice to a safe position until the belay anchor is reestablished.

(f) When a human belay anchor is used:

(i) The belay anchor person shall establish the anchor position as far back away from the cornice as conditions permit;

(ii) The anchor person shall remain in a seated position with their legs pointed toward the belayed person until such time as the belayed person has retreated back from the cornice to a position considered to be safe.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. 06-19-074, § 296-52-807, filed 9/19/06, effective 12/1/06.]

WAC 296-52-809 Retrieving misfired explosives (duds). (1) The following requirements shall apply to all kinds of avalanche control blasting:

(a) Each person who ignites a charge or propels a charged projectile with any kind of apparatus shall note whether or not the charge actually detonates.

(b) A conscientious effort shall be made to promptly retrieve any misfired explosives.

(i) If conditions make it impractical or dangerous to promptly retrieve a misfired explosive, a search shall be conducted as soon as conditions permit.

(ii) Any area which contains a misfired explosive shall be closed to entry to all personnel except the search team until such time as the area has been searched and pronounced safe by the designated search leader.

(c) When searching for a misfired explosive on an uncontrolled avalanche slope (a slope which has not released), the procedures used shall be consistent with good mountaineering practices.

(d) A hand charge misfire shall not be approached for at least thirty minutes.

(e) A hand charge or avalauncher misfired explosive may be blown up with a secondary charge where they are found or may be disarmed at that location by fully trained and qualified personnel.

(f) Military warhead misfired explosives shall not be moved. They shall be blown up where they are found by secondary charges except that trained military personnel may disarm and transport such misfired explosives when approved by the governmental branch having jurisdiction.

(2) Records.

(a) Accurate records shall be maintained for every explosive device which does not detonate.

(b) Misfired explosives records shall include the following information:

(i) The suspected location;

(ii) A description of the misfired explosive;

(iii) The date the misfired explosive was lost;

(iv) The date the misfired explosive was found and disposed of.

(3) Misfired explosive frequency.

(a) Misfired explosive frequency should be maintained below one misfired explosive for every five hundred detonating attempts.

(b) All employers who do not maintain a misfired explosive frequency below one misfired explosive per five hun-

dred detonation attempts shall investigate all aspects of the blasting program and take prompt corrective actions as indicated.

(4) Misfired explosives warning signs.

(a) Requirements for warning signs. Ski area operations which use any form of explosive device for avalanche control shall display warning, information placards and/or signs as found in this chapter, Part H.

(b) Signs shall be posted at readily visible locations and in such a manner as to give both employees and the public ample opportunity to be informed of the potential existence of misfired explosive avalanche charges. Locations may include but are not limited to:

(i) Ticket sales and lift loading areas;

(ii) Food and beverage service facilities;

(iii) Restrooms and locker rooms;

(iv) Safety bulletin boards;

(v) Along general access routes.

(c) Signs shall be distinctive in appearance from the surrounding background where they are posted.

(d) Signs shall be maintained in legible condition.

(e) Signs shall include the following information:

(i) The word "WARNING" or "DANGER" at the top of the sign in the largest lettering on the sign;

(ii) The words "EXPLOSIVES ON THE MOUNTAIN";

(iii) A colored pictorial illustration which also provides information on dimensions of each type of explosive device used in the area;

(iv) The sign wording shall conclude with specific instructions to be followed by anyone who locates an unexploded explosive device.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. 06-19-074, § 296-52-809, filed 9/19/06, effective 12/1/06.]

Chapter 296-54 WAC

SAFETY STANDARDS—LOGGING OPERATIONS

WAC

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DISPOSITION OF SECTIONS FORMERLY CODIFIED IN THIS CHAPTER

296-54-001 Scope and application. [Order 72-14, § 296-54-001, filed 7/31/72, effective 9/1/72; Rules (part), filed 6/2/67, effective 7/10/67.] Repealed by 79-10-081 (Order 79-14), filed 9/21/79. Statutory Authority: RCW 49.17.040, 49.17.150 and 49.17.240.

296-54-003 Waiver and variance. [Order 72-14, § 296-54-003, filed 7/31/72, effective 9/1/72; Rules (part), filed 6/2/67, effective 7/10/67.] Repealed by 79-10-081 (Order 79-14), filed 9/21/79. Statutory Authority: RCW 49.17.040, 49.17.150 and 49.17.240.

296-54-010 Definitions of terms used in the logging standards for the purpose of this chapter. [Order 76-29, § 296-54-010, filed 9/30/76; Order 72-14, § 296-54-010, filed 7/31/72, effective 9/1/72; Rules (part), filed 6/2/67, effective 7/10/67; Rules (part), filed 7/6/61; Rules (part), filed 3/30/62; Rules (part), filed 3/23/60.] Repealed by 79-10-081 (Order 79-14), filed 9/21/79. Statutory Authority: RCW 49.17.040, 49.17.150 and 49.17.240.

296-54-020 Introduction. [Order 72-14, § 296-54-020, filed 7/31/72, effective 9/1/72; Rules (part), filed 6/2/67, effective 7/10/67; Rules (part), filed 7/6/61; Rules (part), filed 3/23/60.] Repealed by 79-10-081 (Order 79-14), filed 9/21/79. Statutory Authority: RCW 49.17.040, 49.17.150 and 49.17.240.

296-54-030 Management's responsibility. [Order 72-14, § 296-54-030, filed 7/31/72, effective 9/1/72; Rules, § I, filed 6/2/67, effective 7/10/67; Rules (part), filed 7/6/61; Rules (part), filed 3/23/60.] Repealed by 79-10-081 (Order 79-14), filed 9/21/79. Statutory Authority: RCW 49.17.040, 49.17.150 and 49.17.240.

296-54-040 Employee's responsibility. [Order 72-14, § 296-54-040, filed 7/31/72, effective 9/1/72; Rules, § II, filed 6/2/67, effective 7/10/67; Rules (part), filed 7/6/61; Rules (part), filed 3/23/60.] Repealed by 79-10-081 (Order 79-14), filed 9/21/79. Statutory Authority: RCW 49.17.040, 49.17.150 and 49.17.240.

296-54-050 through 296-54-125. Safety and first aid. [Rules (part), filed 7/6/61, 3/23/60.] Decodified. See chapter 296-25 WAC, General safety standards.

296-54-051 Safety educational and first aid requirements. [Order 72-14, § 296-54-051, filed 7/31/72, effective 9/1/72.] Repealed by 79-10-081 (Order 79-14), filed 9/21/79. Statutory Authority: RCW 49.17.040, 49.17.150 and 49.17.240.

296-54-052 General requirements. [Order 72-14, § 296-54-052, filed 7/31/72, effective 9/1/72.] Repealed by 79-10-081 (Order 79-14), filed 9/21/79. Statutory Authority: RCW 49.17.040, 49.17.150 and 49.17.240.

296-54-130 Camps. [Order 72-14, § 296-54-130, filed 7/31/72, effective 9/1/72; Rules, § IV, filed 6/2/67, effective 7/10/67; Rules (part), filed 7/6/61; Rules (part), filed 3/23/60.] Repealed by 79-10-081 (Order 79-14), filed 9/21/79. Statutory Authority: RCW 49.17.040, 49.17.150 and 49.17.240.

296-54-140 Railroad and truck road construction and maintenance—Railroads. [Order 72-14, § 296-54-140, filed 7/31/72, effective 9/1/72; Rules, § V (part), filed 6/2/67, effective 7/10/67; Rules (part), filed 7/6/61; Rules (part), filed 3/23/60.] Repealed by 79-10-081 (Order 79-14), filed 9/21/79. Statutory Authority: RCW 49.17.040, 49.17.150 and 49.17.240.

296-54-150 Truck roads. [Order 72-14, § 296-54-150, filed 7/31/72, effective 9/1/72; Rules, § V (part), filed 6/2/67, 7/10/67; Rules (part), filed 7/6/61; Rules (part), filed 3/23/60.] Repealed by 79-10-081 (Order 79-14), filed 9/21/79. Statutory Authority: RCW 49.17.040, 49.17.150 and 49.17.240.

296-54-160	Transportation of crews—General requirements. [Order 72-14, § 296-54-160, filed 7/31/72, effective 9/1/72; Rules, § VI (part), filed 6/2/67, effective 7/10/67; Rules (part), filed 7/6/61; Rules (part), filed 3/23/60.] Repealed by 79-10-081 (Order 79-14), filed 9/21/79. Statutory Authority: RCW 49.17.040, 49.17.150 and 49.17.240.	296-54-240	Yarding, loading, and skidding units. [Order 72-14, § 296-54-240, filed 7/31/72, effective 9/1/72; Rules, § X, filed 6/2/67, effective 7/10/67; Rules (part), filed 7/6/61; Rules (part), filed 3/23/60.] Repealed by 79-10-081 (Order 79-14), filed 9/21/79. Statutory Authority: RCW 49.17.040, 49.17.150 and 49.17.240.
296-54-170	Transportation of crews by use of speeders and trailers. [Order 72-14, § 296-54-170, filed 7/31/72, effective 9/1/72; Rules, § VI (part), filed 6/2/67, effective 7/10/67; Rules (part), filed 7/6/61, 3/23/60.] Repealed by 79-10-081 (Order 79-14), filed 9/21/79. Statutory Authority: RCW 49.17.040, 49.17.150 and 49.17.240.	296-54-250	New and used boiler or pressure vessels. [Rules (part), filed 7/6/61, 3/23/60.] Superseded by Rules, filed 6/27/67, effective 7/10/67. See WAC 296-54-240(9) and chapter 70.79 RCW.
296-54-180	Transportation of crews by motor vehicles. [Order 72-14, § 296-54-180, filed 7/31/72, effective 9/1/72; Rules, § VI (part), filed 6/2/67, effective 7/10/67; Rules (part), filed 7/6/61; Rules (part), filed 3/23/60.] Repealed by 79-10-081 (Order 79-14), filed 9/21/79. Statutory Authority: RCW 49.17.040, 49.17.150 and 49.17.240.	296-54-260	Falling—Bucking. [Order 72-14, § 296-54-260, filed 7/31/72, effective 9/1/72; Rules, § VII, filed 6/2/67, effective 7/10/67; Rules (part), filed 7/6/61; Rules (part), filed 3/23/60.] Repealed by 79-10-081 (Order 79-14), filed 9/21/79. Statutory Authority: RCW 49.17.040, 49.17.150 and 49.17.240.
296-54-185	Methods of crew transportation other than those specified. [Order 72-14, § 296-54-185, filed 7/31/72, effective 9/1/72.] Repealed by 79-10-081 (Order 79-14), filed 9/21/79. Statutory Authority: RCW 49.17.040, 49.17.150 and 49.17.240.	296-54-270	Moving machines. [Order 72-14, § 296-54-270, filed 7/31/72, effective 9/1/72; Rules, § XI, filed 6/2/67, effective 7/10/67; Rules (part), filed 7/6/61; Rules (part), filed 3/23/60.] Repealed by 79-10-081 (Order 79-14), filed 9/21/79. Statutory Authority: RCW 49.17.040, 49.17.150 and 49.17.240.
296-54-190	Rigging. [Order 72-14, § 296-54-190, filed 7/31/72, effective 9/1/72; Rules, § VIII, filed 6/2/67, effective 7/10/67; Rules (part), filed 7/6/61; Rules (part), filed 3/23/60; Addendum, filed 3/30/62.] Repealed by 79-10-081 (Order 79-14), filed 9/21/79. Statutory Authority: RCW 49.17.040, 49.17.150 and 49.17.240.	296-54-280	General requirements. [Order 76-29, § 296-54-280, filed 9/30/76; Order 72-14, § 296-54-280, filed 7/31/72, effective 9/1/72; Rules, § XIX, filed 6/2/67, effective 7/10/67; Rules (part), filed 7/6/61; Rules (part), filed 3/23/60.] Repealed by 79-10-081 (Order 79-14), filed 9/21/79. Statutory Authority: RCW 49.17.040, 49.17.150 and 49.17.240.
296-54-195	Additional requirements for portable spars and boom type yarding and loading machines. [Order 72-14, § 296-54-195, filed 7/31/72, effective 9/1/72.] Repealed by 79-10-081 (Order 79-14), filed 9/21/79. Statutory Authority: RCW 49.17.040, 49.17.150 and 49.17.240.	296-54-281	Water dumps. [Order 72-14, § 296-54-281, filed 7/31/72, effective 9/1/72.] Repealed by 79-10-081 (Order 79-14), filed 9/21/79. Statutory Authority: RCW 49.17.040, 49.17.150 and 49.17.240.
296-54-200	Yarding. [Order 72-14, § 296-54-200, filed 7/31/72, effective 9/1/72; Rules, § XII, filed 6/2/67, effective 7/10/67; Rules (part), filed 7/6/61; Rules (part), filed 3/23/60.] Repealed by 79-10-081 (Order 79-14), filed 9/21/79. Statutory Authority: RCW 49.17.040, 49.17.150 and 49.17.240.	296-54-282	Boom and rafting grounds. [Order 76-7, § 296-54-282, filed 3/1/76; Order 72-14, § 296-54-282, filed 7/31/72, effective 9/1/72.] Repealed by 79-10-081 (Order 79-14), filed 9/21/79. Statutory Authority: RCW 49.17.040, 49.17.150 and 49.17.240.
296-54-202	Yarding—Signal transmission, signaling equipment and related items. [Rules AB-2 through AB-11, effective 1/2/65; Rules L-4, L-5, L-6, L-16, L-22 through L-27, filed 7/6/61; Rules (part), filed 3/23/60.] Superseded by Rules, filed 6/27/67, effective 7/10/67. See WAC 296-54-350 through 296-54-393.	296-54-284	Dry land sorting and storage. [Order 72-14, § 296-54-284, filed 7/31/72, effective 9/1/72.] Repealed by 79-10-081 (Order 79-14), filed 9/21/79. Statutory Authority: RCW 49.17.040, 49.17.150 and 49.17.240.
296-54-210	Tractor logging. [Order 72-14, § 296-54-210, filed 7/31/72, effective 9/1/72; Rules, § XIII, filed 6/2/67, effective 7/10/67; Rules (part), filed 7/6/61; Rules (part), filed 3/23/60.] Repealed by 79-10-081 (Order 79-14), filed 9/21/79. Statutory Authority: RCW 49.17.040, 49.17.150 and 49.17.240.	296-54-286	Boats and mechanical devices on water. [Order 76-7, § 296-54-286, filed 3/1/76; Order 72-14, § 296-54-286, filed 7/31/72, effective 9/1/72.] Repealed by 79-10-081 (Order 79-14), filed 9/21/79. Statutory Authority: RCW 49.17.040, 49.17.150 and 49.17.240.
296-54-215	Canopy guards, barricades, seat belts, screens and other items required for industrial equipment. [Order 72-14, § 296-54-215, filed 7/31/72, effective 9/1/72.] Repealed by 79-10-081 (Order 79-14), filed 9/21/79. Statutory Authority: RCW 49.17.040, 49.17.150 and 49.17.240.	296-54-290	Electrical logging equipment. [Rules (part), filed 7/6/61; Rules (part), filed 3/23/60.] Repealed by 79-10-081 (Order 79-14), filed 9/21/79. Statutory Authority: RCW 49.17.040, 49.17.150 and 49.17.240.
296-54-216	Roll-over protective structures and overhead protection. [Order 72-14, § 296-54-216, filed 7/31/72, effective 9/1/72.] Repealed by 79-10-081 (Order 79-14), filed 9/21/79. Statutory Authority: RCW 49.17.040, 49.17.150 and 49.17.240.	296-54-300	Explosives. [Order 72-14, § 296-54-300, filed 7/31/72, effective 9/1/72; Rules, § XX, filed 6/2/67, effective 7/10/67; Rules (part), filed 7/6/61; Rules (part), filed 3/23/60.] Repealed by 79-10-081 (Order 79-14), filed 9/21/79. Statutory Authority: RCW 49.17.040, 49.17.150 and 49.17.240.
296-54-217	Braking systems for tractors and other mobile equipment. [Order 72-14, § 296-54-217, filed 7/31/72, effective 9/1/72.] Repealed by 79-10-081 (Order 79-14), filed 9/21/79. Statutory Authority: RCW 49.17.040, 49.17.150 and 49.17.240.	296-54-310	Railroad operations. [Order 72-14, § 296-54-310, filed 7/31/72, effective 9/1/72; Rules, § XVI, filed 6/2/67, effective 7/10/67; Rules (part), filed 7/6/61; Rules (part), filed 3/23/60.] Repealed by 79-10-081 (Order 79-14), filed 9/21/79. Statutory Authority: RCW 49.17.040, 49.17.150 and 49.17.240.
296-54-218	Emergency steering. [Order 72-14, § 296-54-218, filed 7/31/72, effective 9/1/72.] Repealed by 79-10-081 (Order 79-14), filed 9/21/79. Statutory Authority: RCW 49.17.040, 49.17.150 and 49.17.240.	296-54-320	Railroad maintenance, loading or unloading. [Order 72-14, § 296-54-320, filed 7/31/72, effective 9/1/72; Rules, § XVII, filed 6/2/67, effective 7/10/67; Rules (part), filed 7/6/61; Rules (part), filed 3/23/60.] Repealed by 79-10-081 (Order 79-14), filed 9/21/79. Statutory Authority: RCW 49.17.040, 49.17.150 and 49.17.240.
296-54-220	Log loading. [Order 72-14, § 296-54-220, filed 7/31/72, effective 9/1/72; Rules, § XIV, filed 6/2/67, effective 7/10/67; Rules (part), filed 7/6/61; Rules (part), filed 3/23/60.] Repealed by 79-10-081 (Order 79-14), filed 9/21/79. Statutory Authority: RCW 49.17.040, 49.17.150 and 49.17.240.	296-54-330	Motor truck log transportation. [Order 72-14, § 296-54-330, filed 7/31/72, effective 9/1/72; Rules, § XV, filed 6/2/67, effective 7/10/67; Rules (part), filed 7/6/61; Rules (part), filed 3/23/60.] Repealed by 79-10-081 (Order 79-14), filed 9/21/79. Statutory Authority: RCW 49.17.040, 49.17.150 and 49.17.240.
296-54-230	Lines, blocks and shackles. [Order 72-14, § 296-54-230, filed 7/31/72, effective 9/1/72; Rules, § IX, filed 6/2/67, effective 7/10/67; Rules (part), filed 7/6/61; Rules (part), filed 3/23/60.] Repealed by 79-10-081 (Order 79-14), filed 9/21/79. Statutory Authority: RCW 49.17.040, 49.17.150 and 49.17.240.	296-54-335	Stationary log truck trailer loading. [Order 72-14, § 296-54-335, filed 7/31/72, effective 9/1/72.] Repealed by 79-10-081 (Order 79-14), filed 9/21/79. Statutory Authority: RCW 49.17.040, 49.17.150 and 49.17.240.
		296-54-340	Maintenance shops. [Order 72-14, § 296-54-340, filed 7/31/72, effective 9/1/72; Rules, § XVIII, filed 6/2/67, effective 7/10/67; Rules (part), filed 7/6/61; Rules (part), filed 3/23/60.] Repealed by 79-10-081 (Order 79-14), filed 9/21/79. Statutory Authority: RCW 49.17.040, 49.17.150 and 49.17.240.

- 14), filed 9/21/79. Statutory Authority: RCW 49.17.040, 49.17.150 and 49.17.240.
- 296-54-350 Signals and signal systems. [Order 72-14, § 296-54-350, filed 7/31/72, effective 9/1/72; Rules, § XXI (part), filed 6/2/67, effective 7/10/67; Rules (part), filed 7/6/61; Rules (part), filed 3/23/60.] Repealed by 79-10-081 (Order 79-14), filed 9/21/79. Statutory Authority: RCW 49.17.040, 49.17.150 and 49.17.240.
- 296-54-360 Skidder whistle signals. [Order 72-14, § 296-54-360, filed 7/31/72, effective 9/1/72; Rules, § XXI (part), filed 6/2/67, effective 7/10/67; Rules (part), filed 7/6/61; Rules (part), filed 3/23/60.] Repealed by 79-10-081 (Order 79-14), filed 9/21/79. Statutory Authority: RCW 49.17.040, 49.17.150 and 49.17.240.
- 296-54-370 Slackline whistle signals. [Order 72-14, § 296-54-370, filed 7/31/72, effective 9/1/72; Rules, § XXI (part), filed 6/2/67, effective 7/10/67; Rules (part), filed 7/6/61; Rules (part), filed 3/23/60.] Repealed by 79-10-081 (Order 79-14), filed 9/21/79. Statutory Authority: RCW 49.17.040, 49.17.150 and 49.17.240.
- 296-54-380 High lead logging whistle signals. [Order 72-14, § 296-54-380, filed 7/31/72, effective 9/1/72; Rules, § XXI (part), filed 6/2/67, effective 7/10/67; Rules AB-1, effective 1/2/65; Rule Z-3, filed 7/6/61; Rules (part), filed 3/23/60.] Repealed by 79-10-081 (Order 79-14), filed 9/21/79. Statutory Authority: RCW 49.17.040, 49.17.150 and 49.17.240.
- 296-54-390 High lead whistle signal—General whistle signals. [Rules (part), filed 7/6/61, 3/23/60.] Superseded by Rules, filed 6/27/67, effective 7/10/67. For later enactment see WAC 296-54-391 through 296-54-393.
- 296-54-391 General requirements for signaling and signal equipment. [Rules, § XXI (part), filed 6/2/67, effective 7/10/67.] Repealed by omission, Order 72-14, filed 7/31/72.
- 296-54-392 Electric signal systems. [Order 72-14, § 296-54-392, filed 7/31/72, effective 9/1/72; Rules, § XXI (part), filed 6/2/67, effective 7/10/67.] Repealed by 79-10-081 (Order 79-14), filed 9/21/79. Statutory Authority: RCW 49.17.040, 49.17.150 and 49.17.240.
- 296-54-393 Radio systems used for voice communications, activation of audible signals or equipment. [Order 72-14, § 296-54-393, filed 7/31/72, effective 9/1/72; Rules, § XXI (part), filed 6/2/67, effective 7/10/67.] Repealed by 79-10-081 (Order 79-14), filed 9/21/79. Statutory Authority: RCW 49.17.040, 49.17.150 and 49.17.240.
- 296-54-39301 Form No. 157—Application for permit to operate radio signal system in designated area. [Order 72-14, Form No. 157 (codified as WAC 296-54-39301), filed 7/31/72, effective 9/1/72.] Repealed by 79-10-081 (Order 79-14), filed 9/21/79. Statutory Authority: RCW 49.17.040, 49.17.150 and 49.17.240.
- 296-54-399 Special rigging standards. [Rules (part), filed 7/6/61, 3/23/60. Recodified from WAC 296-54-400 to avoid duplication of numbering.] Superseded by Rules, filed 6/27/67, effective 7/10/67. See WAC 296-54-190.
- 296-54-400 Radio-signaling systems—Minimum requirements. [Order 72-14, § 296-54-400, filed 7/31/72, effective 9/1/72.] Repealed by 79-10-081 (Order 79-14), filed 9/21/79. Statutory Authority: RCW 49.17.040, 49.17.150 and 49.17.240.
- 296-54-450 Rules and regulations of the state board of health concerning labor camps. [Rules (part), filed 7/6/61, 3/23/60.] Decodified. See WAC 296-54-130, and chapters 296-26 and 248-60 WAC.
- 296-54-45001 Pulpwood logging. [Statutory Authority: Chapter 49.17 RCW. 88-23-054 (Order 88-25), § 296-54-45001, filed 11/14/88; Order 76-7, § 296-54-45001, filed 3/1/76; Order 74-20, § 296-54-450 (codified as WAC 296-54-45001), filed 5/6/74.] Repealed by 96-22-013, filed 10/28/96, effective 1/1/97. Statutory Authority: RCW 49.17.040, [49.17].050 and [49.17].060.
- 296-54-51180 Personal flotation devices. [Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-51180, filed 8/18/99, effective 12/1/99.] Repealed by 06-07-142, filed 3/21/06, effective 5/1/06. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.
- 296-54-525 Railroad construction and maintenance. [Statutory Authority: RCW 49.17.040, 49.17.150 and 49.17.240. 79-10-081 (Order 79-14), § 296-54-525, filed 9/21/79.] Repealed by 99-17-117, filed 8/18/99, effective 12/1/99. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.
- 296-54-559 Yarding—Helicopters and helicopter cranes. [Statutory Authority: RCW 49.17.040, [49.17].050 and [49.17].060. 96-22-013, § 296-54-559, filed 10/28/96, effective 1/1/97. Statutory Authority: Chapter 49.17 RCW. 88-23-054 (Order 88-25), § 296-54-559, filed 11/14/88. Statutory Authority: RCW 49.17.040 and 49.17.050. 81-05-013 (Order 81-3), § 296-54-559, filed 2/10/81. Statutory Authority: RCW 49.17.040, 49.17.150 and 49.17.240. 79-10-081 (Order 79-14), § 296-54-559, filed 9/21/79.] Amended and decodified by 99-17-117, filed 8/18/99, effective 12/1/99. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050.
- 296-54-599 Truck and equipment maintenance shops. [Statutory Authority: RCW 49.17.040, 49.17.150 and 49.17.240. 79-10-081 (Order 79-14), § 296-54-599, filed 9/21/79.] Repealed by 99-17-117, filed 8/18/99, effective 12/1/99. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050.
- 296-54-990 Map. [Order 72-14, Map (codified as WAC 296-54-990), filed 7/31/72, effective 9/1/72.] Repealed by 88-23-054 (Order 88-25), filed 11/14/88. Statutory Authority: Chapter 49.17 RCW.
- 296-54-99001 Appendix I—Figure 1—Rigging up, wrapping a guyline. [Order 72-14, Figure 1 (codified as WAC 296-54-99001), filed 7/31/72, effective 9/1/72.] Repealed by 88-23-054 (Order 88-25), filed 11/14/88. Statutory Authority: Chapter 49.17 RCW.
- 296-54-99005 Appendix I—Figure 5—Standard signals for tractor logging. [Order 72-14, Figure 5 (codified as WAC 296-54-99005), filed 7/31/72, effective 9/1/72.] Repealed by 88-23-054 (Order 88-25), filed 11/14/88. Statutory Authority: Chapter 49.17 RCW.
- 296-54-99006 Appendix I—Figure 6—Standard signals for loading logs. [Order 72-14, Figure 6 (codified as WAC 296-54-99006), filed 7/31/72, effective 9/1/72.] Repealed by 88-23-054 (Order 88-25), filed 11/14/88. Statutory Authority: Chapter 49.17 RCW.
- 296-54-99007 Appendix I—Figure 7—Heel boom loading. [Order 72-14, Figure 7 (codified as WAC 296-54-99007), filed 7/31/72, effective 9/1/72.] Repealed by 99-22-045, filed 10/29/99, effective 12/1/99. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050.
- 296-54-99008 Appendix I—Figure 8—Guyline loading. [Order 72-14, Figure 8 (codified as WAC 296-54-99008), filed 7/31/72, effective 9/1/72.] Repealed by 99-22-045, filed 10/29/99, effective 12/1/99. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050.
- 296-54-99009 Appendix I—Figure 9—Hayrack boom loading. [Order 72-14, Figure 9 (codified as WAC 296-54-99009), filed 7/31/72, effective 9/1/72.] Repealed by 99-22-045, filed 10/29/99, effective 12/1/99. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050.
- 296-54-99010 Appendix I—Figure 10—Spreader bar loading. [Order 72-14, Figure 10 (codified as WAC 296-54-99010), filed 7/31/72, effective 9/1/72.] Repealed by 99-22-045, filed 10/29/99, effective 12/1/99. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050.
- 296-54-99011 Appendix I—Figure 11—Placement and number of binders. [Order 72-14, Figure 11 (codified as WAC 296-54-99011), filed 7/31/72, effective 9/1/72.] Repealed by 88-23-054 (Order 88-25), filed 11/14/88. Statutory Authority: Chapter 49.17 RCW.
- 296-54-99012 Appendix I—Figure 12—Standard signals for high lead logging. [Order 72-14, Figure 12 (codified as WAC 296-54-99012), filed 7/31/72, effective 9/1/72.] Repealed by 88-23-054 (Order 88-25), filed 11/14/88. Statutory Authority: Chapter 49.17 RCW.

WAC 296-54-501 Scope and application. This chapter establishes safety practices for all types of logging, log road construction and other forest activities using logging machinery and/or power saws regardless of the end use of the wood. This chapter does not apply to log handling at sawmills, plywood mills, pulp mills, or other manufacturing operations governed by specific safety standards. This chapter provides minimum safety requirements for the logging industry. The logging industry is also covered by the general safety standards, chapter 296-24 WAC; occupational health standards, chapter 296-62 WAC; the safety and health core rules, chapter 296-800 WAC; or others that may apply. Chapter 296-52

WAC, which covers the possession, handling and use of explosives, applies when explosives are used in logging operations.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 01-11-038, § 296-54-501, filed 5/9/01, effective 9/1/01; 99-17-117, § 296-54-501, filed 8/18/99, effective 12/1/99. Statutory Authority: RCW 49.17.040, [49.17].050 and [49.17].060. 96-22-013, § 296-54-501, filed 10/28/96, effective 1/1/97. Statutory Authority: Chapter 49.17 RCW. 88-23-054 (Order 88-25), § 296-54-501, filed 11/14/88. Statutory Authority: RCW 49.17.040, 49.17.150 and 49.17.240. 79-10-081 (Order 79-14), § 296-54-501, filed 9/21/79.]

WAC 296-54-503 Variance. If an employer finds it impractical to comply with specific requirements of this chapter, the department may permit a variation from the requirements. However, the employer must still provide equal protection by substitute means. To request a variance, write to:

WISHA Services Division—Variance Request
Department of Labor & Industries
P.O. Box 44648
Olympia, WA 98504-4648

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-503, filed 8/18/99, effective 12/1/99. Statutory Authority: RCW 49.17.040, 49.17.150 and 49.17.240. 79-10-081 (Order 79-14), § 296-54-503, filed 9/21/79.]

WAC 296-54-505 Definitions. A-frame - a structure made of two independent columns fastened together at the top and separated by a reasonable width at the bottom to stabilize the unit from tipping sideways.

An operation - any place where logging or log related activities are taking place.

Approved - approved by the department of labor and industries.

Arch - any device attached to the back of a vehicle and used for raising one end of logs to facilitate movement.

Authorized person - a person approved or assigned by the employer to perform a specific type of duty(s) or to be at a specific location at a certain time(s).

Backcut (felling cut) - the cut in a felling operation made on the opposite side from the undercut.

Backline - the portion of the haulback that runs between the spar/spar tree and the corner block.

Ballistic nylon - a nylon fabric of high tensile properties designed to provide protection from lacerations.

Barrier - a fence, wall or railing to prevent passage or approach.

Base of tree - that portion of a natural tree not more than three feet above ground level.

Bight of the line - a hazardous zone created by running lines under tension. Any section of a line between the ends.

Binder - a hinged lever assembly for connecting the ends of a wrapper to tighten the wrapper around the load of logs or materials.

Boomboat - any boat used to push or pull logs, booms, bundles, or bags, in booming ground operations.

Boomscooter - a small boat, usually less than fourteen feet in length, equipped with an outboard motor, having directional pushing capabilities of 360 degrees.

Brailing - when tiers of logs, poles, or piles are fastened together with a type of dogline and the ends of the side members are then fastened together for towing.

Brow log - a log or a suitable substitute placed parallel to any roadway at a landing or dump to protect the carrier and facilitate the safe loading or unloading of logs, timber products, or materials.

Buck - means the process of severing a tree into sections (logs or bolts).

Butt - the bottom of the felled part of a tree.

Butt welding - the practice of welding something end to end.

Cable tree thinning - the selective thinning of a timber stand using mobile yarding equipment specifically designed or adapted for the purpose. Cable tree thinning includes skyline, slackline, or modified slackline, overhead cable systems.

Cable yarding - the movement of felled trees or logs from the area where they are felled to the landing on a system composed of a cable suspended from spars and/or towers. The trees or logs may be either dragged across the ground on the cable or carried while suspended from the cable.

Chock - a block, often wedge shaped, which is used to prevent movement; e.g., a log from rolling, a wheel from turning.

Choker - a length of wire rope with attachments for encircling the end of a log to be yarded.

Chunking - to clear nonusable material from a specified area.

Cold deck - a pile of yarded logs left for future removal.

Competent person - one who is capable of identifying hazards in the surroundings or working conditions which are unsanitary, hazardous or dangerous.

Corner block - the first block the haulback passes through on its way to the tail block.

Crotch line - two short lines attached to the same ring or shackle, used for loading or unloading.

Cutter - an employee whose primary job is to fall, buck, or limb trees before they are moved to the landing area.

Danger trees - any tree of any height, dead or alive, that presents a hazard to workers because of rot, root, stem or limb damage, lean, or any other observable condition created by natural process or man-made activity.

Dapped - a notch in a timber for receiving part of another timber.

DBH - diameter at breast height.

Deadman - buried log or other object used as an anchor.

Debark - to remove bark from trees or logs. Debark generally denotes mechanical means as opposed to manual peeling.

Deck - a stack of trees or logs.

Designated person - an employee who has the requisite knowledge, training, and experience to perform specific duties.

Directional falling - a mechanical means to control the direction of falling timber.

Dog line - type of line used to fasten logs or timber products together by the use of dogs.

Domino felling - the partial cutting of multiple trees which are left standing and then pushed over with a pusher tree.

Donkey - any machine with a series of drums used to yard logs.

Double ended logs - two logs end to end on the same lay.

Drop zone - the area where the helicopter delivers logs from the logging site.

Droplines - a short line attached to the carriage or carriage block which is used as an extension to the main line.

Drum - a mechanical device on which line is spooled or unspooled.

Dry land storage - decks of logs stored for future removal or use.

Dutchman -

- A block used to change direction of line lead (side-blocking).

- A method used to pull a tree against its lean by leaving a section of the undercut on one corner of the face. The portion left consists of a single saw kerf in one side of the face, with the face completely removed on the opposite side of the face cut. A single saw kerf must never extend completely across the stump.

Experienced person - a person who has been trained and has participated in the subject process for a period of time long enough to thoroughly acquaint the person with all facets of the process.

F.O.P.S. - falling object protective structure.

Fair lead - sheaves, rolls, or a combination thereof arranged to receive a line coming from any direction for proper line spooling on to a drum.

Fell (fall) - to cut down trees.

Feller (faller) - an employee who fells trees.

Front end loader - a mobile machine mounted on a wheeled or tracked chassis, equipped with a grapple, tusk, bucket, or fork-lift device, and employed in the loading, unloading, stacking, or sorting of logs or materials.

Grounded - the placement of a component of a machine on the ground or on a device where it is firmly supported. Grounded may also relate to the placement of a tree on the ground or a method to dissipate static or electrical charges.

Guarded - covered, shielded, fenced, enclosed, or otherwise protected by means of suitable enclosures, covers, casings, shields, troughs, railings, screens, mats, or platforms, or by location, to prevent injury.

Guard rail - a railing to restrain a person.

Guyline - a line used to support or stabilize a spar, tail/lift tree, intermediate support tree or equipment. A guyline is considered a standing line.

Gypsy drum - a mechanical device wherein the line is not attached to the drum and is manually spooled to control the line movement on and off the drum.

Haulback - a line used to pull the buttrigging and mainline to the logs to be yarded.

Haulback block - any block the haulback line passes through including the corner block and tailblock.

Hay rack -

- A type of loading boom where two tongs are used and logs are suspended.

- A transporting vehicle with multiple sets of bunks attached to a rigid frame usually used for hauling logs.

Haywire - see strawline.

Hazardous falling area - the area within a circle centered on the tree being felled and having a radius not less than twice the height of that tree.

Head tree - the tree where yarding and/or loading takes place. (See spar)

Heel boom - a type of loading boom where one tong is used and one end of the log is pulled up against the boom.

High lead - a system of logging wherein the main line is threaded through the main line block, which is attached near the top of the spar, to obtain a lift of the logs being yarded.

High visibility colors - white, bright, or fluorescent colors that stand out from the surrounding background color so they are easily seen.

Hobo log and/or hitchhiker - a free or unattached log that is picked up by a turn and is transported with the turn.

Hooktender - the worker that supervises the method of moving the logs from the woods to the landing.

Hot deck - a landing where logs are being moved.

Hydraulic jack - a mechanical device, powered by internal pressure, used to control the direction in which a tree is to be felled.

In the clear - a position within the work area where the probability of hazardous contact with falling trees, moving logs, rootwads, chunks, material, rigging and equipment is minimized by distance from the hazards and/or use of physical barriers, such as stumps, trees, terrain or other objects providing protection.

Examples:

- Back behind on the uphill side of the turn and out of reach of any upending logs.

- Out of the bight.

- In the logged off area.

- In a position where movement will not be obstructed.

Intermediate support system - a system for supporting a loaded skyline in a support jack by one of the two following methods:

- Double tree support - the skyline is suspended on a single piece of wire rope supported by two trees so that the load is shared between the two trees.

- Single tree support - the skyline is suspended on a single piece of wire rope, single-eyed choker or double-eyed strap supported by a single tree. The support tree may be vertical or leaning.

Jackstrawed - trees or logs piled in an unordered manner.

Jaggers - any projecting broken wire in a strand of cable.

Kerf - the part of timber products taken out by the saw teeth.

Knob - a metal ferrule attached to the end of a line.

Landing - any place where logs are laid after being yarded, awaiting subsequent handling, loading, and hauling.

Landing chute - the head of the skid trail or road where the logs are temporarily placed before handling, loading and hauling.

Lay -

- The straight-line distance it takes a strand of wire rope to make one complete spiral around the core of a rope.

- The position of a log in a pile, on a load, or in the fell and bucked.

Limbing - to cut branches off felled or standing trees.

Loading boom - any structure projecting from a pivot point to guide a log when lifted.

Lodged tree (hung tree) - a tree leaning against another tree or object which prevents it from falling to the ground.

Log - a tree segment suitable for subsequent processing into lumber, pulpwood, or other wood products, including,

but not limited to, poles, piling, peeler blocks, sections and/or bolts.

Log bronco - a sturdily built boat usually from twelve to twenty feet in length, used to push logs or bundles of logs in a generally forward direction in booming and rafting operations.

Log dump - a place where logs are removed from transporting equipment. It may be either dry land or water, par-buckled over a brow log or removed by machine.

Log stacker - a mobile machine mounted on a wheeled or tracked chassis, equipped with a frontally mounted grapple, tusk, or forklift device, and employed in the loading, unloading, stacking, or sorting of logs.

Logging machine - a machine used or intended for use to yard, move, or handle logs, trees, chunks, trailers, and related materials or equipment.

Note: A self-loading log truck is only considered a logging machine when in use for loading and unloading.

Note: A helicopter is not considered a logging machine.

Logging operations - operations associated with felling and/or moving trees, logs, veneer bolts, poles, pilings, and other forest products from the stump to the point of delivery. Such operations are such, but not limited to, marking, felling, bucking, limbing, debarking, chipping, yarding, loading, unloading, storing, and the transporting of machines, equipment and personnel from one site to another.

Long sticks - an overlength log or tree length that creates a hazard by exceeding the safe perimeters of the landing.

Machine - a piece of stationary or mobile equipment having a self-contained power plant, that is operated off-road and used for the movement of material. Machines include but are not limited to tractors, skidders, front-end loaders, scrapers, graders, bulldozers, rough terrain logging shovels, log stackers and mechanical felling devices, such as tree shears and feller-bunchers.

Mainline - the line attached to the buttrigging used to pull logs to the landing.

Mainline block - the block hung in the portable spar or tower through which the mainline passes.

Mainline train - any train that is made up for travel between the woods and log dump.

Matchcutting - the felling of trees without using an undercut.

Mechanized falling - falling of standing timber by a self-propelled mobile wheeled or tracked machine equipped with a shear or other powered cutting device.

Mechanized feller - any such machine as described in WAC 296-54-541 and 296-54-543, and includes feller/bunchers and similar machines performing multiple functions.

Mechanized logging machine - a feller-buncher, single-grip harvester, processor, forwarder, clambunk, or log loader.

Mobile log loader - a self-propelled log loading machine mounted on wheels or tracks, incorporating a boom and employed in the loading or unloading of logs by means of grapples or tongs.

Mobile yarder - a logging machine mounted on wheels, tracks, or skids, incorporating a vertical or inclined spar, tower, or boom, employed in skyline, slackline, high lead or grapple overhead cable logging systems.

Molle - a single strand of wire rope rolled into a circle with six wraps. A molle can be used as a temporary method of connecting the eye splices of two lines. A molle is used in most pin shackles in place of a cotter key.

Must - the same as "shall" and is mandatory.

New job site - a location of operations when the loading station and/or the yarder or cutting operations are moved to a new area outside of the current sale or contracted unit.

Pass line - a small line threaded through a block at the top of the spar to assist the high climber.

Permissible (as applied to any device, equipment or appliance) - such device, equipment, or appliance has the formal approval of the United States Bureau of Mines, American Standards Association, or National Board of Fire Underwriters.

Portable spar or tower - a movable engineered structure designed to be used in a manner similar to which a wood spar tree would be used.

Qualified person - a person, who by possession of a recognized degree, certificate, professional standing, or by extensive knowledge, training, and experience, has successfully demonstrated ability to solve or resolve problems relating to the subject matter, the work, or the project.

Rated capacity - the maximum load a system, vehicle, machine or piece of equipment was designed by the manufacturer to handle.

Reach - a steel tube or wood timber or pole connected to the truck and inserted through a tunnel on the trailer. It steers the trailer when loaded and pulls the trailer when empty.

Reload - an area where logs are dumped and reloaded or transferred as a unit to another mode of transportation.

Rollway - any place where logs are dumped and they roll or slide to their resting place.

Root wad - the ball of a tree root and dirt that is pulled from the ground when a tree is uprooted.

R.O.P.S. - roll over protection structure.

Rub tree - a tree used to guide a turn around an area.

Running line/running rope - any moving line directly involved with the yarding of logs.

Safety factor - the ratio of breaking strength to a safe working strength or loading.

Safety glass - a type of glass that will not shatter when broken.

Sail block - a block hung inverted on the sail guy to hold the tong block in proper position.

Scaler - the person who measures the diameter and length of the logs, determines specie and grade, and makes deductions for footage calculations.

Serviceable condition - a state or ability of a tool, machine, vehicle or other device to operate as it was intended by the manufacturer to operate.

Shall - a requirement that is mandatory.

Shear log - a log placed in a strategic location to divert passage of objects.

Shore skids - any group of timbers spaced a short distance apart on which logs are rolled.

Should - means recommended.

Signal person - the person designated to give signals to the machine operator.

Siwash - to change the lead of a line with a physical object such as a stump or tree instead of a block.

Skidder - a machine or animal used to move logs or trees to a landing.

Skidding - movement of logs or trees on the surface of the ground to the place where they are to be loaded.

Skidding line - the main haulage line from a carriage to which chokers are attached. Sometimes referred to a mainline.

Skyline - the line suspended between two points on which a block or carriage travels.

Slackline - a form of skyline where the skyline cable is spooled on a donkey drum and can be raised or lowered.

Slack puller - any weight or mechanical device used to increase the movement of a line when its own weight is inadequate.

Slope (grade) - the increase or decrease in altitude over a horizontal distance expressed as a percentage. For example, change of altitude of 20 feet (6 m) over a horizontal distance of 100 feet (30 m) is expressed as a 20 percent slope.

Snag - a dead standing tree or a portion thereof. (See Danger tree)

Snorkel - a loading boom modified to extend its limitations for yarding.

Spar/spar tree - a tree or device (rigged for highlead, skyline or slackline yarding) used to yard logs by any method of logging.

Speeder - a small self-powered vehicle that runs on a railroad track.

Spike - a long heavy nail similar to a railroad spike.

Springboard - a board with an iron tip used by fallers to stand on while working above ground level.

Spring pole - a tree, segment of a tree, limb, or sapling which is under stress or tension due to the pressure or weight of another object.

Square lead - the angle of 90 degrees.

Squirrel - a weight used to swing a boom when the power unit does not have enough drums to do it mechanically.

Squirrel tree - a topped tree, guyed if necessary, near the spar tree in which the counter balance (squirrel) of a tree rigged boom is hung.

Standing line -

- Guyline

- A nonoperating rope with end terminations to support a boom or mast.

Stiff boom - two or more boom sticks wrapped together on which boom persons walk or work.

Strap - any short piece of line with an eye or "D" in each end.

Strap socket or D - a socket with a closed loop arranged to be attached to the end of a line by the molten zinc, or an equivalent method. It is used in place of a spliced eye.

Strawline - a light cable used in rigging up, or in moving other cables or blocks. The smallest line on the yarder. (Mainline - haulback line - strawline.)

Strip - a definite location of timber on which one or more cutting crews work.

Swamping - the falling or cutting of brush around or along a specified place.

Swede connection - a line configuration made by wrapping two choker lines in the same direction around a tree or log connecting the line knobs to opposite line bells.

Swifter - a piece of equipment used to tie the side sticks of a log raft together to keep the raft from spreading.

Swing cut - an intentional dutchman left on one corner of an undercut or a backcut in which the holding wood on one side is cut through in conjunction with an intentional dutchman to achieve a desired lay for the tree being fell.

Tail block - a block used to guide the haulback line at the back corner of the yarding area.

Tail hold - an anchor used for making fast any line or block.

Tail/lift tree - the tree at the opposite end from the head tree on which the skyline or other type rigging is hung.

Tie back - to use a twister(s) (or similar system/device) that has a breaking strength equal to fifty percent of the breaking strength of the mainline or skyline whichever is greater. To secure or support one anchor by securing it to a second anchor(s) such as wrapping one stump and choking another.

Tie down - a chain, cable, steel strips or fiber webbing and binders attached to a truck, trailer or other conveyance as a means to secure loads and to prevent them from shifting or moving when they are being transported.

Tight line - when either the mainline or haulback are held and power is exerted on the other or when power is exerted on both at the same time.

Tong line block - the block hung in a boom through which the tong line operates.

Tongue - a device used to pull and/or steer a trailer.

Topping - cutting off the top section of a standing tree.

Tower - (see portable spar or tower).

Tractor - a machine of wheel or track design used in logging.

Tractor logging - the use of any wheeled or tracked vehicle in the skidding or yarding of logs.

Transfer (as used in loading) - changing of logs in a unit from one mode of transportation to another.

Tree jack - a grooved saddle of wood or metal rollers contained within two steel plates, attached to a tree with a strap, used as a guide for skyline, sail guy, or similar static line. It is also formed to prevent a sharp bend in the line.

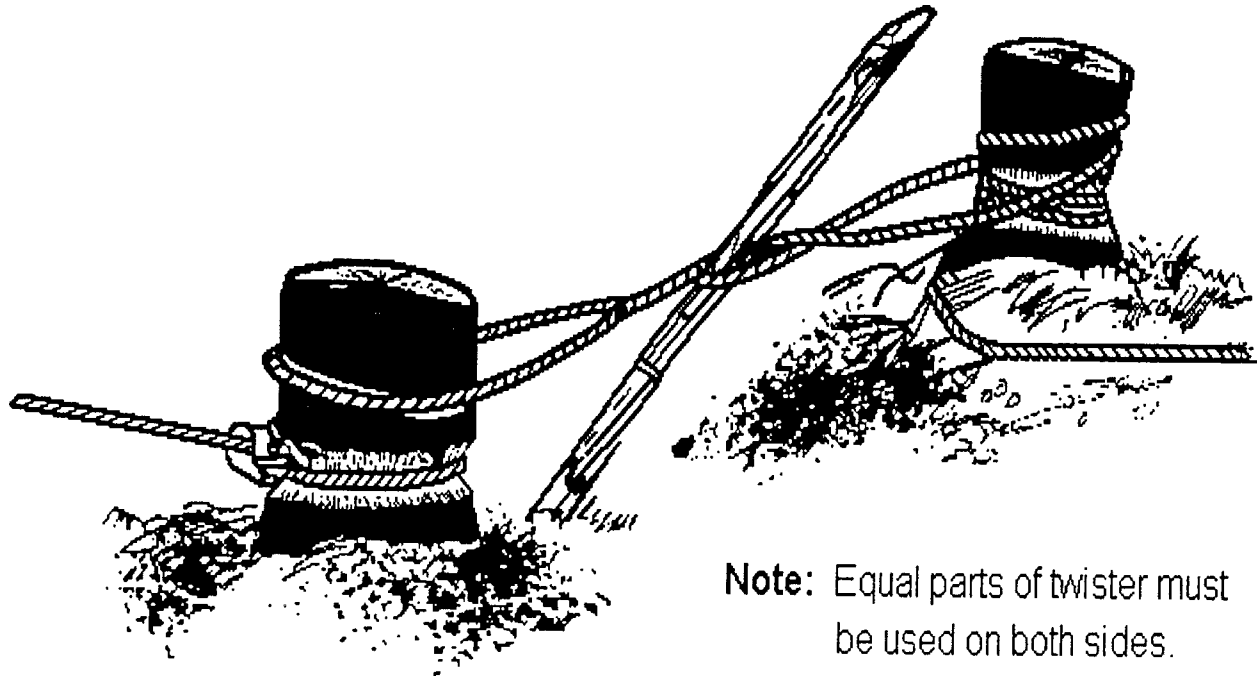
Tree plates - steel bars sometimes shaped as elongated J's, which are fastened near the top of a tree to hold guylines and prevent them from cutting into the tree when tightened. The hooks of the J are also used to prevent the mainline block strap from sliding down the tree.

Tree pulling - a method of falling trees in which the tree is pulled down with a line.

Tug - a boat, usually over twenty feet in length, used primarily to pull barges, booms of logs, bags of debris, or log rafts.

Turn - any log or group of logs attached by some means to power and moved from a point of rest to a landing.

Twister - a line (usually small diameter wire rope "hay-wire") that supports a tailhold stump, guyline stump, or tree that does not appear to be strong enough. This is done by connecting the tailhold to another stump or tree opposite by wrapping the two with a line. This line is then tightened by placing a piece of large-diameter limb between the wrappings and twisting them together.



Note: Equal parts of twister must be used on both sides.

TWISTER ROPE

Undercut - a notch cut in a tree to guide the direction of the tree fall and to prevent splitting or kickback.

V-lead - a horizontal angle of less than ninety degrees formed by the projected lines of the mainline from the drum of the logging machine through the block or fairlead and the yarding log or turn.

Vehicle/crew bus - a car, bus, truck, trailer or semi-trailer owned, leased, or rented by the employer that is used for transportation of employees or movement of material.

WAC - Washington Administrative Code.

Waistline - that portion of the haulback running between the corner block and the tail block.

Winching - the winding of cable or rope onto a spool or drum.

Within the stakes - when one-half the log diameter is below the stake top.

Work areas - any area frequented by employees in the performance of assigned or related duties.

Wrapper - a cable assembly or chain used to contain a load of logs.

Wrapper rack - barrier used to protect a person while removing binders and wrappers from a loaded logging truck.

Yarder (donkey) - a machine with a series of drums used to yard logs.

Yarding - the movement of logs from the place they are felled to a landing.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-505, filed 8/18/99, effective 12/1/99. Statutory Authority: RCW 49.17.040, [49.17].050 and [49.17].060. 96-22-013, § 296-54-505, filed 10/28/96, effective 1/1/97. Statutory Authority: Chapter 49.17 RCW. 87-24-051 (Order 87-24), § 296-54-505, filed 11/30/87. Statutory Authority: RCW 49.17.040, 49.17.050, 49.17.240, chapters 43.22 and 42.30 RCW. 80-11-057 (Order 80-15), § 296-54-505, filed 8/20/80. Statutory Authority: RCW 49.17.040, 49.17.150 and 49.17.240. 79-10-081 (Order 79-14), § 296-54-505, filed 9/21/79.]

(2007 Ed.)

WAC 296-54-507 Employer's responsibilities. The employer must comply with the requirements of all safety and health regulations and must:

- (1) Provide safety training for each employee.
- (2) Take additional precautions to ensure safe logging operations when extreme weather or other extreme conditions create hazards. If the logging operation cannot be made safe, the work must be discontinued until safe to resume.
- (3) Ensure that danger trees within reach of landings, rigging, buildings, or work areas are either felled before regular logging operations begin, or arrange work so that employees are not exposed to the related hazards.
- (4) Develop and maintain a chemical hazard communication program as required by WAC 296-800-170. The program must provide information to all employees about hazardous chemicals or substances to which they are exposed, or may become exposed, in the course of their employment.
- (5) Ensure that intoxicating beverages and narcotics are prohibited on or near the worksite. The employer must remove from the worksite any employee under the influence of alcohol or narcotics.

Note: Narcotics do not include prescription drugs taken under a doctor's direction if the use does not endanger any employee.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. 06-07-142, § 296-54-507, filed 3/21/06, effective 5/1/06. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 01-11-038, § 296-54-507, filed 5/9/01, effective 9/1/01; 99-17-117, § 296-54-507, filed 8/18/99, effective 12/1/99. Statutory Authority: Chapter 49.17 RCW. 94-16-145, § 296-54-507, filed 8/3/94, effective 9/12/94; 89-11-035 (Order 89-03), § 296-54-507, filed 5/15/89, effective 6/30/89. Statutory Authority: RCW 49.17.040, 49.17.050, 49.17.240, chapters 43.22 and 42.30 RCW. 80-11-057 (Order 80-15), § 296-54-507, filed 8/20/80. Statutory Authority: RCW 49.17.040, 49.17.150 and 49.17.240. 79-10-081 (Order 79-14), § 296-54-507, filed 9/21/79.]

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WAC 296-54-509 Employee's responsibility. (1)

Employees must coordinate and cooperate with the employer and other employees in an attempt to eliminate accidents.

(2) Employees must be aware of and follow all safe practices that apply to their work.

(3) Employees should offer safety suggestions that may contribute to a safer work environment.

(4) Intoxicating beverages and narcotics must not be permitted or used by employees in or around the worksites. Employees under the influence of alcohol or narcotics must not be permitted on the worksite.

EXCEPTION: This rule does not apply to employees taking prescription drugs and/or narcotics as directed by a physician if the use does not endanger the employee or others.

(5) Employees must conduct themselves in a workman-like manner while on the worksite.

(6) Employees must make prompt report to their immediate supervisor of each industrial injury or occupational illness, regardless of the degree of severity.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-509, filed 8/18/99, effective 12/1/99. Statutory Authority: RCW 49.17.040, 49.17.150 and 49.17.240. 79-10-081 (Order 79-14), § 296-54-509, filed 9/21/79.]

WAC 296-54-511 Personal protective equipment

(PPE). (1) Protective equipment, including personal protective equipment for eyes, face, head, hearing and extremities, protective clothing, respiratory devices and protective shields and barriers, must be used, and maintained in a sanitary and reliable condition wherever it is necessary by reason of hazards of processes or environment, chemical hazards, radiological hazards, or mechanical irritants encountered in a manner capable of causing injury or impairment in the function of any part of the body through absorption, inhalation or physical contact.

(2) Personal protective equipment, including any personal protective equipment provided by an employee, must be maintained in a serviceable condition.

(3) Design. All personal protective equipment must be of safe design and construction for the work to be performed. All safety belts and attachments must meet the requirements of section 3 of ANSI A10.14-1975.

(4) Personal protective equipment, including any personal protective equipment provided by an employee, must be inspected before initial use during each workshift. Defects or damage must be repaired or the unserviceable personal protective equipment must be replaced before work is commenced.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-511, filed 8/18/99, effective 12/1/99. Statutory Authority: RCW 49.17.040, [49.17].050 and [49.17].060. 96-22-013, § 296-54-511, filed 10/28/96, effective 1/1/97. Statutory Authority: Chapter 49.17 RCW. 94-20-057 (Order 94-16), § 296-54-511, filed 9/30/94, effective 11/20/94. Statutory Authority: RCW 49.17.040 and 49.17.050. 83-24-013 (Order 83-34), § 296-54-511, filed 11/30/83. Statutory Authority: RCW 49.17.040, 49.17.050, 49.17.240, chapters 43.22 and 42.30 RCW. 80-11-057 (Order 80-15), § 296-54-511, filed 8/20/80. Statutory Authority: RCW 49.17.040, 49.17.150 and 49.17.240. 79-10-081 (Order 79-14), § 296-54-511, filed 9/21/79.]

WAC 296-54-51110 Head protection. The employer must provide, at no cost to the employee, and ensure that all employees involved in the logging operation or any of its

related activities wear head protection, unless the employees are protected by FOPS, cabs, or canopies meeting the requirements of this chapter.

(1) Hard hats purchased after February 20, 1995, must meet the requirements of ANSI Z89.1-1986, "American National Standard for Personnel Protection—Protective Headwear for Industrial Workers—Requirements," or the employer must demonstrate that they are equally effective.

(2) Hard hats purchased before February 20, 1995, must meet the requirements of ANSI Z89.1-1969, "American National Standard Safety Requirements for Industrial Head Protection," or the employer must demonstrate that they are equally effective.

(3) Hard hats must be maintained in serviceable condition.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-51110, filed 8/18/99, effective 12/1/99.]

WAC 296-54-51120 Eye and face protection. The employer must provide, at no cost to the employee, and ensure that each employee wears:

(1) Eye protection meeting the requirements of WAC 296-800-160, where there is potential for eye injury from falling or flying objects; and

(2) Face protection meeting the requirements of WAC 296-800-160, where there is potential for facial injury such as, but not limited to, operating a chipper. An employee using a chain saw may use either eye or face protection.

Note: The employee does not have to wear separate eye protection when the face protection also covers the eyes.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 01-11-038, § 296-54-51120, filed 5/9/01, effective 9/1/01; 99-17-117, § 296-54-51120, filed 8/18/99, effective 12/1/99.]

WAC 296-54-51130 Hearing protection. The employer must provide hearing protection when required by chapter 296-817 WAC, Hearing loss prevention (noise).

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060. 03-11-060, § 296-54-51130, filed 5/19/03, effective 8/1/03. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-51130, filed 8/18/99, effective 12/1/99.]

WAC 296-54-51140 Hand protection. (1) The employer must provide, and make sure that each employee handling wire rope uses, hand protection that provides adequate protection from puncture wounds, cuts, and lacerations.

(2) Hand protection must be maintained in serviceable condition.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. 06-07-142, § 296-54-51140, filed 3/21/06, effective 5/1/06. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-51140, filed 8/18/99, effective 12/1/99.]

WAC 296-54-51150 Respiratory protection. The employer must provide respiratory protection when required by chapter 296-842 WAC, Respirators.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. 05-20-055, § 296-54-51150, filed 10/3/05, effective 12/1/05; 05-03-093, § 296-54-51150, filed 1/18/05, effective 3/1/05. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-51150, filed 8/18/99, effective 12/1/99.]

WAC 296-54-51160 Leg protection. (1) The employer must provide, at no cost to the employee, and ensure that each employee who operates a chain saw wears leg protection constructed with cut-resistant material, such as ballistic nylon. The leg protection must cover the full length of the thigh to the top of the boot on each leg to protect against contact with a moving chain saw.

EXCEPTION: This requirement does not apply to an employee working aloft in trees when supported by climbing spurs and climbing belt, or when an employee is working from a vehicle-mounted elevating and rotating work platform meeting the requirements of chapter 296-24 WAC, Part J-3, Vehicle-mounted elevating and rotating work platforms.

(2) Leg protection must be maintained in serviceable condition.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 01-11-038, § 296-54-51160, filed 5/9/01, effective 9/1/01; 99-17-117, § 296-54-51160, filed 8/18/99, effective 12/1/99.]

WAC 296-54-51170 Foot protection. (1) Each employee must wear foot protection that covers and supports the ankle, such as heavy-duty logging boots.

(2) Each employee who operates a chain saw must wear cut resistant foot protection that will protect the employee against contact with a running chain saw.

For example: Leather logging boots, insulated rubber pacs, and rubber boots with cut protection will meet the cut-resistant requirement of this section.

(3) All employees whose duties require them to walk on logs or boomsticks must wear sharp-calked boots, or the equivalent.

EXCEPTION 1: When calks are ineffective because of ice, snow, or other conditions and other footwear does not provide suitable protection, employees must be prohibited from working on logs or boomsticks.

EXCEPTION 2: The employer may allow employees to wear nonslip boots instead of calks when the nonslip boots provide greater employee protection than calks (such as at scaling stations, log sorting yards, etc.). The nonslip boots must still provide firm ankle support and secure footing.

(4) Foot protection must be maintained in serviceable condition.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-51170, filed 8/18/99, effective 12/1/99.]

WAC 296-54-51190 Highly visible clothing. (1) Employees working on landings or in log sorting yards on or from the ground, must wear highly visible hard hats, yellow or orange vests, or other similarly colored garments, to make employees more visible to equipment operators.

Note: The department recommends that hard hats and vests or outer garments be luminous or reflective.

(2) An employee working as a flagger must wear a hard hat and vest or other garment of high visibility colors. Warning vests and hard hats worn at night must be reflective.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-51190, filed 8/18/99, effective 12/1/99.]

WAC 296-54-513 Arrangement of work areas and emergency contact. (1) Employee work areas must be (2007 Ed.)

spaced and employee duties organized so the actions of one employee do not create a hazard for any other employee.

(2) Work areas must be assigned so that:

(a) Trees cannot fall into an adjacent occupied work area;

(b) The distance between work areas is at least two tree lengths of the trees being fell;

(c) The distance between work areas reflects the degree of slope, the density of the growth, the height of the trees, the soil structure and other hazards reasonably anticipated at the worksite; and

(d) A distance of more than two tree lengths is maintained between work areas on any slope where rolling or sliding of trees or logs is reasonably foreseeable.

(3) Each employee must be within visual, audible, or radio/telephone contact with another person who can assist in case of emergency.

(4) In any logging operation where cutting, yarding, or loading are performed, there must be at least two employees working as a team.

(5) Each employee must have visual or audible signal contact with another employee as often as this schedule requires:

(a) Cutters - 30 minutes.

(b) All other employees - 2 hours, which allows for making layouts, notching guyline stumps, etc., during normal work hours.

Exception: The requirements for a two-person team and check-in schedule do not apply to operators of motor vehicles, mechanized logging machines, watchpersons or certain other jobs which, by their nature, are singular employee assignments. However, a procedure for checking the welfare of these employees during their working hours must be instituted and all employees so advised.

(6) Mechanics or other employees must not be assigned to work on equipment by themselves when there is a probability of a fall from elevated work locations or equipment. Also, if the work is of such nature that heavy parts require moving, or there is a probability that anything heavy could fall on the person, there must be another person in the immediate area to render assistance.

(7) The employer must establish a method of checking the employees in from the woods at the end of each shift, including operators of all movable equipment. Each immediate supervisor must account for their crew.

(8) Each worksite must have at least one serviceable and operable two-way radio, phone, or radio/phone combination available to reach emergency service. Citizen band radios are permitted only as a secondary means of communication.

(9) Each worksite must have an emergency medical plan to ensure rapid emergency medical care for employees with major illnesses and injuries. The plan must be in writing and include the following:

(a) Township, range, and section numbers or latitude and longitude or UMS Grid System coordinates;

(b) Directions by road, or escort provisions to the site;

(c) Telephone number of emergency medical services; and

(d) Provisions for emergency vehicle(s) access, when working behind locked gate(s).

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-513, filed 8/18/99, effective 12/1/99. Statutory Authority:

RCW 49.17.040, [49.17].050 and [49.17].060. 96-22-013, § 296-54-513, filed 10/28/96, effective 1/1/97. Statutory Authority: RCW 49.17.040, 49.17.150 and 49.17.240. 79-10-081 (Order 79-14), § 296-54-513, filed 9/21/79.]

WAC 296-54-515 Accident prevention program. (1)

The employer must develop a formal accident prevention program, tailored to the needs of the particular logging operation and to the type of hazards involved. The program must be implemented in a manner that is effective in practice.

(2) The accident prevention program must be in writing.

(3) The accident prevention program must cover at least the following elements:

(a) A safety training program that describes the employer's total safety program.

(b) How and when to report injuries;

(c) The location of first-aid supplies;

(d) Safe use, operation and maintenance of tools, machines and vehicles the employee uses or operates;

(e) How to report unsafe conditions and practices;

(f) The use and care of required personal protective equipment;

(g) An on-the-job review of the practices necessary to perform job assignments safely; and

(h) Recognition of safety and health hazards associated with the employee's specific work tasks, including using measures and work practices to prevent or control those hazards.

(4) The employer must document and maintain current records of required training, including:

• Who was trained;

• The date(s) of the training; and

• The signature of the trainer or the employer.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. 06-07-142, § 296-54-515, filed 3/21/06, effective 5/1/06. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-515, filed 8/18/99, effective 12/1/99. Statutory Authority: RCW 49.17.040, [49.17].050 and [49.17].060. 96-22-013, § 296-54-515, filed 10/28/96, effective 1/1/97. Statutory Authority: RCW 49.17.040, 49.17.050, 49.17.240, chapters 43.22 and 42.30 RCW. 80-11-057 (Order 80-15), § 296-54-515, filed 8/20/80. Statutory Authority: RCW 49.17.040, 49.17.150 and 49.17.240. 79-10-081 (Order 79-14), § 296-54-515, filed 9/21/79.]

WAC 296-54-51510 Safety and health meetings. (1)

The employer must hold safety and health meetings at the following intervals:

(a) Each time the employer moves to a new job site; and

(b) Monthly after the initial job site meeting.

(2) Safety and health meetings may be conducted individually, in crew meetings, in larger groups, or as part of other staff meetings.

(3) Attendance and subject(s) must be documented.

Note: When moving to a new job site, site specific hazards should be identified and discussed during the prejob safety meeting.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-51510, filed 8/18/99, effective 12/1/99.]

WAC 296-54-51520 First-aid training. (1)

Each employee, including supervisors, must receive or have received first-aid and CPR training. New employees not holding a valid first-aid card must be trained within a reasonable time, not to exceed six months from hiring.

EXCEPTION: Log truck drivers are not required to receive first-aid and CPR training if they are not involved with falling, yarding, loading, or processing logs.

(2) Each employee's first-aid and CPR training and/or certificate of training must be current.

(3) At least two persons holding a valid certificate of first-aid training must be present or available at all times in sorting yard operations.

(4) First-aid and CPR training must cover at least the following:

(a) The definition of first aid.

(b) Legal issues of applying first aid (Good Samaritan Laws).

(c) Basic anatomy.

(d) Patient assessment and first aid for the following:

• Respiratory arrest.

• Cardiac arrest.

• Hemorrhage.

• Lacerations/abrasions.

• Amputations.

• Musculoskeletal injuries.

• Shock.

• Eye injuries.

• Burns.

• Loss of consciousness.

• Extreme temperature exposure (hypothermia/hyperthermia).

• Paralysis.

• Poisoning.

• Artificial ventilation.

(e) CPR.

(f) Applying dressings and slings.

(g) Treating strains, sprains, and fractures.

(h) Immobilizing injured persons.

(i) Handling and transporting injured persons.

(j) Treating bites, stings, or contact with poisonous plants or animals.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-51520, filed 8/18/99, effective 12/1/99.]

WAC 296-54-51530 First-aid kits. (1)

The employer must provide first-aid kits:

(a) At each worksite where trees are being cut (e.g., falling, bucking, limbing);

(b) At each active landing/logging site; and

(c) In the absence of readily accessible first-aid supplies such as first-aid kits, first-aid stations, first-aid rooms or their equivalent, all transport vehicles, log trucks, speeders, road graders and similar equipment must be equipped with not less than a ten package first-aid kit; and

(d) The number of first-aid kits and the content of each kit must reflect the degree of isolation, the number of employees, and the hazards reasonably anticipated at the worksite.

(2) Following is the minimally acceptable number and type of required first-aid supplies to meet the requirements of subsection (1)(a) and (b) of this section.

Note: The contents of the first-aid kit listed should be adequate for small worksites of two or three employees. For larger or multiple logging operations conducted at the same location, the employer should provide additional first-aid kits or additional quantities of supplies in the first-aid kits.

- (a) Gauze pads (at least 4 x 4 inches).
 - (b) Two large gauze pads (at least 8 x 10 inches).
 - (c) Box adhesive bandages (band-aids).
 - (d) One package gauze roller bandage at least 2 inches wide.
 - (e) Two triangular bandages.
 - (f) Wound cleaning agent such as sealed moistened tow-elettes.
 - (g) Scissors.
 - (h) At least one blanket.
 - (i) Tweezers.
 - (j) Adhesive tape.
 - (k) Latex gloves.
 - (l) Resuscitation equipment such as resuscitation bag, airway, or pocket mask.
 - (m) Two elastic wraps.
 - (n) Splint.
 - (o) Stretcher.
- (3) Transport vehicles, log trucks, speeders and road graders must have at least the following number and type of first-aid supplies:

- 10 package kit.
- 1 pkg. adhesive bandages, 1" (16 per pkg.).
- 1 pkg. bandage compress, 4" (1 per pkg.).
- 1 pkg. scissors and tweezers (1 each per pkg.).
- 1 pkg. triangular bandage, 40" (1 per pkg.).
- 1 pkg. antiseptic soap or pads (3 per pkg.).
- 5 pkgs. employer's choice.

(4) When six or more employees are generally being transported on any one trip, the first-aid kit must be increased in size following the requirements of subsection (2) of this section. Subsection (2)(h), (n) and (o) are optional.

(5) The employer must maintain the contents of each first-aid kit in a serviceable condition.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-51530, filed 8/18/99, effective 12/1/99.]

WAC 296-54-517 Lockout/tagout procedures. (1)

The employer must establish and implement written procedures for lockout/tagout to prevent the accidental start up or release of stored energy of logging machinery that is shut down for repairs, maintenance, or adjustments.

(2) Lockout/tagout procedures must contain specific steps for:

- (a) Shutting down, blocking, and securing machines to control hazardous energy;
- (b) Locking and/or tagging out machinery; and
- (c) Release from lockout/tagout.

(3) Lockout/tagout procedure details must include at least the following:

(a) Employees performing maintenance, repairs, or adjustments have knowledge of the hazardous energy to be controlled and the means to control the energy.

- (b) Logging machine shutdown.
 - Apply brakes, swing locks, etc.
 - Place the transmission in the manufacturer's specified park position.

• Lower to the ground or secure each moving element such as, but not limited to, blades, booms, grapples, buckets, saws, and shears to prevent a release of stored energy.

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• Shut down machinery and ensure that a responsible person removes and maintains possession of the ignition/master key.

• Engage hydraulic safety locks when applicable.

• Before working on hydraulic or air systems, relieve pressure by bleeding tanks or lines and operate controls to dissipate residual stored energy (pressure).

• Place lockout and/or tagout device.

(4) Release from lockout/tagout. Before lockout or tagout devices are removed and machinery is started, the work area must be inspected to ensure that all tools have been removed, guards are replaced, and employees are in the clear.

(5) The employer must provide padlocks and/or tags for locking and/or tagging out logging machinery that are durable enough to withstand the environment.

(6) Tags must have a legend such as "do not start" or "do not operate." Tags must be placed so they are obvious to anyone attempting to operate the machinery.

Note: In lockout, padlocks are commonly used to prevent access to ignition/master switches or battery disconnects.

(7) Energy sources. Stored or residual energy such as that in elevated machine members, rotating saws, hydraulic systems, air pressure and springs, must be dissipated or restrained by methods such as grounding, repositioning, blocking, chaining, bleeding down, etc.

(8) The employer must provide training to ensure that the purpose and function of the lockout/tagout program are understood by employees performing maintenance, repairs, or adjustments covered by this section. This program must be reviewed at least annually and training provided as needed. This training may be accomplished through safety meetings.

Note: See appendix 2 for a sample lockout/tagout program (energy control program).

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-517, filed 8/18/99, effective 12/1/99. Statutory Authority: RCW 49.17.040, 49.17.050, 49.17.240, chapters 43.22 and 42.30 RCW. 80-11-057 (Order 80-15), § 296-54-517, filed 8/20/80. Statutory Authority: RCW 49.17.040, 49.17.150 and 49.17.240. 79-10-081 (Order 79-14), § 296-54-517, filed 9/21/79.]

WAC 296-54-519 Miscellaneous requirements. (1)

Spikes, drift bolts, nails, or other metal must not be left in any recoverable log.

(2) The employer must provide and maintain portable fire extinguishers on each machine and vehicle.

(3) Machines, vehicles, and portable powered tools (unless diesel powered) must not be fueled while the motors are running.

Note: See WAC 296-54-58130(3) for exceptions related to helicopters.

(4) Flammable and combustible liquids must be stored, handled, transported, and used according to the requirements of chapter 296-24 WAC, Part E, and the following:

(a) Flammable and combustible liquids must not be transported in the driver compartment or in any passenger-occupied area of a machine or vehicle.

(b) Flammable or combustible liquids, including chain-saw and diesel fuel, may be used to start a fire, if the employer ensures that in the particular situation its use does not create a hazard for an employee.

(5) Smoking is prohibited in battery charging areas and within fifty feet of all refueling operations. Precautions must be taken to prevent open flames, sparks, or electric arcs in battery charging or refueling areas.

(6) When charging batteries:

(a) The vent caps must be kept in place to avoid electrolyte spray;

(b) Caps must be functioning; and

(c) The battery (or compartment) cover(s) must be open to dissipate heat.

(7) Tools and other metallic objects must be kept away from the tops of uncovered batteries.

(8) Explosives and blasting agents must be stored, handled, transported, and used according to the requirements of chapter 296-52 WAC, Possession and handling of explosives.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-519, filed 8/18/99, effective 12/1/99. Statutory Authority: RCW 49.17.040, [49.17].050 and [49.17].060. 96-22-013, § 296-54-519, filed 10/28/96, effective 1/1/97. Statutory Authority: RCW 49.17.040, 49.17.050, 49.17.240, chapters 43.22 and 42.30 RCW. 80-11-057 (Order 80-15), § 296-54-519, filed 8/20/80. Statutory Authority: RCW 49.17.040, 49.17.150 and 49.17.240. 79-10-081 (Order 79-14), § 296-54-519, filed 9/21/79.]

WAC 296-54-521 Motor vehicles. (1) The seats of each vehicle must be securely fastened.

(2) Each school bus type vehicle that will transport nine or more passengers must have a substantial barricade behind the driver. The barricade must extend from the floor to at least a level even with the top of the driver's head.

(3) Adequate provision must be made for safe entrance and exits. Each vehicle must have mounting steps and handholds wherever it is necessary to prevent an employee injury when entering or leaving the vehicle.

(4) When equipment or tools are carried inside the vehicle, the employer must provide and use racks, boxes, holsters or other means to transport tools so that a hazard is not created for any vehicle operator or passenger.

(5) No one may enter or exit any vehicle until the vehicle is completely stopped.

(6) Employees must keep all parts of the body within the vehicle.

(7) Heat and light must be available in the passenger area of the vehicle. Use of stoves in vehicles is prohibited.

(8) Vehicles designed to transport nine or more passengers must have an emergency exit that:

(a) Is at least six and one-half square feet in area, with the smallest dimension being at least 18 inches;

(b) Is placed at the back of the vehicle or near the back on the side opposite the regular entrance; and

(c) Has an unobstructed route to and from the exit.

(9) When no fuel is transported in the crew vehicle, a minimum rated 5/BC dry chemical fire extinguisher must be kept in the passenger compartment. When fuel is transported on the crew vehicle according to subsection (12) of this section, a minimum rated 10/BC dry chemical fire extinguisher must be kept in the passenger compartment. The extinguishing agent must be nontoxic and preferably noncorrosive.

Note: For additional requirements relating to portable fire extinguishers see WAC 296-800-300.

(10) Exhaust systems must be designed and maintained to eliminate the exposure of passengers to toxic agents.

(11) Operating and maintenance instructions must be available in each vehicle. Each vehicle operator and maintenance employee must comply with the operating and maintenance instructions.

(12) Fuel must be transported or stored only in approved safety containers. Enclosed areas where fuels are carried or stored must be vented so that a hazardous concentration of fumes cannot accumulate. All containers or drums must be properly secured to the vehicle while being transported. Commercially built pick-up or flatbed trucks with a maximum seating capacity of six persons may be used to carry fuel in or on the bed of such vehicles, if the fuel is not carried in the crew compartment. Van-type vehicles may be used to carry fuel only when a vapor-proof bulkhead is installed between the passenger compartment and storage compartment. A maximum of forty-two gallons of gasoline may be carried or stored in the compartment and each container must have a maximum capacity seven gallons.

(13) Motor vehicles used regularly to transport employees must be covered against the weather and equipped and operated according to applicable state of Washington motor vehicle laws.

(14) All operators of crew vehicles must be experienced drivers and have a valid operator's license for the class of vehicle being operated.

(15) Dump trucks must only be used in an emergency to transport workers and have adequate safety chains or locking devices that eliminate the possibility of the body of the truck being raised while employees are riding in the truck. **"Emergency"** means any unforeseen circumstances that call for immediate action when danger to life or danger from fire exists.

(16) An effective means of signaling must be provided for communication between the driver and the passengers being transported when they are in separate compartments.

(17) The passenger load limit of a crew vehicle must not exceed the seating capacity of the vehicle.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 01-17-033, § 296-54-521, filed 8/8/01, effective 9/1/01; 99-17-117, amended and recodified as § 296-54-521, filed 8/18/99, effective 12/1/99. Statutory Authority: RCW 49.17.040, [49.17].050 and [49.17].060. 96-22-013, § 296-54-531, filed 10/28/96, effective 1/1/97. Statutory Authority: RCW 49.17.040, 49.17.050, 49.17.240, chapters 43.22 and 42.30 RCW. 80-11-057 (Order 80-15), § 296-54-531, filed 8/20/80. Statutory Authority: RCW 49.17.040, 49.17.150 and 49.17.240. 79-10-081 (Order 79-14), § 296-54-531, filed 9/21/79.]

WAC 296-54-523 Inspection and repair of equipment and vehicles. Defective equipment.

(1) Equipment in need of repair must be reported to management as soon as possible and such equipment must not be used until repairs are completed if there is a possible hazard to safety of the operator or other employees.

(2) Each vehicle used to perform any logging operation must be inspected before initial use during each workshift. Defects or damage must be repaired or the unserviceable vehicle must be replaced before work is commenced.

(3) Each vehicle, machine and piece of equipment used to perform any logging operation must be maintained in serviceable condition.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, amended and recodified as § 296-54-523, filed 8/18/99, effective 12/1/99. Statutory Authority: RCW 49.17.040, [49.17].050 and [49.17].060. 96-22-013, § 296-54-521, filed 10/28/96, effective 1/1/97. Statutory Authority: RCW 49.17.040, 49.17.150 and 49.17.240. 79-10-081 (Order 79-14), § 296-54-521, filed 9/21/79.]

WAC 296-54-527 Seat belts. Each machine equipped with ROPS or FOPS and each vehicle (whether provided by the employee or the employer) must meet the following requirements:

(1) A seat belt must be provided for each vehicle, vehicle occupant, and all machines equipped with ROPS.

Note: An employer is not required to retrofit a vehicle that was not equipped with seat belts at the time of manufacture.

(2) Each employee must use the available seat belt while the vehicle or machine is being operated.

(3) Each employee must securely and tightly fasten the seat belt to restrain the employee within the vehicle or machine cab.

(4) Each machine seat belt must meet the requirements of the Society of Automotive Engineers Standard SAE J386, June 1985, "Operator Restraint Systems for Off-Road Work Machines." Seat belts need not be provided for equipment that is designed **only** for stand-up operations.

(5) Seat belts must not be removed from any vehicle or machine. The employer must replace each seat belt that was removed from any vehicle or machine that was equipped with seat belts at the time of manufacture.

(6) Each seat belt must be maintained in a serviceable condition.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. 06-07-142, § 296-54-527, filed 3/21/06, effective 5/1/06. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, amended and recodified as § 296-54-527, filed 8/18/99, effective 12/1/99. Statutory Authority: RCW 49.17.040, [49.17].050 and [49.17].060. 96-22-013, § 296-54-529, filed 10/28/96, effective 1/1/97. Statutory Authority: RCW 49.17.040, 49.17.050, 49.17.240, chapters 43.22 and 42.30 RCW. 80-11-057 (Order 80-15), § 296-54-529, filed 8/20/80. Statutory Authority: RCW 49.17.040, 49.17.150 and 49.17.240. 79-10-081 (Order 79-14), § 296-54-529, filed 9/21/79.]

WAC 296-54-529 Overhead electrical lines clearance. One of the following conditions must exist in work areas where equipment or machines are operated near electrical distribution and transmission lines:

(1) The lines have been deenergized and visibly grounded at the point of work;

(2) Insulating barriers that are not a part of or an attachment to the equipment or machinery are erected to prevent physical contact with the lines; or

(3) All of the following requirements are met:

	Line Voltage	Required minimum clearance between lines and any part of equipment or machine
(a)	50 kV or below	ten feet
(b)	over 50 kV	ten feet plus 0.4 inch for each 1 kV over 50 kV, or twice the length of the line insulator, but never less than ten feet
For equipment or machinery in transit with no load and any boom or extended equipment lowered:		

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	Line Voltage	Required minimum clearance between lines and any part of equipment or machine
(c)	50 kV or below	four feet
(d)	50-345 kV	ten feet
(e)	345-750 kV	sixteen feet

(4) Someone must be designated to observe proper clearance and to give timely warning for all operations where it is difficult for the operator to see well enough to maintain the clearance.

(5) All overhead wires shall be considered energized unless the line owner or the electrical utility authorities ensure that it is not an energized line and has been visibly grounded.

(6) Special precautions must be taken to prevent trees from falling into power lines. The employer must notify the power company immediately if a felled tree makes contact with any power line. Before falling any tree that appears will hit a power line, the employer must notify the power company. If a tree does contact a power line, all employees must remain clear of the area until the power company ensures that there is no electrical hazard.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, amended and recodified as § 296-54-529, filed 8/18/99, effective 12/1/99. Statutory Authority: RCW 49.17.040, 49.17.050, 49.17.240, chapters 43.22 and 42.30 RCW. 80-11-057 (Order 80-15), § 296-54-527, filed 8/20/80. Statutory Authority: RCW 49.17.040, 49.17.150 and 49.17.240. 79-10-081 (Order 79-14), § 296-54-527, filed 9/21/79.]

WAC 296-54-531 Truck roads. (1) Haul road grades must not exceed 20 percent unless:

(a) Special equipment and safety measures are used to accommodate the steep grade; or

(b) The logging equipment or truck is specifically designed and approved by the manufacturer for operation on grades over twenty percent.

(2) Truck road surfaces must meet the following requirements:

(a) Truck roads are wide enough and even to ensure the safe operation of equipment.

(b) Hazards such as broken planking, deep holes, large rocks, logs, etc., that make equipment operation unsafe, must be immediately corrected.

(c) On blind curves, one of the following must be implemented:

(i) Truck roads are wide enough for two trucks to pass;

(ii) A signal system is maintained; or

(iii) Speed is limited so that the vehicle can be stopped in one-half the visible distance.

(3) For all portions of roads under the direct control of the employer, the employer must ensure that:

(a) All danger trees are felled a safe distance back from the roadway;

(b) Rocks that present a hazard are cleared from banks; and

(c) Brush and other materials that obstruct the view at intersections or on sharp curves are cleared.

(4) All bridge structures used in the logging operation must meet the following requirements:

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(a) Structures are adequate to support the maximum imposed loads without exceeding the maximum safe working unit stresses;

(b) Bridges have an adequate number of reflectors to clearly define the entrance to the bridge;

(c) Structures are maintained in good condition and repair;

(d) Structures are inspected at least annually by a qualified authorized person; and

(e) A record maintained of each inspection must be available to a representative of the department on request.

(5) Shear rails must be installed on both outside edges of bridges. The shear rails must be securely fastened and made of material able to withstand the impact generated by contact with the wheels of a loaded vehicle. The top of shear rails must be at least fifteen inches above the bridge surface. Bridges in use before 1980 with outside shear rails a minimum of ten inches high or center shear rails at least five inches high are permissible until repairs are needed.

(6) The employer must implement measures that minimize dust to the degree that visibility is sufficient to allow an operator to safely operate a vehicle. Vehicle operators must travel at a speed consistent with road conditions.

(7) Pneumatic-tired equipment must have fenders as described in the Society of Automotive Engineers Technical Report J321a.

(8) Employee(s) must be assigned to flag on roads or provide other equivalent protection where hazardous conditions are created from logging such as but not limited to:

(a) Running wire rope lines or rigging across road grades, excluding guylines and standing skylines if lines remain a safe distance above the road to allow a vehicle to pass under; or

(b) The movement of logs, chunks, or debris across or suspended over road grades.

EXCEPTION: Where there is no through traffic, such as on a dead end road or where the property owner's permission or proper authority is granted to close a section of road, warning signs and barricades may be used instead of flagger(s).

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, amended and recodified as § 296-54-531, filed 8/18/99, effective 12/1/99. Statutory Authority: RCW 49.17.040, 49.17.150 and 49.17.240. 79-10-081 (Order 79-14), § 296-54-533, filed 9/21/79.]

WAC 296-54-533 Road pioneering and earthwork.

(1) Banks at the borrow area must be sloped to prevent slides.

(2) Backfill must be firmly compacted.

(3) Roadside banks must be sloped or stabilized to prevent slides.

(4) Overhanging banks, large rocks and debris must be removed or secured.

(5) Where riprap is used, the material and design must ensure containment of material.

(6) Trees or snags that may fall into the road must be fell.

(7) Root wads, logs, and other unstable debris must not be placed against standing timber or otherwise placed so as to create a hazard for timber falling or other logging operations.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, amended and recodified as § 296-54-533, filed 8/18/99, effective 12/1/99. Statutory Authority: RCW 49.17.040, [49.17].050 and [49.17].060. 96-22-013, § 296-54-535, filed 10/28/96, effective 1/1/97. Statutory Authority: RCW 49.17.040, 49.17.050, 49.17.240, chapters 43.22 and 42.30 RCW. 80-11-057 (Order 80-15), § 296-54-535, filed 8/20/80. Statutory Authority:

[Title 296 WAC—p. 1166]

RCW 49.17.040, 49.17.150 and 49.17.240. 79-10-081 (Order 79-14), § 296-54-535, filed 9/21/79.]

WAC 296-54-535 Hand and portable powered tools.

(1) Each hand and portable powered tool, including any tool provided by an employee, must be maintained in serviceable condition.

(2) Each tool, including any tool provided by an employee, must be inspected before initial use during each workshift. The inspection must include at least the following:

(a) Handles and guards, to ensure that they are sound and tight-fitting, (properly shaped, free of splinters and sharp edges, and in place);

(b) Controls, to ensure proper function;

(c) Chain saw chains, to ensure proper adjustment;

(d) Chain saw mufflers, to ensure that they are operational and in place;

(e) Chain brakes and/or nose shielding devices, to ensure that they are in place and function properly;

(f) Heads of shock, impact-driven and driving tools, to ensure that there is no mushrooming.

(3) Each tool must be used and maintained according to the following requirements:

(a) Each tool is used only for purposes for which it was designed.

(b) Any shock, impact-driven or driving tool is repaired or removed from service when the head begins to chip.

(c) The cutting edge of each tool is sharpened according to manufacturer's specifications whenever it becomes dull during the workshift.

(d) Each tool is stored in the provided location when not being used at a worksite.

Note: See WAC 296-24-650 for rules on the use and maintenance of tools and other equipment not covered by this chapter.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, amended and recodified as § 296-54-535, filed 8/18/99, effective 12/1/99. Statutory Authority: RCW 49.17.040, [49.17].050 and [49.17].060. 96-22-013, § 296-54-523, filed 10/28/96, effective 1/1/97. Statutory Authority: RCW 49.17.040, 49.17.150 and 49.17.240. 79-10-081 (Order 79-14), § 296-54-523, filed 9/21/79.]

WAC 296-54-537 Chain saws. (1) Operators must inspect chain saws daily to ensure that handles and guards are in place, and controls and other moving parts are functional.

(a) Each chain saw placed into initial service after February 9, 1995, must be equipped with a chain brake and, shall otherwise meet the requirements of ANSI B175.1-1991 "Safety Requirements for Gasoline-Powered Chain Saws" and the requirements of this chapter;

(b) Each chain saw placed into service before February 9, 1995, must be equipped with a protective device that minimizes chain saw kickback, i.e., reduced kickback bar, chains, bar tip guard, or chain brake;

(c) No chain saw kickback device shall be removed or otherwise disabled; and

(d) Chain saws must be operated and adjusted in accordance with the manufacturer's instructions.

(2) Saw pinching and subsequent chain saw kickback must be prevented by using wedges, levers, guidelines, and saw placement, or by undercutting.

(3) Chain saws must be:

(a) Shutoff while fueling;

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- (b) Fueled outdoors at least ten feet from anyone smoking or from other potential sources of ignition; and
- (c) Started at least 10 feet (3 m) from the fueling area.
- (4) Chain saws must have a positive means of stopping the engine.
- (5) Unless the carburetor is being adjusted, the chain saw must be shut off before any adjustments or repairs are made to the saw, chain, or bar.
- (6) Using a chain saw with a faulty clutch is prohibited.
- (7) The bar must be handled only when the chain saw motor is shut off.
- (8) The drive end of the chain saw bar must be guarded.
- (9) The chain saw must have an automatic throttle control that will return the engine to idle speed when the throttle is released.

Note: Idle speed is when the engine is running and the chain does not rotate on the bar.

- (10) The chain saw must be started:
 - (a) With the chain brake engaged, unless the manufacturer prohibits; or
 - (b) On the ground, log or where otherwise firmly supported. Drop starting a chain saw is prohibited.
- (11) A chain saw must be held with the thumbs and fingers of both hands encircling the handles during operation unless the employer demonstrates that a greater hazard is posed by keeping both hands on the chain saw in a specific situation.
- (12) The chain saw must be carried in a manner that will prevent operator contact with the cutting chain and muffler.

- (13) The chain saw must be shut off or at idle before the faller starts to retreat.
- (14) The chain saw must be shut down or the chain brake engaged whenever a saw is carried:
 - (a) Further than 50 feet (15.2 m); or
 - (b) Less than 50 feet if conditions such as, but not limited to, the terrain, underbrush, and slippery surfaces, may create a hazard for an employee.
- (15) Using a chain saw to cut directly over head is prohibited.
- (16) The chain saw operator must be certain of footing before starting to cut. The chain saw must not be used in a position or at a distance that could cause the operator to become off-balance, to have unsteady footing, or to relinquish a firm grip on the saw.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. 06-07-142, § 296-54-537, filed 3/21/06, effective 5/1/06. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-537, filed 8/18/99, effective 12/1/99. Statutory Authority: RCW 49.17.040, [49.17].050 and [49.17].060. 96-22-013, § 296-54-537, filed 10/28/96, effective 1/1/97. Statutory Authority: RCW 49.17.040, 49.17.150 and 49.17.240. 79-10-081 (Order 79-14), § 296-54-537, filed 9/21/79.]

WAC 296-54-539 Falling and bucking—General. (1)

The employer must assign work areas so that:

- (a) Trees cannot fall into an adjacent occupied work area;
- (b) The distance between work areas is at least two tree lengths of the trees being fell (see Figure 1: Distance Between Work Areas);

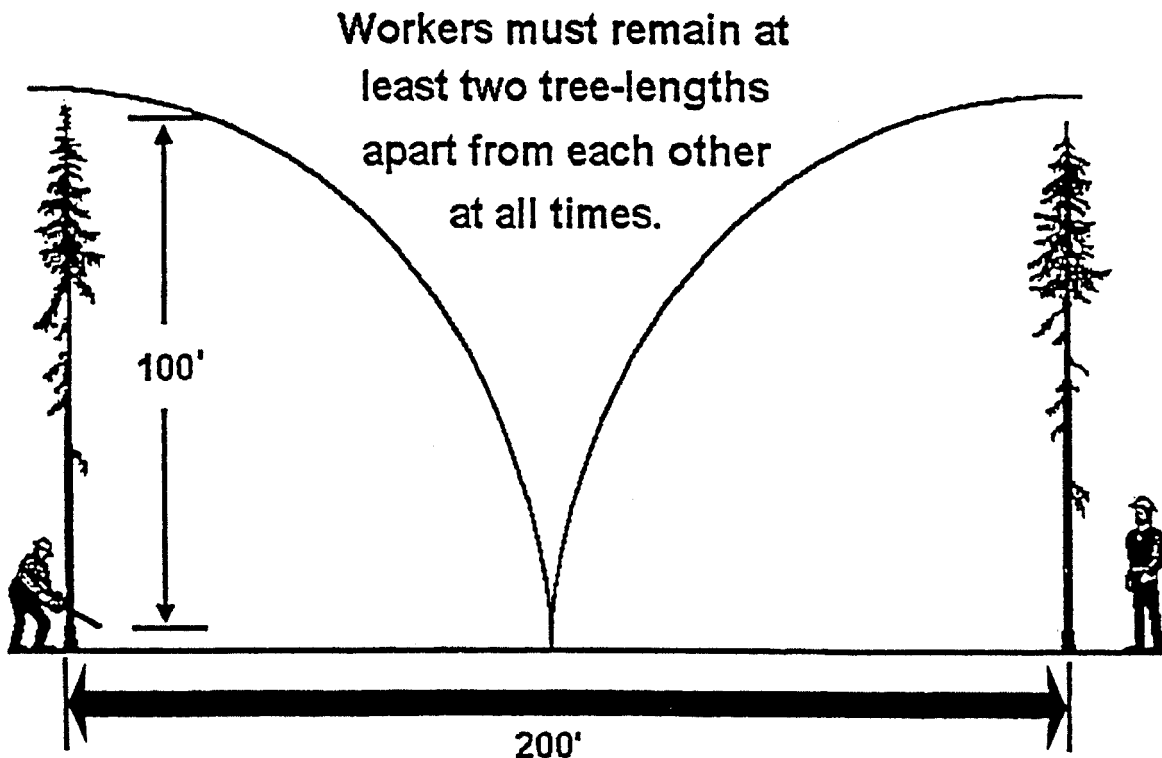


Figure 1: Distance Between Work Area

- (c) The distance between work areas reflects the degree of slope, the density of the growth, the height of the trees, the soil structure and other hazards reasonably anticipated at the worksite; and

- (d) A distance of more than two tree lengths is maintained between work areas on any slope where rolling or sliding of trees or logs is reasonably foreseeable.

EXCEPTION: This rule does not apply to a team of cutters working on the same tree.

(2) Before falling or bucking, conditions such as, but not limited to, snow and ice accumulation, the wind, the lean of tree, dead limbs, and the location of other trees, must be evaluated by the cutter and precautions taken so a hazard is not created for an employee. Accumulations of snow and ice that may create a hazard for an employee must be removed before beginning falling in the area, or the area must be avoided.

(3) Employees must not approach a cutter closer than two tree lengths of trees being felled until the cutter has acknowledged that it is safe to do so.

(4) A competent person, properly experienced in this type of work, must be placed in charge of falling and bucking operations. Inexperienced workers must not be allowed to fall timber, buck logs or windfalls unless working under the direct supervision of an experienced cutter.

(5) Trees must not be fell if the falling tree can strike any line in the logging operation and endanger workers.

(6) Before an employee falls or bucks any tree:

(a) A sufficient work area must be swamped;

(b) The cutter must plan and clear an escape path; and

(i) The escape path must extend diagonally away from the expected felling line unless such an escape path poses a greater hazard than an alternate escape path; and

(ii) An escape path must be used as soon as the tree or snag is committed to fall, roll, or slide.

(7) If a cutter has determined a tree cannot be safely fell, the work must stop until the cutter has conferred with a supervisor or an experienced cutter and determined the safest possible work method or procedure.

(8) The person in charge of cutting crews must regularly inspect the work of the cutting crews and is responsible to ensure the work is performed in a proper and safe manner.

(9) All cutters must carry or have in near proximity at all times:

(a) An axe or suitable tool for driving wedges;

(b) A minimum of two wedges;

(c) A whistle carried on the person; and

(d) A first-aid kit.

(i) The first-aid kit must contain at least two trauma bandages or equivalent absorbent gauze material and a means to secure the material in place.

(ii) First-aid supplies must be kept clean and dry.

(10) A flagperson(s) must be assigned on roads where hazardous conditions are created from falling trees. Where there is no through traffic, such as on a dead end road, warning signs or barricades may be used instead of a flagperson(s).

(11) A cutter must not fall a tree or danger tree alone when at least two cutters are necessary to minimize hazards.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-539, filed 8/18/99, effective 12/1/99. Statutory Authority: RCW 49.17.040, [49.17].050 and [49.17].060. 96-22-013, § 296-54-539, filed 10/28/96, effective 1/1/97. Statutory Authority: RCW 49.17.040, 49.17.050, 49.17.240, chapters 43.22 and 42.30 RCW. 80-11-057 (Order 80-15), § 296-54-539, filed 8/20/80. Statutory Authority: RCW 49.17.040, 49.17.150 and 49.17.240. 79-10-081 (Order 79-14), § 296-54-539, filed 9/21/79.]

WAC 296-54-53910 Falling and bucking—Falling.

(1) Where felled trees are likely to roll and endanger workers,

cutting must proceed from the bottom toward the top of the slope, and uphill from previously fell timber.

(2) A cutter must not be placed on a hillside immediately below another cutter or below other logging operations where there is probable danger.

(3) Cutters must be informed of the movement and location of other employees placed, passing, or approaching the vicinity of trees being fell.

(4) Cutters must give audible warning when falling trees, and:

(a) Indicate the direction of fall;

(b) Ensure that all employees are out of reach of the tree; and

(c) Ensure that all employees are in clear of logs, fallen trees, snags, or other trees that may be struck by the falling tree.

EXCEPTION: Audible warnings are not required when falling trees less than 18 inches DBH, if the cutter has an unobstructed view of the entire area that could be affected by the tree being fell and is assured there is no one within the area.

(5) While manual falling is in progress, all logging machines must be operated at least two lengths away from trees being manually fell.

EXCEPTION: This provision does not apply to logging machines performing tree pulling operations or logging machines called upon by the cutter to ground hazard trees. All cutters must be notified of the logging machine's entrance into the area and all falling within two tree lengths of the logging machine must stop.

(6) Trees must be fell into the open whenever conditions permit.

(7) Cutters must not fall into another strip; trade leaners on the line.

(8) Knocking over trees larger than six inches in diameter in lieu of cutting is prohibited, except as provided in WAC 296-54-53910(9).

(9) Domino falling of trees, including danger trees, is prohibited. Domino falling does not include the falling of a single danger tree by falling another single tree into it.

(10) Undercuts large enough to safely guide trees and eliminate the possibility of splitting must be used on all trees over 6 inches DBH.

For example: A tree with no perceptible lean, having an undercut depth of one-fourth of the diameter of the tree and a face opening equal to one-fifth of the diameter of the tree would meet the requirement.

(11) A cutter must place an adequate undercut and leave enough holding wood to ensure the tree will fall in the intended direction.

(12) The two cuts that form the undercut must not cross where they meet, except where a dutchman is required on either side of the cut.

(13) The undercut must not be made while other workers are in an area into which the tree could fall.

(14) A backcut must be made in each tree being fell.

(a) The backcut must be as level as possible;

(b) The backcut must leave enough hinge wood to hold the tree to the stump during most of its fall so that the hinge is able to guide the tree's fall in the intended direction; and

(c) The backcut must be above the level of the horizontal facecut to provide an adequate platform to prevent kickback.

EXCEPTION: This requirement does not apply to open-faced falling where two angled facecuts are used instead of a horizontal facecut.

(d) In tree-pulling operations the backcut may be at or below the undercut hinge point.

(15) Cutting holding wood instead of using wedges is prohibited. Swing cuts are prohibited except by an experienced person.

(16) Trees with face cuts and/or backcuts must not be left standing unless all the following conditions are met:

- (a) The cutter clearly marks the tree;
- (b) Discontinues work in the hazardous area;
- (c) Notifies all workers who might be endangered; and
- (d) Takes appropriate measures to ensure that the tree is safely fell before other work is undertaken in the hazardous area.

(17) Undercuts and backcuts must be made at a height above the highest ground level to enable the cutter to safely begin the cut, control the tree, and have freedom of movement for a quick escape from a falling tree.

(18) Lodged trees must be clearly marked and identified by a predetermined method and all persons in the area must be instructed not to pass or work within two tree lengths of the trees except to ground them.

Note: See Figure No. 2, for illustrations of undercuts.

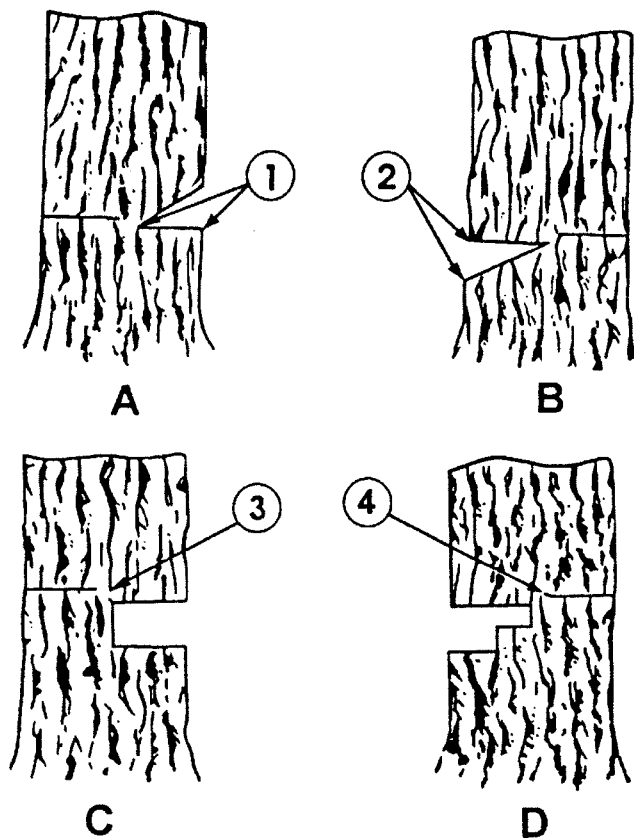


FIGURE 2: UNDERCUTS

- (A) **Conventional undercut.** Can be made with parallel saw cut and axe diagonal cut or both cuts with the saw. Generally used on trees of small diameter.
- (B) **Humboldt undercut.** Leaves square-end log. Same as (A), except that waste is put on the stump.

- (C) **Two parallel cuts with the saw.** The material between the cuts is chopped out with an axe-adz (pulaski) combination. Used on trees over 30 inches in diameter.
- (D) **Three parallel cuts with the saw, leaving a step.** Same in principle as (C). Used on trees of very large diameters.

Item	
1	Undercut depth
2	Undercut height
3	Holding wood
4	Backcut

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-53910, filed 8/18/99, effective 12/1/99.]

WAC 296-54-53920 Falling and bucking—Bucking.

(1) The tree (and root wad if applicable) must be carefully examined to determine which way the logs (and root wad) will roll, drop, or swing when the cut is completed. No worker shall be allowed in this danger zone during cutting. The cut must be made from a position that will not expose the cutter to potential injury.

(2) Logs must be completely bucked through whenever possible. If it becomes hazardous to complete a cut, then the log must be marked and identified by a predetermined method. Rigging crews must be instructed to recognize such marks and when possible, cutters must warn the rigging crew of locations where unfinished cuts remain.

(3) Cutters must give timely warning to all persons within range of any log that may have a tendency to roll after being cut off.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-53920, filed 8/18/99, effective 12/1/99.]

WAC 296-54-53930 Falling and bucking—Danger trees.

(1) Each danger tree must be carefully checked for signs of loose bark, broken branches and limbs, or other damage before they are fell or removed. Accessible loose bark and other damage that may create a hazard for an employee must be removed or held in place before falling or removing the tree. When a danger tree has elevated loose bark that cannot be removed, the buddy system must be used to watch for and give warning of falling bark or other hazards.

(2) Danger trees that are unsafe to cut must be blown down with explosives or fell by other safe methods.

(3) To avoid use of wedges, which might dislodge loose bark or other material, danger trees must be fell in the direction of lean unless other means (mechanical or dynamite) are used.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-53930, filed 8/18/99, effective 12/1/99.]

WAC 296-54-53940 Falling and bucking—Springboards and tree jacking.

(1) Springboards must be:

- (a) Made of clear, straight grained sound stock;
- (b) Long enough, wide enough, and strong enough; and
- (c) Replaced when they will no longer safely support the expected load at the extreme end.

(2) Springboard irons must be well lipped and firmly attached with bolts or other equally strong attachment.

(3) Saw chains must be stopped while shifting springboards.

(4) Jack plates must be used with hydraulic tree jacks and the base plate must be seated on solid wood inside the bark ring as close to level as possible.

(5) When necessary, two workers must be present at the tree during hydraulic tree jacking to lend assistance.

(6) Wedges must be used as a follow-up method while using tree jacks, and continuously moved in as the tree is jacked.

(7) All hydraulic tree jacks must be equipped with a check valve and the pump must be equipped with an operable pressure gauge.

(8) Jacking a tree straight uphill is prohibited when the tree may slide back past the stump.

(9) On slopes over 50% grade, tree(s) must at least be quartered to a degree that prevents employees from being exposed to the possibility of sliding or rolling trees or logs.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-53940, filed 8/18/99, effective 12/1/99.]

WAC 296-54-541 Tree pulling. (1) The cutter must be responsible for determining if a tree can be safely pulled. If, for any reason, the cutter believes the tree pulling cannot be completed safely, the tree must be conventionally fell.

(2) When using a radio, positive radio communications must be maintained at all times between the tree pulling machine and cutter when tree pulling. An audible signal must be blown when the initial pull is made on the tree and the line is tightened. Hand signals, instead of radio communications and an audible signal, may be used only if the cutter is clearly visible to the tree puller operator.

(3) A choker with bell, or a line and sleeve shackle must be used as the means of attachment around the tree when tree pulling. (See also WAC 296-54-54710(4).) The bight on the line must be the minimum necessary to hold the choker or line around the tree.

(4) The tree pulling machine must be equipped with a torque converter, fluid coupler, or an equivalent device to ensure a steady even pull on the line attached around the tree.

(5) The tree pulling line must have as straight and direct path from the machine to the tree as possible. Physical obstructions that prevent a steady even pull on the tree pulling line must be removed or the line must be rerouted.

(6) Siwashing, in lieu of a block, in order to change tree pulling lead, is prohibited.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-541, filed 8/18/99, effective 12/1/99. Statutory Authority: RCW 49.17.040, 49.17.150 and 49.17.240. 79-10-081 (Order 79-14), § 296-54-541, filed 9/21/79.]

WAC 296-54-543 Mechanized falling. (1) A flagger(s) must be assigned on roads where hazardous conditions are created from falling trees. Where there is no through traffic, such as on a dead end road, warning signs or barricades may be used instead of a flagger(s).

(2) Self-propelled mobile falling equipment used for falling trees must be designed, or have auxiliary equipment installed, that will cause the tree to fall in the intended direction.

(3) Until the machine operator has acknowledged that it is safe to do so, no employee shall approach a mechanical

falling operation closer than a minimum of two tree lengths of the trees being fell.

(4) Mechanized falling must be conducted in a way that does not endanger people or equipment.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-543, filed 8/18/99, effective 12/1/99. Statutory Authority: RCW 49.17.040, 49.17.050, 49.17.240, chapters 43.22 and 42.30 RCW. 80-11-057 (Order 80-15), § 296-54-543, filed 8/20/80. Statutory Authority: RCW 49.17.040, 49.17.150 and 49.17.240. 79-10-081 (Order 79-14), § 296-54-543, filed 9/21/79.]

WAC 296-54-545 Climbing equipment and passline.

(1) Standard climbing equipment must be furnished by the employer. However, the climber may use personal equipment, if it meets the requirements of this section and is permitted by the employer.

(a) The climber may fasten climbing rope by passing it through "D" rings fastened to the belt and around his body before tying it to itself.

(b) An extra set of climbing equipment must be kept at the jobsite and another person with climbing experience must be present.

(2) The climber must be equipped with a climbing equipment assembly that includes:

(a) A safety belt with double "D" rings;

(b) Steel spurs long and sharp enough to hold in any tree in which they are used; and

(c) A climbing rope made of wire-core hemp, wire or chain construction.

(3) All climbing equipment must be maintained in good condition.

(4) Defective climbing equipment must be immediately removed from service.

(5) Going up a raised portable spar or tower without suitable equipment is prohibited.

(6) Only an employee directed by the climber may work directly under a tree. The climber must give warning before intentionally dropping any objects or when objects are accidentally dropped.

(7) Running lines must not be moved while the climber is working in the tree, except such "pulls" as climber directs and are necessary for the work.

(8) One experienced person must be assigned to transmit the climber's signals to the machine operator.

(a) This signal person must not otherwise be occupied while the climber is in the tree.

(b) The machine operator must not be distracted while the climber is using the passline.

(c) The designated signal person must be positioned clear of hazards from falling, flying, or thrown objects.

(9) The climber must be an experienced logger with proper knowledge of logging methods and the safety of rigging spar and tail trees.

(10) Noisy equipment such as power saws, tractors, and shovels must not be operated near where a climber is working when such noise will interfere with the climber's signals.

(11) Climbing and passline equipment must not be used for other purposes.

(12) Lineman hooks must not be used as spurs.

(13) Tools used by the climber, except the chain saw, must be safely secured to climber's belt when not in use.

(14) Using snaps on a climber's rope is prohibited unless a secondary safety device between the belt and snap is used.

(15) A climber's rope must encircle the tree before the climber leaves the ground, except when the climber is riding the passline.

(16) While the climber is working in the tree, persons must keep at sufficient distance from the tree to be clear of falling objects.

(17) When used, passline blocks must be kept in alignment and free from fouling.

(18) Loose equipment, rigging, or material must either be removed from the tree or securely fastened.

(19) Drums used for passlines must have enough flange depth to prevent the passline from running off the drum at any time.

(20) Passlines must:

(a) Be at least 5/16-inch and not over 1/2-inch in diameter;

(b) Not be subjected to sawing on other lines or rigging, and kept clear of all moving lines and rigging;

(c) Be one continuous length and in good condition with no splices, knots, molles, or eye-to-eye splices between the ends;

(d) Long enough to provide three wraps on the drum before the climber leaves the ground.

(21) Passline chains must be:

(a) At least 5/16-inch alloy or 3/8-inch high test chain and must not contain cold shuts or wire strands;

(b) Attached to the end of the passline with a screw-pin shackle, a slip-pin shackle with a nut and molle, or a ring large enough to prevent going through the pass block; and

(c) Fitted with links or rings to prevent workers from being pulled into the passline block.

(22) Pass blocks must:

(a) Be inspected before placing in each spar and the necessary replacements or repairs made before they are hung;

(b) Have the shells bolted under the sheaves;

(c) Have the bearing pin securely locked and nuts keyed, or the block positively secures the nut and pin;

(d) Be equipped with sheaves at least six inches in diameter; and

(e) Comply with WAC 296-54-54750.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-545, filed 8/18/99, effective 12/1/99. Statutory Authority: RCW 49.17.040, 49.17.150 and 49.17.240. 79-10-081 (Order 79-14), § 296-54-545, filed 9/21/79.]

WAC 296-54-547 Rigging—General. (1) Rigging must be arranged and operated so that rigging and loads will not foul or saw against lines, straps, blocks, or other equipment or material.

(2) When not in use, rigging must be stored so that it does not present a hazard to employees.

(3) Tongs, grapples, logs and materials must not be swung or suspended over employees.

(4) All employees must be in the clear of running lines, standing skylines, moving rigging, or suspended loads until the rigging or loads have completely stopped.

(5) Riding on a turn of logs or rigging is prohibited, except on the passline. Holding on to moving rigging or chokers to be pulled uphill is prohibited.

(2007 Ed.)

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-547, filed 8/18/99, effective 12/1/99. Statutory Authority: RCW 49.17.040, 49.17.150 and 49.17.240. 79-10-081 (Order 79-14), § 296-54-547, filed 9/21/79.]

WAC 296-54-54710 Rigging—Inspection. (1) An authorized, qualified person must thoroughly inspect all blocks, straps, guylines, butt rigging, and other rigging before they are used.

(2) The inspections must include examining for:

(a) Damaged, cracked, or worn parts;

(b) Loose nuts and bolts;

(c) Need for lubrication; and

(d) The condition of straps and guylines.

(3) All necessary repairs or replacements for safe operation must be made before the rigging is used.

(4) All rigging elements must be large and strong enough to safely withstand the stress that can be imposed by the maximum pull of the power unit against the equipment or devices as rigged or used in that particular logging operation.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-54710, filed 8/18/99, effective 12/1/99.]

WAC 296-54-54720 Rigging—Molles. (1) Molles must not be used as a temporary connection between two spliced eyes of a load-supporting running line. Double molles may be used on droplines only and single molles may be used on strawline.

(2) Molles must be as large as the pinhole will accommodate and have the loose ends rolled in.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-54720, filed 8/18/99, effective 12/1/99.]

WAC 296-54-54730 Rigging—Shackles. (1) Shackles used to hang blocks, jacks, or rigging on spars, must have the pins secured with a nut and cotter key or a nut and molle.

(2) Flush pin, straight-sided shackles must be used for mainline, slackline and skyline extensions.

(3) Shackles with screw pins, knockout or slip pins may be used to anchor skylines, slackline, guyline, and/or guyline extensions.

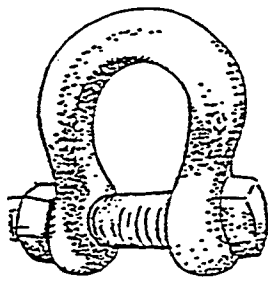
(4) All other shackles must be screw pin type or have the pin secured with a nut and cotter key or a nut and molle, except as specified elsewhere for specific purposes.

(5) The opening between the jaws of shackles used to hang blocks, jacks, and rigging and to join or attach lines, must be a maximum of one inch greater than the size of the rope, swivel, or shackle to which it is attached.

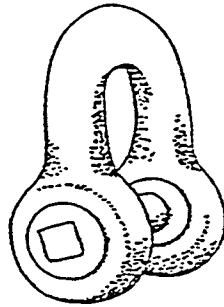
(6) All shackles must be one size larger than the lines they connect and made of forged steel or material of equivalent strength.

(7) Shackles used to join lines must be hung with the pin and "U" part of the shackle through the eyes of the lines.

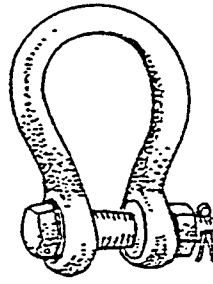
[Title 296 WAC—p. 1171]



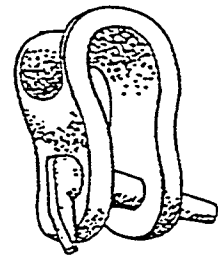
**Medium Bell
With Safety Pin**



**Flush Pin
Straight Side**



**Wide Bell-shaped Hanging
Type With Safety Pin**



**Guyline Sleeve
With Knock-out Pin**

Figure 2-2: Shackles

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-54730, filed 8/18/99, effective 12/1/99.]

WAC 296-54-54740 Rigging—Straps. Straps must be used according to the following requirements:

(1) Straps or chokers used to hang corner or tail blocks and straps used to anchor skylines/slacklines must be the size required by Table 1: Strap/Choker Size in Inches.

Table 1: Strap/Choker Size in Inches		
Running Line Size in Inches	Block or Skyline / Slackline Hung in Both Eyes	Block Hung in Single Eye
5/16	1/4	1/2
3/8	3/8	9/16
7/16	7/16	5/8
1/2	1/2	3/4
9/16	9/16	7/8
5/8	5/8	1
3/4	3/4	1 1/8
7/8	7/8	1 1/4
1	1	1 3/8
1 1/8	1	
1 1/4	1	
1 3/8	1	
1 1/2	1 1/8	
1 5/8	1 1/4	
1 3/4	1 1/4	
1 7/8	1 3/8	
2	1 3/8	

Note: Both strap ends must be under equal tension.

(2) When a single choker or single part strap is used to support lift blocks, jacks and tree shoes they must be adequately sized to support the applied loads.

(3) When a two part strap or two chokers are used to hang a block, jack, tree shoe, or rigging, both eyes or ends must be under equal tension.

(4) Where two equal length chokers are used instead of one choker to gain extra breaking strength, they must be arranged in a swede connection.

(5) Straps or chokers used to hang or support blocks, jacks, tree shoes, or rigging must be replaced when there is evidence of damaged or broken wires. They must:

- (a) Be made of new wire rope; or
- (b) Meet the pull test strength of new wire rope.
- (6) Threading wire rope straps eye through eye is prohibited.

(7) Synthetic straps must be used as recommended by the manufacturer and only at a flat or downward angle unless wrapped one full turn around the tree support to prevent the strap from riding up on the support.

(8) Synthetic straps must be removed from service when wear reaches the limits prescribed by the manufacturer or when deterioration is evident.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-54740, filed 8/18/99, effective 12/1/99.]

WAC 296-54-54750 Rigging—Blocks. (1) Load-bearing blocks must:

- (a) Not be used for heavier strains or lines than those for which they are constructed;
- (b) Be fitted with line guards;
- (c) Be designed and used to prevent fouling;
- (d) Be kept in proper alignment when in use;
- (e) Be equipped with bearing and yoke pins that will safely withstand the strains imposed, and are securely fastened; and
- (f) Be equipped with sheaves designed for the size of the wire rope used.

EXCEPTION: Subsections (b), and (f) do not apply to rig-up ("Tommy Moore") blocks.

(2) Blocks with cracked or excessively worn sheaves or shells must not be used.

(3) Block bearings must be kept well lubricated.

(4) All pins in blocks must be properly secured by "Molle Hogans" or keys of the largest size the pin hole will accommodate. When blocks are hung in spars, pins must be secured with a nut and cotter pin or nut and molle.

(5) Lead blocks used for yarding, swinging, loading and unloading used in wood spars shall:

- (a) Be of the type and construction designed for this purpose;
- (b) Be bolted with not less than two bolts through the shells below the sheaves in a manner that will retain the sheave and line in case of bearing pin failure (this does not apply to haulback lead blocks); and
- (c) Mainline blocks shall have a sheave diameter of not less than twenty times the diameter of the mainline.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-54750, filed 8/18/99, effective 12/1/99.]

WAC 296-54-54760 Rigging—Hanging blocks. (1)

All logging systems must use enough corner or tail blocks to distribute the stress on anchors and attachments.

(2) Blocks (other than passline or haywire) must be hung by one of the following methods:

(a) Hanging the block in both eyes or Ds of the straps (threaded straps are prohibited); or

(b) If chokers are used, the ferrule must be properly seated in the socket of the bell or hook to prevent the ferrule from coming unbuttoned. The chokers must be the size required in WAC 296-54-54740(1); or

(c) If single part straps are used, the straps must be secured with a shackle and be the size required in WAC 296-54-54740(1).

(3) The yoke pin of haulback blocks shall be inserted with the head facing the direction from which the rigging approaches.

(4) When there is danger of tail block straps slipping up or off the stump or tree, the stump or tree must be adequately notched or the line properly wrapped and secured. When the tail tree or stump is not secure, it must be tied back.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-54760, filed 8/18/99, effective 12/1/99.]

WAC 296-54-54770 Chokers and butt rigging. (1)

Chokers must be at least one size smaller than the mainline. If a dropline is used it must have a breaking strength equal to a line one size smaller than the mainline.

(2) All butt hook rigging must be used in a manner to prevent loss of the choker.

(3) Molles or cold shuts are prohibited in butt rigging as a load bearing connection.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, amended and recodified as § 296-54-54770, filed 8/18/99, effective 12/1/99. Statutory Authority: RCW 49.17.040, [49.17].050 and [49.17].060. 96-22-013, § 296-54-559, filed 10/28/96, effective 1/1/97. Statutory Authority: Chapter 49.17 RCW. 88-23-054 (Order 88-25), § 296-54-559, filed 11/14/88. Statutory Authority: RCW 49.17.040 and 49.17.050. 81-05-013 (Order 81-3), § 296-54-559, filed 2/10/81. Statutory Authority: RCW 49.17.040, 49.17.150 and 49.17.240. 79-10-081 (Order 79-14), § 296-54-559, filed 9/21/79.]

WAC 296-54-549 Selecting spar, tail and intermediate support trees. (1) Spar, tail and intermediate support trees must be examined carefully for defects before being selected. They must be sound, straight, green and of sufficient diameter to withstand the strains to be imposed.

(2) Trees having defects that impair their strength must not be used for spar, tail or intermediate support trees. Raised trees must be identified and marked as such.

(3) Douglas fir or spruce must be used as spar trees when available. If other species must be used, additional guylines, tree plates or other precautions must be taken to ensure that the tree will withstand the strains to be imposed.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-549, filed 8/18/99, effective 12/1/99. Statutory Authority: RCW 49.17.040, 49.17.050, 49.17.240, chapters 43.22 and 42.30 RCW. 80-11-057 (Order 80-15), § 296-54-549, filed 8/20/80. Statutory Authority: RCW 49.17.040, 49.17.150 and 49.17.240. 79-10-081 (Order 79-14), § 296-54-549, filed 9/21/79.]

(2007 Ed.)

WAC 296-54-551 Raising and lowering portable spars or towers. (1) A qualified, authorized person must direct each raising and lowering of a portable spar or tower.

(2) All employees not engaged in the raising or lowering of portable spars must stay in the clear during these operations.

(3) Portable spars must be leveled to provide proper line spooling and avoid excessive stress on component parts.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-551, filed 8/18/99, effective 12/1/99. Statutory Authority: RCW 49.17.040, [49.17].050 and [49.17].060. 96-22-013, § 296-54-551, filed 10/28/96, effective 1/1/97. Statutory Authority: RCW 49.17.040, 49.17.050, 49.17.240, chapters 43.22 and 42.30 RCW. 80-11-057 (Order 80-15), § 296-54-551, filed 8/20/80. Statutory Authority: RCW 49.17.040, 49.17.150 and 49.17.240. 79-10-081 (Order 79-14), § 296-54-551, filed 9/21/79.]

WAC 296-54-553 Metal spars. (1) Each portable metal spar must have an identification plate permanently attached to its base or on the yarder in a position that can be easily read by a person standing on the ground or on the base platform.

EXCEPTION: A hydraulic loader with yarding drums is not required to have an identification plate if the drums are installed and used according to the manufacturer's recommendations.

(2) The identification plate must have the following information:

(a) Name and address of manufacturer;

(b) Model number; and

(c) The maximum and minimum angle at which the metal spar is designed to operate.

(3) The identification plate on metal spars manufactured after July 1, 1980, must also have the following information:

(a) The maximum breaking strength and/or size of the mainline for which the spar is designed;

(b) The maximum breaking strength and/or size of the haulback line for which the spar is designed;

(c) The number, breaking strength, and size of guylines or any other lines required; and

(d) For a spar designed for a skyline, slackline, or modified slackline system, the maximum breaking strength and size of the skyline, mainline, and haulback line that can be used.

(4) All portable metal spars must be operated within the manufacturer's capacity:

(a) As specified on the identification plate; or

(b) As modified by the manufacturer; or

(c) As designed and specified by a registered engineer; or

(d) A tension limiting device must be installed on the yarder. The device must be:

(i) Designed to automatically slack the skyline or mainline to within the manufacturer's line strength specifications;

(ii) Tamper proof;

(iii) Inspected; and

(iv) Maintained in good operating condition; or

(e) A line fuse installed in the skyline or mainline. Line fused systems must have a design breaking strength equal to or less than the maximum line rating of the spar as listed on its identification plate.

Note: Item (d) and (e) list options to follow when using wire rope which exceeds the manufacturer's line strength specifications.

(5) Equipment used for yarding, which is specifically designed to be self-stabilizing during operation, may be used without guyline(s) provided the equipment is used with guylines when required by the manufacturer.

(6) Portable spars or towers and their parts must be inspected by a qualified person whenever:

(a) The portable spar or tower is lowered;

(b) Its safe condition is in doubt; or

(c) When damage from over-stress or any other source is noted or suspected. Before being used again, the part in question must be inspected by a suitable method and:

(i) Found safe;

(ii) Repaired by a qualified person; or

(iii) Replaced.

(7) Any structural modifications or additions that affect the capacity or safe operation of metal spars must be made under the direction of the manufacturer or a registered professional engineer. If such modifications or additions are made, the identification plate required in this section must reflect such changes.

(8) When moving metal spar logging machines, the spar must be lowered.

EXCEPTION: The spar may be raised when necessary for mobility if it is adequately supported to ensure the stability of the machine during movement.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-553, filed 8/18/99, effective 12/1/99. Statutory Authority: RCW 49.17.040, [49.17].050 and [49.17].060. 96-22-013, § 296-54-553, filed 10/28/96, effective 1/1/97. Statutory Authority: RCW 49.17.040, 49.17.150 and 49.17.240. 79-10-081 (Order 79-14), § 296-54-553, filed 9/21/79.]

WAC 296-54-555 Metal spar guyline safety straps.

(1) A metal spar guyline safety strap or equivalent device must be installed at the bight of the guylines to prevent guylines from falling vertically more than five feet in case of structural or mechanical failure of the guyline attachment.

(2) The safety strap or equivalent devices must be equal to the strength of one guyline being used.

(3) Using cable clips or clamps to join the ends of portable spar or tower guyline safety straps is prohibited, unless used to secure the end of a farmer's eye.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-555, filed 8/18/99, effective 12/1/99. Statutory Authority: RCW 49.17.040, [49.17].050 and [49.17].060. 96-22-013, § 296-54-555, filed 10/28/96, effective 1/1/97. Statutory Authority: RCW 49.17.040 49.17.050, 49.17.240, chapters 43.22 and 42.30 RCW. 80-11-057 (Order 80-15), § 296-54-555, filed 8/20/80. Statutory Authority: RCW 49.17.040 49.17.150 and 49.17.240. 79-10-081 (Order 79-14), § 296-54-555, filed 9/21/79.]

WAC 296-54-557 Wire rope. (1) Wire rope must be of the same or better grade as originally recommended by the equipment manufacturer.

(2) Wire rope must be removed from service when any of the following conditions exist:

(a) In running ropes, six randomly distributed broken wires in one lay or three broken wires in one strand in one lay;

(b) Wear of one-third the original diameter of outside individual wires. Kinking, crushing, birdcaging, or any other damage resulting in distortion of the rope structure;

(c) Evidence of any heat damage from any cause;

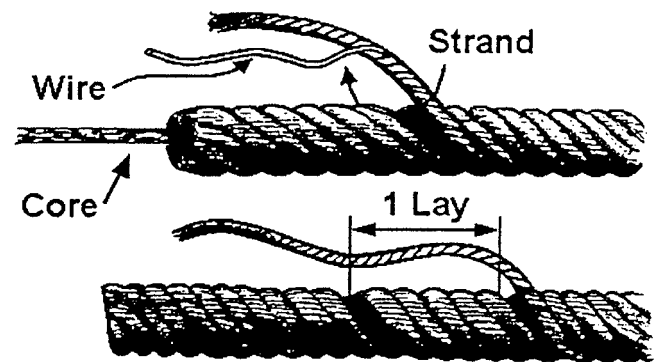
(d) Reductions from nominal diameter of more than 3/64-inch for diameters to and including 3/4-inch, 1/16-inch for diameters 7/8-inch to 1-1/8-inch, inclusive, 3/32-inch for diameters 1-1/4-inches to 1-1/2-inches inclusive;

(e) In standing ropes, more than two broken wires in one lay in sections beyond end connections or more than one broken wire at an end connection;

(f) In standing ropes, when twelve and one-half percent of the wires are broken within a distance of one wrap (lay); and

(g) Corroded, damaged, or improperly applied end connections.

(3) Wire rope must be kept lubricated as conditions of use require.



Wire rope selection is an important element in cable logging.

WIRE ROPE

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. 06-07-142, § 296-54-557, filed 3/21/06, effective 5/1/06. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-557, filed 8/18/99, effective 12/1/99. Statutory Authority: RCW 49.17.040, [49.17].050 and [49.17].060. 96-22-013, § 296-54-557, filed 10/28/96, effective 1/1/97. Statutory Authority: RCW 49.17.040, 49.17.050, 49.17.240, chapters 43.22 and 42.30 RCW. 80-11-057 (Order 80-15), § 296-54-557, filed 8/20/80. Statutory Authority: RCW 49.17.040, 49.17.150 and 49.17.240. 79-10-081 (Order 79-14), § 296-54-557, filed 9/21/79.]

WAC 296-54-55710 Wire rope—Cutting. (1) Hard hammers must not be used for cutting cable with a wire ax or when splicing.

(2) Employees must wear eye protection when cutting lines.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-55710, filed 8/18/99, effective 12/1/99.]

WAC 296-54-55720 Wire rope—Splicing. (1) Marlin spikes must be used for splicing. The marlin spikes must be:

(a) Large enough for the size of the line being spliced; and

(b) Maintained in good condition;

(2) Short splices, eye-to-eye splices, cat's paws, and knots are prohibited except for moving nonload-bearing lines. Knots may be used on single drum tractors, grapple pickup lines, and dropline carriage systems using slider bells if the knot is tied on the end of the dropline.

(3) Wire rope one-half inch in diameter or less must be tucked at least two times provided the rope is used only as a strawline.

(4) Eye splices in all regular lay lines and straps must be tucked at least three times.

(5) Eye splices in lang lay lines must be tucked at least four times.

(6) Splices, other than eye splices, in lang lay loading lines are prohibited.

(7) Long splices must be used to permanently join regular lay running line.

(8) The length of line strand to be unraveled to make a long splice in wire rope must be as shown in Table 2: Length of Line Strand. The full length of the splice is twice the length of the rope to be unraveled.

Table 2: Length of Line Strand

Rope Diameter	To Be Unraveled	Total Length
1/4"	8'	16'
3/8"	8'	16'
1/2"	10'	20'
5/8"	13'	26'
3/4"	15'	30'
7/8"	18'	36'
1"	20'	40'
1-1/8"	23'	46'
1-1/4"	25'	50'
1-3/8"	28'	56'
1-1/2"	30'	60'
1-5/8"	33'	66'
1-3/4"	35'	70'
1-7/8"	38'	76'
2"	40'	80'

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-55720, filed 8/18/99, effective 12/1/99.]

WAC 296-54-55730 Wire rope—Attaching end fastenings. (1) The manufacturer's recommendations must be followed when attaching sockets and other end fastenings.

(2) Using cable clips or clamps for joining lines is prohibited, except to transfer slack lines from one place to another.

(3) When U-bolt cable clips are used to form eyes, Table 3: U-bolt Cable Clips to Form Eyes must be used to determine the number and spacing of clips.

Table 3: U-bolt Cable Clips to Form Eyes

Improved Plow Steel Diameter of Rope	Number of Clips Forged	Required Other Material	Minimum Space Between Clips
3/8 to 5/8 inch	3	4	-3/4 inch
3/4 inch	4	5	4-1/2 inch
7/8 inch	4	5	5-1/4 inch
1 inch	5	6	6 inches
1-1/8 inch	6	6	6-3/4 inch
1-1/4 inch	6	7	7-1/2 inch
1-3/8 inch	7	7	8-1/4 inch
1-1/2 inch	7	8	9 inches

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(4) When U-bolt cable clips are used:

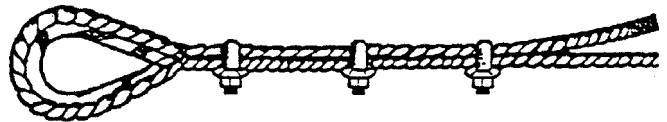
(a) For eye splices, the U-bolt wire rope clip must be attached so that the U section is in contact with the dead or short end of the rope (see Figure 3: Eyes Formed with U-bolt Cable Clips);

(b) U-bolt cable clips must be spaced at least six rope diameters apart to obtain the maximum holding power. Nuts must be tightened evenly and tightened again after application of the first sustained load. After the rope has been used and is under tension, the clips must be tightened again to take up any looseness caused by the tension reducing the rope diameter;

(c) With high strength wire rope, one more U-bolt cable clip must be added for each grade above improved plow steel; and

(d) Eyes formed with U-bolt cable clips are prohibited with running lines or straps.

APPLICATION OF WIRE ROPE
U-BOLT CLIPS
Crosby Type



1. CORRECT METHOD—U-Bolts of clips on short end of rope. (No distortion on live end of rope)



2. WRONG METHOD—U-Bolts on live end of rope. (This will cause mashed spots on the live end of rope)



3. WRONG METHOD—Staggered clips; two correct and one wrong. (This will cause a mashed spot in live end of rope due to wrong position of center clip)
4. After rope is in service, and is under tension, tighten clips to take up decrease in rope diameter.

Figure 3: Eyes Formed with U-bolt Cable Clips

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-55730, filed 8/18/99, effective 12/1/99.]

WAC 296-54-561 Guylines. (1) Guylines must be used with any logging equipment when required by the equipment manufacturer.

(2) At least the minimum number and angle of guylines recommended by the equipment manufacturer must be used.

(3) Unless otherwise specified by the equipment manufacturer, guylines must be of the following sizes:

(a) In highlead logging, the head spar guylines must be equal in breaking strength to the mainline.

(b) In skyline logging, if the skyline is one and three-eighths inch or greater, the head spar guylines must be at least

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one and three-eighths inch. If the skyline is less than one and three-eighths inch, the head spar guylines must be equal in breaking strength to the skyline.

(c) On all other cable logging machines, the guylines must have a breaking strength at least equal to the mainline/skyline, whichever is largest.

(d) Tail/lift and intermediate support trees must be adequately guyed to withstand any stress to which the tree may be subjected.

(4) When guylines are required for spars they must be positioned according to Table 4: Guyline Positioning, or according to the manufacturer's specifications.

Table 4: Guyline Positioning

Number of Guys on Spar	Number of Guys Sharing Load	Positioning Figure Number
1	1	4 - 1 Guyline Case
2	2	5 - 2 Guyline Case
3	3*	6 - 3 Guyline Case
	2	7 - 3 Guyline Case (2)
4	2	8 - 4 Guyline Case
5	2	9 - 5 Guyline Case
	3	10 - 5 Guyline Case (2)
6	2	11 - 6 Guyline Case
	3	12 - 6 Guyline Case (2)
7	3	13 - 7 Guyline Case
8	2	14 - 8 Guyline Case
	4	15 - 8 Guyline Case (2)

* For metal spars designed to operate without snap guy

(5)(a) Guylines supporting metal spars must be made of plow steel or better material and must be maintained in good condition.

(b) Guylines for tail/lift and intermediate support trees may be made of synthetic material and must be used according to the manufacturer's recommendations.

(6) Load bearing guyline angles must be no greater than fifty degrees measured horizontally (See Figure 18: Maximum Angle for Load Bearing Guylines and Skyline). If suitable anchors are unavailable or the terrain is so steep that the guyline angle exceeds fifty degrees, an additional guyline must be rigged to oppose the load.

(7) Guylines must be kept securely tightened while the spar, tree, equipment or rigging they support is in use.

(8) Power driven devices must be securely anchored when used to tighten guylines. Holding such devices is prohibited.

(9) All trees that interfere with proper alignment, placement, or tightening of guylines must be felled.

(10) Guylines must be hung in a manner to prevent a excessive bight or fouling when they are tightened.

(11) The use of loops or molles for attaching guylines is prohibited.

(12) The U part of shackles or sleeves must be around the guyline and the pin passed through the eye of the guyline.

(13) Splicing of guylines is prohibited except to make an eye splice.

(14) All spliced guyline eyes must be tucked at least three times.

(15) Extensions to guylines must be:

(a) Equal in breaking strength to the guyline to which they are attached; and

(b) Connected only by a shackle connecting two spliced eyes, pressed eyes or by double-end hooks. Connections must have at least one and one-half times the strength of the guyline.

(16) When hanging a block or jack on a guyline, only sleeve-type safety pin shackles must be used. The shackle sleeve shall have not less than two and one-half times the line diameter bearing on the guyline.

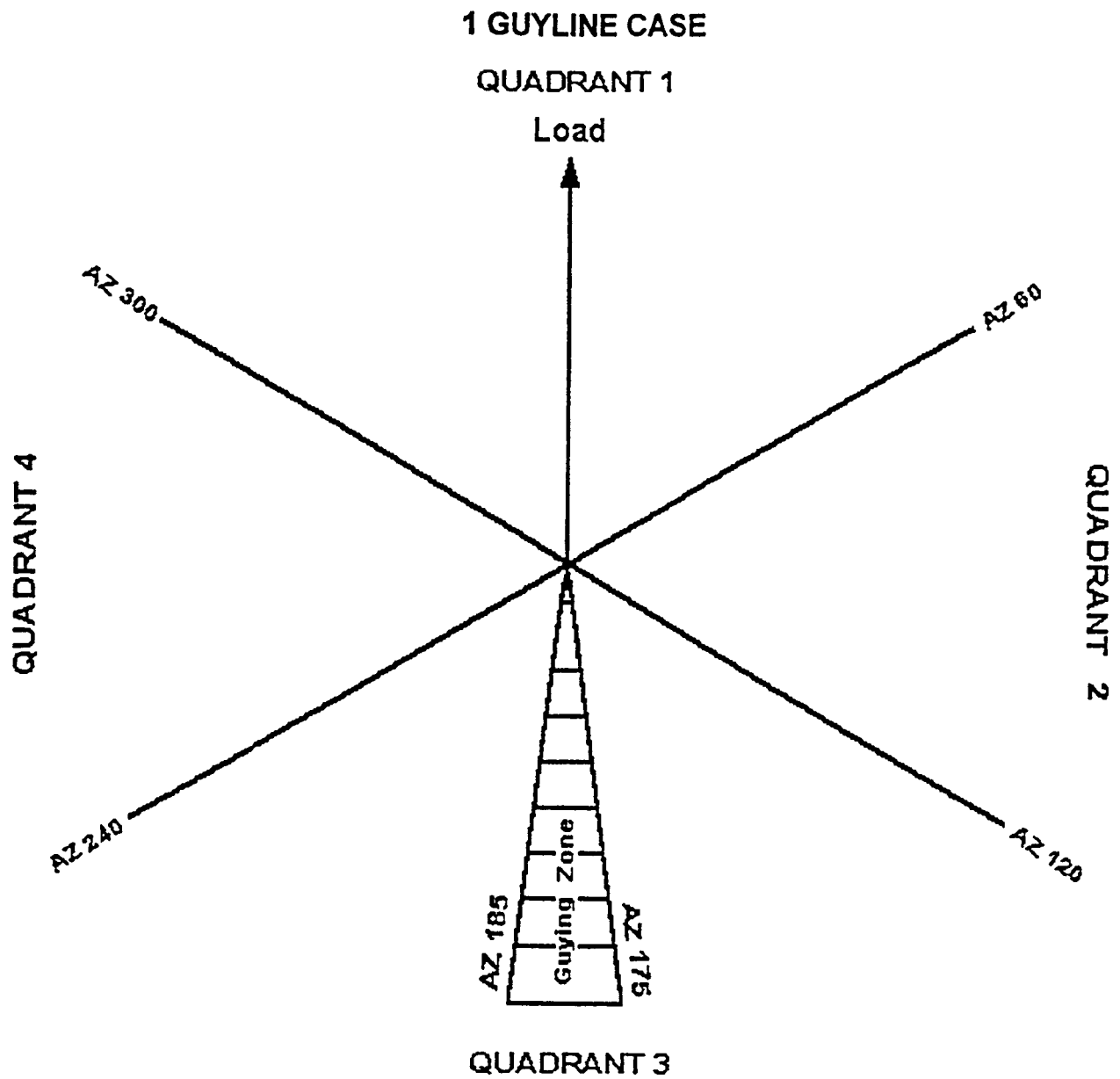


Figure 4: 1 Guyline Case

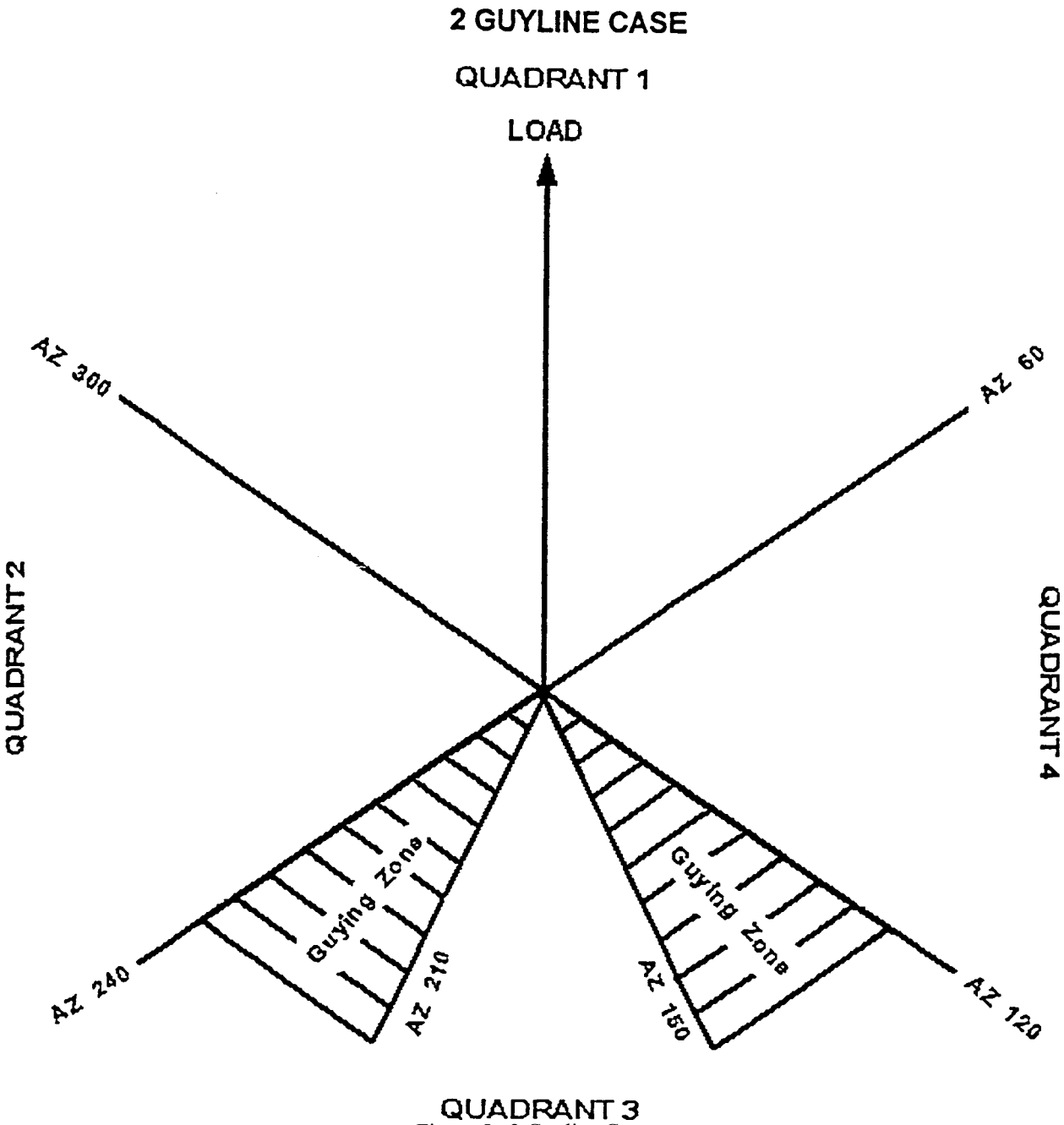
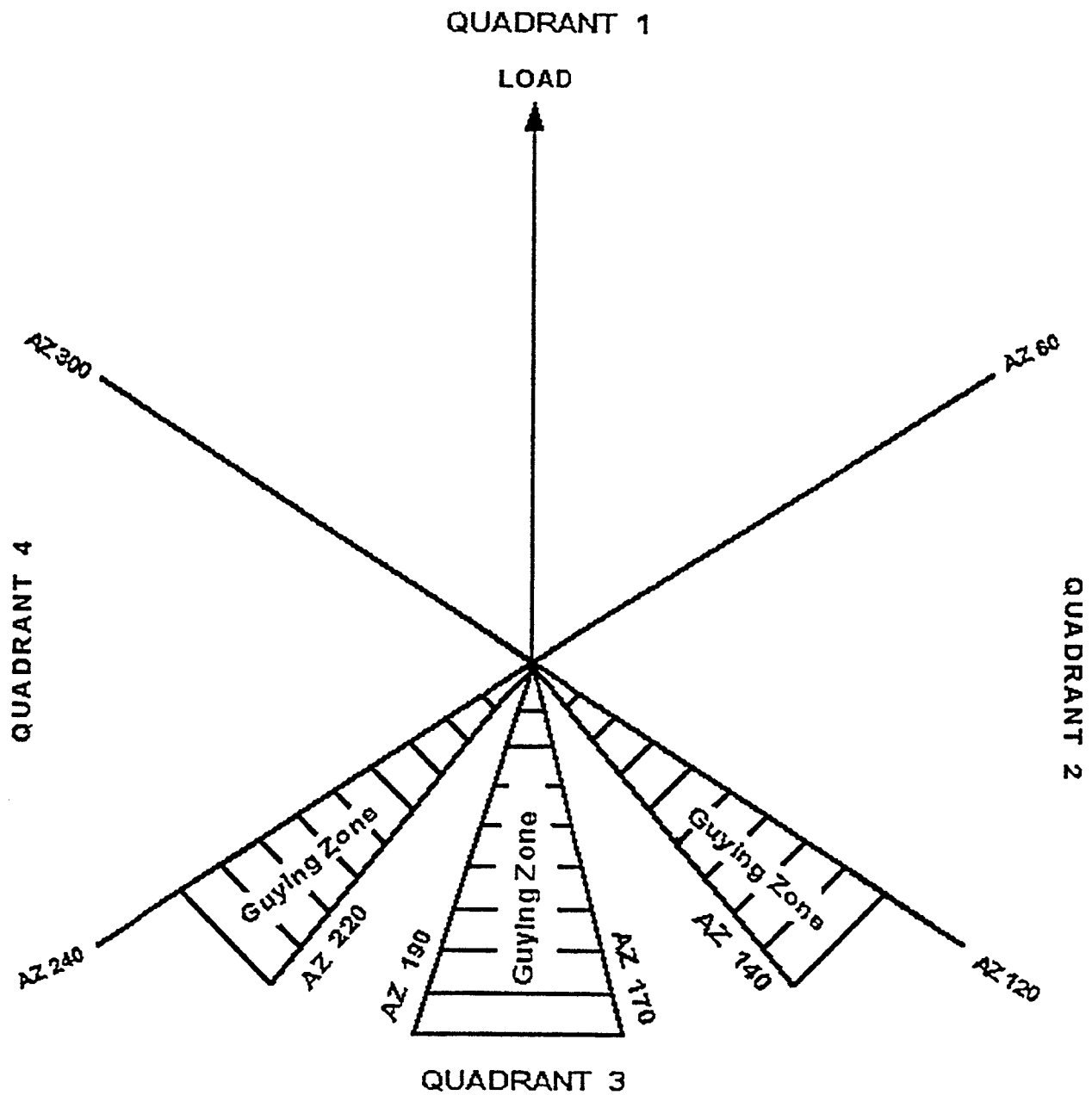


Figure 5: 2 Guyline Case

3 GUYLINE CASE



QUADRANT 3
Figure 6: 3 Guyline Case

3 GUYLINE CASE

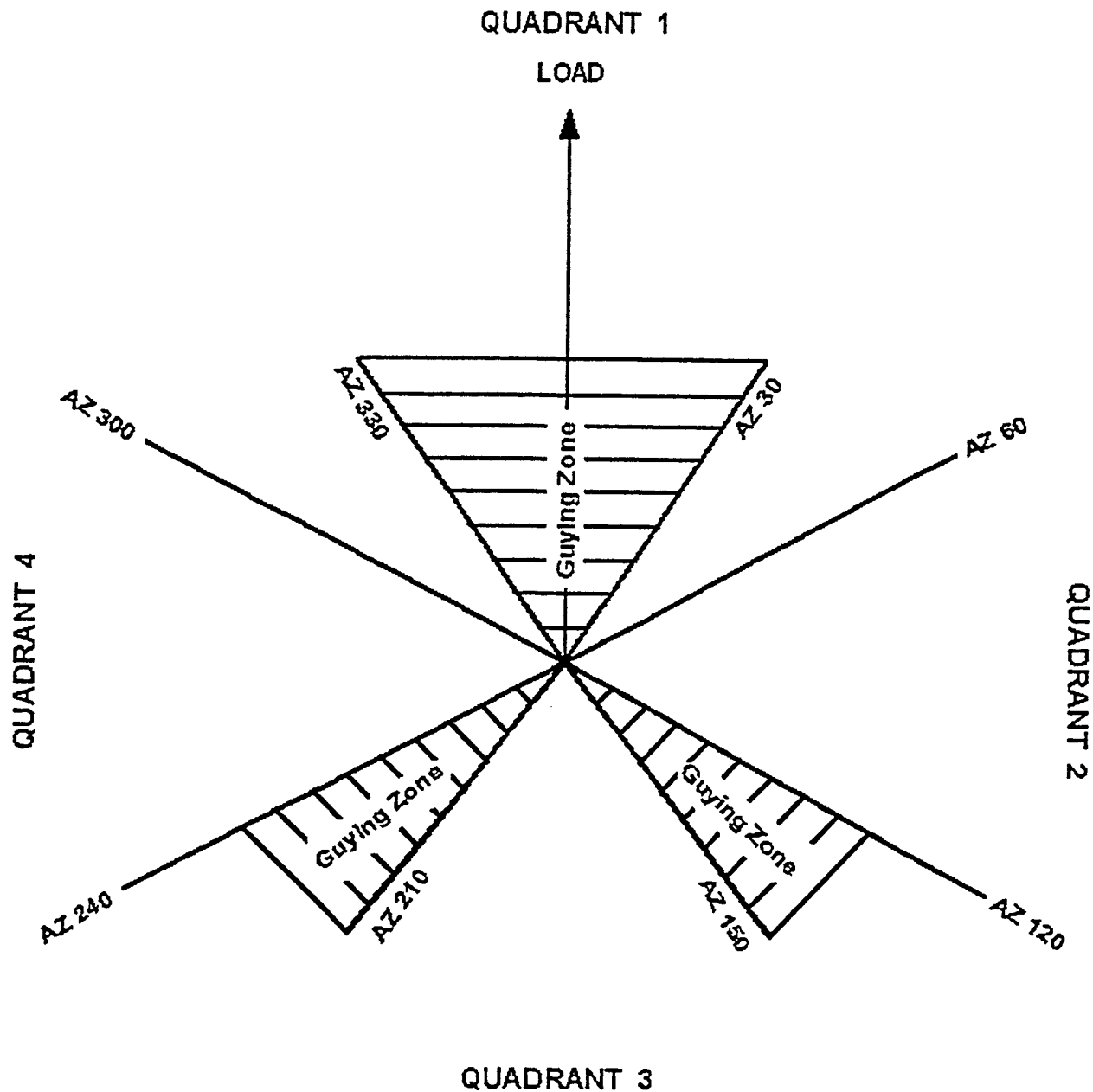
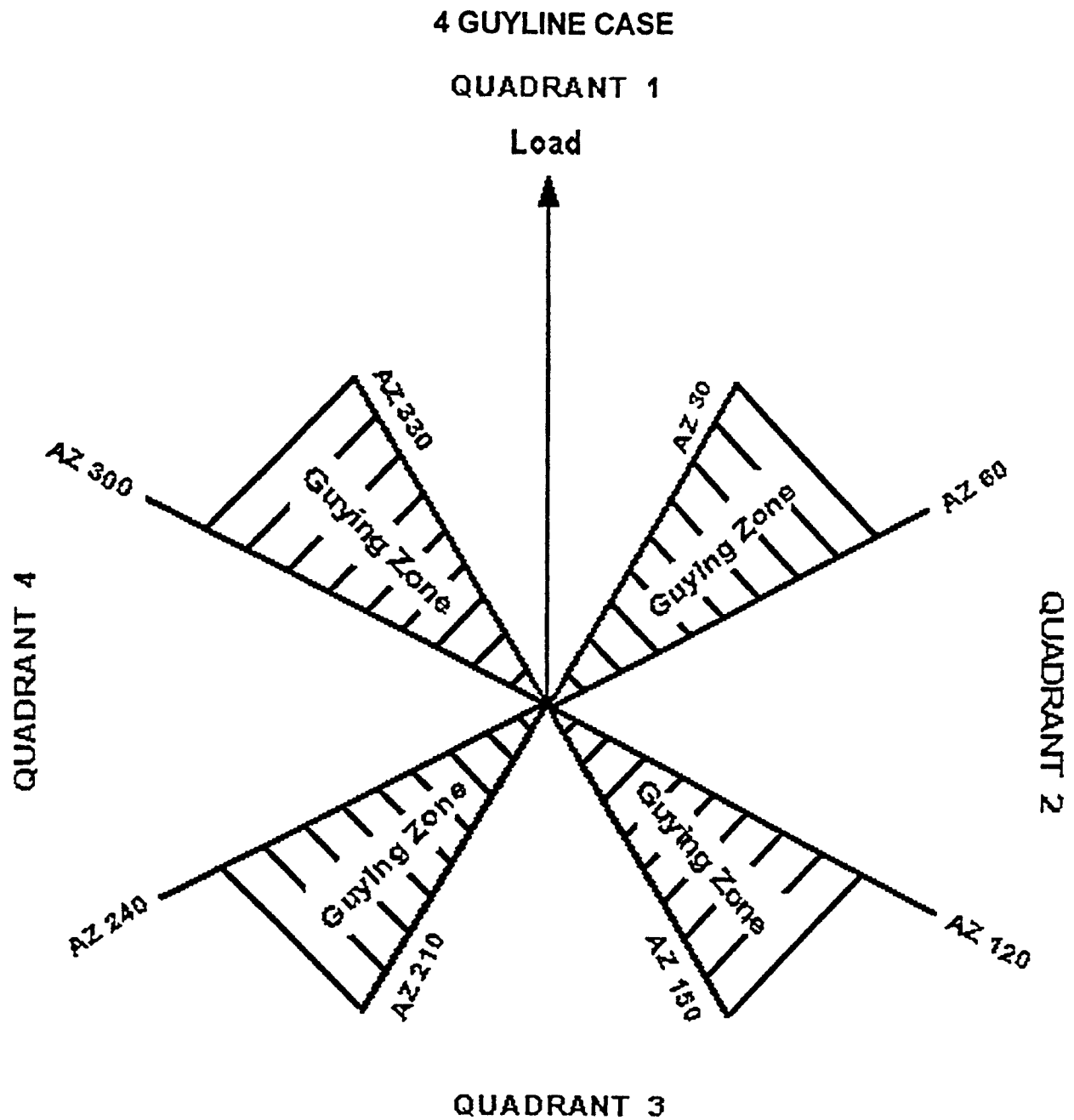
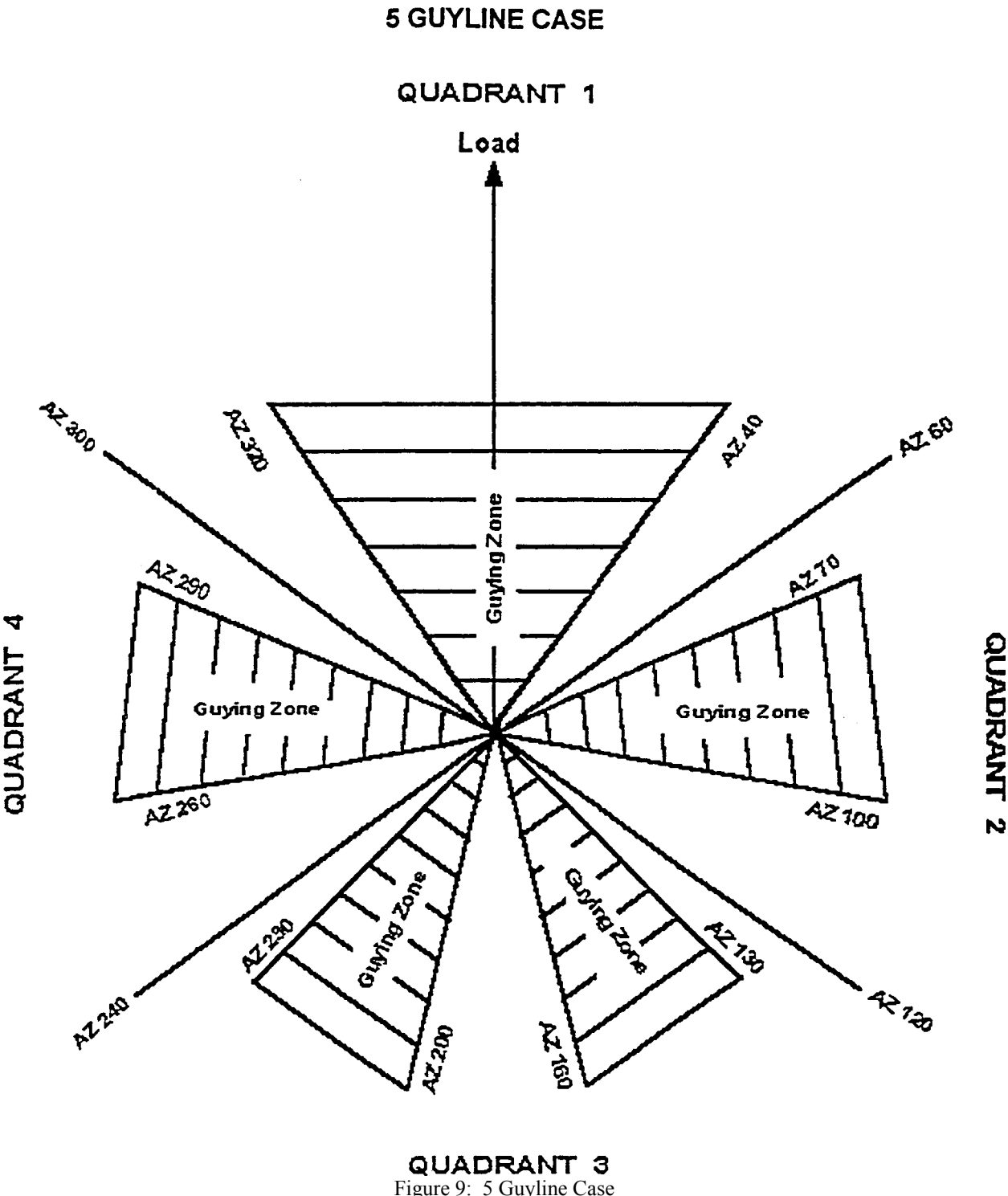


Figure 7: 3 Guyline Case (2)



QUADRANT 3
Figure 8: 4 Guyline Case



5 GUYLINE CASE

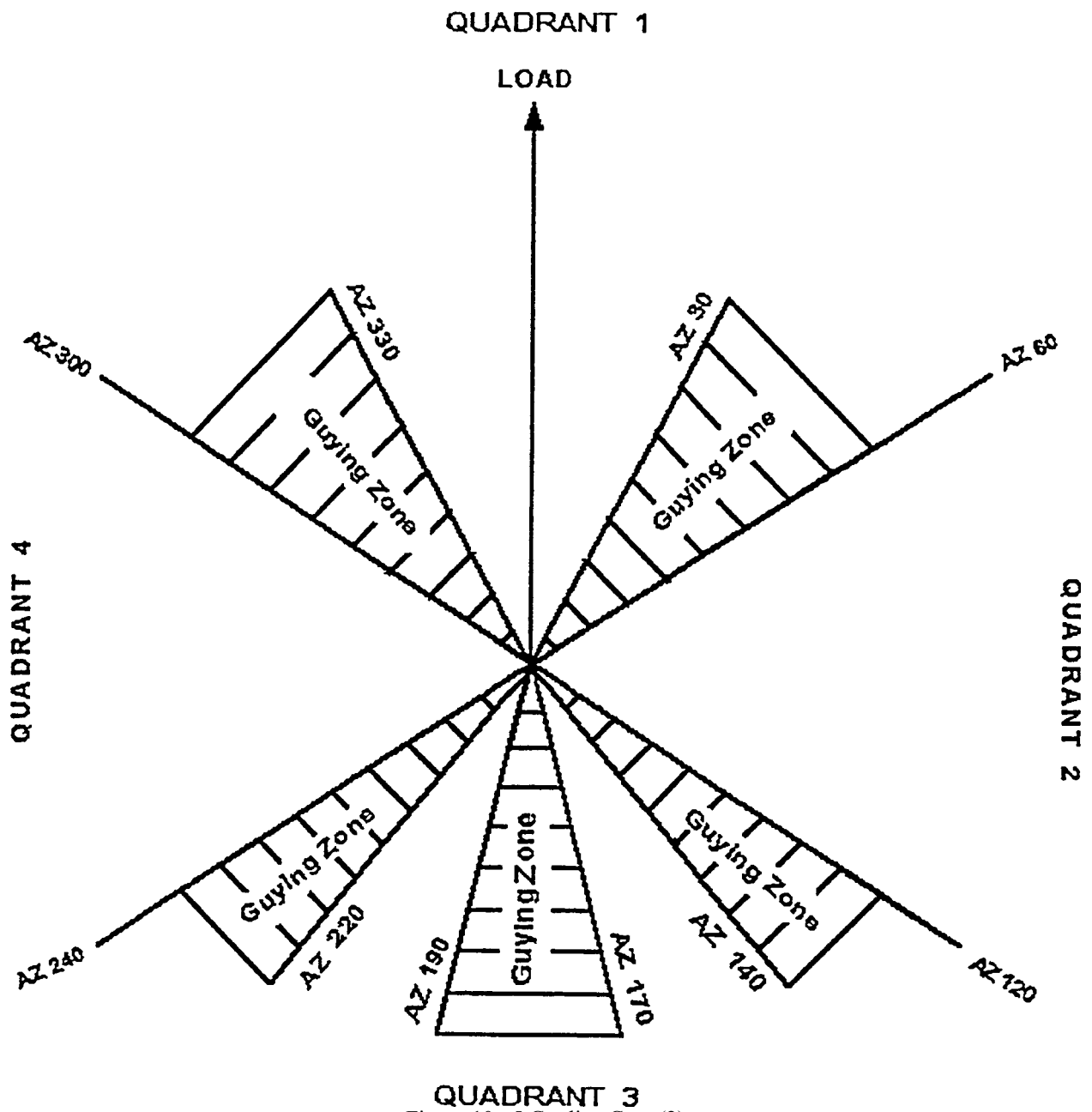


Figure 10: 5 Guyline Case (2)

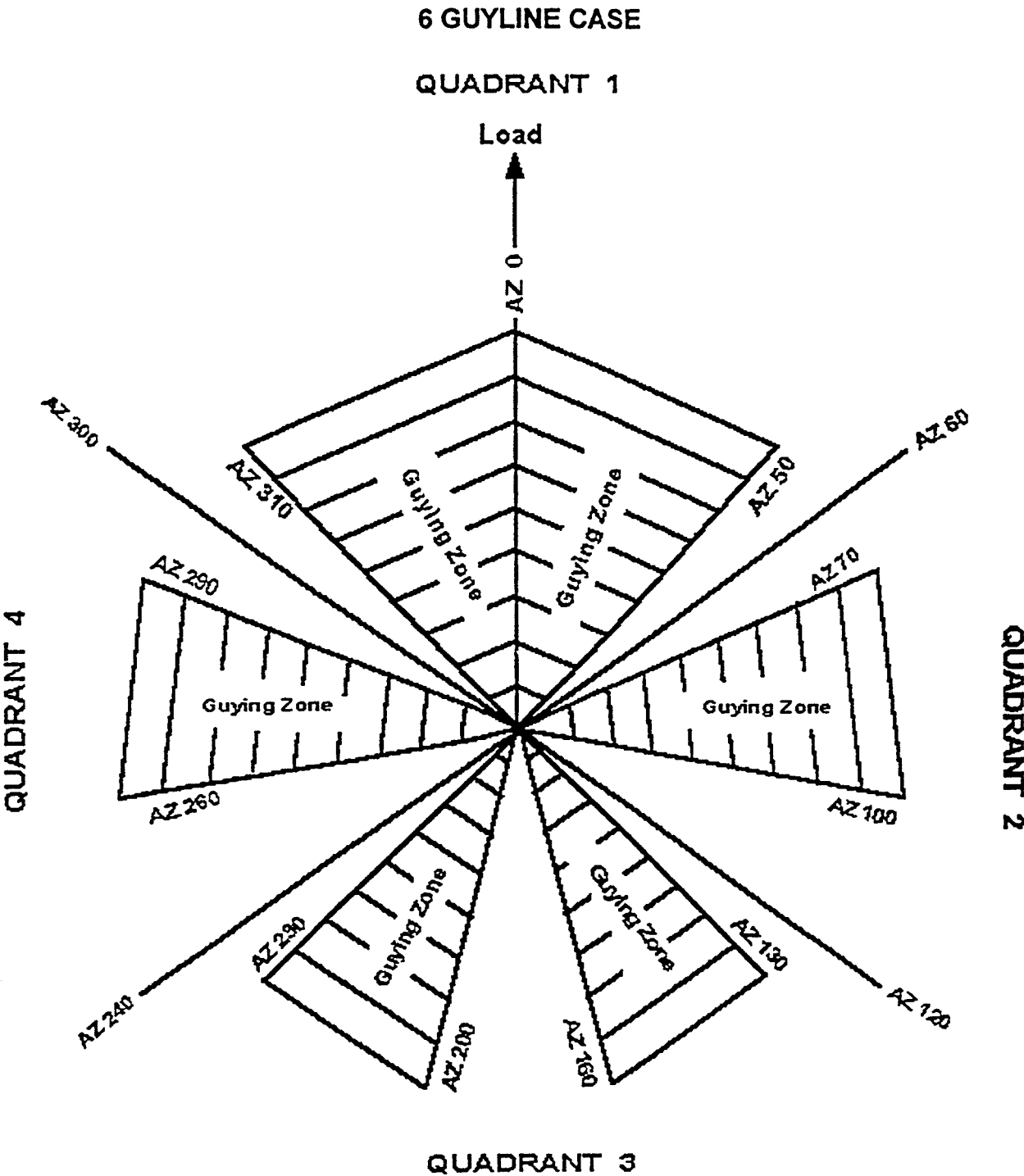


Figure 11: 6 Guyline Case

6 GUYLINE CASE

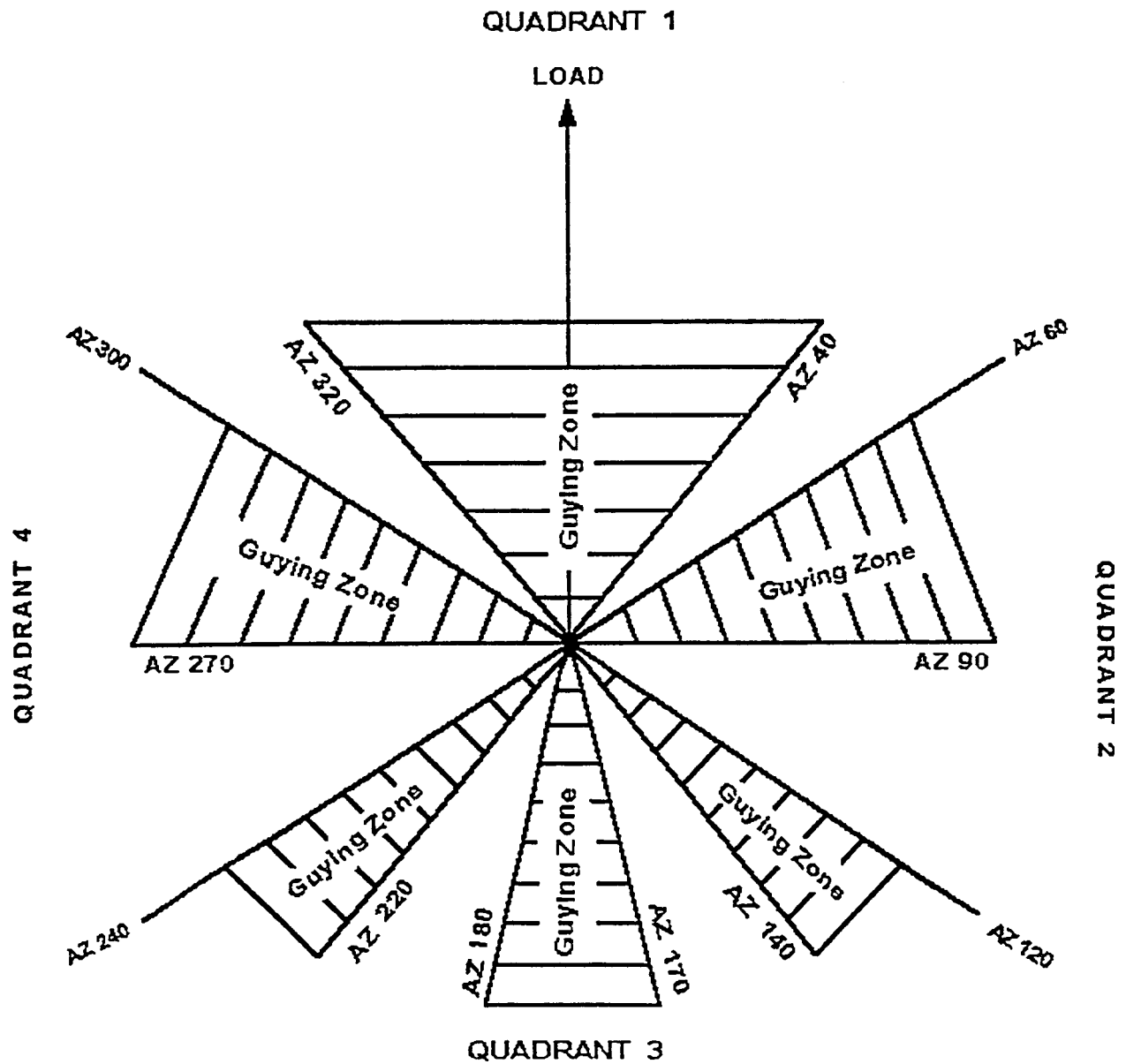


Figure 12: 6 Guyline Case (2)

7 GUYLINE CASE

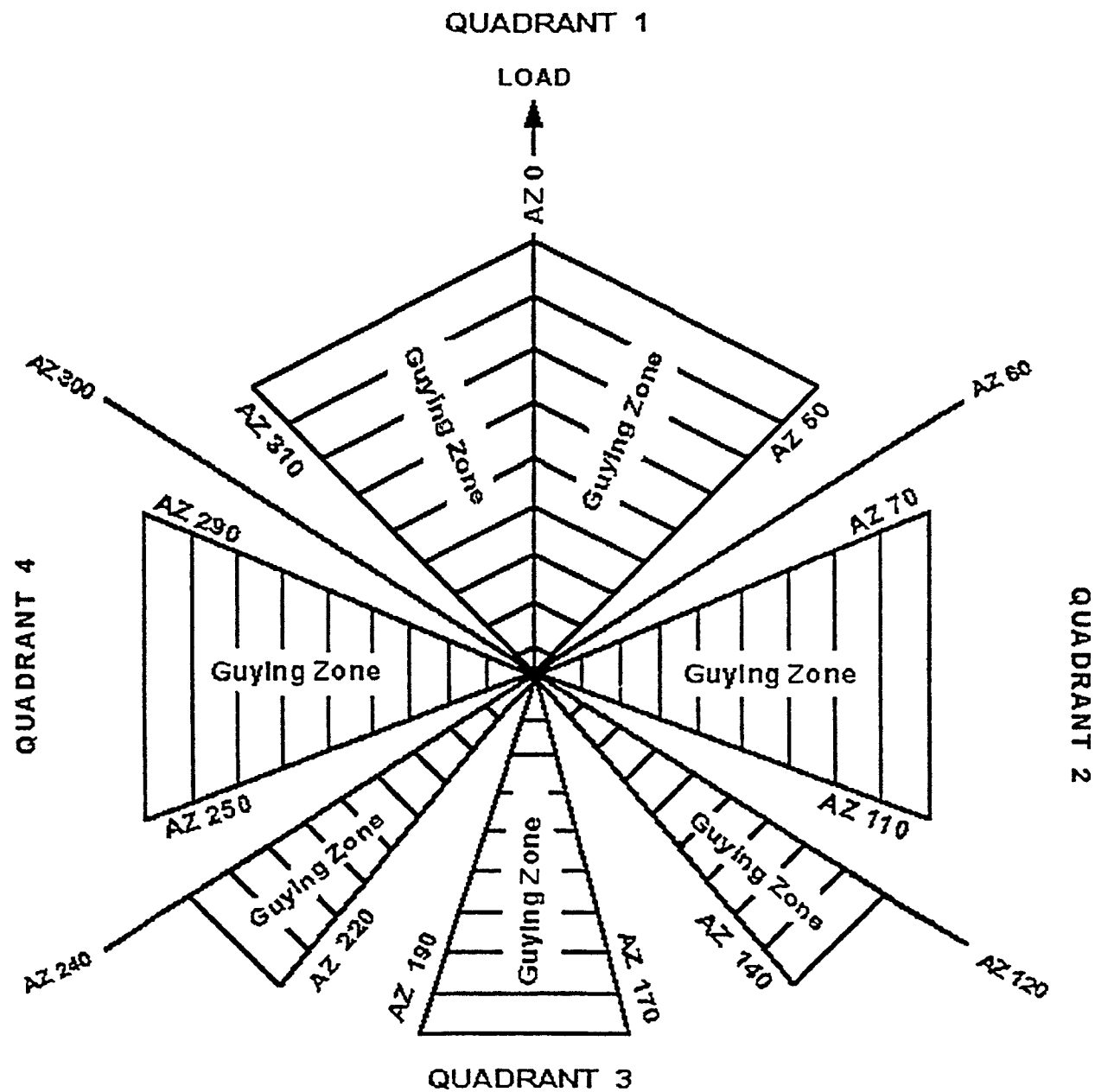


Figure 13: 7 Guyline Case

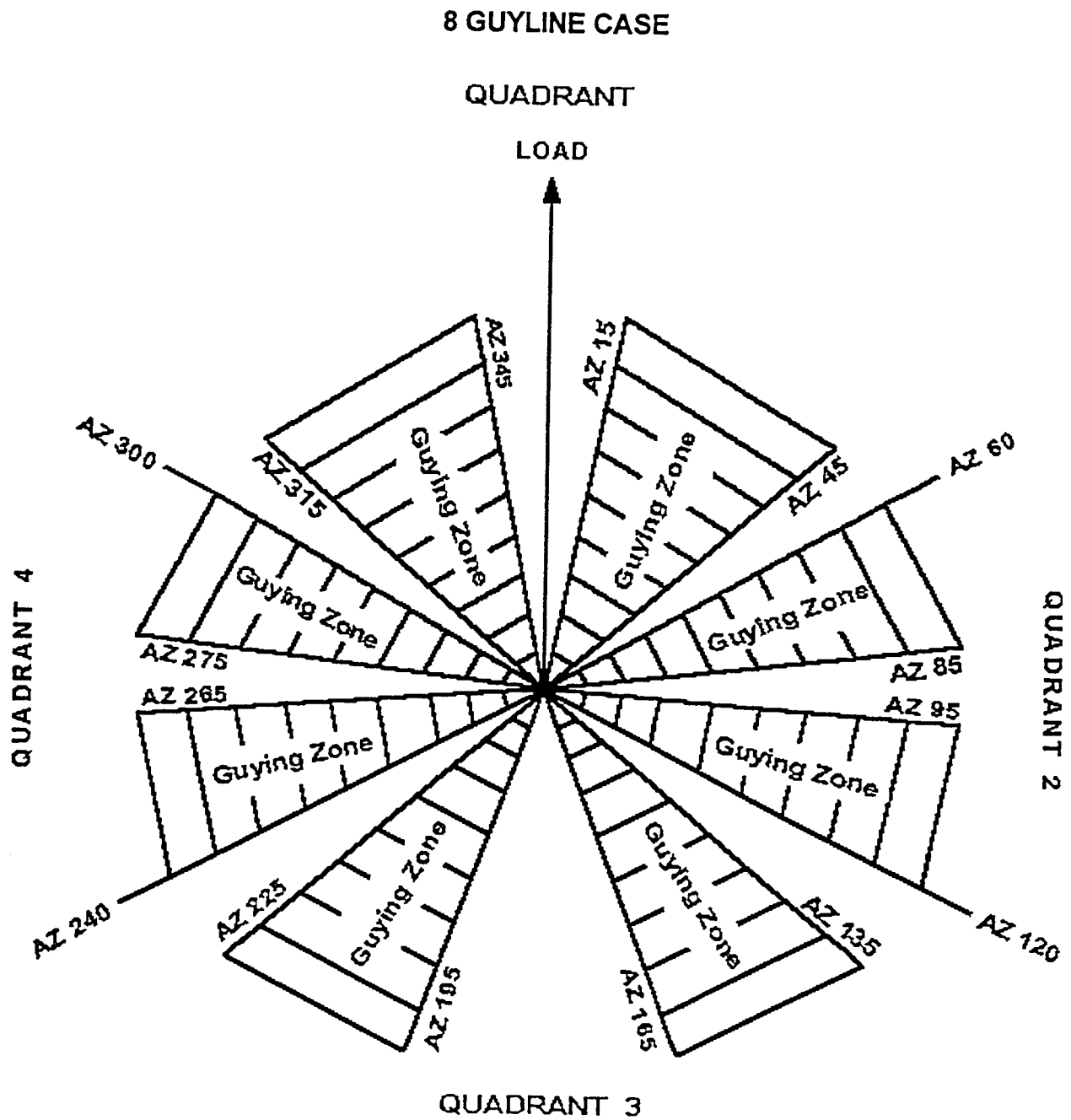


Figure 14: 8 Guyline Case

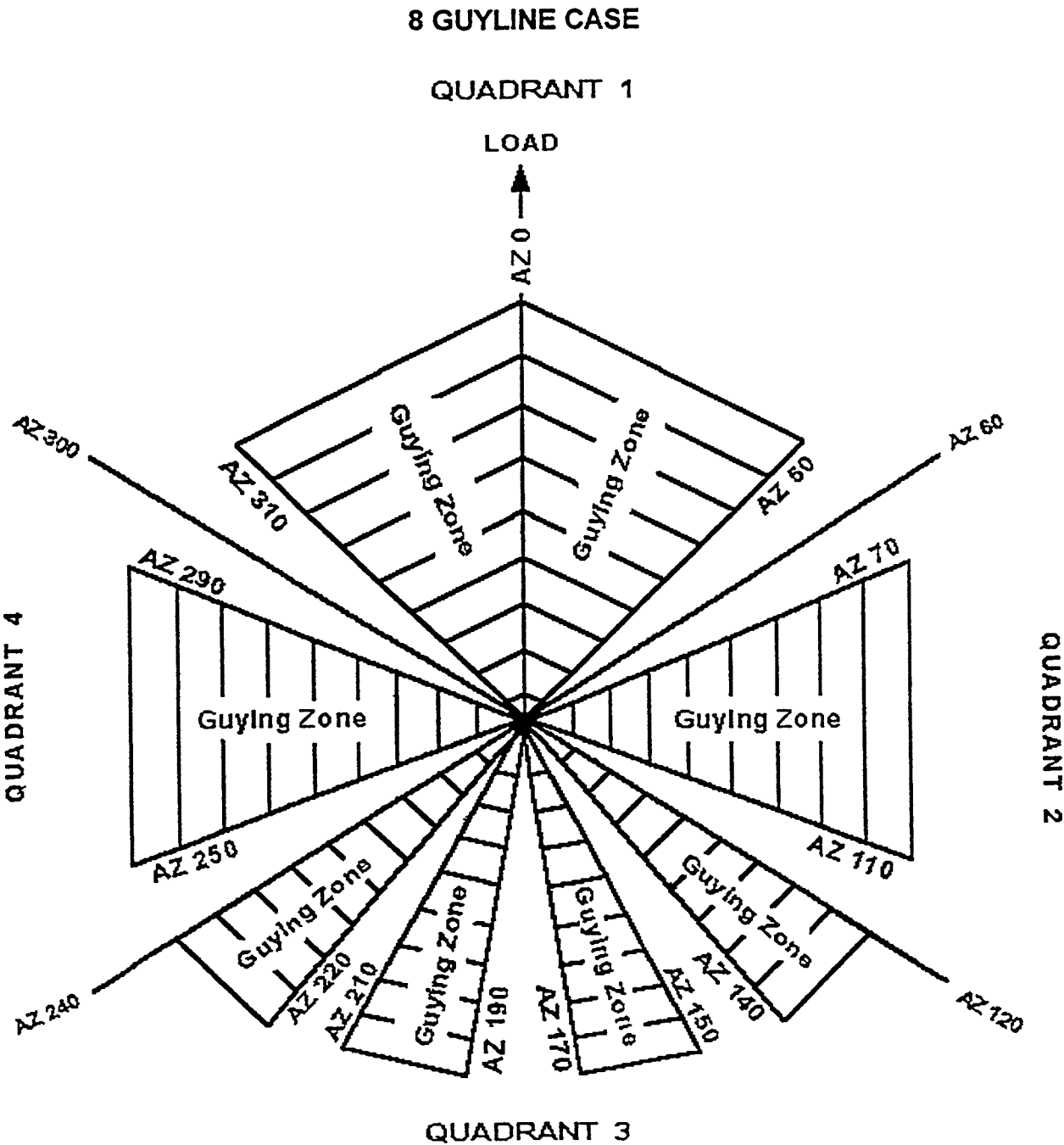


Figure 15: 8 Guyline Case (2)

POSITIONING GUYLINES IN BACK OF TREE

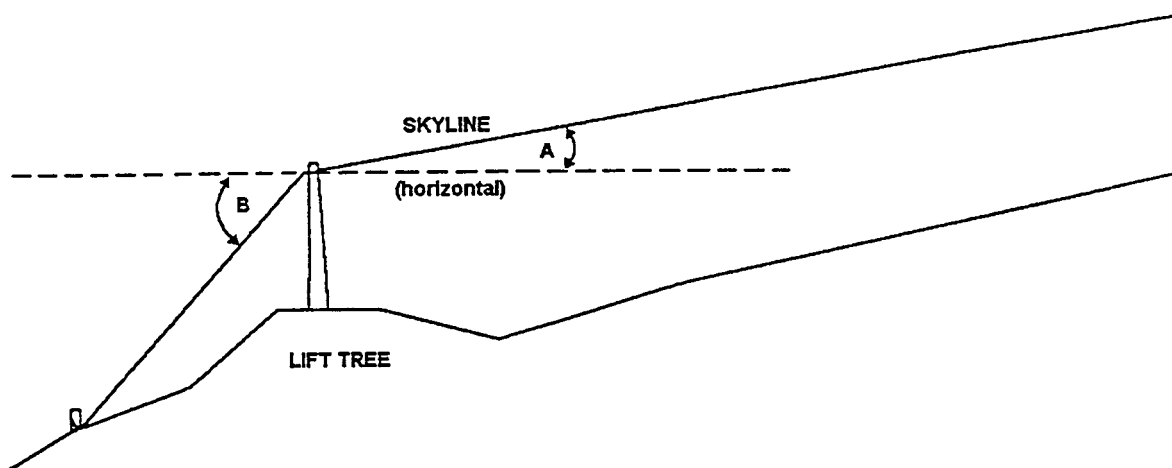


Figure 16: Positioning Guylines in Back of Tree

POSITIONING GUYLINES IN FRONT OF TREE

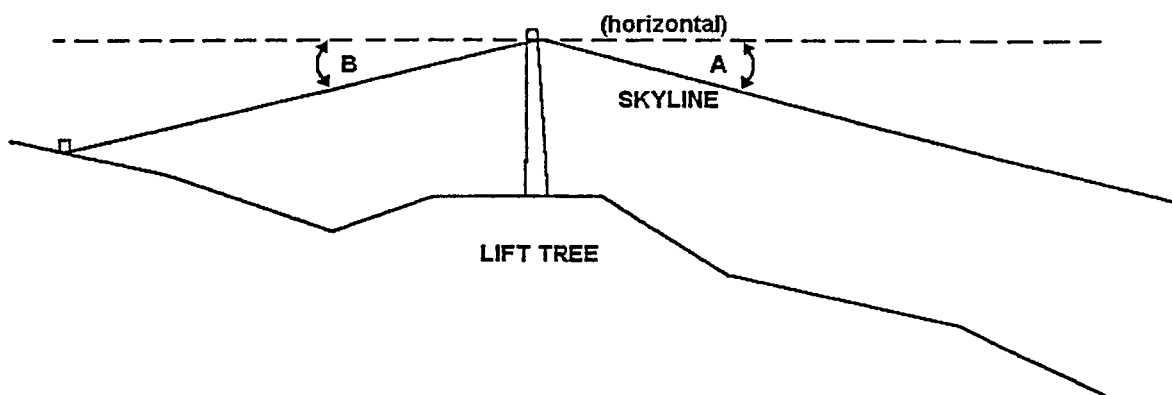


Figure 17: Positioning Guylines in Front of Tree

MAXIMUM ANGLE FOR LOAD BEARING GUYLINES AND SKYLINE

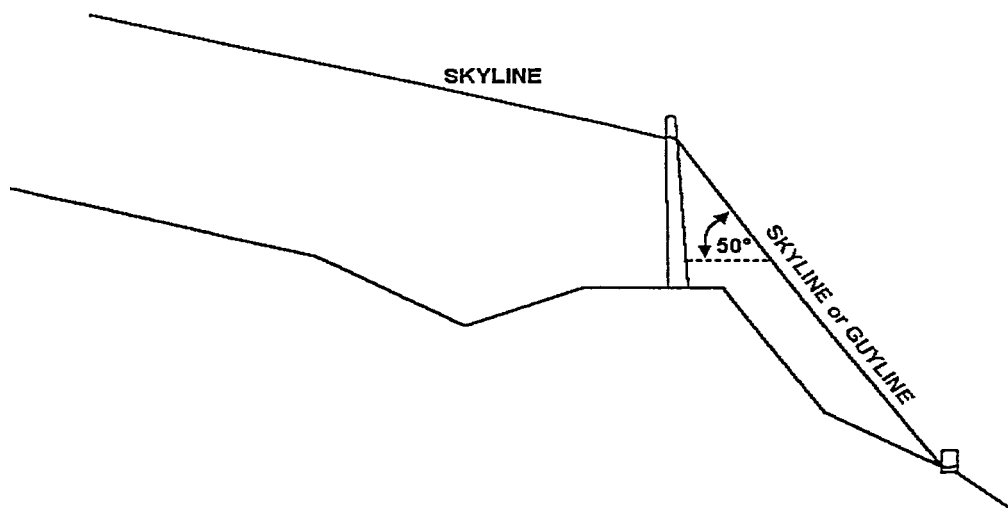


Figure 18: Maximum Angle for Load Bearing Guylines and Skyline

4 GUYLINE CASE – TAIL/LIFT TREE GUYING

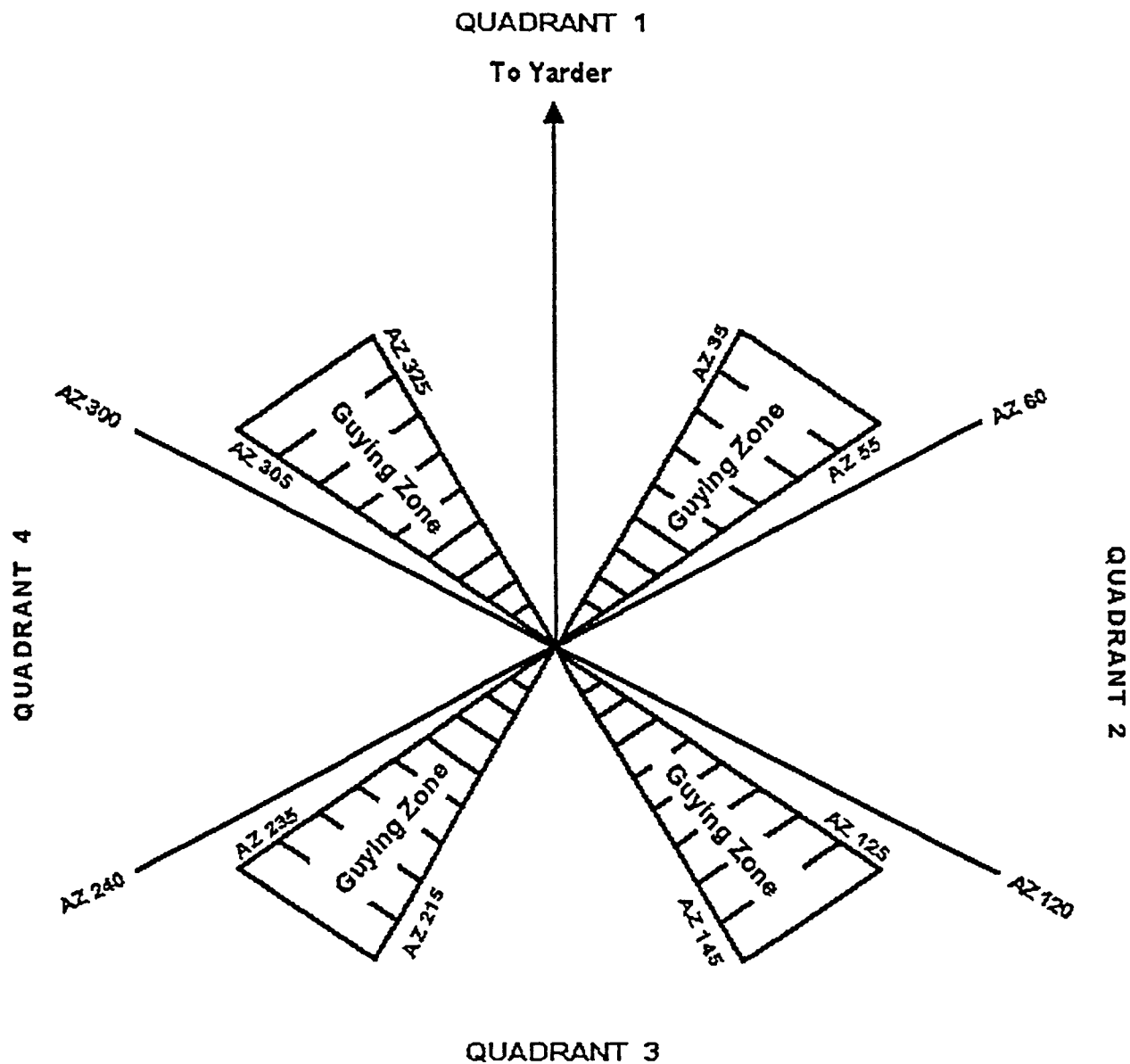


Figure 19: 4 Guyline Case - Tail/Lift Tree Gying

2 GUYLINE CASE

TAIL/LIFT TREE GUYING

(gravity outhaul, non-slackpulling carriage)

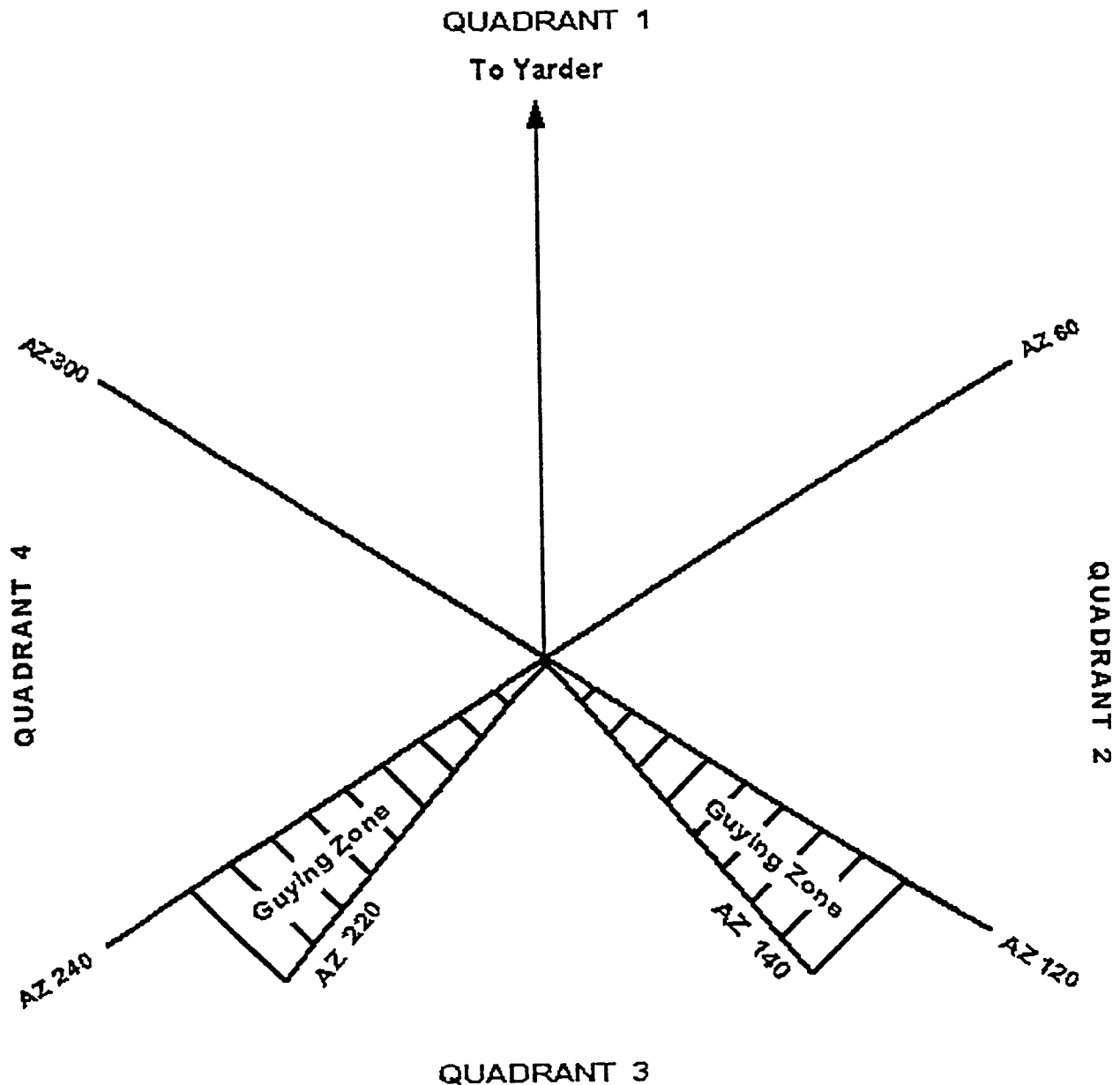


Figure 20: 2 Guyline Case - Tail/Lift Tree Gying
(gravity outhaul, non-slackpulling carriage)

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-561, filed 8/18/99, effective 12/1/99. Statutory Authority: RCW 49.17.040, [49.17].050 and [49.17].060. 96-22-013, § 296-54-561, filed 10/28/96, effective 1/1/97. Statutory Authority: RCW 49.17.040, 49.17.150 and 49.17.240. 79-10-081 (Order 79-14), § 296-54-561, filed 9/21/79.]

WAC 296-54-563 Gying tail/lift trees. (1) Whenever a tail/lift tree is within reach of the work area and the rigging is placed on the tail/lift tree at a height greater than five times the tree diameter (dbh), at least two guylines must be used

unless tree size and strength and rigging position eliminate the need for guylines or employees must be in the clear before the go-ahead signal is given.

(2) Guylines on tail/lift trees must not be anchored to standing trees unless:

(a) There is no danger that the guyline anchor tree will enter the work area;

(b) The guyline anchor tree is properly tied back; or

(c) Employees are in the clear of the guyline anchor tree(s) before the go-ahead signal is given.

(3) When guylines are required, they must be positioned according to Figure 16: Positioning Guylines in Back of Tree and Figure 19: 4 Guyline Case - Tail/Lift Tree Guying as follows:

(a) When the angle between the horizontal and skyline coming into the tree (angle A in Figure 16) is less than the angle between the horizontal and the skyline leaving the tree towards the anchor point (angle B in Figure 16), the guylines must be in back of the tail/lift tree as specified in Figure 19.

(b) If angle A is greater than angle B, then the guys must be placed in front of the tail/lift tree. This situation usually occurs when a tail/lift tree is used during downhill yarding as shown below. Placing the guys on the uphill side only helps to pull the tail/lift tree over uphill.

(c) If a suitable anchor is not available within a specified shaded zone, two guylines may be used instead of one guyline, provided a guyline is placed on either side of and as near as possible to the affected shaded zone.

(4) Tail/lift trees must be supported by additional guylines if necessary, to ensure the stability of the tree.

(5) Guylines for tail/lift trees may be made of synthetic material and must be used according to the manufacturer's recommendation.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-563, filed 8/18/99, effective 12/1/99. Statutory Authority: RCW 49.17.040, 49.17.050, 49.17.240, chapters 43.22 and 42.30 RCW. 80-11-057 (Order 80-15), § 296-54-563, filed 8/20/80. Statutory Authority: RCW 49.17.040, 49.17.150 and 49.17.240. 79-10-081 (Order 79-14), § 296-54-563, filed 9/21/79.]

WAC 296-54-565 Intermediate support trees. (1)

Trees used as intermediate supports must be sound and straight from the ground to the point of strap attachment; and must be rigged so that:

(a) Carriage clearance, as measured at the base of the support tree(s) is approximately five feet.

(b) The jackline/support line (see Figure 21: Critical Measurements of the Double Tree Intermediate Support System) is a single piece of line that is one-eighth inch larger than the tong or skidding line or rigged to provide a strength equal to a line one-eighth inch larger than the tong or skidding line.

(2) Vertical support trees must be firmly rooted.

(3) The base of all leaning tree supports must be prevented from moving by:

(a) Retaining twenty percent of the stump diameter in holding wood; or

(b) Other suitable rigging arrangements.

(4) Double tree supports must be rigged so that (see Figure 22: Double Tree Intermediate Support System):

(a) The minimum and maximum heights of the jack relative to the height of the block are as shown below:

(b) The angle the block line makes with the center line of the support tree is as follows:

(i) For skylines one and one-eighth inch and smaller, ten degrees in any direction; and

(ii) For skylines larger than one and one-eighth inch, deflection of the block is in the direction of the jack and a maximum of ten degrees.

(c) The loaded support tree does not displace more than two feet at the point of rigging attachment.

(5) Intermediate support trees must be adequately guyed to withstand any stress to which the tree may be subjected.

(6) Single tree supports must be guyed as follows:

(a) For skylines one and one-eighth inch and less, as shown in Figure 4; and

(b) For skylines larger than one and one-eighth inch, as shown in Figure 6.

(7) Double tree supports must be guyed as follows:

(a) For skylines one and one-eighth inch and less, no guys are required;

(b) For skylines larger than one and one-eighth inch, as shown in Figure 4.

(8) Guylines for intermediate support trees may be made of synthetic material and must be used according to the manufacturer's recommendations.

CRITICAL MEASUREMENTS OF THE DOUBLE TREE INTERMEDIATE SUPPORT SYSTEM

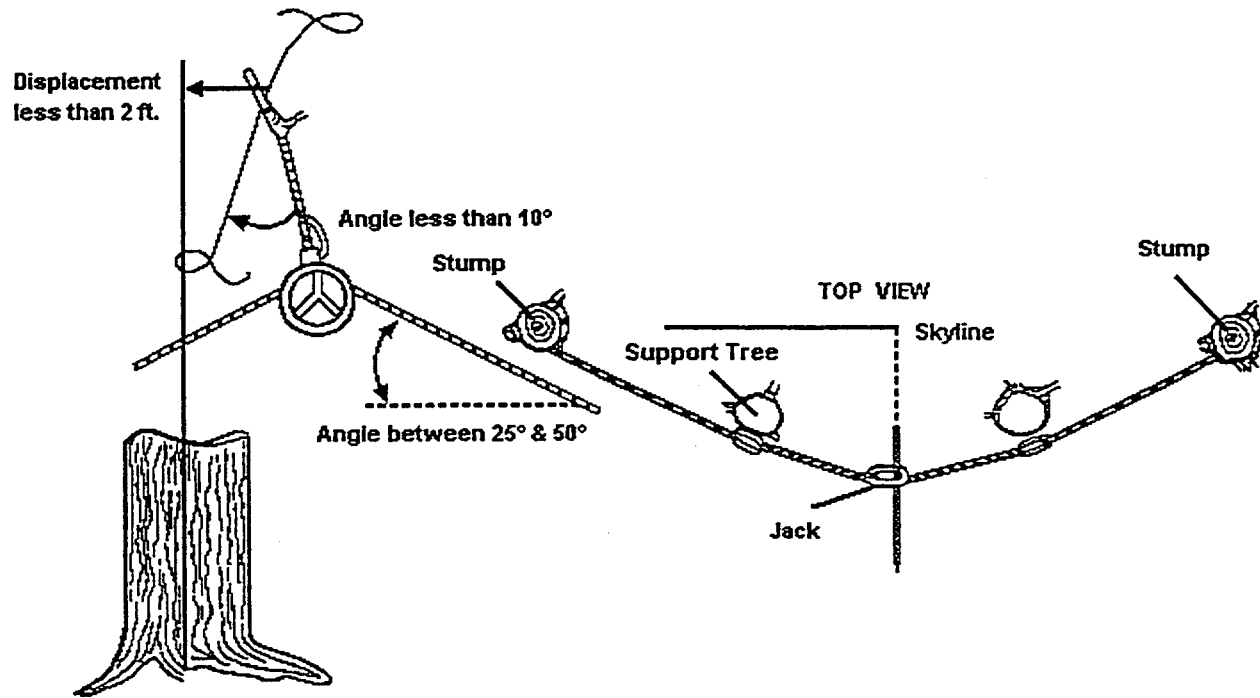
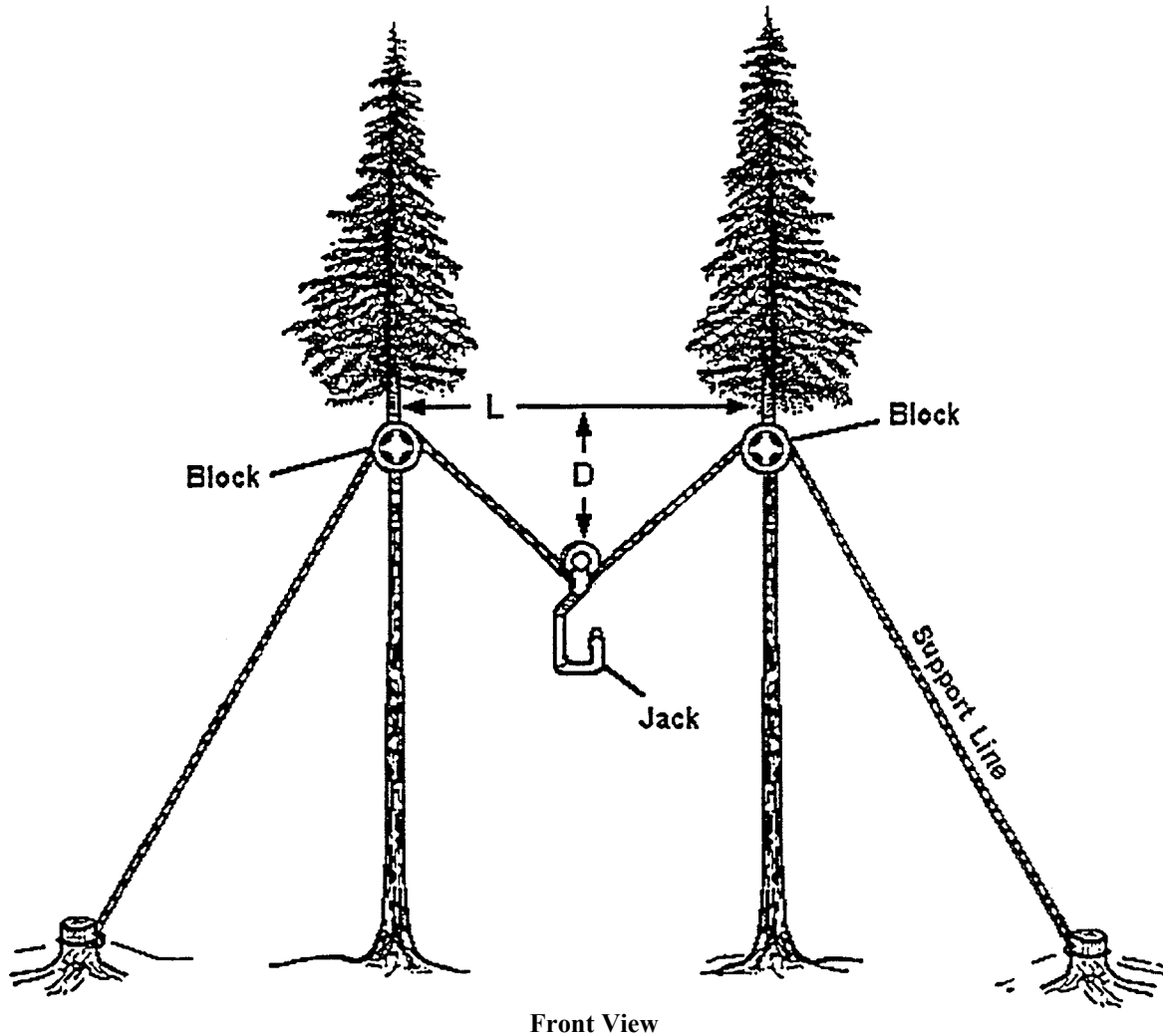


Figure 21: Critical Measurements of the Double Tree Intermediate Support System

DOUBLE TREE INTERMEDIATE SUPPORT SYSTEM



$$D = .25 \times L = \text{minimum distance}$$

$$D = .5 \times L = \text{maximum distance}$$

Figure 22: Double Tree Intermediate Support System

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050, 99-17-117, § 296-54-565, filed 8/18/99, effective 12/1/99. Statutory Authority: RCW 49.17.040, [49.17].050 and [49.17].060, 96-22-013, § 296-54-565, filed 10/28/96, effective 1/1/97. Statutory Authority: RCW 49.17.040, 49.17.150 and 49.17.240, 79-10-081 (Order 79-14), § 296-54-565, filed 9/21/79.]

WAC 296-54-567 Rigging skylines. (1) A skyline must not make an angle greater than fifty degrees measured from the horizontal as it leaves the tail/lift tree. (See Figure 18: Maximum Angle for Load Bearing Guylines and Skyline.)

(2) When rigged in a tail/lift tree, the skyline must be anchored no more than eight degrees offline from the rearward projection of the skyline. If a suitable anchor is not available within the specified zone and the tail/lift tree is stable, a more suitable anchor outside the zone may be used. (See Figure 23: Skyline Positioning Limits Tail/Lift Tree.)

(3) A skyline must not be considered a guyline.

(4) Extensions to skylines must be equal in breaking strength to the skyline to which they are attached and must not alter the safe capacity of the tower. In addition, the extension

must be attached only by a regular long splice or by a flush pin straight side shackle connecting the two eyes.

Note: See exception in WAC 296-54-553 (4)(e).

(5) Live, running or standing skylines must be anchored by one of the following methods:

(a) Directly to a stump or suitable manufactured anchor;

(b) Directly to the base of a standing tree provided the point of attachment is no more than three feet above the ground and no part of the tree will enter the work area if pulled over;

(i) If the tree will enter a work area, it must be properly tied back; or

(ii) Employee(s) must be in the clear before the go-ahead signal is given.

(c) By passing the skyline through a jack or block hung on a tail/lift tree before being anchored.

(6) Skylines or mainlines must be secured by one of the following methods:

(a) With at least two and one-half wraps, well spiked, or properly clamped (see WAC 296-54-569 (5)(b)); or

(b) Choked by using an approved shackle over the skyline or mainline with the pin through the eye; or

(c) With an approved strap having both eyes hung in a shackle and the knockout pin or safety pin through the eye of the skyline or mainline.

(7) Attaching the end of the skyline or slackline to the base of the rigged tail/lift tree is prohibited.

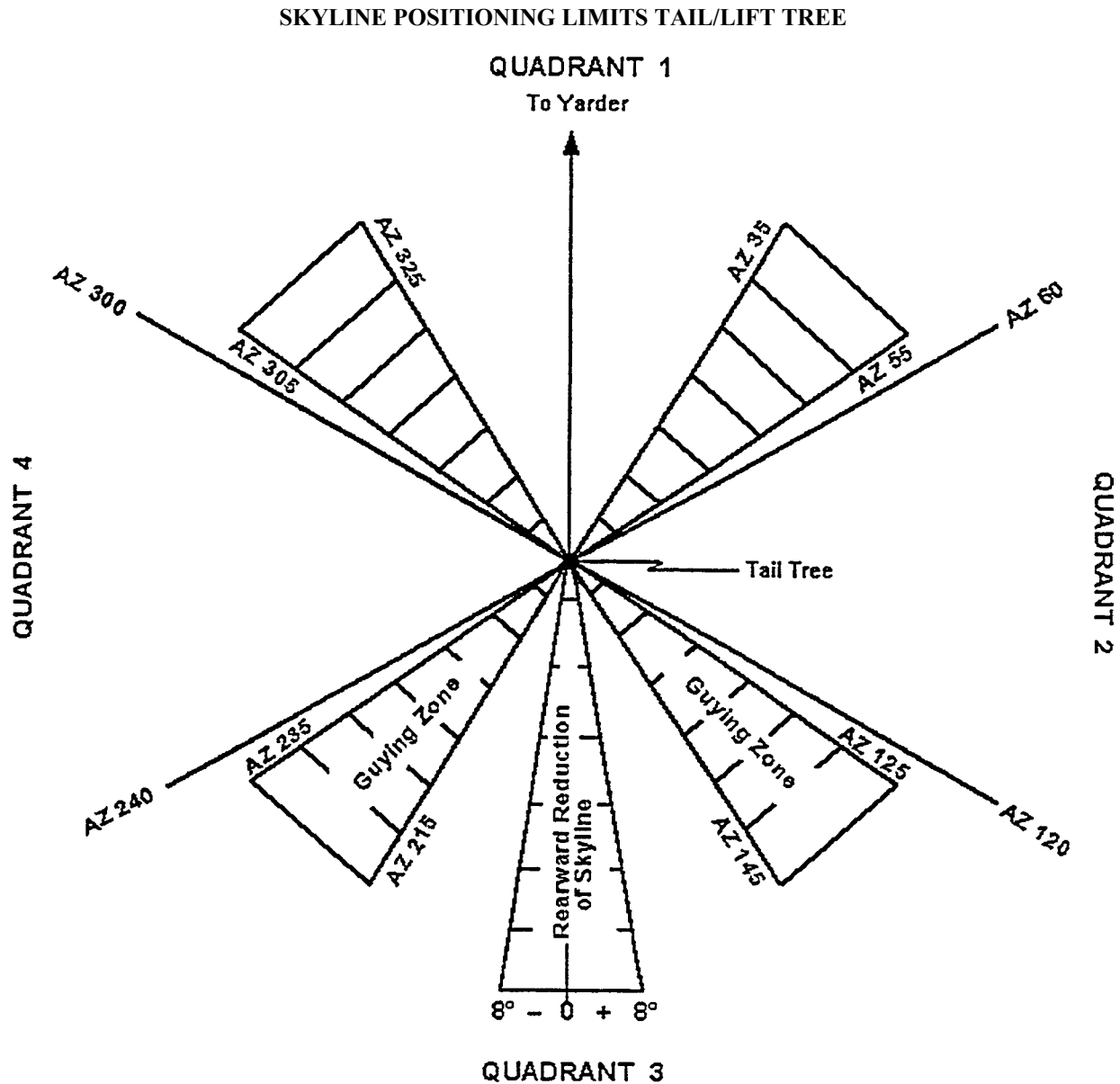


Figure 23: Skyline Positioning Limits Tail/Lift Tree

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-567, filed 8/18/99, effective 12/1/99. Statutory Authority: RCW 49.17.040, [49.17].050 and [49.17].060. 96-22-013, § 296-54-567, filed 10/28/96, effective 1/1/97. Statutory Authority: RCW 49.17.040 and 49.17.050. 81-05-013 (Order 81-3), § 296-54-567, filed 2/10/81. Statutory Authority: RCW 49.17.040, 49.17.150 and 49.17.240. 79-10-081 (Order 79-14), § 296-54-567, filed 9/21/79.]

WAC 296-54-569 Anchoring. (1) Stumps used to anchor guylines and skylines must be carefully chosen for position, height, and strength. When necessary, stump anchors must be tied back to distribute the load.

(2) Stump anchors when spiked must be barked where attachments are to be made.

(3) Stump anchors must be adequately notched to keep the line in place and not adversely affect the stump strength.

(4) Employees must not stand close to the stump or tree or in the bight of lines as the guyline or wraps are being tightened.

(5) When spikes or cable clamps are used, guylines or skylines must be anchored with at least two and one-half wraps around the stumps. Wraps must:

(a) Be well secured with at least eight spikes or six staples in sound wood on the first and last wrap; or

(b) Have the end of the line secured with two wire rope clips on lines up to one inch diameter and three wire rope clips on lines one inch diameter and over.

(6) Properly installed deadman anchors are permitted. Guylines must not be directly attached to deadman anchors. Suitable straps or equally effective means must be used.

(7) Guylines of portable spars, wood spars or towers must not be anchored to standing trees if the unit is used as a head tree, except as specified in subsection (8) of this section.

(8) In special cases such as hanging on foreign ownership or in cable thinning operation where frequent moves make the retrieval of fell guyline trees difficult, the following will apply:

(a) Standing trees within reach of a work area or haul road may be used provided:

(i) They are solid;

(ii) Have a sound undisturbed root system;

(iii) If fell, would be suitable for a guyline stump or tailhold as required in subsection (1) of this section; and

(iv) Are properly tied back to distribute the load; or

(b) Guyline and/or tailhold anchor trees, when located so they will not fall into the work area or haul road, need not be tied back if stable.

Note: Under no circumstances must an employer accept a requirement, or be required to use standing trees to anchor guylines.

(9) Rock bolt anchors must be grouted, installed, tested, and maintained according to the rock bolt manufacturer's recommendations.

(10) Anchors must be regularly inspected while the logging operation is in progress. Insecure or hazardous anchors must be corrected immediately.

(11) Artificial earth anchors must be installed and used according to their design specifications and manufacturer's recommendations.

(12) Mobile equipment may be used to anchor skylines, running lines and guylines, provided the weight of the machine or other methods are used to ensure machine stability for all applied loads.

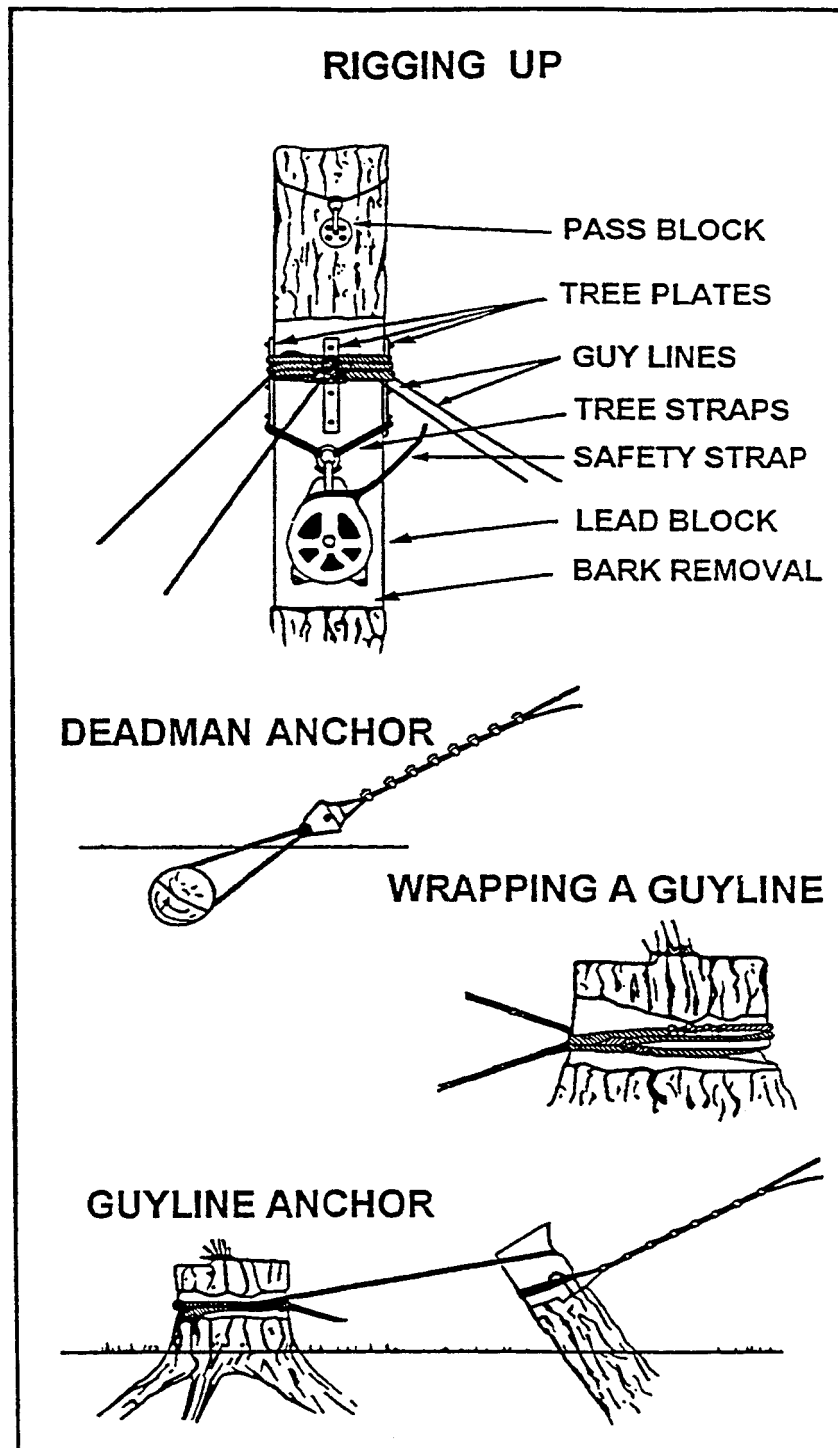


Figure 24: Rigging Illustrations

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-569, filed 8/18/99, effective 12/1/99. Statutory Authority: Chapter 49.17 RCW. 90-09-026 (Order 90-01), § 296-54-569, filed 4/10/90, effective 5/25/90. Statutory Authority: RCW 49.17.040, 49.17.150 and 49.17.240. 79-10-081 (Order 79-14), § 296-54-569, filed 9/21/79.]

WAC 296-54-571 Releasing spiked guylines and spiked skylines from anchors. The following procedures must be followed when removing spiked guylines or spiked skylines from stumps:

(1) Reversed safety wrap is put on and secured before loosening the last wrap;

(2) An authorized employee is in charge of loosening guylines or skylines;

(3) The authorized employee uses all precautions and gives warning before releasing lines; and

(4) Safety holdbacks are used when necessary for employee safety.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-571, filed 8/18/99, effective 12/1/99. Statutory Authority: RCW 49.17.040, 49.17.150 and 49.17.240. 79-10-081 (Order 79-14), § 296-54-571, filed 9/21/79.]

WAC 296-54-573 Logging machines—General. (1)

All logging machinery must have speed limiting devices, safety stops, or emergency shut down devices or shut off valves, with the controls located so that in the event of an emergency, the prime mover may be shut down from a safe place.

(2) The floor and lower portion of cabs must be completely enclosed with solid material, except at entrances, to prevent the operator from being injured by obstacles which otherwise could enter the cab compartment.

(3) Machine operators must be experienced in operating the equipment they use.

EXCEPTION: Inexperienced employees may operate equipment to gain experience while in training but may do so only while working under the immediate supervision of an experienced authorized person.

(4) All machine controls must be marked as to their purpose in the operation of the machine.

(5) The rated capacity of any vehicle transporting a machine must not be exceeded.

(6) Machines must be loaded, secured, and unloaded in a manner that will not create a hazard for any employee.

Note: This requirement includes the loading, securing and unloading of a machine on and off a transport vehicle.

(7) The employer must not make any modifications or additions that affect the capacity or safe operation of the equipment without written approval of the manufacturer or a qualified engineer. If modifications or changes are made, the capacity, operation and maintenance instruction plates, tags, or decals, must be changed accordingly. The original safety factor of the equipment must never be reduced.

(8) Equipment must be classed and used according to the manufacturer's rating. Where low gear ratios or other devices are installed to increase the line pull in accordance with subsection (7) of this section, the size of the rigging must be increased accordingly so that it will safely withstand the increased strains.

(9) Each machine, including any machine provided by an employee, must be maintained in serviceable condition and the following:

(a) Each machine must be inspected before initial use during each workshift. Defects or damage must be repaired or the unserviceable machine is replaced before beginning work.

(b) Operating and maintenance instructions must be available on the machine or in the area where the machine is being operated. Each machine operator and maintenance employee must comply with the operating and maintenance instructions.

(c) Each machine must be operated only from the operator's station or as otherwise recommended by the manufacturer.

(d) Employees must not be allowed to ride on any load.

(10) The yarding machine or vehicle, including its load, must be operated with safe clearance from all obstructions.

(11) While manual/mechanized falling is in progress, all logging machines must be operated at least two tree lengths away from trees being fell.

EXCEPTION: This provision does not apply to logging machines performing tree pulling operations or logging machines called upon by the cutter to ground hazard trees. All cutters must be notified of the logging machine entrance into the area and all falling within two tree lengths of the logging machine must stop.

(12) If a hydraulic or pneumatic storage device can move the moving elements such as, but not limited to, blades, buckets, saws and shears, after the machine is shut down, the pressure or stored energy from the element must be discharged as specified by the manufacturer.

(13) Loads must not exceed the rated capacity of the pallet, trailer, or other carrier.

(14) Boom-type logging machines must have a boom stop to prevent over-topping of the boom.

(15) Boom points of timber booms must be equipped with metal straps, plates, or other devices as needed to properly secure eyebolts and fittings used to support lines, blocks, or other rigging.

(16) Logging machine sleds or bases must be strong enough to withstand any stresses imposed upon them.

(17) Stationary logging machines must be securely anchored or otherwise stabilized to prevent unintended movement while yarding or skidding.

(18) Logging machines and their components must be securely anchored to their bases.

(19) Logging machines must be kept free of flammable waste materials and any materials that might contribute to slipping, tripping or falling.

(20) A safe and adequate means of access and egress to all parts of logging machinery where persons must go must be provided and maintained in a safe and uncluttered condition. Machine access systems, meeting the specifications of the Society of Automotive Engineers, SAE J185, June 1988, "Recommended Practice for Access Systems for Off-Road Machines," must be provided for each machine where the operator or any other employee must climb onto the machine to enter the cab or to perform maintenance. Walking and working surfaces of each machine and machine work station must have a slip-resistant surface to assure safe footing.

(21) Enclosed-type cabs installed on mobile logging machines must have two means of exit. One may be an emergency exit and be available for use at all times regardless of the position of the side arms or other movable parts of the machine. An easily removable window is acceptable as the emergency exit if it is large enough for an employee to readily exit.

EXCEPTION: Cable yarders manufactured before July 1, 1980 are not required to have two means of exit.

(22) Before leaving the operator's station of a machine, the operator must ensure the machine is secured as follows:

(a) The parking brake or brake locks must be applied;

(b) The transmission must be placed in the manufacturer's specified park position; and

(c) Each moving element such as, but not limited to, blades, buckets, saws and shears, must be lowered to the ground or otherwise secured.

(23) Storing employee property, tools, or other miscellaneous materials on or within three feet of any logging machine is prohibited if retrieving the items would expose an employee to the hazardous pinch point area between the rotating superstructure and the nonrotating undercarriage.

(24) Employees must approach the hazardous pinch point area only after informing the operator of that intent and receiving acknowledgment from the operator that the operator understands the employee's intention. All logging machines must be stopped while any employee is in the hazardous pinch point area.

(25) After adjustments or repairs are made, logging machines must not be operated until all guards are reinstalled, safety devices reactivated, and maintenance equipment removed.

(26) Fairleads must be properly aligned at all times and designed to prevent line damage.

(27) Employee(s) must not ride on any mobile logging machine unless provided with seating, seat belts, and other protection equivalent to that provided for the operator.

EXEMPTION: Mechanics in the course of their job and trainees, operating under circumstances that minimize their exposure to dangerous situations, are exempt from this requirement.

(28) Riding on arches, reaches or turn of logs is prohibited.

(29) Tractors, skidders, arches, or logs being yarded by them must not run over or rub against anchored lines, tailhold stumps, or other rigging.

(30) Ends of lines attached to drums on logging machines must be secured by end attachments that develop the ultimate strength of the line unless three wraps of line are maintained on the drum at all times.

EXCEPTION: This does not apply to tractors or skidders.

(31) Wire rope must be wound on drum spools in a manner to prevent excessive wear, kinking, chafing or fouling.

(32) Guylines required in rigging spars or towers must be evenly spooled to prevent fouling.

(33) A guide pulley, tool, stick, iron bar or other mechanical or manual means must be used when guiding lines onto drums. Guiding lines onto drums with any part of the body in direct contact with the line is prohibited.

(34) A limit switch must be installed on electric-powered log loaders to prevent the lift arms from traveling too far in the event the control switch is not released in time.

(35) All forklift type log handling machines must be equipped with a grapple system and the arms must be closed whenever logs are being carried.

(36) When forklift machines are used to load, unload, or handle trailers, a positive means of holding the lifting attachment on the fork must be installed and used.

(37) Loads on forklift type log handling machines must be transported as low as safely operable without obstructing visibility.

(38) Guyline drum controls and outrigger controls must be separated and clearly identified in a manner that will prevent the engaging of the wrong control.

(39) Each machine must be equipped with guarding to protect employees from exposed moving elements, such as, but not limited to, shafts, belts, pulleys on chains, sprockets and gears in accordance with the requirements of this stan-

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dard and chapter 296-806 WAC, Machine safety. Guards must be in place at all times when machines are in use.

Note: This does not apply to lifting or yarding components such as, but not limited to, cable nip points, sheaves and blocks.

(40) Each machine used for debarking, limbing, and chipping must be guarded to protect employees from flying wood chunks, logs, chips, bark, limbs, and other material in accordance with the requirements of this standard and chapter 296-806 WAC, Machine safety.

(41) Grab rails must be provided and maintained in good repair on all walkways of stationary units elevated more than four feet.

(42) Towed equipment such as, but not limited to, skid pans, pallets, arches, and trailers, must be attached to each machine or vehicle to allow a full ninety degree turn; to prevent overrunning of the towing machine or vehicles; and to ensure that the operator is always in control of the towed equipment.

(43) Timbers used for masts or booms shall be straight-grained, solid, and capable of withstanding the working load.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. 06-07-142, § 296-54-573, filed 3/21/06, effective 5/1/06; 04-14-028, § 296-54-573, filed 6/29/04, effective 1/1/05. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-573, filed 8/18/99, effective 12/1/99. Statutory Authority: RCW 49.17.040, 49.17.150 and 49.17.240. 79-10-081 (Order 79-14), § 296-54-573, filed 9/21/79.]

WAC 296-54-57310 Logging machines—Chipping in woods locations. In-woods chipping must be performed according to the following:

(1) Chipper access covers or doors remain closed until the drum or disc stops completely.

(2) Infeed and discharge ports are guarded to prevent contact with the disc, knives, or blower blades.

(3) The chipper is shut down and locked out according to the lockout/tagout requirements of chapter 296-803 WAC when an employee performs any servicing or maintenance.

(4) Detached trailer chippers are chocked when used on any slope where rolling or sliding of the chipper is reasonably foreseeable.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060. 04-15-105, § 296-54-57310, filed 7/20/04, effective 11/1/04. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-57310, filed 8/18/99, effective 12/1/99.]

WAC 296-54-57315 Logging machines—Exhaust pipes. (1) Engines not equipped with turbochargers must be equipped with spark arrestors in compliance with the department of natural resources, chapter 332-24 WAC, requirements for spark-emitting equipment.

(2) Each machine muffler provided by the manufacturer, or their equivalent, must be in place at all times the machine is in operation.

(3) Exhaust pipes must be located or insulated to protect workers from accidental contact with the pipes or muffler and must direct exhaust gases away from the operator and other persons.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-57315, filed 8/18/99, effective 12/1/99.]

WAC 296-54-57320 Logging machines—Glass. Glass installed on logging machines must:

- (1) Be free of deposits of oil and mud or defects that could endanger the operator or other employees;
- (2) Be safety glass or a type that provides equal protection;
- (3) Be removed or replaced if defective or broken glass impairs the vision of the operator; and
- (4) Have an additional metal screen or guard installed where glass does not provide adequate operator protection from flying chokers, chunks, saplings, limbs, etc. The operator's vision must not be impaired.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-57320, filed 8/18/99, effective 12/1/99.]

WAC 296-54-57325 Logging machines—Brakes. (1) Brakes or dogs must be installed on all machine drums and maintained in effective working condition.

(2) Drum brakes must have an independent locking device that will hold the drum when the operator leaves the machine and the machine is not operating.

(3) Brakes must be protected from direct exposure to the elements or be designed or constructed to make them impervious to such exposure.

(4) At the start of each shift, logging machine operators must test all brakes before taking a load.

(5) Service brakes must be able to stop and hold each machine and its rated load capacity on the slopes over which it is being operated. Brakes must be effective whether or not the engine is running and regardless of the direction of travel.

(6) Self-propelled logging machines manufactured on or after July 1, 1985, must be equipped with braking systems as follows:

(a) A service braking system, which must be the primary means of stopping and holding the equipment;

(b) An emergency stopping system, which must be a secondary means of stopping the equipment in the event of any single failure of the service system; and

(c) A parking brake system, which must be used to continuously hold a stopped machine stationary within the limits of traction on any grade on which it is operated so as to allow the operator to leave the vehicle without the vehicle moving, and to prevent subsequent movement of the vehicle while unattended. The parking brake system must maintain this parking performance despite any contraction of brake parts, failure of the source of application, energy or leakage of any kind.

(7) The braking systems required in subsection (5) of this section must be installed, tested, and maintained according to the following Society of Automotive Engineers' (SAE) Recommended Practices:

(a) J1026-1982—Braking Performance—In Service Crawler Tractors and Crawler Loaders;

(b) J1473-1984—Braking Performance—Rubber-Tired Construction Machines;

(c) J1178-1980—Minimum Performance Criteria for Braking Systems for Rubber-Tired Skidders.

(8) Self-propelled logging machines manufactured before July 1, 1985, must have braking systems installed, tested and maintained in as effective a condition as originally intended by the manufacturer.

[Title 296 WAC—p. 1200]

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-57325, filed 8/18/99, effective 12/1/99.]

WAC 296-54-57330 Logging machines—Outriggers.

(1) All outriggers must have a stable base under the outrigger or equivalent leveling pads as recommended by the equipment manufacturer.

(2) Outriggers must have a means to hold them in both the retracted and extended position.

(3) Hydraulic outriggers must have a positive holding device (velocity fuse, load check valve, manually operated valve or equivalent) to prevent movement of the piston in the event of a hose, fitting or other failure in the hydraulic system except when proper blocking is provided.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-57330, filed 8/18/99, effective 12/1/99.]

WAC 296-54-57335 Logging machines—Hydraulics.

(1) If failure of hydraulic lines could create a hazard to an equipment operator while at the operator's station, safeguards must be installed that will eliminate the hazard.

(2) Machines or equipment must not be operated when hydraulic fluid leakage creates contamination of the operator's workstation, means of access or egress, or creates other unsafe conditions such as fire hazard or control malfunction.

(3) Abrasive contact with hydraulic hoses, tubing or fittings must be eliminated before further use.

(4) Defective hydraulic hoses, lines and fittings must be replaced.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-57335, filed 8/18/99, effective 12/1/99.]

WAC 296-54-57340 Logging machines—A-frames.

(1) A-frames must be guyed or braced to provide stability and prevent tipping.

(2) A-frame bases must be secured against displacement and the tops must be securely bolted or lashed to prevent displacement.

(3) Where guylines are used, A-frames must have at least one snap guy and two guylines securely attached, anchored and spread to form an angle 70 degrees to 90 degrees opposite the direction of stress or strain.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-57340, filed 8/18/99, effective 12/1/99.]

WAC 296-54-57345 Logging machines—Moving. (1)

Operators must ensure that all employees are in the clear before initiating or continuing the movement of any mobile equipment. The machine must be operated far enough from employees and other machines so that operation does not create a hazard for an employee.

(2) At any time when moving logging machines, the driver must have a clear and unobstructed view of the direction of travel. When this is not possible, a signal person with a clear and unobstructed view of the direction of travel must be designated and used to direct the movement of the machine, or the machine must have an audible horn that is sounded.

EXCEPTION: This does not apply to tractors, skidders or tree harvesters during normal yarding operations.

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(3) Where a signalperson is used, the equipment operator must move the equipment only on signal from the designated signalperson and only when the signal is distinct and clearly understood.

(4) When moving power units, persons other than the operator and the person in charge must not be permitted to ride on the unit.

(5) All obstructions that may reach the operator while moving a machine must be removed.

(6) When moving to areas within the immediate landing area, all employees must stay in the clear of the logging machine(s) or must inform the operator of the intent to approach or be near the machine(s).

(7) Mobile yarders and wheel or crawler loaders must not travel on road grades greater than 15 percent unless they are securely snubbed or towed, or have a braking system designed for such travel by the manufacturer.

(8) Crawler-type, track-mounted logging machines with manual transmissions must be equipped with a ratchet or other device that will prevent unintended disengagement or reversing of the machine and the operator must be informed of the proper technique.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-57345, filed 8/18/99, effective 12/1/99.]

WAC 296-54-57350 Logging machines—Tractors and skidders. (1) Operators must operate and control their machines in a safe manner and avoid operations in areas where machine stability may not be maintained.

(2) Winch lines on logging tractors or skidders must be attached to the drums with a breakaway device.

(3) Arches must be equipped with line guards.

(4) A turnaround, if needed for skidders, must be provided on all skidding roads every 500 feet.

(5) The following safe work procedures must be followed:

(a) Lines must not be allowed to trail behind the tractor or skidder where it may hang up and snap forward.

(b) Each machine must be positioned during winching so the machine and winch are operated within their design limits.

(c) Logs/trees must be chocked near the ends of the logs/trees whenever possible and safely positioned before traveling.

(d) Before climbing or descending grades, the proper gear must be selected to allow the engine to govern the tractor speed.

(e) On side hills, abrupt turns uphill must be avoided. The tractor or skidder must be backed downhill first then turned uphill. The turn may be slacked off as necessary to permit this maneuver.

(f) Tractor or skidder speed must be adjusted to the circumstances prevailing. Excessive or uncontrolled speed must be avoided.

(6) Where tractor and skidder operators or helpers, because of the nature of their work duties, are required to wear calk soled footwear, the decks and operating foot controls must be covered with a suitable nonslip material.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-57350, filed 8/18/99, effective 12/1/99.]

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WAC 296-54-57355 Logging machines—Protective structures for operators. (1) Each tractor, skidder, log stacker and mechanical felling device, such as tree shears or feller-buncher, placed into initial service after February 9, 1995, must be equipped with falling object protective structure (FOPS) and/or rollover protective structure (ROPS). The employer must replace FOPS or ROPS which have been removed from any machine.

EXCEPTION: This requirement does not apply to machines which are capable of 360 degree rotation.

(2) ROPS must be installed, tested, and maintained in accordance with the Society of Automotive Engineers SAE J1040, April 1988, "Performance Criteria for Rollover Protective Structures (ROPS) for Construction, Earthmoving, Forestry, and Mining Machines."

(3) The ROPS must be high enough and wide enough so that it will not impair the movements of the operator or prevent his immediate escape from the vehicle in emergencies and must allow as much visibility as possible. Clearance above the deck and the ROPS of the vehicle at exits must be at least fifty-two inches (1.3 meters).

(4) Certified roll-over protective systems must be identified by a metal tag permanently attached to the ROPS in a position where it may be easily read from the ground. The tag must be permanently and clearly stamped, etched or embossed indicating the name and address of the certifying manufacturer or registered professional engineer, the ROPS model number (if any) and the vehicle make, model or serial number the ROPS is designed to fit.

(5) Roll-over protective structure systems must be maintained in a manner that will preserve their original strength. Welding must be performed by qualified welders only. (A qualified welder is defined under "welder qualification" in American Welding Society A.W.S. A3.0-69.)

(6) FOPS structures must be installed, tested and maintained according to:

(a) The society of automotive engineers SAE J231-1971, "minimum performance criteria for falling object protective structures (FOPS) prior to February 9, 1995."

(b) Society of automotive engineers SAE J231, January 1981, "minimum performance criteria for falling object protective structures (FOPS) for each tractor, skidder, log stacker, log loader and mechanical felling device, such as tree shears or faller-buncher, placed into initial service after February 9, 1995."

(7) The employer must replace FOPS that have been removed from any machine.

(8) Vehicles with ROPS or FOPS as required in subsection (1) of this section, must comply with the society of automotive engineers SAE J397a-1972, "deflection limiting volume for laboratory evaluation of roll-over protective structures (ROPS) and falling object protective structures (FOPS) of construction and industrial vehicles." Vehicles placed into initial service after February 9, 1995, must meet the requirements of SAE J397-1988.

(9) The opening in the rear of the ROPS on the crawler or rubber-tired tractors (skidders) must be covered with 1/4-inch diameter woven wire having not less than 1-1/2 inches or more than 2-inch mesh, or material which will afford equivalent protection for the operator.

[Title 296 WAC—p. 1201]

(a) The covering must be attached to the structural members so that enough clearance is provided between the screen and the back of the operator.

(b) Structural members must be free from projections that would tend to puncture or tear flesh or clothing.

(c) Suitable safeguards or barricades must be installed, in addition to the screen, to protect the operator when there is a possibility of being struck by any material that could enter from the rear.

(10) Crawler and rubber-tired tractors (skidders) working in areas where limbs or brush may endanger the operator must be guarded.

(a) Shear or deflector guards must be installed on each side of the vehicle at an angle leading forward and down from the top front edge of the canopy of the vehicle, which will tend to slide the brush or limbs up and over the top of the canopy.

(b) Open mesh material with openings of a size that will reject the entrance of an object larger than 1-3/4 inches in diameter, must be extended forward as far as possible from the rear corners of the cab sides to give the maximum protection against obstacles, branches, etc., entering the cab area.

(c) Deflectors must also be installed ahead of the operator to deflect whipping saplings and branches.

(d) Deflectors must be located so as not to impede entrance to or exit from the compartment area.

(e) The floor and lower portion of the cab must be completely enclosed with solid material, except at entrances, to prevent the operator from being injured by obstacles which otherwise could enter the cab compartment.

(11) Each machine manufactured after August 1, 1996, must have a cab that is fully enclosed with mesh material with openings no greater than 2 inches (5.08 cm) at its lease dimension. The cab may be enclosed with other material(s) where the employer demonstrates such material(s) provides equivalent protection and visibility.

EXCEPTION: Equivalent visibility is not required for the lower portion of the cab where there are control panels or similar obstructions in the cab, or where visibility is not necessary for safe operation of the machine.

Enclosures for agricultural and industrial tractors manufactured after September 1, 1972, must be constructed, designed and installed as detailed in the society of automotive engineers technical report J168.

(12) Overhead protection and other barriers must be installed to protect the operator from lines, limbs, and other moving materials on or over all loading or skidding machines and on all yarding machines where the operator's station is mounted on board. The overhead covering of each cab must be of solid material and extend over the entire canopy. A skylight in a logging machine must be made of safety glass or provide equivalent protection.

Note: This does not apply to self-loaders.

Reference: For requirements relating to overhead protection on forklifts, see chapter 296-863 WAC, Forklifts and other powered industrial trucks.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060, 49.17.142, § 296-54-57355, filed 3/21/06, effective 5/1/06. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050, 99-17-117, § 296-54-57355, filed 8/18/99, effective 12/1/99.]

[Title 296 WAC—p. 1202]

WAC 296-54-575 Landing area. (1) Unless otherwise specified, landing areas must:

(a) Be large enough that if logs are to be heeled and swung, they will not strike standing timber, rigging, or other equipment or objects;

(b) Be large and level enough to land and deck the logs in the turns so that they will not slide or roll in the direction of employees or equipment. This is not intended to restrict the yarding and/or loading of logs for pole piling or an infrequent long break or tree length, provided the log is secured before unhooking the choker;

(c) Be large enough for safe movement of all logs and machinery;

(d) Landings must be free of root wads, limbs, tops, etc., that constitute a safety hazard; and

(e) Not have materials pushed, thrown, or dumped over the edge in a manner or at a time that will endanger employees.

(2) When during roadside thinning, logs stacked on the roadside without a landing must be placed in a stable condition.

(3) During uphill yarding, the landing chute must be cleared of logs before the next turn of logs is landed unless:

(a) The logs are fully contained in the landing chute; or

(b) There is no possibility that employees working below the landing may be struck by rolling objects coming off the landing.

(4) Roadside or continuous landings must be large and wide enough to safely operate and maintain the yarding or loading equipment. Outrigger pads, tracks or wheels must be on firm, stable ground.

(5) In logging operations where the yarder is set up in the haul road and logs are landed on the slope below the road, the following must apply:

(a) If the landing chute slope is twenty percent or less, logs may be landed and decked in the chute provided the logs can be left in a stable position;

(b) If the landing chute slope exceeds twenty percent, decking is not permitted in the chute if a chaser is required to unhook the rigging from the logs or if employees are working below the landing chute and are exposed to rolling or sliding logs;

(c) If logs are to be decked below the road, the logs must be effectively secured from rolling or sliding down the hill; or

(d) If the landing process or weather conditions (rain, snow, ice, mud) prevent the required log stability and exposes employees to the hazard of rolling or sliding logs, the logs must be decked at a different location.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050, 99-17-117, § 296-54-575, filed 8/18/99, effective 12/1/99. Statutory Authority: RCW 49.17.040, [49.17].050 and [49.17].060, 96-22-013, § 296-54-575, filed 10/28/96, effective 1/1/97. Statutory Authority: RCW 49.17.040, 49.17.050, 49.17.240, chapters 43.22 and 42.30 RCW, 80-11-057 (Order 80-15), § 296-54-575, filed 8/20/80. Statutory Authority: RCW 49.17.040, 49.17.150 and 49.17.240, 79-10-081 (Order 79-14), § 296-54-575, filed 9/21/79.]

WAC 296-54-577 Yarding, skidding, landing. (1) Running lines must be arranged so that employees are not required to work in the bight of the line. When employees must work in the bight, employees must move out of the bight of the lines before the signal to move the turn is given, or be

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in a position where they are protected by standing timber, terrain, or other objects large enough to ensure their safety.

(2) Choker holes must be dug from the uphill side of the log when there is danger of the log rolling or moving.

(3) Chokers must be placed near the end of the log/tree whenever possible.

EXCEPTION: When long logs or tree-length logs are being yarded and a long end is necessary to safely land the logs/trees on the available landing space.

(4) Employees must be in the clear of logs, root wads, chunks, hazardous trees, rolling material and rigging before the go-ahead signal is given and must stay in the clear until all rigging movement has stopped.

(5) Employees must move away from the turn so as to be above or behind the turn and in the clear. They must remain on their feet and face the turn before the go-ahead signal is given.

(6) All employees must remain away from rigging that is stopped at a hangup, until the rigging has been slacked to reduce the hazard.

(7) Chokers must not be hooked or unhooked until all rigging is stopped completely.

(8) Logs must not be landed until all employees, trucks or equipment are in the clear.

(9) Logs must not accumulate in the landing chute to the point where they become a hazard to the landing personnel.

(10) Logs must be stable and secure before being approached by employees and before chokers are unhooked.

(11) An employee must not buck, limb or trim logs from a position that will expose the employee to contact with moving lines.

(12) Logs must not be placed in, moved about, or removed from the bucking area of the landing unless all employees are in the clear.

(13) An unimpaired horizontal clearance of at least three feet must be maintained between the rotating superstructure of any logging machine working on a landing and any adjacent object or surface. If this clearance cannot be maintained, a safety zone barrier must be used to isolate the hazardous area. The safety zone barrier may be a warning line constructed of rope or ribbon, supported on stanchions.

(14) "DANGER 36-INCH CLEARANCE" must be marked near the rear of the machine.

(15) Employees must not approach a machine's working circle until the operator has acknowledged that it is safe to do so.

(16) Whenever possible, chokers must be set from the uphill side of a log. Persons must not be on the lower side of a log which appears to be unstable or likely to roll.

(17) When yarding during the hours of darkness, the area must be lighted enough to allow employees to safely perform their duties. The source of light must be located and directed to create minimum shadows and glare. If using a portable tailhold, lights must be directed on equipment to allow the person to visually determine that the tailhold equipment remains stabilized.

(18) Each yarded tree/log must be placed in a location that does not create a hazard for an employee and in an orderly manner so that the trees/logs are stable before bucking or limbing is commenced.

(19) When using a yarder, loader or skidding machine, the location of the machine or position of the yarder must be such that the operator will not be endangered by incoming logs or debris.

(20) Employee(s) must be assigned to flag on roads or provide other equivalent protection where hazardous conditions are created from logging such as, but not limited to:

(a) Running wire rope lines or rigging across road grades, excluding guylines and standing skylines if lines remain a safe distance above the road to allow a vehicle to pass under; or

(b) The movement of logs, chunks, or debris across or suspended over road grades.

EXCEPTION: Where there is no through traffic, such as on a dead end road or where the property owner's permission or proper authority is granted to close a section of road, warning signs and barricades may be used instead of flagger(s).

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-577, filed 8/18/99, effective 12/1/99. Statutory Authority: RCW 49.17.040, 49.17.150 and 49.17.240. 79-10-081 (Order 79-14), § 296-54-577, filed 9/21/79.]

WAC 296-54-579 Log decks. (1) Logs must be placed in and removed from decks in a straight and orderly manner so as to minimize the hazards from rolling or shifting logs.

(2) If employees are working on the ground near the deck, the deck must be constructed and located so it is stable and provides each employee with enough room to safely move and work in the area.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-579, filed 8/18/99, effective 12/1/99. Statutory Authority: RCW 49.17.040, 49.17.150 and 49.17.240. 79-10-081 (Order 79-14), § 296-54-579, filed 9/21/79.]

WAC 296-54-581 Helicopter logging—General. (1) Prior to daily logging operations, a briefing must be conducted. The briefing must set forth the plan of operation for the pilot(s) and ground personnel. Anytime a change in operating procedure is necessary, affected personnel must be notified.

(2) Employees and equipment must remain in the clear and employees must never be under a suspended load.

(3) Employees must not work under hovering craft except for that limited period of time necessary to guide, secure, hook/unhook loads, and perform maintenance/inspections or other related job duties.

(4) The location of the drop zone, decking areas, loading areas, and designated safety zones must be established by a pilot and a responsible supervisor taking into consideration current operating conditions.

(5) Personal protective equipment.

(a) Employees must wear high visibility hard hats secured by a chinstrap.

(b) Employees hooking and receiving the load must wear high visibility vests or outer garments.

(6) Whenever approaching or leaving a support helicopter with blades rotating, employees must:

(a) Remain in full view of the pilot and keep in a crouched position;

(b) Obtain a visual or audible acknowledgment from the pilot before entering or exiting the helicopter;

(c) Avoid the area from the cockpit or cabin rearward unless authorized by the helicopter company to work there; and

(d) Exercise special caution to keep clear of rotors when visibility is reduced.

(7) Before approaching or departing the service area for maintenance, visual and/or audible communication must be established.

(8) There must be reliable communication available between the helicopter, woods crew, landing, and service areas. In the absence of radio communication there must be a designated signal person.

(9) Developed hand signals must be clearly communicated and understood by all persons working in the area who may be affected by their use.

(10) Riding the load or hook of a helicopter is prohibited except in an emergency rescue situation.

(11) Unauthorized employees must not be allowed to approach within fifty feet of the helicopter when the rotor blades are turning.

(12) Every practical precaution must be taken to provide for the protection of employees from flying objects in the rotor downwash.

(13) Loads must be properly slung. Tag lines used by ground personnel to position loads must be of a length that will not permit their being drawn up into rotors. Pressed sleeve, swaged eyes, or equivalent means must be used for all freely suspended loads to prevent hand splices from spinning open or cable clamps from loosening.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. 06-07-142, § 296-54-581, filed 3/21/06, effective 5/1/06. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-581, filed 8/18/99, effective 12/1/99. Statutory Authority: RCW 49.17.040, 49.17.150 and 49.17.240. 79-10-081 (Order 79-14), § 296-54-581, filed 9/21/79.]

WAC 296-54-58110 Helicopter logging—Landing.

(1) The landing drop zone must be large enough for the longest logs to be landed without endangering the landing crew.

(2) Landing crew must remain in the clear until the load is placed flat on the ground and chokers are released from the hook.

(3) Landings must be constructed with minimal slope for drainage in the drop zone and a decking area to prevent logs from rolling.

(4) The approach to the landing must be kept clear and long enough to prevent tree tops from being pulled into the landing.

(5) Landing personnel must be notified when chokers are being picked up.

(6) If the load will not release from the hook, the hook must be on the ground or at eye level, whichever is safer, before employees approach to release the hook manually.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-58110, filed 8/18/99, effective 12/1/99.]

WAC 296-54-58120 Helicopter logging—Yarding.

(1) Helicopters must not work in areas near enough to cutters to cause the rotor wash to affect a cutter's ability to safely control a tree or to cause dislodging of limbs.

(2) The yarding helicopter must be equipped with a siren to warn employees of any hazardous situation.

(3) Log pickup must be arranged so that the hookup crew will not work on slopes below fell and bucked timber that appears unstable and likely to roll.

(4) If the load must be lightened by the hooker, the hooker must remain on the uphill side of the load and slack given to the entire load before releasing the hook.

(5) If the load must be aborted or lightened by the pilot, the hooker must be in the clear before releasing the hook.

(6) Employees must remain in the clear as chokers are being delivered. Under no circumstances can employees move under the chokers being delivered or take hold of the chokers before they are placed on the ground.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-58120, filed 8/18/99, effective 12/1/99.]

WAC 296-54-58130 Helicopter logging—Fueling area. (1) Separate areas must be designated for landing logs and for fueling helicopter(s).

(2) Refueling any helicopter with either aviation gasoline or Jet B (turbine) type fuel while the engine is running is prohibited.

(3) Helicopters using Jet A (turbine-kerosene) type fuel may be refueled with engines running provided the following criteria are met:

(a) Unauthorized employees must not be allowed within fifty feet of the refueling operation or fueling equipment; and

(b) Fire extinguishers must be strategically located in the fueling area and must have a combined rating of at least 20A:120BC.

(4) All fueling employees must be thoroughly trained in the refueling operation and in the use of the available fire extinguishing equipment they may be expected to use.

(5) The following are prohibited within fifty feet of the fueling area or fueling equipment:

- Smoking;
- Open flames;
- Exposed flame heaters;
- Flare pots; and
- Open flame lights.

EXCEPTION: Aircraft preheaters are not prohibited. However, no fueling may be performed while the heaters are in operation.

(6) The fueling area must be posted with "no smoking" signs.

(7) Because there are many causes of static electricity, fueling employees must assume that it is present at all times. Before starting refueling operations, the fueling equipment and the helicopter must be bonded and the fueling nozzle must be electrically bonded to the helicopter. Using conductive hose is not an acceptable method of bonding. All grounding and bonding connections must be electrically and mechanically firm to clean unpainted metal parts.

(8) To control spills, fuel must be pumped either by hand or power; pouring or gravity flow is prohibited. Self-closing nozzles or deadman controls must be used and must not be blocked open. Nozzles must not be dragged along the ground.

(9) In case of a spill, the fueling operation must be immediately stopped until the person in charge determines that it is safe to resume.

(10) Helicopters with their engines stopped while being refueled with aviation gasoline or Jet B (turbine) type fuel, must comply with subsection (4) through (9) of this section.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-58130, filed 8/18/99, effective 12/1/99.]

WAC 296-54-583 Loading logs. (1) A positive means of communication must be established and used between the truck driver and the employee loading logs to control the movement of the log truck being loaded.

(2) Employees must not be permitted alongside or underneath trucks being loaded or on the load until communication has been established with the loading machine operator and the truck driver, and the employee is assured that it is safe to be there.

(3) Logs being moved or loaded must not pass over any employee or an occupied vehicle, equipment or truck cab.

(4) Standing between a truck cab and a log being loaded or unloaded is prohibited.

(5) Logs must not be lowered to the bunk while bunk or block adjustments are being made or until the employee making these adjustments is in the clear.

(6) Standing underneath a suspended trailer or its reach is prohibited.

(7) Loads must be built up or loaded in a manner to be stable without the use of wrappers. Wrappers are considered only as precautionary measures to ensure stability of the load.

(8) Where there is a danger of the grapple slipping off of logs, straps must be used in loading logs that are too large for the grapple or tongs and must be hung in both eyes.

(9) Logs must be loaded in a manner to prevent excessive strain on wrappers, binders, bunk stakes, bunk chains or straps.

(10) Logs in any tier or layer unsecured by stakes or cheese blocks must be well saddled and have their diameter centers inside the diameter centers of the outer logs of the next lower tier or layer.

(11) Bunk and wing logs must extend at least twelve inches beyond the front and rear bunks or stakes. When fixed bunks are used, logs must extend at least six inches beyond the front and rear bunk or stake.

(12) Double-ended logs above the stakes must not be loaded on the side of the load from which the binders or wrappers are intended to be released.

(13) Logs must be loaded so that no more than one-third of the weight of any log extends beyond the end of the logs or bunk supporting it.

(14) Logs must be loaded in a manner that will not impair full and free movement of the truck.

(15) Each log not contained within the stakes must be secured with at least two wrappers before the truck leaves the vicinity of the landing/loading area.

(16) All of the required wrappers must be placed on the load within sight of the landing/loading area so immediate emergency assistance can be given if necessary.

(17) Loads or logs must not be moved or shifted while binders are being applied or adjusted.

(18) The transport vehicle must be positioned to provide working clearance between the vehicle and the deck.

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(19) All limbs or knots that would project beyond the stakes or legal height must be removed before the log is loaded on the car or truck.

Note: This does not apply to incidental limbs/knots placed on loads during the normal loading process.

(20) Power saws must not be operated on top of loaded logging trucks.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-583, filed 8/18/99, effective 12/1/99. Statutory Authority: RCW 49.17.040, 49.17.150 and 49.17.240. 79-10-081 (Order 79-14), § 296-54-583, filed 9/21/79.]

WAC 296-54-584 Tongs, hooks, grapples. (1) Tongs must be maintained in good condition, properly aligned and with sharp points.

(2) Tongs must not be carried by being rested on both shoulders with the tong points around the neck.

(3) When loading logs, straps of sufficient size and length must be used where there is a danger of tongs or hooks pulling out of the log.

(4) When loading logs, tongs may be used on large logs if the logs are barked and notched to ensure a secure hold.

(5) The closing line must be securely attached to the grapple according to the manufacturer's recommendations.

(6) Loading hooks and tongs must be securely attached on the loading line with screw shackles or equivalent devices.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-584, filed 8/18/99, effective 12/1/99.]

WAC 296-54-585 Cross-haul systems. (1) In cross-haul (parbuckle) or roll-on loading systems, the skid timbers must be strong enough to support the logs being loaded and long enough to remain in place while the log is being loaded.

(2) Loaders on cross-haul systems must work beyond the ends of the logs being loaded.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-585, filed 8/18/99, effective 12/1/99. Statutory Authority: RCW 49.17.040, 49.17.150 and 49.17.240. 79-10-081 (Order 79-14), § 296-54-585, filed 9/21/79.]

WAC 296-54-587 Self-loading log trucks. (1) A safe means of access and egress must be provided to the operator's loading work station.

(2) Self-loading log truck operators must not unload their own load unless a positive means of securing the logs is provided when binders and wrappers are removed.

(3) New self-loading log trucks purchased and put in operation after January 1, 1980, must be equipped with:

(a) A check valve installed on the jib boom; and

(b) A seat that is offset from the point of attachment of the boom. The seat and boom structure must rotate concurrently.

(4) The operator of a self-loading log truck must not heel the log over the operator's work station.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-587, filed 8/18/99, effective 12/1/99. Statutory Authority: RCW 49.17.040, 49.17.150 and 49.17.240. 79-10-081 (Order 79-14), § 296-54-587, filed 9/21/79.]

WAC 296-54-589 Log trucks—General. (1) Prior to use, the operator must make a complete daily inspection of the truck and trailer with particular attention to:

- Steering apparatus;
- Lights and reflectors;
- Brake boosters;
- Brake hoses and connections;
- Reaches;
- Hitches (couplings);
- Bunks;
- Stakes;
- Bunk blocks.

The brakes must be tested before and after movement of the vehicle. The operator must submit a written list of necessary repairs to a person designated by the employer.

(2) Any defective parts that would make the vehicle unsafe to operate, must be replaced or repaired before the vehicle is placed in service.

(3) Motor vehicles used on roads not under the control of the state department of transportation, counties, or cities must be equipped with accessories necessary for a safe operation including:

- (a) Operable head lamps;
- (b) At least two tail lamps and brake lamps that emit a red light plainly visible from a distance of one thousand feet to the rear; and

(c) Two reflectors visible at night from three hundred fifty feet when directly in front of properly adjusted motor vehicle head lamps.

(4) The driver must do everything reasonably possible to keep the truck under control at all times and must not operate in excess of a speed at which the driver can stop the truck in one-half the visible distance.

(5) The area between the truck frame members, extending from the cab rearward as far as necessary to provide a safe work area, must be covered with suitable nonslip type material.

(6) Log trucks that have logs scaled at stations must have a platform on each side extending outward from the frame members at least eighteen inches, and must be eighteen inches long or as near to eighteen inches as the design of the truck permits. The treading surface of the platforms must be of nonslip material and the platform must be able to safely support a five hundred pound load.

(7) To protect the operator of vehicles from loads, there must be a substantial bulkhead behind the cab that extends up to the height of the cab.

(8) When at the dump or reload or where logs are scaled or branded on the truck, the logs must be scaled or branded before the binders are released.

(9) All vehicles, where vision of the operator in the direction of travel is impaired by the load or vehicle, must be moved only on a signal from a worker who has a clear view in the direction in which the vehicle is to be moved.

(10) Where a bridge or other roadway structure is posted with a load limit sign, log truck drivers or operators of other heavy equipment are prohibited from driving a load in excess of the posted limit over such a structure.

(11) All passengers must ride in the cab of the log truck.

(12) All trucks must keep to the right side of the road except where the road is plainly and adequately posted for left side travel.

(13) A method must be provided to ensure that the trailer will remain mounted on the truck while driving on highways or logging roads.

(14) When trucks are towed on any road, the person guiding the vehicle being towed must, by prearranged signals, govern the speed of travel. Vehicles must be towed at a reasonable speed and in a prudent manner. A tow cable or chain over fifteen feet in length must have a white flag attached at the approximate center, however, it is recommended that a rigid tow bar be used for this purpose.

(15) All rubber-tired motor vehicles must be equipped with fenders. Mud flaps may be used instead of fenders whenever the motor vehicle is not designed for fenders.

(16) All trucks must be equipped with doors with operable latches, or a safety bar or strap.

(17) Log trucks must not approach a landing while there is danger from incoming logs.

(18) While en route, the operator must check and tighten the wrappers/binders whenever there is reason to believe that the wrappers/binders have loosened or the load has shifted.

(19) Persons must not enter the area below a suspended load of logs.

(20) All trucks must be equipped with a means to protect the operator from inclement weather.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-589, filed 8/18/99, effective 12/1/99. Statutory Authority: RCW 49.17.040, 49.17.150 and 49.17.240. 79-10-081 (Order 79-14), § 296-54-589, filed 9/21/79.]

WAC 296-54-58910 Log trucks—Brakes. (1) Motor logging trucks and trailers must be equipped with brakes or other control methods that will safely stop and hold the maximum load on the maximum grade.

(2) All trucks with air brakes must be equipped with a readily visual or audible low air pressure warning device in good working order.

(3) An air loss rate out-of-service condition exists if an air leak is discovered and the reservoir pressure is not maintained when:

- (a) The governor is cut in;
- (b) Reservoir pressure is between 80 and 90 psi;
- (c) Engine is at idle; and
- (d) Service brakes are fully applied.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-58910, filed 8/18/99, effective 12/1/99.]

WAC 296-54-58920 Log trucks—Trailer hitches and safety chains. (1) All log truck and trailer combinations must be equipped with approved hitches (couplings) which must:

(a) Be capable of withstanding, in any direction, the potential stresses imposed;

(b) Be of a design which would not be rendered inoperative by dirt and debris and must be locked securely and positively; and

(c) Be attached to the truck frame or extension of the truck frame by means of not less than four machine bolts and nuts (120,000 psi material or better) inch diameter or larger, secured by lock nuts. Other means of attachment furnishing

strength equal to or greater than the above may be accepted if of approved design and application.

(2) Hitches (couplings) or parts that are broken, cracked, excessively worn, or otherwise defective hitches must be repaired before use.

(3) Each log truck and trailer combination or log truck and independent trailer combination must be provided with two or more safety chains or cables with a rated breaking strength of at least the gross weight of the towed vehicle, and:

(a) Able to hold the trailer in line in case of failure of the hitch assembly;

(b) Permanently attached to the frame of the truck or an extension of the truck frame;

(c) Form a separate continuous connection between the truck frame or extension of the truck frame and the reach or trailer;

(d) Attached not more than twelve inches from the eye of the reach or trailer;

(e) Short enough to prevent the trailer reach or tongue from contacting the ground in the event of disengagement from the truck;

(f) Designed to provide a positive connection that cannot be made inoperative by any condition of use or exposure.

(4) Safety chains and cables must be replaced immediately if they contain cut, cracked, or excessively worn links, or frayed, stranded, or otherwise defective wire rope.

(5) Butt welding of safety chain links to reach truck frame, or extension of truck frame is prohibited.

(6) Repairs to safety chains, such as cold shuts, are prohibited.

(7) Frames must not be welded or drilled into if the manufacturer recommends against it.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-58920, filed 8/18/99, effective 12/1/99.]

WAC 296-54-58930 Log trucks—Reaches and bunks. (1) Log trailers must be connected to tractors by reaches of a size and strength to withstand all normal imposed stresses.

(2) Hand-holds or other facilities must be installed on trailer tongues or trailer reaches if workers are required to manually assist in coupling them to their tractors or trucks.

(3) The reaches of unloaded trailers being towed must have and use a minimum one-inch pin near the end or an equally effective means to prevent pulling or stripping through the tunnel.

(4) Reach locks, clamps, or tighteners must be of the type that will securely lock the reach in the tunnel.

(5) All reaches must be the maximum size usable in the tunnel of a trailer.

(6) Altering a trailer tunnel to permit reduction of reach size is prohibited.

(7) Every truck or truck and trailer engaged in transporting logs loaded lengthwise must be equipped with bunks and chock blocks or stakes.

(8) Log bunks or any part of a bunk assembly bent enough to cause bunks to bind, must be straightened. Bunks must be sharp enough to prevent logs from slipping.

(9) All trucks with swivel bunks must have bunk locks or an equivalent system of holding the bunks in place while loading logs.

(2007 Ed.)

(10) The bunks or bolsters of any truck or trailer must be either curved upward or straight. Bunks with ends lower than their centers are prohibited.

(11) Enough clearance must be maintained between the bunk and the bunk rider to prevent bunk binding.

(12) Trailer bunks must have a false or tilt bunk. The channel of the bunk must be kept reasonably free of debris.

(13) Stakes and stake extensions must be installed and maintained so that the angle between bunks and stakes (and extensions if used) do not exceed ninety degrees when loaded.

(14) Frames, bunks, and running gear of log trucks must be maintained free of cracks, breaks and defects. If defects are found, they must be immediately repaired or the part replaced.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-58930, filed 8/18/99, effective 12/1/99.]

WAC 296-54-58940 Log trucks—Stakes, stake extensions and chock blocks. (1) Trucks and trailers must be equipped with bunk stakes or chock blocks of strength and sized material to perform their intended function.

(2) All stakes, stake extensions, and bunks installed on log trucks and trailers, together with the means to secure and lock the stakes in hauling position, must be designed and constructed of materials of such size and dimension that will withstand operational stresses without yield or permanent set.

(3) Stake extensions made from axle shafts or other brittle material are prohibited.

(4) The linkage used to support the stakes or chocks must be of adequate size and strength to withstand the maximum imposed impact load. Molles or cold shuts are prohibited in chains or cables used for linkage.

(5) Stake chains or cables must be equal to or better than "high test" steel chain or "plow steel" wire rope, and of a size necessary to meet the requirements of a safe working load of at least six thousand six hundred pounds. (3/8-inch alloy chain, 7/16-inch high test chain of welded link construction, and 5/8 inch improved plow steel cable in 6 x 19 and 6 x 37 construction meet this requirement.)

(6) Bunk chains containing cut, cracked, excessively worn, or otherwise defective links, must be immediately removed from service. Molles, cold shuts (welded or otherwise), or bolts are not permitted in bunk chains.

(7) The use of frayed, stranded, or otherwise defective wire rope for chock block cable or stake straps is prohibited.

(8) Only chain links approved for welding (and properly welded) or approved repair links that will develop strength equivalent to the chain, are permissible for repairs or attachments to stake chains or binder chains.

(9) Chains or cables used to secure stakes or chock blocks must be secured in a way that does not require hammering directly on them to release the stakes or blocks. Key-hole slots and similar methods of securing chains are prohibited.

(10) Deformed or defective stakes, stake securing or stake locking devices, or bunks must be immediately repaired or removed from service.

(11) Each stake and chock used to trip loads must be constructed so that the tripping mechanism is activated on the side opposite the release of the load.

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(12) Trip type stakes must be properly secured and locked in a manner that will prevent them from accidentally tripping or falling.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-58940, filed 8/18/99, effective 12/1/99.]

WAC 296-54-58950 Log trucks—Wrappers and binders. (1) On log trucks equipped with stakes, the following requirements must apply:

(a) In the hauling of a one log load, one wrapper chain or cable must be required and secured to the rear bunk. The log must be properly blocked or secured in a manner which will prevent it from rolling or shifting. An additional wrapper secured to the front bunk is optional.

(b) In the hauling of two log loads, not less than two wrapper chains or cables must be used to secure the load. The logs must be properly blocked to prevent them from rolling or shifting.

(c) On loads consisting of three or four logs not over forty-four feet in length, the load must be secured by not less than two properly spaced wrapper chains or cables. Ends of short logs not secured by such wrappers must be secured with extra wrappers. If any log is over forty-four feet in length, the load must be secured by not less than three properly spaced wrappers.

(d) Loads consisting of five or more logs, when the logs are all seventeen feet or less in length, must be secured by not less than two properly spaced wrappers. Loads consisting of five or more logs, when any log is over seventeen feet in length, must be secured by not less than three properly spaced wrappers.

(2) On log trucks equipped with chock blocks the following requirements must apply:

(a) In the hauling of a one log load, one wrapper chain or cable shall be required and secured to the rear bunk and the log must be properly blocked in a manner to prevent it from rolling or shifting.

(b) One additional wrapper chain or cable shall be required on log trucks using chock blocks over and above the requirements in subsection (1)(c) and (d) of this section.

(3) In the case of short logs loaded crosswise, the following method of securing the load must be used if the truck or trailer is not provided with solid ends of a height sufficient to prevent any log in the load from rolling off:

Not less than two chock blocks must be used at each open end of the vehicle and the load must be held with at least two wrapper chains or cables. The wrappers must be firmly attached to the end of the truck or trailer. Rigid standards or stakes may be used in lieu of chock blocks but each such standard or stake must be either rigidly connected to the bed of the truck or trailer or must be placed in a tight-fitting socket at least 12 inches in depth. Other means furnishing equivalent security may be acceptable.

(4) When two wrappers are required, they must be applied within six feet of the front and rear bunks. When more than two wrappers are required, the front and back binder must be applied within six feet of the front and rear bunks.

(5) To properly secure short logs, binders must be placed near the end, not less than twelve inches from the end of the log.

(6) Log(s) loaded on top or in outside saddles of a load must not be transported unless secured by at least two wrapper chains or cables, one of which must be placed near each end of such log.

(7) All wrappers and binders must be fastened in place prior to tightening to prevent the displacement of logs on the top of the load.

(8) All wrapper chains or cables, except in the case of one log load, must entirely surround the load. This does not apply to gut-wrappers.

(9) Gut-wrappers, when used, must be adjusted so as to be tightened by, but not carry the weight of the logs above them.

(10) A warning must be given before throwing wrappers over the load and care must be taken to avoid striking other persons with the wrapper.

(11) Each log not contained within the stakes must be secured with at least two wrappers before the truck leaves the vicinity of the landing/loading area.

(12) While moving logs, poles, or log chunks within sorting or mill yards, that could roll or slide off the truck due to snow or ice conditions, or the logs or log chunks do not extend beyond the stakes, at least two wrappers and binders must be used regardless of the height of the load.

(13) Wrapper chains or cables, binders, fasteners, or attachments thereof, used for any purpose as required by these standards must have a minimum breaking strength of not less than fifteen thousand pounds and must be rigged so that it can be safely released.

Note: 3/8-inch hi-test steel chain, 7/16-inch improved plow steel wire rope of 6 x 19 or 6 x 37 construction, or materials having equivalent strength, when in compliance with the requirements herein contained, will be acceptable. (The diameter of the wire rope is immaterial as long as it meets the minimum breaking strength requirements.)

Note: Nylon straps and ratchet binders having an equivalent breaking strength may be used when securing loads on (hay rack) log hauling systems.

(14) A loaded logging truck required to have wrappers by this section, may be moved within the loading area without wrappers only if such movement does not present a hazard to workers.

(15) For the purposes of this standard, applied bundle straps or banding are not acceptable as wrappers and binders.

(16) All loose ends of wrapper chains or cables must be securely fastened so as to prevent their swinging free in a manner that will create a hazard.

(17) Binders for securing wrappers on logging trucks must be fitted with hooks of proper size and design for the wrapper chain being used.

(18) Wrappers must be removed from service when any of the following conditions exist:

- (a) Excessively worn links on chains;
- (b) Deformed or stretched chain links;
- (c) Cracked chain links; or
- (d) Frayed, stranded, knotted, or otherwise defective wire rope.

(19) Pipe extension handles (swedes) for tightening or securing binders must be no longer than thirty-six inches. Care must be taken that a sufficient amount of the pipe extends over the binder handle.

(20) Defective binders must be immediately removed from service.

Note: See Figures 25 through 35 for illustrations of placement and number of wrappers.

**Placement and Number of Wrappers
One Log Load**

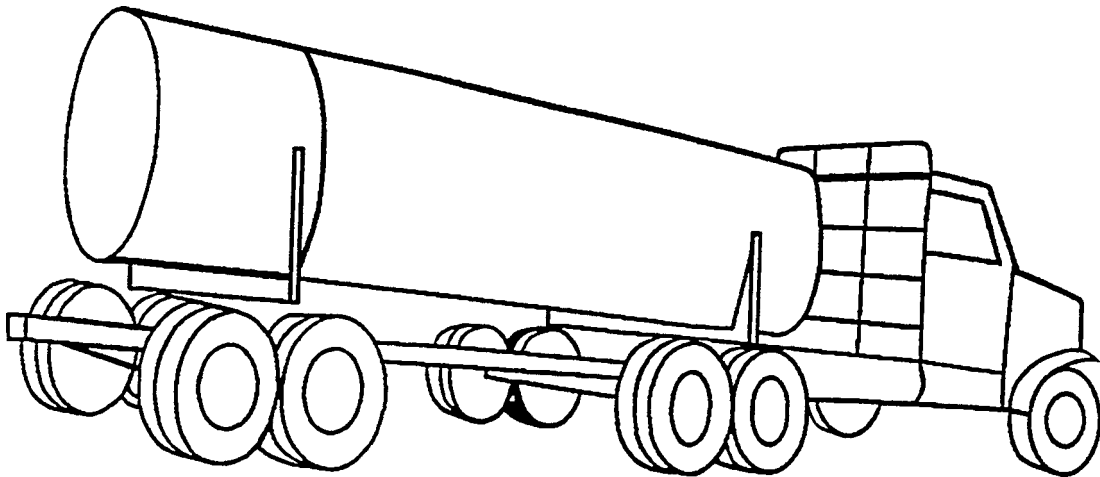


Figure 25: One Log Load

Two Log Load

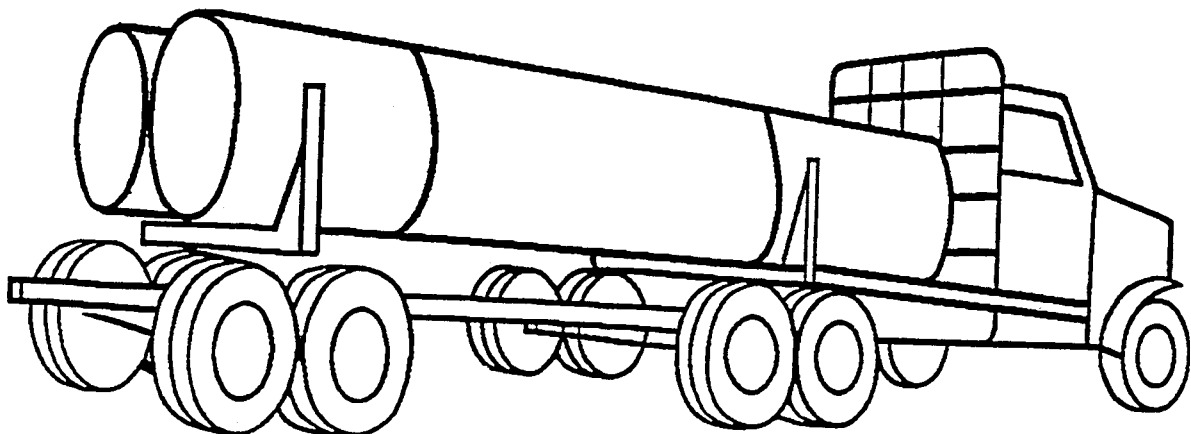


Figure 26: Two Log Load

Three or Four Log Load 44 Ft. or Less

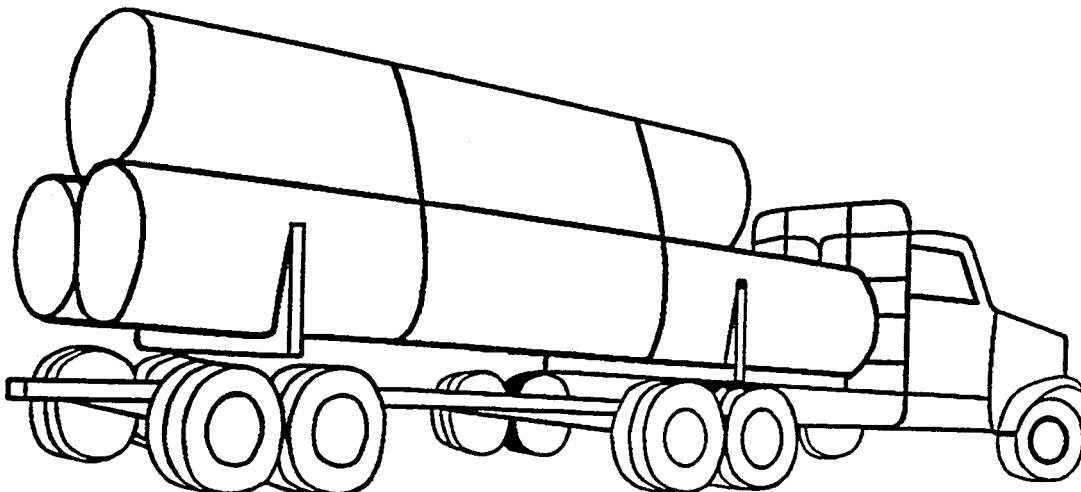


Figure 27: Three or Four Log Load 44 feet or less

Three or Four Log Loads More Than 44 Feet

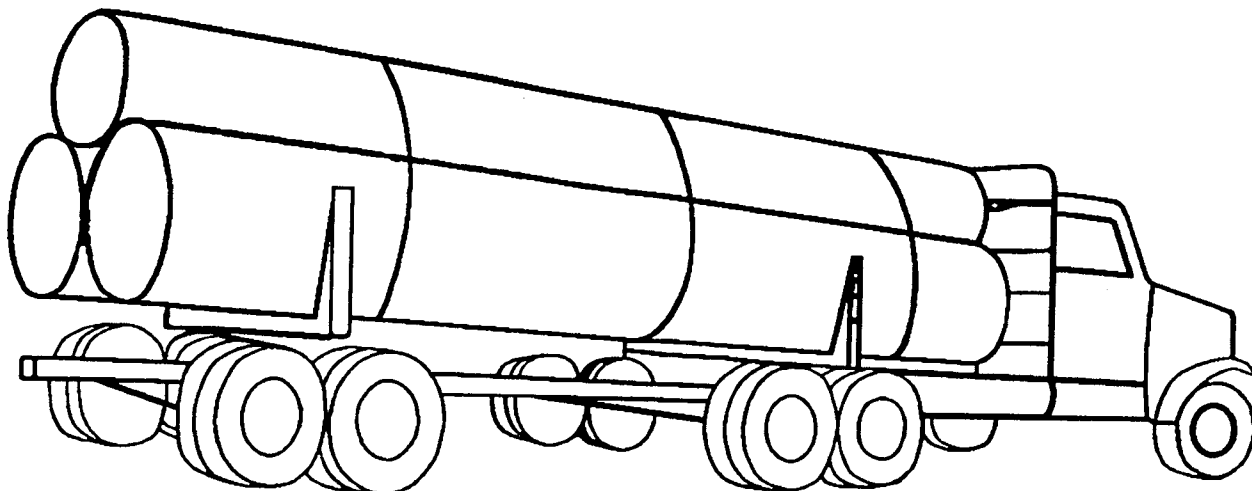


Figure 28: Three or Four Log Loads more than 44 feet

Five or Six Log Load All Logs 17 Feet or Less

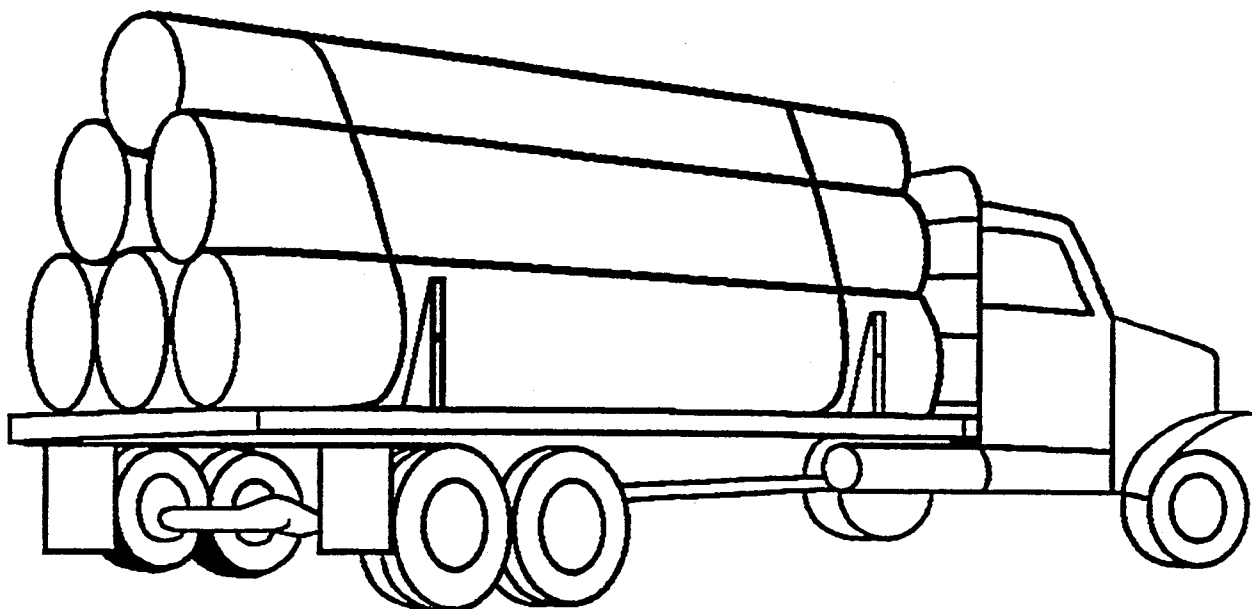


Figure 29: Five or Six Log Load All Logs 17 feet or less

Seven or More Log Load All Logs 17 Feet or Less

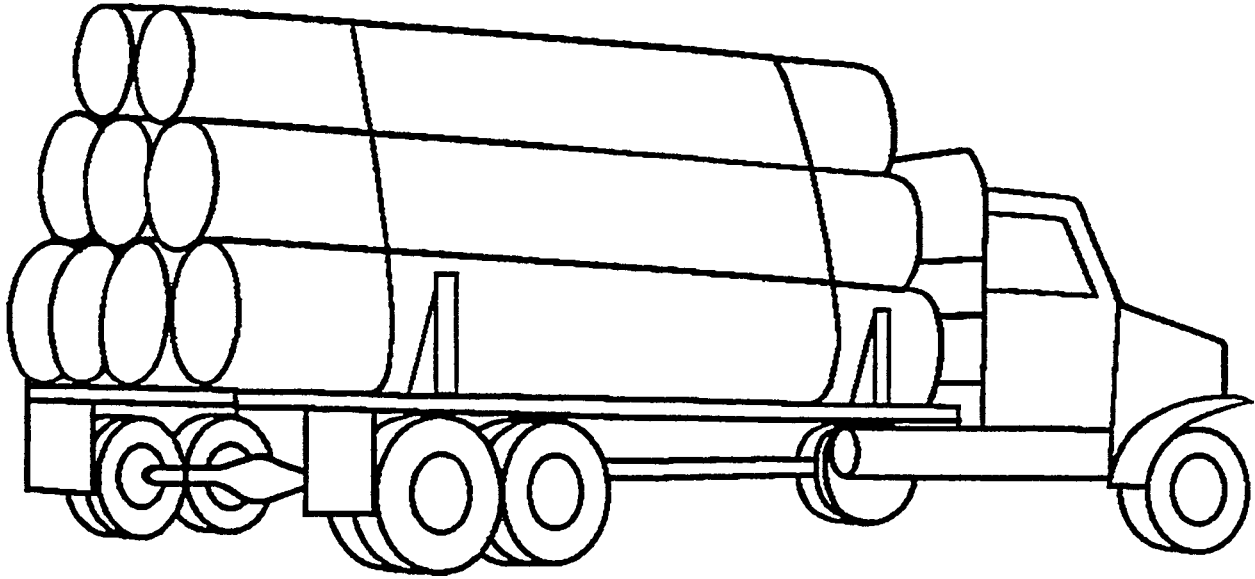


Figure 30: Seven or More Log Load all Logs 17 feet or less
Five or More Log Load If Any Logs Are More Than 17 Feet

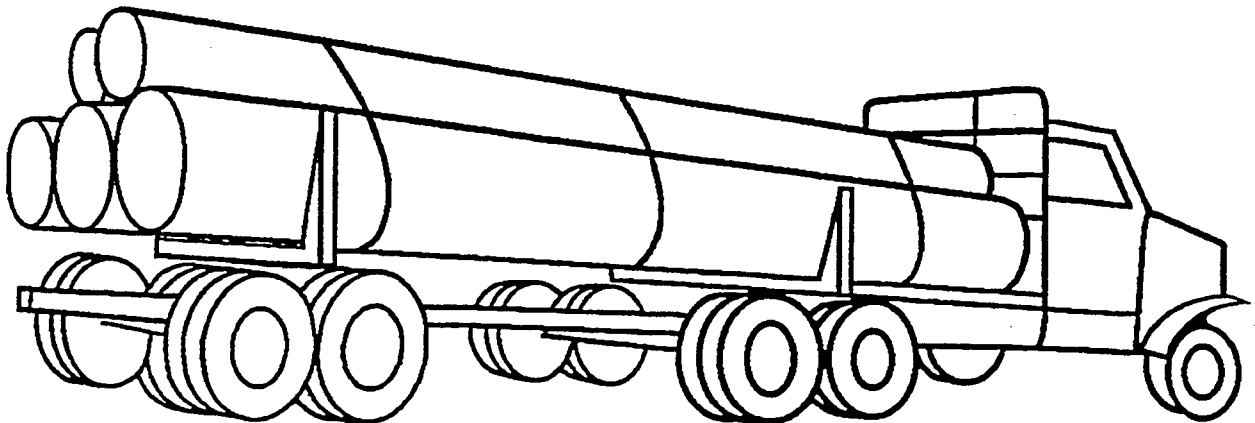


Figure 31: Five or More Log Load if any Logs are more than 17 feet
Proper Support for Logs

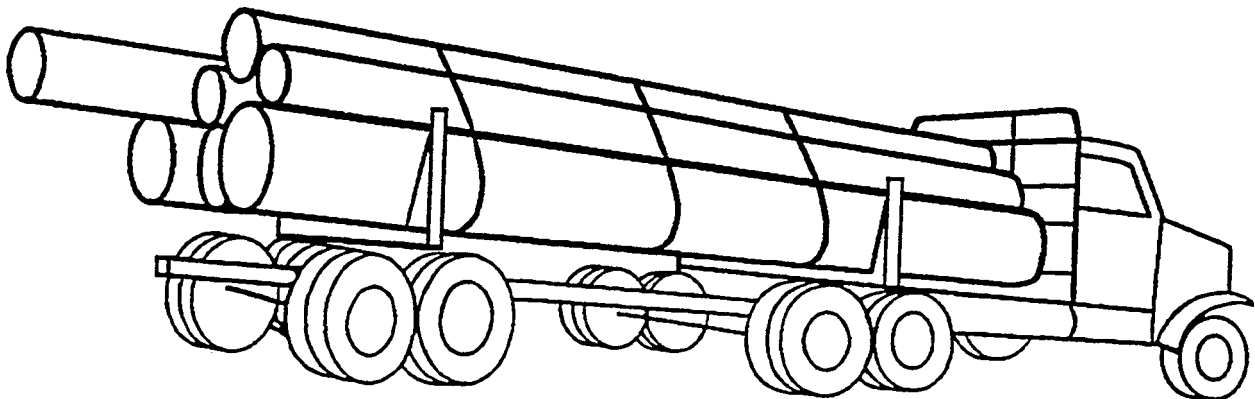


Figure 32: Proper Support for Logs

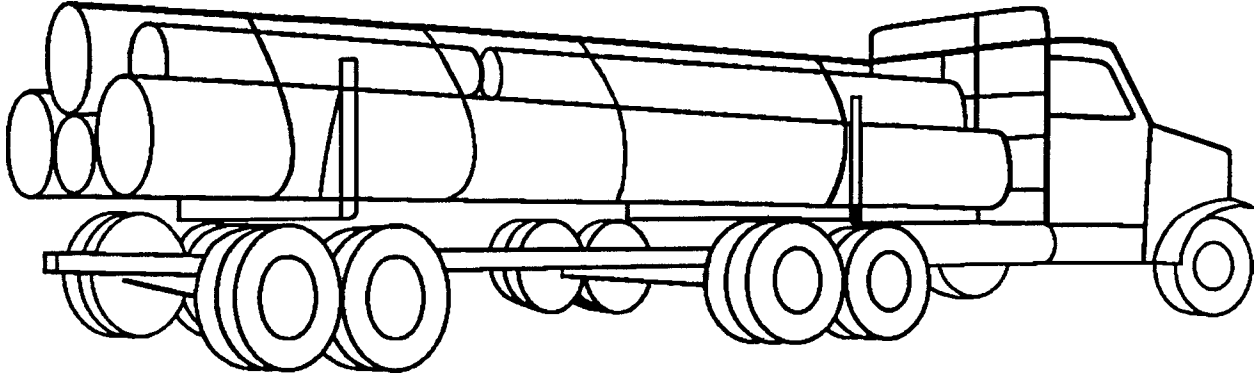
Outside Logs or Top Logs

Figure 33: Outside Logs or Top Logs
A Wrapper Must Be Near Each Bunk

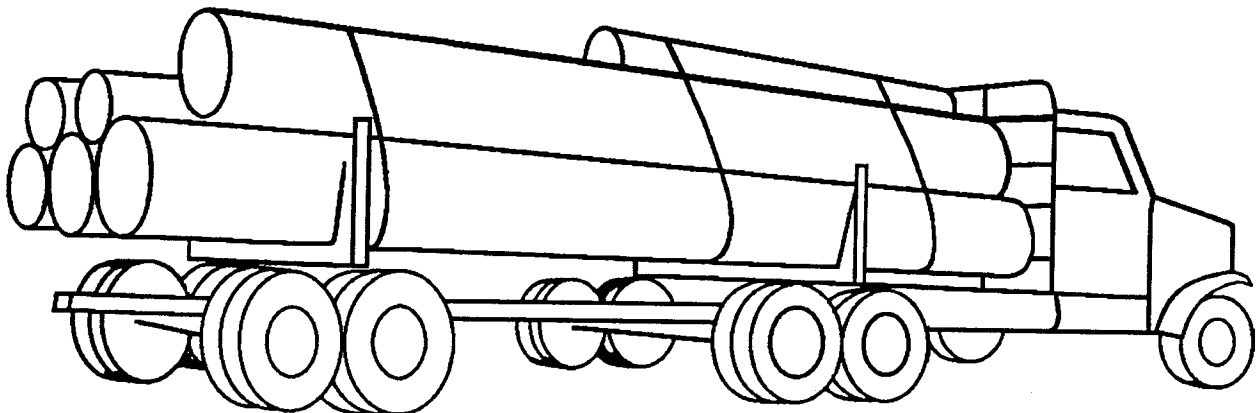


Figure 34: A Wrapper must be near each bunk
Short Logs Loaded Crosswise

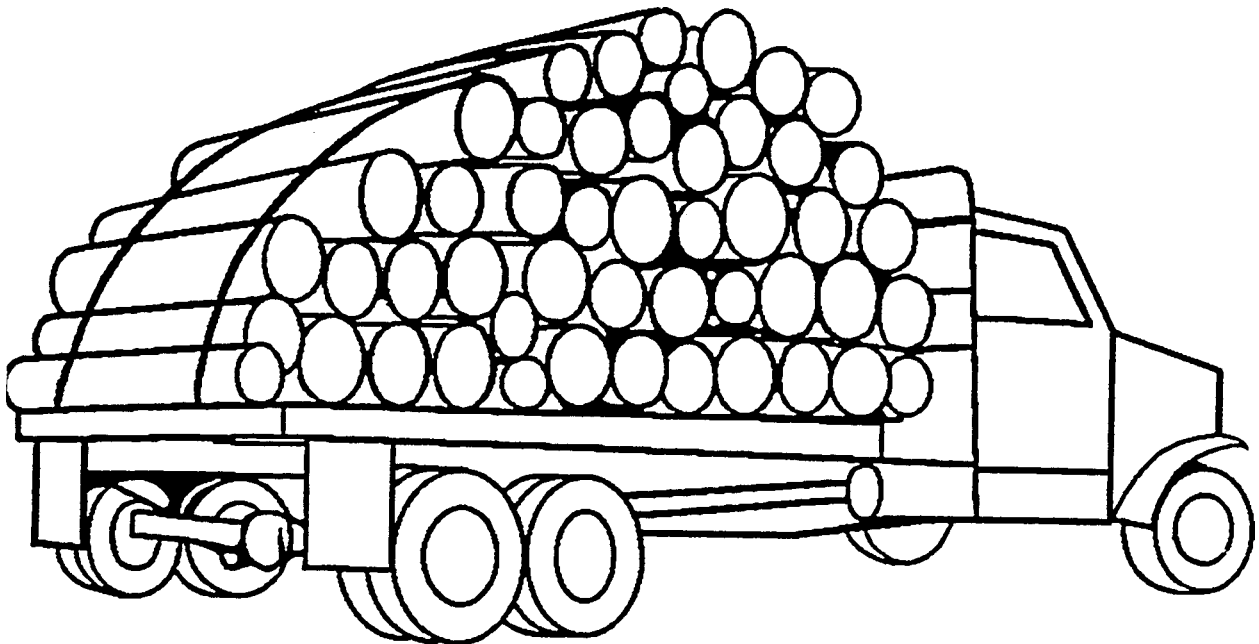


Figure 35: Short Logs Loaded Crosswise

Note: All loads of logs on logging trucks equipped with chock blocks instead of stakes, must have at least one additional wrapper over and above the requirements for trucks equipped with stakes, except on one and two log loads and trucks with short logs loaded crosswise.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-58950, filed 8/18/99, effective 12/1/99.]

WAC 296-54-58960 Log trucks—Miscellaneous requirements. (1) A truck wheel must not have more than twenty-five percent of the lugs missing or defective.

(2) All truck wheels must be maintained free of cracks, breaks, or defects.

(3) Windshields on all equipment must have windshield wipers in good working condition.

(4) Mule train trailers must have a platform on the trailer tongue at least twelve inches by twenty-four inches made of nonslip material and able to support at least three hundred pounds. The platform must be self-cleaning.

(5) Trailer loading and unloading straps, links, or chains must be fastened securely to the trailer frame and used in hoisting the trailer. The connections must be maintained in good condition and not be attached to the trailer bunk. Using molles for this purpose is prohibited.

(6) When unloading trailers from trucks, the trailers must be hoisted clear, the truck driven forward a safe distance, and the trailer lowered to within one foot of the roadway before persons approach the trailer or reach.

(7) Trailer hoisting or unloading straps must be constructed and installed in a manner enabling the loading or unloading machine to engage the strap without manual personal contact.

(8) All motor vehicles must be equipped with a horn that is audible above the surrounding noise level. The horn must be sounded before operating the vehicle in reverse gear and when necessary to alert employees.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-58960, filed 8/18/99, effective 12/1/99.]

WAC 296-54-58970 Log trucks—Steered trailers. Steered trailers, not controlled from the truck cab, must be designed, constructed, and operated as follows:

(1) A secure seat with substantial foot rest must be provided for the operator at the rear of the bunk. Any arrangement that permits the operator to ride in front of the bunk is prohibited unless a false bunk or other adequate protection is provided for the operator.

(2) The seat for the operator must be so arranged that he has an unobstructed exit from both sides and the rear.

(3) The bunk support must be so constructed that the operator has a clear view ahead at all times.

(4) Adequate means of communication must be provided between the operator and the truck driver.

(5) Eye protection and respirator must be provided for the operator.

(6) The trailer must be equipped with fenders or splash plates to protect the operator from mud and dust so far as possible.

(7) If used during periods of reduced visibility on roads not under the control of the state department of transportation, counties, or cities, the trailer must be equipped with head, tail, turn and stop lights.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-58970, filed 8/18/99, effective 12/1/99.]

WAC 296-54-591 Stationary log truck trailer loading. (1) All loading devices must be designed, constructed and maintained so as to have a five to one safety factor for the rated load capacity.

(2007 Ed.)

(2) Loaders must be high and wide enough so they can safely load the maximum-sized trailers they are expected to handle without hanging up or striking the equipment.

(3) Electric-powered trailer loading devices must be equipped with a switch or device that will safely limit the upper direction of travel of the load line.

(4) Electric motors used for hoisting must be equipped with approved overload switches or breakers.

(5) Electrical switch controls must not exceed twenty-four volts. All control switches must be the momentary-contact type that require continuous manual pressure for the hoist to operate.

(6) Pendant control switches must be suspended by a chain or other suitable device that will prevent placing a strain on the electrical cable.

(7) Pendants must be installed so that the control switch does not touch the ground when retracted.

(8) All electrical equipment must be weatherproof-type or adequately protected from the weather, and must meet or exceed the requirements of the National Electrical Code as promulgated by the director of the department of labor and industries pursuant to RCW 19.28.060.

(9) Trailer loaders, except A-frames or bridge crane, must be equipped with reach guides or devices that will keep the reach in proper alignment. A tag rope or other safe guidance device must be used to guide trailers being loaded by an A-frame loader.

(10) Access roads and the area around the trailer loading devices must be kept free of standing water and debris and maintained in good repair.

(11) The maximum capacity load to be lifted must be posted in a conspicuous location where it can be easily seen by any person operating the hoist.

(12) Trailer loading equipment must be periodically inspected at least every thirty days and must be maintained in good repair. A written report must be made and signed by the person making the inspection and kept on file by the company for twelve months.

(13) The employer must conduct an annual lifting test on each loading device and maintain a written record of the test.

(a) The written record must contain:

- The date of the test;
- The name of person conducting the test;
- The amount of weight lifted; and
- The results kept in the office of the employer or at the site.

(b) The test weight must be at least one hundred twenty-five percent of the maximum rated load and a maximum of one hundred thirty percent of the maximum rated load.

(14) Each drum must be designed and arranged in such a manner that the line will maintain lead and spool evenly without chafing, crossing, or kinking.

(15) A braking system must be installed that has the ability to safely brake and hold one and one-half times weight of the full rated load.

(16) When trailers are to be loaded after dark, sufficient lights must be provided for a safe operation.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-591, filed 8/18/99, effective 12/1/99. Statutory Authority: RCW 49.17.040, 49.17.150 and 49.17.240. 79-10-081 (Order 79-14), § 296-54-591, filed 9/21/79.]

WAC 296-54-593 Log unloading, booms, and rafting grounds—Storage and sorting areas—General. (1) At least two persons must be present for all storing, sorting, or boom work, except for boomboat operations.

(2) Employees working on, over, or along water, where there is a danger of drowning, must be provided with and wear approved personal flotation devices.

(a) Employees are not considered exposed to the danger of drowning when:

(i) Employees work behind standard height and strength guardrails;

(ii) Employees work inside operating cabs or stations that will prevent accidentally falling into the water; or

(iii) Employees wear approved safety belts with lifeline attached to prevent falling into the water.

(b) Before and after each use, personal flotation devices must be inspected for defects that would reduce their designed effectiveness. Using a defective personal flotation device is prohibited.

(c) An approved personal flotation device must be approved by the United States Coast Guard as a Type I PFD, Type II PFD, Type III PFD, or Type V PFD, or their equivalent, as required in 46 CFR 160 (Coast Guard Lifesaving Equipment Specifications) and 33 CFR 175.23 (Coast Guard table of devices equivalent to personal flotation devices). Ski belt or inflatable personal flotation devices are prohibited.

(3) In operations where regular logging machinery, rigging, etc., is used, the applicable rules apply.

(4) The employer must provide and ensure the use of artificial lights where employees work between the hours of sunset and sunrise. The lights must be located in a manner that will:

- Be reasonably free of glare;
- Provide uniform distribution of illumination; and
- Avoid sharply defined shadows.

(5) On all log dumps, adequate power for the unloading method used must be provided. All machines used for hoisting, reloading, or lowering must be of an approved design and have enough power to control or hold the maximum load imposed in mid-air.

(6) Methods of unloading logs must be arranged and used in a manner to provide full protection to all employees.

(7) Binders must not be released from any load until an effective safeguard is provided.

(8) All mobile log handling machines must be equipped with a means to prevent the logs from accidentally leaving the forks, and it must be used.

(9) The operator of the unloading machine must have an unobstructed view of the unloading area or must make certain no one is in the area where the logs are to be unloaded. Rear-view mirrors must be installed on mobile log handling equipment to assist the operator in determining that the area behind the machine is clear before backing up.

(10) Unloading lines must be arranged so that it is not necessary for an employee to attach them on the pond or dump side of the load.

(11) Life rings with a minimum of ninety feet of 1/4-inch line with a minimum breaking strength of five hundred pounds attached, must be provided at convenient points adjacent to water that is five feet or more in depth. Life rings must be a minimum of thirty inches outside diameter and seven-

teen inches inside diameter and be maintained so as to retain a thirty-two pound positive buoyancy.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060, 06-07-142, § 296-54-593, filed 3/21/06, effective 5/1/06. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050, 99-17-117, § 296-54-593, filed 8/18/99, effective 12/1/99. Statutory Authority: RCW 49.17.040, [49.17].050 and [49.17].060, 96-22-013, § 296-54-593, filed 10/28/96, effective 1/1/97. Statutory Authority: RCW 49.17.040, 49.17.050, 49.17.240, chapters 43.22 and 42.30 RCW, 80-11-057 (Order 80-15), § 296-54-593, filed 8/20/80. Statutory Authority: RCW 49.17.040, 49.17.150 and 49.17.240, 79-10-081 (Order 79-14), § 296-54-593, filed 9/21/79.]

WAC 296-54-59310 Log unloading, booms, and rafting grounds—Water dumps. (1) All water dumps must have brow logs except when logs are lifted from the load. If portable equipment is used, adequate stops must be provided to prevent equipment from running off the dump.

(2) Where necessary for employees to walk alongside loads and equipment on trestles or fills, a minimum twenty-two inch wide walkway must be provided, unless otherwise specified.

(3) All decks and plankways on log dumps must be kept in good repair and free from bark and other debris. Roadways must not be inclined more than one inch to twelve inches across the driving surface.

(4) The use of small bridge-over logs, planking, or timbers between regular foot logs, or walkways, which will not support the weight of at least three persons are prohibited. All regular foot logs must be barked on the upper side.

(5) Electric-powered hoists using hand-held cord remote controls in grounded locations must be actuated by circuits operating at no more than twenty-four volts. All control switches must be the momentary contact type that require continuous manual pressure for the hoist to operate.

(6) Roadbeds at log dumps must be hard-packed gravel, heavy planking, or equivalent material, and must be of sufficient width and even surface to ensure safe operation of equipment.

(7) Where logs are unloaded on to rollways, enough space must be provided between the top of the skids and the ground to clear the body of a person.

(8) When a brow log is used with a parbuckle system, all persons are prohibited from going between the brow log and the load of logs at any time.

(9) A positive safeguard must be provided to prevent logs from leaving the loads on the side opposite the dump. Unloading lines, crotch lines, or other equivalent means must be arranged and used in a manner to prevent any log from swinging or rolling back.

(10) All employees must remain in the clear until all moving equipment has come to a complete stop.

(11) Logs must not be unloaded by peaves or similar manual methods, unless means are provided and used that eliminate the danger from rolling or swinging logs.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050, 99-17-117, § 296-54-59310, filed 8/18/99, effective 12/1/99.]

WAC 296-54-59320 Log unloading, booms, and rafting ground—Boom and rafting grounds. (1) Breaking of log jams by peavy method is prohibited, except in river drive or when a jam occurs away from a mechanical means or the dump.

(2) Wooden pike poles must be made of continuous, straight-grained No. 1 material.

(a) Defective poles, blunt or dull pikes must not be used.

(b) Conductive pike poles must not be used where there is a possibility of coming in contact with energized electrical conductors.

(3) Stiff booms must be made of at least two boom sticks and must be at least thirty-six inches wide measured outside to outside of the logs. The boom sticks must be fastened with at least 4" x 6" cross ties, or cable lashings notched into the boom sticks may be used when stiff booms are exposed to heavy swells. Stiff booms must be kept free of loose bark and maintained in good repair.

(4) A walkway thirty-six inches wide with standard hand railing must be provided from the shore end of stiff boom to shore.

(5) All sorting gaps must have a substantial stiff boom on each side of gaps. Such stiff booms or walkways must be planked over.

(6) Boom sticks must be reasonably straight with no protruding knots or loose bark. They must be able to support above the water line at either end the weight of one employee and equipment or two hundred fifty pounds.

(7) Foot logs must be reasonably straight with no protruding knots or loose bark and large enough to support above the water line at either end the weight of two employees and equipment or five hundred pounds.

(8) Unsafe boom sticks must be marked by three chopped crosses ten feet from the butt end, and those sticks must not be used as boom sticks.

(9) Gaps between boom sticks must not exceed twenty-four inches. All wire must be removed from boom sticks and boom chains before they are reused or hung in rafting stalls.

(10) When permanent cable swifters are used, they must be arranged so that they are within easy reach of the rafter without rolling the boom sticks on which they are fastened. When cables become hazardous to use because of jagers, they must be discarded.

(11) When a floating donkey or other power-driven machinery is used on a boom, it must be placed on a raft or float with enough buoyancy to keep the deck of the raft or float well above water. Wherever employees walk, the deck of the raft or float must be planked over with at least two inch planking, and kept in good repair.

(12) When doglines used in rafting, brailing, or stowing logs become hazardous to use because of jagers, they must be discarded.

(13) Sufficient walkways and floats must be installed and securely anchored to provide safe passage for employees.

(14) Walkways alongside sorting gaps must be at least four feet wide. Other walkways must be at least twenty-two inches wide.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-59320, filed 8/18/99, effective 12/1/99.]

WAC 296-54-59330 Log unloading, booms, and rafting grounds—Boats and mechanical devices on waters.

(1) Before starting the boat motor, any spilled fuel must be removed and vapors must be exhausted from any area in which they may accumulate.

(2) The bilge area must be kept clean and oil, grease, fuel, or highly combustible materials must not be allowed to accumulate.

(3) Adequate ventilation equipment must be provided and used for the bilge area to prevent the accumulation of toxic or explosive gases or vapors.

(4) Adequate ventilation equipment must be provided and used for the cabin area on enclosed-cabin boats to prevent an accumulation of harmful gases or vapors.

(5) Deck and cabin lighting must be provided and used where necessary to provide safe levels of illumination aboard boats. Boats operated between sunset to sunrise, or in conditions of restricted visibility, must display navigation lights as required by the United States Coast Guard. Searchlights or floodlights must be provided for safe navigation and to illuminate working or boarding areas adjacent to the craft.

(6) On craft used by employees wearing calked shoes, all areas where employees must stand or walk must be made of or be covered with wood or other suitable matting or nonslip material. The covering must be maintained in good condition.

(7) Each boat must:

(a) Be provided with a fire extinguisher; and

Note: For additional requirements relating to portable fire extinguishers see WAC 296-800-300.

(b) Have a life ring with at least fifty feet of one-fourth inch line attached.

Note: On log broncs, boomscoters, or other small boomboats where all occupants are required to wear life saving devices and a life ring would present a tripping hazard, the life ring may be omitted.

(8) Along docks, walkways, or other fixed installations on or adjacent to open water more than five feet deep, approved life rings with at least ninety feet of one-fourth inch line attached, must be provided. The life rings must be spaced at intervals not exceeding two hundred feet and must be easily visible and readily accessible.

(a) When employees are assigned work at other casual locations where exposure to drowning exists, at least one approved life ring with at least ninety feet of line attached must be provided in the immediate vicinity of the work assigned.

(b) Lines attached to life rings on fixed installations must be at least ninety feet long, at least one-fourth inch in diameter, and have a minimum breaking strength of five hundred pounds. Similar lines attached to life rings on boats must be at least fifty feet long.

(c) Life rings must be United States Coast Guard approved thirty-inch size.

(d) Life rings and attached lines must be maintained to retain at least seventy-five percent of their designed buoyancy and strength.

(e) Where work is assigned over water where the vertical drop from an accidental fall would exceed fifty feet, special arrangements must be made with and approved by the department of labor and industries prior to such assignment.

(9) Log broncs, boomscoters, and boomboats must not be loaded with employees or equipment in a way that adversely affects stability or seaworthiness.

(10) Boats must not be operated at excessive speed or handled recklessly.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 01-17-033, § 296-54-59330, filed 8/8/01, effective 9/1/01; 99-17-117, § 296-54-59330, filed 8/18/99, effective 12/1/99.]

WAC 296-54-59340 Log unloading, booms, and rafting grounds—Dry land sorting and storage. (1) Unauthorized foot and vehicle traffic is prohibited in the sorting or storage area.

(2) Logs must be stored in a safe and orderly manner. Roadways and traffic lanes must be kept clear of protruding ends of logs and debris.

(3) Dry deck log storage areas must be kept orderly and maintained in a condition conducive to safe operation of mobile equipment. Roadways and walkways must have a smooth hard-packed surface wide enough to permit a safe operation. Bark, mud, and other debris must not be allowed to accumulate to the extent they constitute a hazard to the operation.

(4) The employer must implement an effective method to control dust at log dumps and in sorting and storage areas.

(5) Only an authorized person shall operate or ride any lift truck, log stacker, or log unloader.

(6) Signaling log unloader operators at dry deck areas by throwing bark or chips in the air is prohibited. Hand, horn signals or other safe, effective means must be used at all times.

(7) Unnecessary talking to the operator while operating controls of a log stacker or log unloader is prohibited.

(8) Lift forks and arms of unloading machines must be lowered to their lowest position, and all equipment brakes set before the operator leaves the machine unattended.

(9) Log unloaders or stackers must not be moved about the premises for distances greater than absolutely necessary with the lift extended above the driver's head or with loads lifted higher than is necessary for vision.

(10) When truck drivers are out of the cab, they must be in the clear, and in view of the log unloader before the lift forks are moved under the load and the lift is made.

(11) Where logs are offloaded onto a dry deck by unloading lines, a self-releasing mechanism must be used. Employees are prohibited from climbing dry decks to release unloading lines.

(12) Employees must not enter the hazardous area near or under loads of logs being lifted, moved, or suspended.

(13) When log unloaders and log stackers are designed so that logs being handled may jeopardize the safety of the operator, the employer must provide overhead protection and any other necessary safeguards.

(14) Log unloaders and log stackers must be equipped with a horn or other audible warning device. If vision is impaired or restricted to the rear, the warning device must be sounded before operating the vehicle in reverse gear and periodically while backing. The warning device must be operative at all times.

(15) A limit stop, which will prevent the lift arms from over-traveling, must be installed on electric powered log unloaders.

(16) Shear guards must be installed on unloading machines and similar equipment on which the arms pivot and move alongside the operator creating a pinch point at that location.

(17) All forklift log handling machines must be equipped with a grapple arms and the arms must be used whenever logs are being carried.

(18) When log trucks are loaded by a log stacker and the lay of any log is higher than the stakes, the log stacker must remain against the completed load, or other suitable protection provided, to prevent the logs from falling until at least two wrappers and binders have been applied.

(19) All binders and wrappers must remain on the load until an approved safeguard has been provided to prevent logs from rolling off the side of the truck or trailer when binders are released. A shear log, or equivalent means, must be provided to ensure the log truck will be stationed close enough to the wrapper rack so that a log cannot fall between the log truck and the wrapper rack when removing binders and wrappers. At least one binder must remain secured while relocating or tightening other binders. Crotch lines, forklifts, log stackers, log unloaders, or other effective means must be used for this purpose.

(20) An extra wrapper or metal band of equal strength must be placed to hold the logs when it is necessary to remove a wrapper to prevent it from being fouled by the unloading machine.

(21) Machines with arms that block the regular exit when in the up position must have an emergency exit installed.

(22) Riding on any part of a log handling machine except under the canopy guard is prohibited.

(23) Identification tags must not be applied or pulled unless logs are resting in a stationary place, such as bunks, cradles, skids, or sorting tables.

(24) Employees must not approach the immediate vicinity of a forklift-type log handling machine without first notifying the operator of the person's intention and receiving an acknowledgement from the operator.

(25) When dry land log dumps use unloading methods similar to those of water dumps, the safety standards for water dumps apply.

(26) When logs are handled between sunset and sunrise or other periods of poor visibility, the employer must provide illumination that meets the requirements of WAC 296-800-210 relating to illumination.

(27) Air operated stake releases must meet the following requirements:

(a) The air supply must be taken from the "wet" air reservoir or from the accessory air line to a spring loaded, normally closed control valve;

(b) The control valve must be located in the cab, positioned so that it is accessible only from the operator's position;

(c) The control valve must be fitted with a spring-loaded cover or otherwise guarded against inadvertent operation; and

(d) A separate air line must extend from the control valve to the tractor and trailer stake release chambers. The air line must be clearly identified or installed so that it cannot be mistaken for the service or emergency air line.

(28) Each deck must be constructed and located so it is stable and provides each employee with enough room to safely move and work in the area.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 01-11-038, § 296-54-59340, filed 5/9/01, effective 9/1/01; 99-17-117, § 296-54-59340, filed 8/18/99, effective 12/1/99.]

WAC 296-54-595 Transporting crews.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-595, filed 8/18/99, effective 12/1/99. Statutory Authority: RCW 49.17.040, [49.17].050 and [49.17].060. 96-22-013, § 296-54-595, filed 10/28/96, effective 1/1/97. Statutory Authority: RCW 49.17.040, 49.17.050, 49.17.240, chapters 43.22 and 42.30 RCW. 80-11-057 (Order 80-15), § 296-54-595, filed 8/20/80. Statutory Authority: RCW 49.17.040, 49.17.150 and 49.17.240. 79-10-081 (Order 79-14), § 296-54-595, filed 9/21/79.]

WAC 296-54-59510 Speeders used to transport crews. (1) All speeders must be equipped with two separate and independently operated braking systems, either of which must be of sufficient capacity to lock all wheels when speeder is fully loaded;

(2) All speeders used for transporting crews must be equipped with methods for sanding tracks, operative for both directions of travel.

(3) Electric lights of sufficient candle power and range so that vehicle can be stopped within the range of the beam, and which will shine in the direction of travel, must be provided on all speeders.

(4) Adequate tail lights must be installed and maintained in good order.

(5) Automatic windshield wipers of sufficient capacity to maintain clear visibility must be installed on all speeders.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-59510, filed 8/18/99, effective 12/1/99.]

WAC 296-54-59520 Trailers used to transport crews.

(1) When trailers are coupled behind speeders, they must be equipped with two separate and independent braking systems, either must be of sufficient capacity to lock all wheels when the trailer is fully loaded. One of these must be power operated and must be controlled from the speeder; the other manually operated from the trailer. One person must be designated to operate this brake in case of emergency.

(2) All trailers must be coupled to speeders with metal couplings and safety chains or straps of sufficient strength to withstand the impact caused by a broken coupling.

(3) No trailer shall coast or be used as a crew car without being attached to a speeder.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-59520, filed 8/18/99, effective 12/1/99.]

WAC 296-54-597 Railroads.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-597, filed 8/18/99, effective 12/1/99. Statutory Authority: RCW 49.17.040, [49.17].050 and [49.17].060. 96-22-013, § 296-54-597, filed 10/28/96, effective 1/1/97. Statutory Authority: RCW 49.17.040, 49.17.150 and 49.17.240. 79-10-081 (Order 79-14), § 296-54-597, filed 9/21/79.]

WAC 296-54-59710 Railroad construction and maintenance. (1) All construction must be according to safe logging practices as to size of rails, ties, track accessories and methods of installing same.

(2007 Ed.)

(2) Rail guards must be placed on main lines and spurs, consistent with the type of traffic and general local conditions.

(3) Rail anchors of approved design must be installed wherever practicable.

(4) Frogs, switches, and guard rail ends must have either patent or wooden foot guard blocking installed.

(5) Slip plates must be used under all switches and switch points.

(6) All above ground wire for permanent telegraph or telephone lines used for dispatching must be well strung on insulators and must be clear of the ground and obstructions.

(7) Where telephone lines are strung under or near power lines, foot stools mounted on insulators in front of telephone boxes must be used, unless other protection is provided, which affords a substantially equivalent measure of safety.

(8) Foundations, pile trestles, framed bent trestles, mud sills, or other framework of all structures must be adequate to support the maximum imposed loads without exceeding the maximum safe working unit stresses.

(a) The structure must be maintained in good condition and repair.

(b) The structure must be inspected at least annually by a qualified person.

(c) The employer must maintain records of the inspections and make the records available to the department on request.

(9) Outside wooden guard rails must be installed on all railroad bridges except that outside wooden rails will not be required where inside steel guard rails are used;

(a) They must extend not less than six inches above the top of the ties and must be bolted or spiked to ties at intervals of not more than five feet; and

(b) Spacer blocks must be used unless ties are spiked to stringers, or guard rails are dapped to avoid need for spacer blocks.

(10) Guard rails must extend at least six inches above the top of the ties and are bolted or spiked to ties at maximum intervals of five feet. Spacer blocks must be used unless ties are spiked to stringers, or guard rails are dapped to avoid need for spacer blocks.

(11) Regular bridge ties of not less than ten feet in length must be used on all railroad bridges constructed after the effective date of these standards.

(12) Trestles and bridges longer than two hundred fifty feet must have safety platforms with safe standing space for two persons installed. The platforms must be spaced so that a person on the trestle or bridge is never more than one hundred twenty-five feet from a safety platform or the end of the bridge or structure.

(13) All railroad bridges and trestles used regularly as footways must have a plank walkway between the rails that is at least twelve inches wide and two inches thick. The walkway must extend from end to end of the bridge or trestle.

(14) A suitable substantial walkway at least three feet wide with handrail must be installed on bridges or trestles where train crews must perform routine inspection or repair work on trains. Substantial platforms and handrails must be provided where switches are located on bridges or trestles. Adequate clearance must be allowed for the throw of the switch.

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(15) All dangerous trees, snags or brush must be cleared a safe distance from both sides of the track. Any obstruction that will create a transportation hazard must be removed.

(16) Material must be provided that will promote secure footing at places alongside the track where employees customarily perform duties, such as inspecting loads, setting brakes by hand, or throwing switches.

(17) The distance between any main tracks and a side track must allow a clearance of four feet between bunk ends and locomotive cabs.

(18) The following clearances must be maintained:

(a) At least eight feet horizontal clearance on each side of the center line of standard gauge mainline railroads; and

(b) At least twenty-two feet vertical clearance above the top of each rail (according to standard railroad engineering practices).

(19) Derailers must be installed as follows:

(a) Derailers must be installed and used on all landings, passing tracks, and spurs where cars are left on a grade.

(b) Derailers must be close to standing equipment.

(c) The operation of a derailer must not create a hazard to buildings and other railroad lines.

(d) Derailers must not be installed on the inside rail on a sharp curve.

(e) Derail signs must be set on both sides of the track even with the derailer.

(f) An unneeded derailer must be removed or rendered inoperative.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-59710, filed 8/18/99, effective 12/1/99.]

WAC 296-54-59720 Railroad operations. (1) Employees must report accidents, detention of trains or speeders, failure in supply of fuel or water, defects in track, bridges, or signals to the supervisor by the quickest possible method.

(2) Any logging railroad may maintain a special set of operating rules applicable to their logging operation, provided that said rules are acceptable to the department of labor and industries.

(3) Each logging railroad operation with more than one piece of railroad equipment in operation, must have a dispatcher on duty. All equipment must receive clearance from the dispatcher.

(4) Train crew size must be based on the number of persons needed to safely operate the train under all prevailing conditions. When necessary to set hand brakes, two or more persons must be assigned to set the brakes and to give signals.

(5) All locomotives must be equipped with sanding devices for both rails, front and rear, in proper working order. Clean, dry sand should be used.

(6) Locomotives must be equipped with power brakes (air or steam) on all driving wheels. Tenders must also have power brakes.

(7) All locomotives and speeders, operating between sunset and sunrise or other periods of reduced visibility, must be equipped with and use head lights that shine in the direction of travel. The lights must be bright enough so the train can be stopped within range of the light beam. Cab lights must be provided and maintained so the operators can see from their required positions the gauges and equipment necessary for operation.

(8) All locomotives must be equipped with proper grab irons, hand holds, steps, and running boards.

(9) All locomotives must be equipped with automatic couplers, suitable for low or high draw-bars.

(10) On all rolling stock, wheels with sharp or badly worn flanges, must be replaced. Avoid using flat wheels.

(11) All locomotives with tender must have an apron of proper length and width to ensure safety. The apron must be roughened to ensure secure footing.

(12) Handholds and footboards must be provided on locomotive cranes, except where the cab overhangs the end of the car.

(13) Trains and speeders must not exceed a safe speed.

(14) The trainmen must test the air brakes before leaving the terminal. Enginemen must not proceed until they are satisfied by brake action that the brakes are able to control the train.

(15) All of the cars in a train must have brakes in good operating condition.

(16) On railroads where joint logging operations of two or more firms are necessary, trains must be dispatched at least fifteen minutes apart. Red lights must be displayed on the rear of such trains at night or when visibility is poor.

(17) Whenever cars are left on grades, derailers must be provided. Derail signs must be placed near derailers. In setting out equipment, care must be used in seeing that proper clearance is provided.

(18) Standard pressure for mountain grades requires a pressure of ninety pounds in train pipe, one hundred ten pounds in main reservoirs (low pressure) and one hundred thirty pounds in high pressure to ensure quick releasing of brakes and recharging of auxiliaries. Engineer must see that the engine carries these pressures and that sanders, both forward and rear, are in working order. On all heavy grades the high pressure retaining valve must be used and before train is started from landing, a test of brakes must be made and piston travel adjusted, if necessary, and retaining valves put up. Engineer must start train away from landing slowly, giving wheels a chance to roll before applying brakes and, to avoid skidding of wheels, using sand freely. Brakes should then be applied immediately and released, allowing the retaining valves to hold the train while train pipe and auxiliaries are being recharged. Train speed should be held to the required rate by setting and releasing brakes as it is necessary to control train.

(19) When necessary to leave loads on a pass while switching a side, loads must be left close to the derailer, air set and enough hand brakes set up, before cutting the engine from the train.

(20) The engineer must see the car or signal person when making couplings, giving the train crew enough time to align drawheads and open knuckles of coupler, especially on curves, except when using radios.

(21) Drawbars should not be aligned with the foot while cars or engines are in motion. The train crew must not climb between cars while in motion. Engineers must not drift too close to switches that are to be thrown. The position of switch points should always be observed after throwing switch. The switch lever should be pushed firmly into the notch before leaving the switch. No persons except trainmen, unless authorized, shall ride on engine footboards. Throwing objects

from the train or engine while in motion is prohibited. A bell must be rung or whistle blown before moving the locomotive.

(22) Equipment must not be pushed ahead of a locomotive unless a brake tender is on the head car in constant view of the engineer or second brake tender in a position to receive and pass the signal to the engineer.

(23) In addition to air brakes, hand brakes must be provided on all cars and maintained in good working order.

(24) Hand brakes must be easily accessible to brake tenders when cars are loaded. When wheels or staff brakes are used they should be placed on the side opposite the brow log at the dump to prevent their damage when cars are unloaded. All switch throws, walkways, and cleared areas for brake tenders must be on the hand brake side.

(25) All brake hickies must be made from three-fourths inch hexagon steel (high grade) and be twenty-four inches with a good claw on one end to fit the wheel and a knob on opposite end to prevent slipping from the brakeman's hand.

(26) All railroad trucks and cars, where brakes are set by hand while in motion, must have good footboards and toe-boards on the brake end.

(27) A ten-inch bunk block is recommended on all trucks to prevent logs from slipping over block.

(28) All cars other than logging trucks must have hand hold and foot steps to permit employees to get on and off easily and safely.

(29) All cars and trucks regularly operated must have automatic couplers.

(30) Locomotives and cabooses must carry the following equipment:

- 1 red light (lantern type)
- 3 red flags
- At least 3 fuses

(31) When a train stops between telephones, or where the rear of a train extends beyond yard limits, the rear of the train must be properly protected.

(32) A whistle sign board must be placed one thousand two hundred feet from each side of highway crossings.

(33) A rail clamp must be placed to hold cars left on a grade on main line or spurs.

(34) All cars and trucks must be legibly numbered so that those with defects may be reported and taken out of service. Each locomotive, speeder, or other self-propelled vehicles must be numbered, or otherwise made readily identifiable.

(35) All cars used for hauling logs must be equipped with patent stake bunks, or bunks with chock blocks and/or chains, constructed so that the block can be released from the opposite end of the bunk unless solid stakes are used.

(36) All main line trains of more than ten loaded cars must have a caboose at the rear of the train.

(37) All logging operations having both truck roads and railroads must post signs at intersections same as public crossings.

(38) The following engine whistle signals are established as standard and are taken from the American Association of Railroads. The signals prescribed are illustrated by "o" for short sounds and "-" for long sounds. Audible whistle must be sounded when approaching camps, junctions, grade crossings and other prescribed places as required by the American Association of Railroads:

One short	(o) Stop, apply brakes.
Two long	(—) Release brakes.
Three long	(—) When running, train parted, to be repeated until answered by hand signal.
Two short	(oo) Answer to any signals not otherwise provided for.
Three short	(ooo) When train is standing back.
Four short	(oooo) Call for signals.
Two long, two short	(—oo) Approaching highway crossing at grade.
One long	(-) Approaching station, rollway, chute, crossing, junctions, and derailers.
	When standing, air leak.
Six long	(——) Repeated at intervals, call for section crew, train derailed.
One long, three short	(-ooo) Flagger to go back and protect rear of train.
Four long	(——) Foreman.
Five long	(——) Flagger to return from any direction.
Long, short	(-o-o-o) Repeated four or more times, fire alarm.
Seven long, two short	(———oo) Repeated, person hurt.
One long, one short	(-o) Repeated at intervals, closing down.
Groups of shorts repeated	(ooooooo) Danger of runaway.
Unnecessary use of whistle is prohibited.	

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-59720, filed 8/18/99, effective 12/1/99.]

WAC 296-54-59730 Railroad maintenance—Loading or unloading. (1) Whenever track gangs, bridge crews, etc., work on railroads that are in use, the following signal systems must be implemented:

(a) A yellow caution flag by day and a yellow lantern by night is placed far enough in each direction from the crew to protect them against approaching equipment. The operator of approaching equipment must acknowledge the signal by two short blasts of the whistle or horn and proceed with caution.

(b) When crews are removing or replacing a rail or performing any other work that would make it necessary for approaching equipment to come to a stop, a red flag during daytime work and a red lantern during nighttime work is placed in the center of the track far enough in each direction from employees to protect them against approaching equipment. The operator of approaching equipment must:

(i) Acknowledge the signal by one short blast of the whistle or horn;

(ii) Come to a dead stop; and

(iii) Remain standing until the signal is removed by the person who placed it, or until investigation proves that the track is safe for passage.

(c) The employer may choose to use a flagger in place of meeting the above requirements.

(2) Where clearance is scant, warning signs or signals must be posted.

(3) Switch throws should be kept well oiled and targets and signs in good legible condition.

(4) Standard clearances must be maintained at all points on the right of way. However, if clearance is necessarily restricted in loading or unloading areas or at water tanks, fuel tanks, etc., then warning signs must be posted at these locations.

(5) The employer must provide adequate safeguards to protect employees performing the following tasks:

- Repairing railroad equipment;
- Working on or in railroad equipment;
- Loading or unloading cars; or
- Performing other duties where there is danger of the railroad equipment being struck by other moving railroad equipment.

(a) A derail must be used to prevent other rail equipment from contacting such cars or equipment or endangering employees. After cars are spotted, blue flags must be placed in the center of the tracks at least fifty feet from the end car during the day and blue lights must be installed at such locations at night.

(b) Flags, lanterns, or derails must be removed only by the person placing them unless they are to remain posted for a longer period of time. In which case one person on each oncoming shift must determine that they are in place and they must not remove the safeguards until certain that all employees are in the clear.

(c) Operators of approaching equipment must not pass or remove a flag or lantern that is properly posted. Cars or other equipment must not be placed where they will obscure the signal from an operator controlling approaching equipment.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-59730, filed 8/18/99, effective 12/1/99.]

WAC 296-54-601 Signals and signal systems. (1)

Standard hand or whistle signals as described in this chapter must be used for the movement of rigging, logs, or equipment when using a high lead, slackline, or cable skidder system for yarding. For hand signal illustrations, see appendix 1.

(2) Voice communication may be used to move rigging and control movement of logs, provided a standard audible whistle signal is sounded before any line is moved.

Note: Subsections (1) and (2) of this section do not apply to grapple or other special yarding systems where employees are not exposed to the movement of logs or rigging.

(3) Voice communications may be used for grapple yarding under the following conditions:

(a) Voice communications by use of radio frequencies may be used to transmit instructions and directions to the yarder operator when using a grapple type logging system, if no employee is in a hazardous area near live rigging.

(b) Voice communication may be used to instruct the yarder operator when picking up an occasional log with the use of a choker on a grapple system, if the grapple is on the ground before the setting of the choker and no lines are moved by the operator until the person setting the choker has returned to a safe location away from any running lines. When a number of logs must be yarded by using chokers instead of the grapple, the requirements for high lead logging apply.

(4) Voice communication on the same radio frequencies used to transmit skyline, high-lead, slackline or skidder whis-

tle signals (154.57 and 154.60 MHz channels), must be limited to reporting injuries, fire, and emergency situations where special tools or precautions are needed to prevent or alleviate a hazardous situation. In addition:

(a) The rigging crew must call the yarder engineer by name to ensure that proper contact is established;

(b) The yarder engineer must acknowledge the call with a whistle "stop" signal before the caller starts transmitting the voice message;

(c) Voice transmission must be kept as brief and to the point as possible; and

(d) After receiving the voice message, the yarder engineer must again acknowledge with a whistle "stop" signal that the message has been received and is clearly understood.

(5) If a standard signal is not listed for an unusual or new situation, a hand or whistle signal other than any listed for the type of yarding being done may be used for the specific situation only. Any special signals developed must be understood by all persons working in the area who may be affected by their use.

(6) A copy of the standard hand and whistle signals must be posted on the yarder and at places where crews congregate. For tractor logging operations, hand signals must be posted at places frequented by the crew members such as in crew buses, etc.

(7) Only one person in any crew shall give signals at the point where chokers are being set. Any person is authorized to give a stop signal when someone is in danger or another emergency condition is apparent.

(8) Hand signals are permitted only when the signal person is in plain sight of the machine operator and when visibility allows signals to be seen. Hand signals may be used at any time as an emergency stop signal.

(9) Throwing of any type of material or relying on engine noise, such as from a chain saw, as a signal is prohibited.

(10) All persons must be in the clear before any signal is given to move the rigging, logs, or turns. Rigging, logs, or turns must not be moved until after the proper signals have been given.

(11) Machine operators must not move any line unless the signal received is clear and distinct. If in doubt, the operator must repeat the signal as understood and wait for confirmation.

(12) A horn or whistle that is automatically activated by the radio or electric signaling system must be used on each yarder used for skyline, high lead, skidder or slackline system of yarding, except where hand signals or voice communication as described in subsection (2) of this section is permitted. The horn or whistle must emit a sound that is clearly audible to all persons in the affected area and must be sounded before any line is moved. Such a horn or whistle is also required on combination yarding and loading machines and tree pullers. Audible signals are not necessary on grapple or other yarding systems where persons are not exposed to the movement of logs or rigging.

(13) All radio-controlled motorized carriages and sky-cars must have a warning horn which must be sounded before any lines or loads are moved or an audible whistle must be sounded from the yarder.

(14) Each unit of the signal or control system in use must be tested daily before logging operations begin. Audible signals used for test purposes must not include signals used for the movement of lines or materials.

(15) Citizen band (CB) radios must not be used to activate any signal, machine, or process, either automatically or by voice. CB radios may be used for communication between sides, vehicles, work units, or for emergency situations.

(16) When audible whistle signals are being used simultaneously by yarding and loading machines at a landing, signal whistle or horn tones used in connection with machine movements must be so differentiated as to distinctively identify any intended work movement of either machine.

(17) When the normal crew configuration consists of two or more persons at the point where chokers are being set, they must each carry an operable transmitter on their person. Only one transmitter is required if:

(a) The signal person has no other duties and remains in an area where there are no hazards created by the moving rigging or logs; or

(b) The rigging crew is comprised of only one employee.

(18) The use of a jerk wire whistle system for any type of yarding operation is prohibited.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-601, filed 8/18/99, effective 12/1/99. Statutory Authority: RCW 49.17.040, [49.17].050 and [49.17].060. 96-22-013, § 296-54-601, filed 10/28/96, effective 1/1/97. Statutory Authority: RCW 49.17.040, 49.17.050, 49.17.240, chapters 43.22 and 42.30 RCW. 80-11-057 (Order 80-15), § 296-54-601, filed 8/20/80. Statutory Authority: RCW 49.17.040, 49.17.150 and 49.17.240. 79-10-081 (Order 79-14), § 296-54-601, filed 9/21/79.]

WAC 296-54-603 Electric signal systems. (1) Where an electrical signal system is used, all wires, attachments, and connections must be weatherproof.

(2) Electric signal systems must be properly installed and adjusted. They must be protected against accidental signaling and must be maintained in good operating condition at all times. Enough signal wire must be provided to enable good voice contact between the whistle punk and rigging crew at all times.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-603, filed 8/18/99, effective 12/1/99. Statutory Authority: RCW 49.17.040, 49.17.150 and 49.17.240. 79-10-081 (Order 79-14), § 296-54-603, filed 9/21/79.]

WAC 296-54-604 Radio signaling permits. To apply for a new radio signaling permit, to request a change in a permit, or to request a change in the use area for any permitted system, write to:

WISHA Services Division—Permits
Department of Labor & Industries
P.O. Box 44650
Olympia, WA 98504-4650

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-604, filed 8/18/99, effective 12/1/99.]

WAC 296-54-605 Radio systems used for voice communication, activation of audible signals, or control of equipment. (1) A valid operating permit must be obtained by the owner from the department of labor and industries, prior to putting into use any radio signaling or control system

(2007 Ed.)

intended to be used in conjunction with any type of cable logging operations.

(a) Permits will be issued only for systems licensed for such use and using those carrier frequencies as authorized by the Federal Communications Commission.

(b) Permits will be granted only when tone or function frequencies are compatible with other radio systems in use and when in compliance with all other applicable requirements of this chapter.

(2) The department of labor and industries reserves the right to designate the use of radio frequencies for specific purposes or functions. For example: Frequencies may be specified for voice transmission of instruction, others for tone-coded functions, or activation of signaling devices.

(a) Single tone coded functions must not be used on radio equipment designed to initiate whistle signals, or to activate or control any machine, material-handling device, or other equipment hazardous to employees.

(b) The department may also designate which tone frequencies may be used for the activation of a signaling device or for control of equipment on certain federal communication assigned carrier frequencies.

(3) A list of tone frequencies that may be used with any Federal Communications Commission assigned carrier frequencies will be made available from the department upon request.

(4) The department will assign the area or areas in which a radio signaling system may be used and mark those areas on the permit. Radio signaling systems must not be used in any area other than the ones indicated on the permit. (See Figure 36: Areas for Use of Radio Signaling Systems for Logging Operations.)

(5) The person or firm name on the permit must be the same as the person or firm operating the radio signaling system except for loaner or rental sets. A person or firm using a loaner or rental set is responsible for the radio signal system as if they were the owner of the set.

(6) The application for a permit to use a radio signaling system must contain the following information (see Figure 37: Application for permit to operate radio signal system in designated area):

(a) Name and address of applicant.

(b) The radio frequencies of the radio signaling device in MHz.

(c) The tone frequencies of the radio signaling system used to activate a horn, whistle, or control equipment in Hz. The security gate, or pulse tone, must be shown first.

(d) The name of the manufacturer of the radio signaling system.

(e) The serial number of the receiving unit.

(f) The state assigned area or location in which the unit will operate.

(g) The type of signaling used.

(h) From whom the system was purchased or acquired, and the date of acquisition of the system.

(i) Intended use and function of the system.

(7) All radio equipment must meet all applicable FCC standards. FCC identifier numbers and required information must be visible when possible.

(8) Radio equipment must not be used without displaying a permit as required by this standard. The permit must be

prominently displayed on the outside case of the receiver of the unit or, for radio-controlled carriages, on the transmitter in the yarder.

(9) Each radio receiver must have its radio carrier frequency in MHz and tone frequency(s) in Hz indicated on the outside case of the receiver (see Figure 38: Radio permit):

(a) The manufacturer's name and serial number must be permanently indicated on the outside of the case;

(b) When the duration or width of the tone frequencies performs a function, the one duration/width must also be permanently indicated on the outside of the receiver case;

(c) Each transmitter must be identified with its receiver; and

(d) Two or more receivers in operation simultaneously on the same tone frequencies are prohibited unless one is used for monitoring only.

(10) It shall be the responsibility of the owner of any radio signaling system to notify the department of labor and industries, immediately, if the signal system is:

(a) Permanently retired (in what manner and date retired);

(b) Sold (submit name and address of purchaser and date sold);

(c) Removed from the state (name of state to which moved and date moved); or

(d) Stolen (date).

(11) All radio signaling systems put into use for the first time after the effective date of these safety standards, shall meet or exceed the minimum performance specifications contained in WAC 296-54-607 of these safety standards, and,

when altered or repaired, shall continue to meet such specifications.

(12) Adjustments, repairs, or alterations of radio signaling and control devices must be done only by or under the immediate supervision and responsibility of a qualified and certified radio technician with factory training or equivalent certified experience. Anyone without the technical ability or the proper equipment to cause the signaling systems to function within required tolerances must not attempt to repair, alter, or adjust the systems.

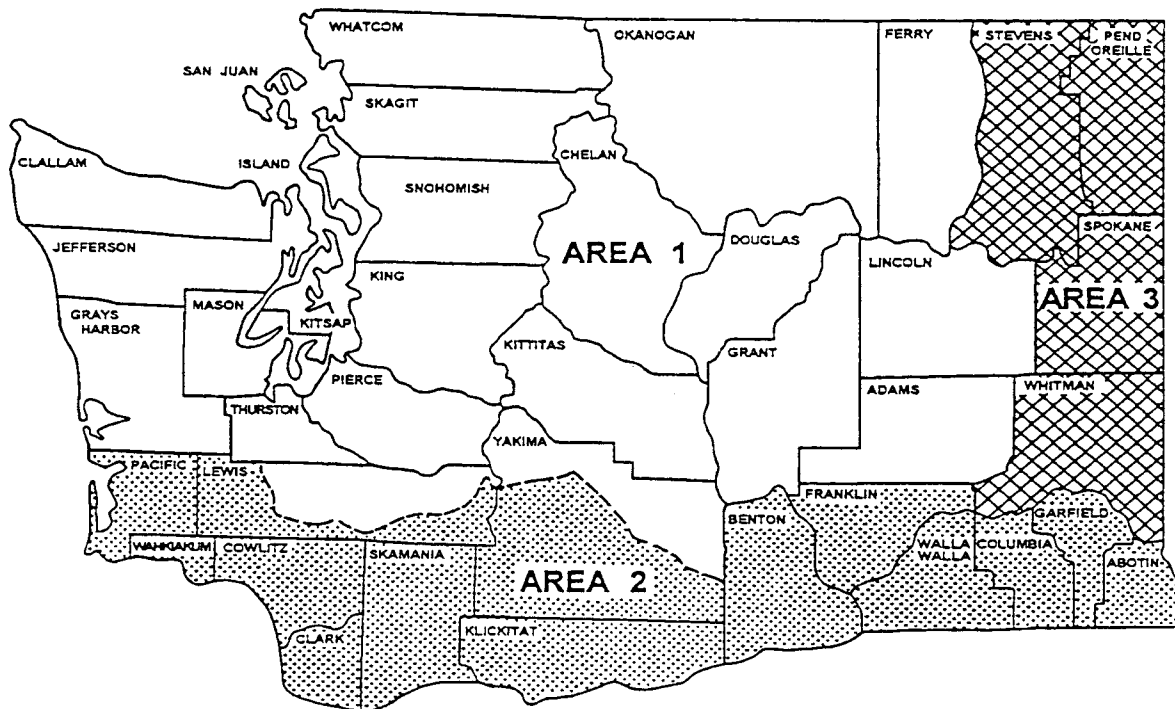
(13) When interference, overlap, fadeout, or blackout of radio signals is encountered, the use of the device must be discontinued immediately. Use may not be resumed until the source of trouble has been detected and corrected.

(14) Radio frequencies assigned to systems for which voice communications may be used to give signals to the yarder operator must not be the same frequencies as those assigned for whistle signals or machine control signals used in skyline, highlead, slackline, or cable skidder systems.

(15) When hazardous interference is created by moving a voice communication system into an area where a system is already in use on the same frequency, use of the newly-moved system must be immediately discontinued until the problem of interference has been corrected.

(16) Before moving any unit from one assigned geographical area to another (see area map, Figure 36: Areas for Use of Radio Signaling Systems for Logging Operations), the owner must apply for and receive a new permit from the department.

AREAS FOR USE OF RADIO SIGNALING SYSTEMS FOR LOGGING OPERATIONS



STATE OF WASHINGTON
DEPARTMENT OF LABOR AND INDUSTRIES
DIVISION OF INDUSTRIAL SAFETY AND HEALTH

Figure 36: Areas for Use of Radio Signaling Systems for Logging Operations

Form No. 157.

STATE OF WASHINGTON

5-71

DEPARTMENT OF LABOR AND INDUSTRIES

DIVISION OF SAFETY

APPLICATION FOR PERMIT TO OPERATE RADIO SIGNAL SYSTEM IN DESIGNATED AREA

Radio Carrier Frequency		Serial No.	
Tone Coding Frequency		Hz.....Name of Manufacturer of Signal System	
Firm Name		Address	
Intended Function of Unit: Voice communication <input type="checkbox"/>		Whistle signal <input type="checkbox"/> Control Equipment <input type="checkbox"/>	
Area in which Unit will be Operated:		1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/>	
(Area map included in Safety Standards for Logging Operations)			
Type of Tone: Sequential <input type="checkbox"/>		Simultaneous <input type="checkbox"/> If other specify type	
System to be Used For: Grapple <input type="checkbox"/>		Skyline, Highlead, Slackline, Skidder <input type="checkbox"/> Balloon <input type="checkbox"/>	
System Purchased or Acquired From			
Date System Purchased or Acquired: Day		Month Year	
Mail Permit to			
Date Application Mailed to Division of Safety		/...../.....	
Day Mo. Year		<div style="border: 1px solid black; padding: 5px; width: fit-content;"> Date Permit Issued</div> <div style="border: 1px solid black; padding: 5px; width: fit-content;"> Day Mo. Year</div>	
		DIV. OF SAFETY USE ONLY	

Figure 37: Application for Permit to Operate Radio Signal System in Designated Area

Dept. of Labor & Industries
Div. of Consultation & Compliance
P.O. Box 44650
Olympia, WA. 98504-4650



RADIO PERMIT

TO OPERATE MULTI-TONE RADIO SIGNAL SYSTEM IN DESIGNATED AREA.

MODEL	SERIAL
CARRIER FREQUENCY	MHz
TONES	Hz
AREA	
FIRM NAME	
ISSUED BY	

F416-086-000 RADIO PERMIT 10-88

Figure 38: Radio Permit

A permit issued by the department of labor and industries shall be attached to the outside of the receiver which shall indicate the area in which the radio signaling equipment may be used.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-605, filed 8/18/99, effective 12/1/99. Statutory Authority: RCW 49.17.040, [49.17].050 and [49.17].060. 96-22-013, § 296-54-605, filed 10/28/96, effective 1/1/97. Statutory Authority: Chapter 49.17 RCW. 88-23-054 (Order 88-25), § 296-54-605, filed 11/14/88. Statutory Authority: RCW 49.17.040, 49.17.150 and 49.17.240. 79-10-081 (Order 79-14), § 296-54-605, filed 9/21/79.]

(2007 Ed.)

WAC 296-54-607 Radio signal systems—Specifications and test procedures. All radio-signaling systems put into use must meet or exceed the requirements of this section. When systems are altered or repaired they must continue to meet these requirements.

(1) Radio equipment in use at cable logging sites, which is primarily used for voice communication, must be on a separately assigned frequency from radio equipment primarily used to initiate whistles or other audible signaling devices or to control any machine, material handling device or other equipment hazardous to employees.

(2) Radio-signaling systems used to transmit whistle signals or control functions of equipment associated with skyline, highlead, slackline, or cable skidder systems of logging must transmit and decode only by the use of authorized multitone frequencies. Only sequential tones may be used to transmit signals or control equipment when using carrier frequencies of 154.57 or 154.60 MHz.

(3) All radio systems receiver sensitivity must be able to attain 0.4 microvolt, or greater, for 12 dB SINAD ratio for VHF frequencies and 0.5 microvolt, or greater, for UHF frequencies. When interference is a factor, the receiver may be desensitized in the furtherance of safety by a person qualified according to WAC 296-54-605(12).

(4) All radio signal systems must have receiver spurious attenuation of at least 70 dB when measured by the 20 db quieting method and image response attenuation of 60 db when measured by the 20 db quieting method. **"Spurious response attenuation"** is a measure of the receiver's ability to discriminate between a desired signal to which it is resonant and an undesired signal at any other frequency to which it is also responsive.

[Title 296 WAC—p. 1223]

(5) All radio signal systems must have receiver selectivity of at least 80 db plus or minus 30 KHz, when measured by the E.*I.A. SINAD method.

(6) The receiver-decoder tone frequency stability must not exceed 0.006 (0.6%) above or below the assigned tone frequency.

(7) The drift of a transmitter-encoder tone must not exceed 0.006 (0.6%) above or below the assigned tone frequency.

(8) Parts of the radio-signaling system affected by moisture, which may be subjected to the entrance of moisture during use, must be weatherproofed. Transmitters must be tested within fifteen minutes after being subjected to the following conditions and must have the ability to continue functioning properly. The transmitter and receiver must be placed in a humidity chamber for eight hours where the humidity has been maintained at not less than ninety percent and where a 40 degrees C. temperature has been maintained.

(9) Radio-signaling system units must operate within tolerances specified at any temperature within the range of -30 degrees C. to +60 degrees C.

(10) Switches of transmitters used to send whistle signals or activate equipment associated with high lead, slackline, or cable skidder systems of logging must be designed so that two buttons, motions or a combination of these are required simultaneously to cause activation of the system. Arrangement of the activating switches must allow the operator to transmit signals easily but not easily activate a control or command function accidentally.

(11) All receivers intended to be mounted on or in the yarder or similar equipment, and all portable transmitters, must continue to maintain specified mechanical and electrical performance during and after being subjected to vibration of the magnitude and amplitude as follows:

(a) The equipment must be vibrated with simple harmonic motion having an amplitude of 0.015" (total excursion 0.03") with the frequency varied uniformly between 10 and 30 Hz and an amplitude of 0.0075" (total excursion 0.015") with the frequency varied uniformly between 30 and 60 Hz.

(b) The entire cycle of frequencies for each group (i.e., 10 to 30 cycles and 30 to 60 cycles) must be accomplished in five minutes and repeated three times.

(c) The above motion must be applied for a total of thirty minutes in each direction, that is, the directions parallel to both axes of the base and perpendicular to the plane of the base.

(12) All portable transmitters must be able to maintain specified mechanical and electrical performance after being subjected to a shock test as follows: The transmitter shall be dropped five times from a height of four feet onto a smooth concrete floor. Each drop must impact a different surface of the transmitter.

(13) Transmitters operating on carrier frequencies of 154.57 MHz and on 154.60 MHz must be limited on maximum power output of 500 mW measured at the antenna terminals.

(14) To minimize the possibility of interference with other signaling systems, the input power of transmitters operating in the 450 MHz range should be limited to only the amount needed to transmit to the receiver of the system effectively.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-607, filed 8/18/99, effective 12/1/99. Statutory Authority: RCW 49.17.040, 49.17.150 and 49.17.240. 79-10-081 (Order 79-14), § 296-54-607, filed 9/21/79.]

WAC 296-54-701 Wood spar trees. (1) Wood spar trees must be of sound material of sufficient size and strength to withstand any stresses which may be imposed by any equipment used for that specific logging operation.

(2) The top of the tree must extend not more than:

(a) Sixteen feet above the top guylines on spar trees over fifty feet tall; and

(b) Eight feet above the top guylines on spar trees less than fifty feet tall.

(3) School marms used as spar trees must be topped at the forks. Spar trees, except cedar, must be barked where guylines, straps, bull blocks, and tree plates are placed.

(4) Spar trees must be topped and limbs must be cut off close so that running lines will not foul or saw on protruding knots.

(5) At least four tree plates must be placed under top guylines on spar trees over fifty feet tall. At least three tree plates must be used on spar trees less than fifty feet tall.

(6) Tree plates must be equipped with lugs or other suitable means to hold them in place.

(7) Before raising spar trees, dummy trees must be topped and guyed with three guylines equivalent in breaking strength to the mainline.

(8) When spar trees are raised, stumps used for snubbing must be properly notched. Guylines must be held by a mechanical means. Snubbing by hand is prohibited.

(9) All rub trees must be limbed and topped.

(10) Loose material such as bark, spikes, straps or chains not in use and slabs caused by bumping logs or chafing straps must be removed from the spar trees. Heavy bark must be removed from trees used for a permanent installation.

(11) A person must ride only the passline to thread lines, to lubricate blocks, or to inspect rigging.

(12) When the friction lever and passline drum are on the opposite side of the machine from the operator, an experienced person must operate the friction lever while the engineer operates the throttle. While being used, the passline drum must be properly attended by another person to guide the passline onto the passline drum with a tool suitable for the purpose.

(13) Using a gypsy drum to handle employees in the tree is prohibited.

(14) A climber's rope must encircle the tree before the climber leaves the ground, except when the climber is riding the passline.

(15) Spikes, used by the climber as a temporary aid in hanging rigging, must be removed before the tree is used for logging.

(16) Topping trees in windy weather is prohibited.

(17) Topping, rigging-up, or stripping is prohibited when visibility is impaired.

(18) When heel tackle is fastened near the machine, a safety line must be placed in such manner that in case of breakage, lines do not strike the power unit and endanger the operator.

(19) Yarding with more than one unit on any one head spar is prohibited.

(20) The angle between the power unit, the high lead block, and the mainline road must not exceed a square lead on rigged spars. When using portable spars or towers, the location of the machine or position of the operator must ensure that the operator is not endangered by incoming logs.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-701, filed 8/18/99, effective 12/1/99.]

WAC 296-54-70110 Wood spar trees—Guylines. (1)

Wood spar trees using a line greater than 7/8-inch and used as loading and yarding trees must have at least six top guys and four buckle guys, if a sail guy is used.

(2) Wood spar trees using a mainline greater than 7/8 inch and used only as yarding trees must have at least six top guys and must use at least three buckle guys.

(3) Wood spar trees using a mainline of 7/8 inch or less must be supported by at least five top guylines or other positive means of supporting the spar.

(4) Wood spar trees used for yarding with light equipment (7/8-inch or smaller mainline) must be guyed so that strains will be imposed on at least two guylines. If less than five top guys are used, guylines must be at least 1/4 inch larger than the mainline.

(5) Wood spar trees used for loading only with crotch line, spreader bar, or swinging boom must have at least four top guys and must use at least three buckle guys.

(6) More guylines must be added if there is any doubt about the stability of a spar tree, raised tree, tail tree, lift tree, or other equipment or rigging they support.

(7) Wood spar trees used for transfer must have at least five top guys and must use at least three buckle guys.

(8) Guylines must alternately be passed around the wood spar in opposite directions to prevent twisting of the spar.

(9) Guylines must be attached to the upper portion of the wood spar by shackles.

(10) When a high lead block is hung below buckle guys, at least three top guys of equal strength to the mainline must be used to keep the top from swaying.

(11) When buckle guys are required, they must be installed on the tree where they will provide the maximum effectiveness.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-70110, filed 8/18/99, effective 12/1/99.]

WAC 296-54-70120 Wood spar trees—Passlines. All spar trees must be equipped with passlines that are:

(1) At least 5/16 inch and a maximum of 1/2 inch in diameter;

(2) Not subjected to sawing on other lines or rigging, and are kept clear of all moving lines and rigging;

(3) A continuous length and in good condition with no splices, knots, molles, or eye-to-eye splices between the ends; and

(4) Long enough to provide three wraps on the drum before the climber leaves the ground.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-70120, filed 8/18/99, effective 12/1/99.]

(2007 Ed.)

WAC 296-54-70130 Wood spar trees—Straps. (1)

Safety straps of appropriate size must be placed on all high lead blocks; and other blocks whenever practicable. Safety straps must be shackled (with the closed end of the shackle up) to a guyline that extends as near as possible at right angles with the power unit, but must not be on a guyline with an extension within one hundred feet of the tree. When the top guyline on which the safety strap of the high lead block is fastened is changed, the safety strap must be attached to another guyline or the loosened guyline must be tightened after the change.

(2) All tree straps must be at least 1/4 inch larger than the pulling line. If impossible to use a safety strap, all tree straps must be 1/2 inch larger than the pulling line.

(3) Lead blocks used for yarding, swinging, loading, and unloading used in wood spars must be:

(a) Designed and constructed for this purpose;

(b) Bolted with at least two bolts through the shells below the sheaves in a manner that will retain the sheave and line in case of bearing pin failure (this does not apply to haul-back lead blocks); and

(c) Mainline blocks have a sheave diameter of at least twenty times the diameter of the mainline.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-70130, filed 8/18/99, effective 12/1/99.]

WAC 296-54-705 Truck and equipment maintenance shops. It is recognized that the usual hazards encountered in maintenance shops performing work on logging and related equipment would be very similar to those found in general repair, machine or welding shops; therefore, the rules contained in chapter 296-24 WAC, General safety and health standards and other applicable safety standards promulgated and administered by the department of labor and industries shall apply to such places of work.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-705, filed 8/18/99, effective 12/1/99.]

WAC 296-54-707 Labor camps. Temporary labor camps for logging operations must meet the requirements of WAC 296-24-125.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-707, filed 8/18/99, effective 12/1/99.]

WAC 296-54-99002 Appendix 1—Signals.

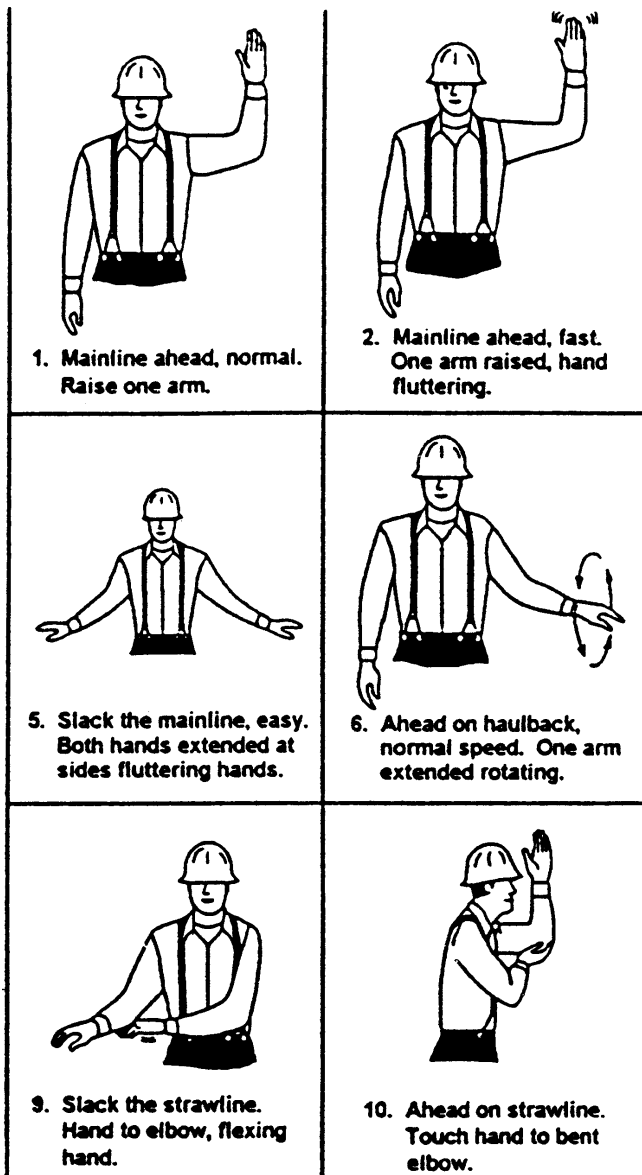


Figure 39: Standard Hand Signals

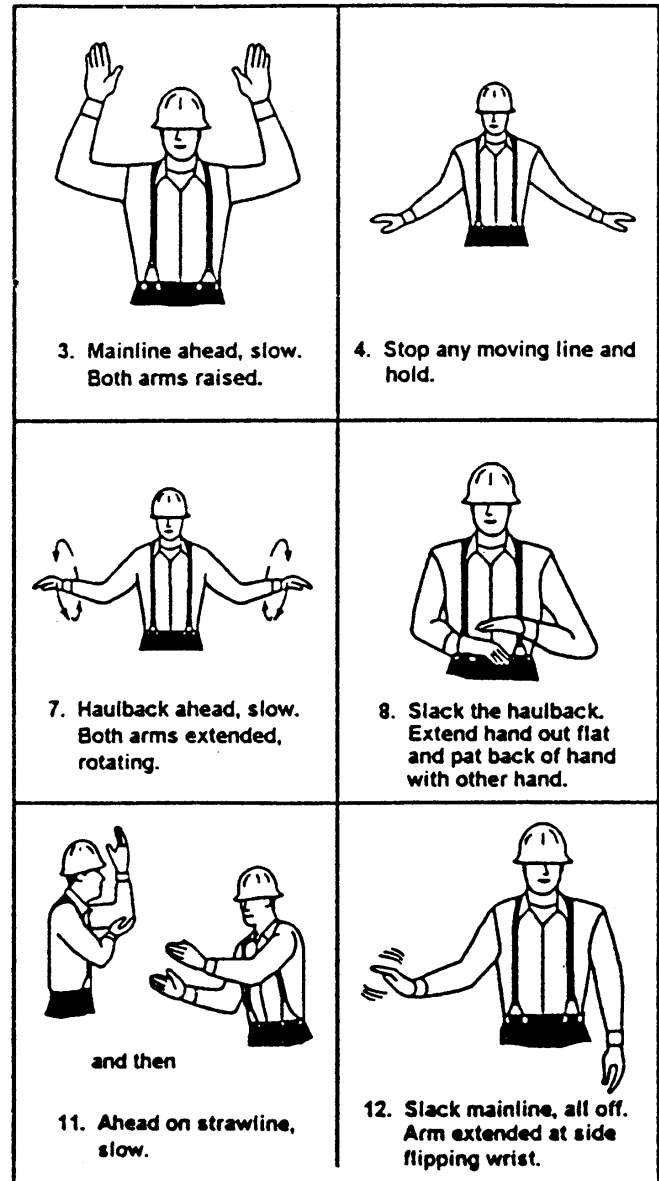


Figure 40: Standard Hand Signals

STANDARD SIGNALS FOR LOADING LOGS

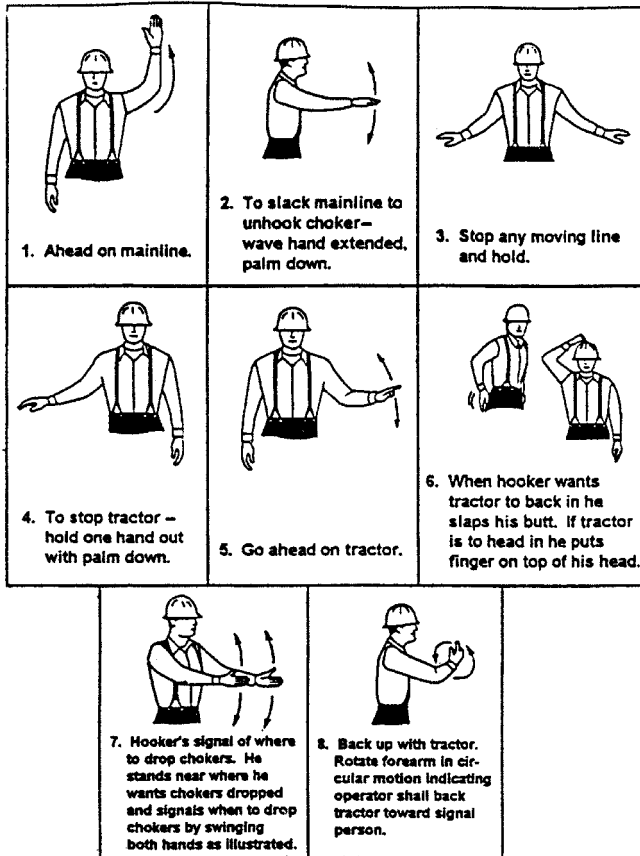


Figure 41: Standard Hand Signals



Figure 42: Standard Signals for Loading Logs

HIGH LEAD LOGGING WHISTLE SIGNALS
- Means longer spacing between signals.

1 short	Stop all lines.
3 short-3 short	Ahead slow on mainline.
3 short	Ahead on mainline.
2 short	Ahead on haulback.
2 short-2 short	Ahead slow on haulback.
3 short-1 short	Ahead on strawline.
3 short-1 short-3 short	Ahead slow on strawline.
4 short or more	Slack mainline.
2 short-4 short	Slack haulback.
3 short-1 short-4 short	Slack strawline.
3 short-2 short	Standing tight line.
1 short-1 short	Tight line while lines are running, or break if running tight.
3 short	When rigging is in: Strawline back on haulback.
3 short / plus "X" number of shorts	When rigging is in: Indicates number of sections of strawline back on rigging.
3 short-1 short-2 short	Strawline back on rigging.
1 short	When rigging is in: Chaser inspect and repair rigging.
2 short	When rigging is in: No chokers back.
2 short-1 short / plus "X" number of shorts	Number of chokers back.
2 short-4 short	When rigging is in: Slack haulback—hold all lines until 2 short blown.

HIGH LEAD LOGGING WHISTLE SIGNALS**- Means longer spacing between signals.**

3 medium	Hooker.
3 medium-4 short	Hooker and that crew.
5 long	Climber.
4 long	Foreman.
1 long-1 short	Start or stop work.
7 long-2 short	Person injured, call transportation and stretcher.
1 long-1 short repeated	Fire.

Grabinski system

2 short-1 short	Slack mainline and haulback together.
2 long	Take off or put on rider block.

SKIDDER WHISTLE SIGNALS**- Means longer spacing between signals.**

1 short	Stops moving carriage-stops or goes ahead on slack puller, as case may be, if carriage is stopped.
2 short	Go ahead on skidding line holding carriage.
1 short-2 short	Pick up skidding line, easy.
2 short-1 short	Shake up carriage to clear choker.
2 short-2 short	Ahead on receding line.
3 short	Ahead on carriage, holding at present level, using interlock.
3 short-3 short	Ahead easy on skidding line.
2 short-2 short-2 short	Slack skyline, cable down.
2 short-2 short-2 short-1 short	Pick up skyline, cable up.
2 short-2 short-4 short	Slack receding line.
2 short-4 short	Slack skidding line.
2 short-2 short-1 short	Tighten all lines.
1 short-4 short	Slack off slack puller.
1 short-2 short	Pick up slack puller when slack.
2 short-2 short / plus "X" number of shorts	When carriage is in: Number of chokers wanted.
2 short-2 short-1 long	Bull choker.
1 short	When carriage is in: Inspect butt rigging.
2 short-4 short / 1 short	For each additional ten feet of tong line.
1 long / plus "X" number of shorts	Number of coils of strawline wanted.
5 medium	Tail or second rigger.
5 medium-4 short	Tail or second rigger and that crew.
2 medium	Skidder head rigger.
3 medium-4 short	Hooker and that crew.
2 long	Ahead on transfer.
2 long-4 short	Slack transfer.
1 short-3 short	Ahead on carriage with slack puller line.

SKIDDER WHISTLE SIGNALS**- Means longer spacing between signals.**

1 long	Ahead on strawline.
1 long-4 short	Slack strawline.
1 long-3 short	Ahead easy on strawline.
5 long	Climber.
4 long	Foreman.
1 long-1 short	Start or stop work.
7 long-2 short	Person injured, call transportation and stretcher.
1 long-1 short repeated	Fire.

SLACKLINE WHISTLE SIGNALS**- Means longer spacing between signals.**

2 short-2 short-2 short-1 short	First cable up when road has been changed and tail hold made fast.
2 short-2 short-2 short	Drop skyline.
1 short	Stop any moving line.
1 long	When logging, slack skyline.
2 short	Ahead on skyline.
1 long-2 short	Ahead easy on skyline.
3 short	Ahead on skidding line, holding haulback.
3 short-3 short	Ahead easy on skidding line with slack haulback.
4 short	Slack skidding line.
2 short-2 short / 2 short-2 short	Ahead easy on haulback with slack skidding line.
2 short-2 short	Ahead on haulback.
2 short-2 short-4 short	Slack haulback.
2 short / 3 short	Pick up skyline and skid.
2 short / 2 short-2 short	Pick up skyline and skin.
3 short-1 short	When carriage is in: Strawline back on haulback.
3 short-1 short-2 short	When carriage is in: Strawline back on carriage.
3 short-1 short	When strawline is out: Ahead on strawline.
3 short-2 short	Tight line.
3 short-1 short-4 short	Slack strawline.
3 short-1 short-3 short	Pull easy on strawline.
2 long	Ahead on transfer.
2 long-4 short	Slack transfer.
2 long-2 short-2 short	When carriage is in: Transfer back on carriage.
1 long / plus "X" number of shorts	When carriage is in: Number of coils.
2 short-2 short-1 short / plus "X" number of shorts	When carriage is in: Number of chokers.
1 short	When carriage is in: Inspect rigging, repair and send back.
2 short-2 short-4 short	When carriage is in: Slack haulback and hold all lines until 1 short is blown-then send back.
3 short-3 short	When carriage is in: Send back powder.

SLACKLINE WHISTLE SIGNALS**- Means longer spacing between signals.**

5 medium	Tail rigger.
5 medium-4 short	Tail rigger and that crew.
3 medium	Head hooker.
3 medium-4 short	Second hooker and that crew.
5 long	Climber.
4 long	Foreman.
1 long-1 short	Start or stop work.
7 long-2 short	Person injured, call transportation and stretcher.
1 long-1 short repeated	Fire.

RUNNING SKYLINE WHISTLE SIGNALS**- Means longer spacing between signals.**

1 short	Stop all moving lines.
2 short	Skin carriage back.
2 short-1 short	Slack haulback.
2 short-2 short	Skin carriage easy.
2 short-3 short	Standing tight line.
1 short-2 short	Ahead on drop line.
4 short	Slack drop line.
1 short-4 short	Slack both mainlines.
1 short-1 short	Stop drop line going up and move carriage forward.
3 short	Move carriage forward.
3 short-3 short	Move carriage forward easy.
3 short-1 short	When strawline is out: Ahead on strawline.
3 short-1 short-4 short	Slack strawline.
3 short	When carriage is in: Strawline.
3 short-X short	When carriage is in: Number sections.
3 short-1 short-2 short	When carriage is in: Strawline back on carriage.
2 short-X short	When carriage is in: Number of chokers.
4 short	When carriage is in: Inspect rigging, repair and send back.
1 short	When carriage is in: Hold all lines until 2 shorts, then send back.
3 medium	Head hooker.
3 medium-4 short	Hooker and that crew.
4 long	Foreman.
1 long-1 short	Start or stop work.
7 long-2 short	Person injured; call transportation and stretcher.
1 long-1 short (repeated)	Fire.
3 short-1 long	Acknowledged by engineer to signify hazardous turn.

TENSION SYSTEM SIGNALS

4	Release tension.
1 short	Stop carriage and start unspooling tong line.
1 short	Stop tong line.

TENSION SYSTEM SIGNALS

1 short	Resume unspooling tong line.
1 short	Will stop any moving line or slack tong line when carriage is stopped.
2 short-2 short	Go into interlock and go back.
2 short-4 short	Slack haulback and let carriage down.
After turn is set 2 short	Go ahead on tong line.
2 short-3 short	Go ahead easy on tong line.
3 short	Go into interlock and take carriage to landing.
3 short-3 short	Ahead on carriage easy.
1 short-2 short	Increase tension on tong line when carriage is going in.
short-1 short	Decrease tension on tong line when carriage is going in.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-99002, filed 8/18/99, effective 12/1/99; Order 72-14, Figure 2 (codified as WAC 296-54-99002), filed 7/31/72, effective 9/1/72.]

WAC 296-54-99003 Appendix 2—Sample minimum lockout/tagout procedure. (Company Name) has established this lockout/tagout program to provide protection for employees performing maintenance or servicing of logging equipment.

Before any employee begins maintenance or servicing of equipment where the unexpected energizing, start up, or release of stored energy could cause injury, the equipment must be shut down, isolated from all potentially hazardous energy and locked or tagged out.

Employees must not start, attempt to start, energize or use equipment that has been locked or tagged out. Tags and/or padlocks will be provided for tagging and/or locking out logging machinery and will be durable enough to withstand the environment. Tags will contain a legend such as: "Do Not Start" or "Do Not Operate." When tagout is used, tags must be located in a position that will be obvious to anyone attempting to operate the machinery. In lockout, padlocks are commonly used to prevent access to ignition/master switches or battery disconnects.

Employees performing maintenance or servicing must determine which sources of hazardous energy must be disabled for a particular job. The following are examples of hazardous stored energy found on logging equipment:

- Equipment
- Hydraulic or pneumatic pressure
- Mechanical (rotating saws, springs, shafts, gears, etc.)
- Gravity (elevated blades, booms, grapples, saw heads, etc.)

The following steps must be followed for lockout/tagout:

- Ensure that the brakes, swing locks, etc. are applied.
- Place the transmission in the manufacturer's specified park position.

- Lower or secure each moving element such as, but not limited to, blades, booms, grapples, buckets, saws, and shears to prevent a release of stored energy.

- Shut down machinery, and ensure that a responsible person removes and keeps the ignition/master key.
- Engage hydraulic safety locks when applicable.
- Before working on hydraulic or air systems, relieve pressure by bleeding tanks or lines and operate controls to dissipate residual stored energy (pressure).
- Place lockout and/or tagout device.

Before lockout or tagout devices are removed and machinery is started, inspect the work area to ensure all tools have been removed, guards are replaced, and employees are in the clear.

We will provide training to ensure that the purpose and function of the lockout/tagout program are understood by employees performing maintenance or repair of equipment.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-99003, filed 8/18/99, effective 12/1/99; Order 72-14, Figure 3 (codified as WAC 296-54-99003), filed 7/31/72, effective 9/1/72.]

WAC 296-54-99004 Appendix 3—Industry consensus standards.

American Society of Mechanical Engineers
ASME

345 East 47th Street
New York, NY 10017
(212) 591-7000

Society of Automotive Engineers, Incorporated
SAE
400 Commonwealth Drive
Warrendale, PA 15096-0001
(412) 776-4841

American National Standards Institute
11 West 42nd Street
New York, NY 10036
(212) 642-4900

Occupational Safety and Health Administration's Office
of Publications

OSHA
Room N 3101, 200 Constitution Avenue Northwest
Washington, DC 20210
(202) 219-4667

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-99004, filed 8/18/99, effective 12/1/99; Order 72-14, Figure 4 (codified as WAC 296-54-99004), filed 7/31/72, effective 9/1/72.]

WAC 296-54-99013 Appendix 4—Various types of cable logging systems.

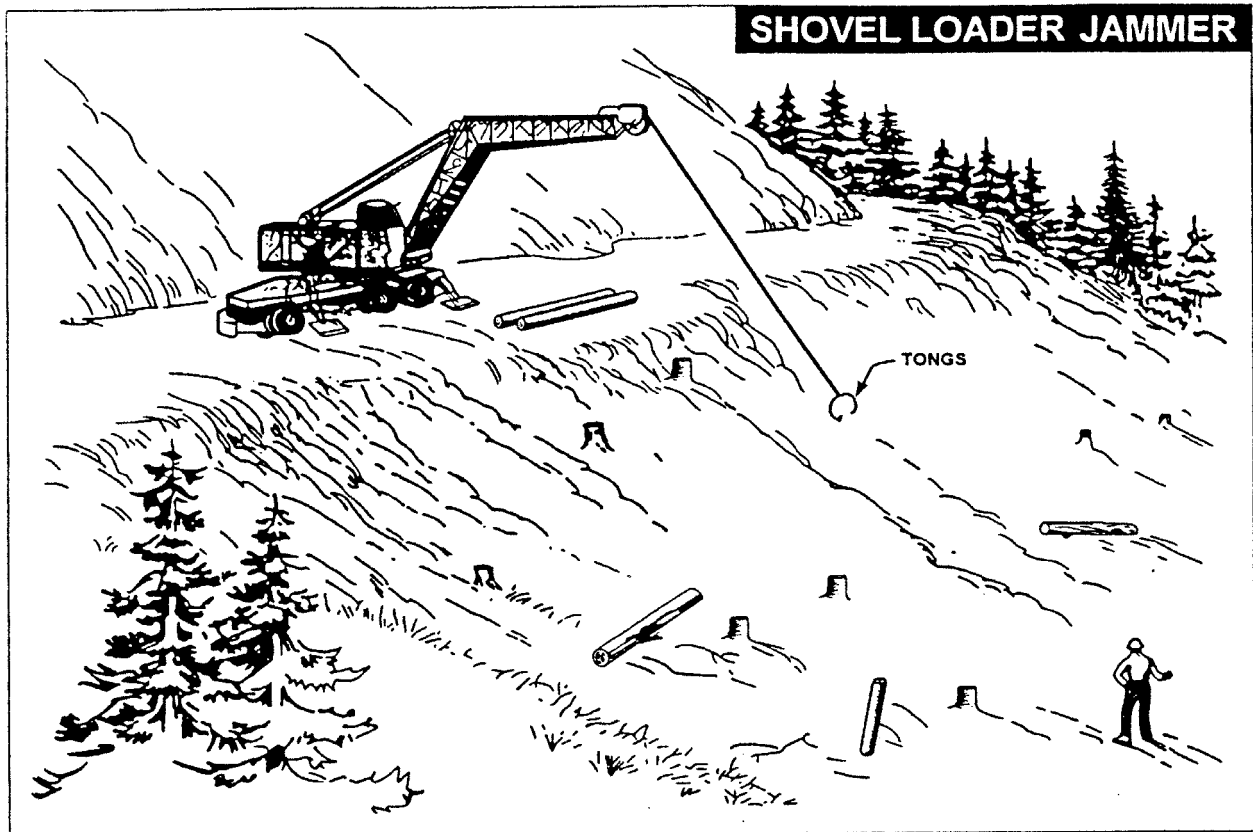


Figure 43: Shovel Load Jammer

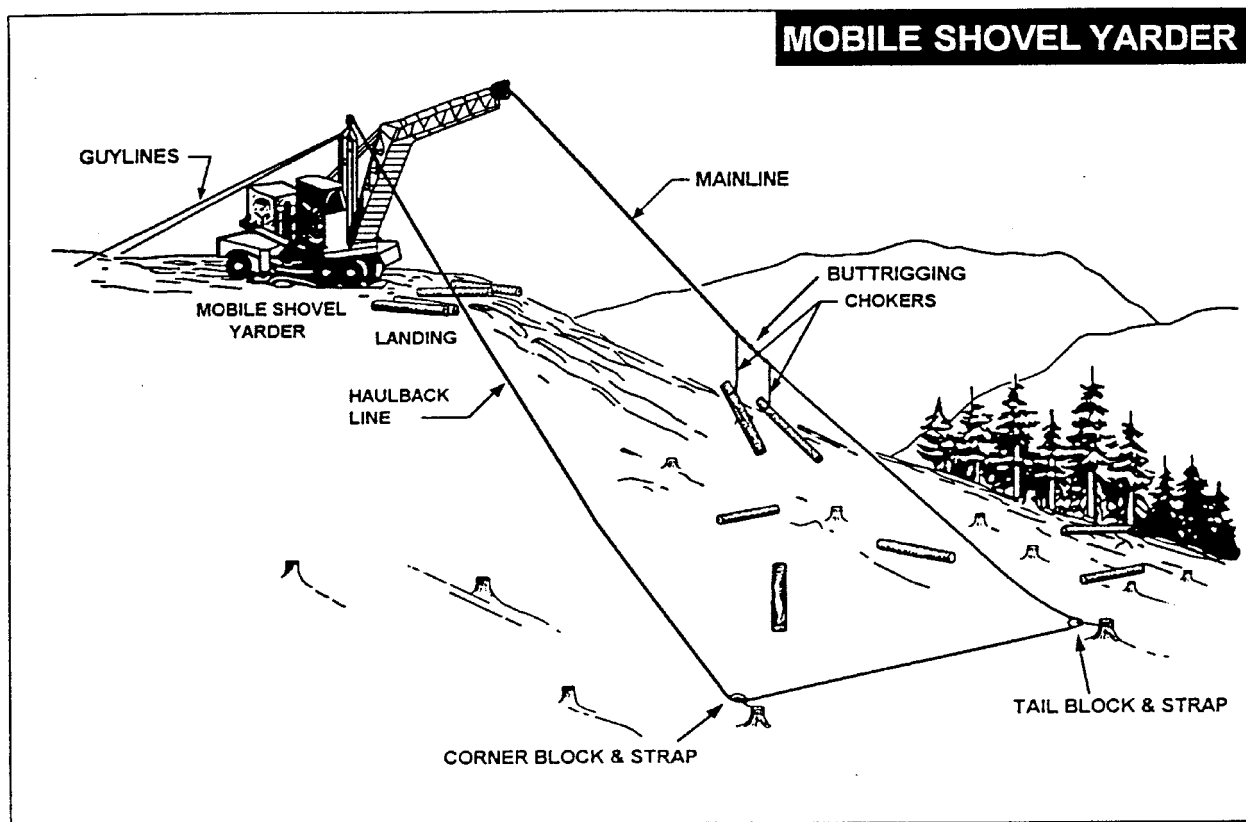


Figure 44: Mobile Shovel Yarder

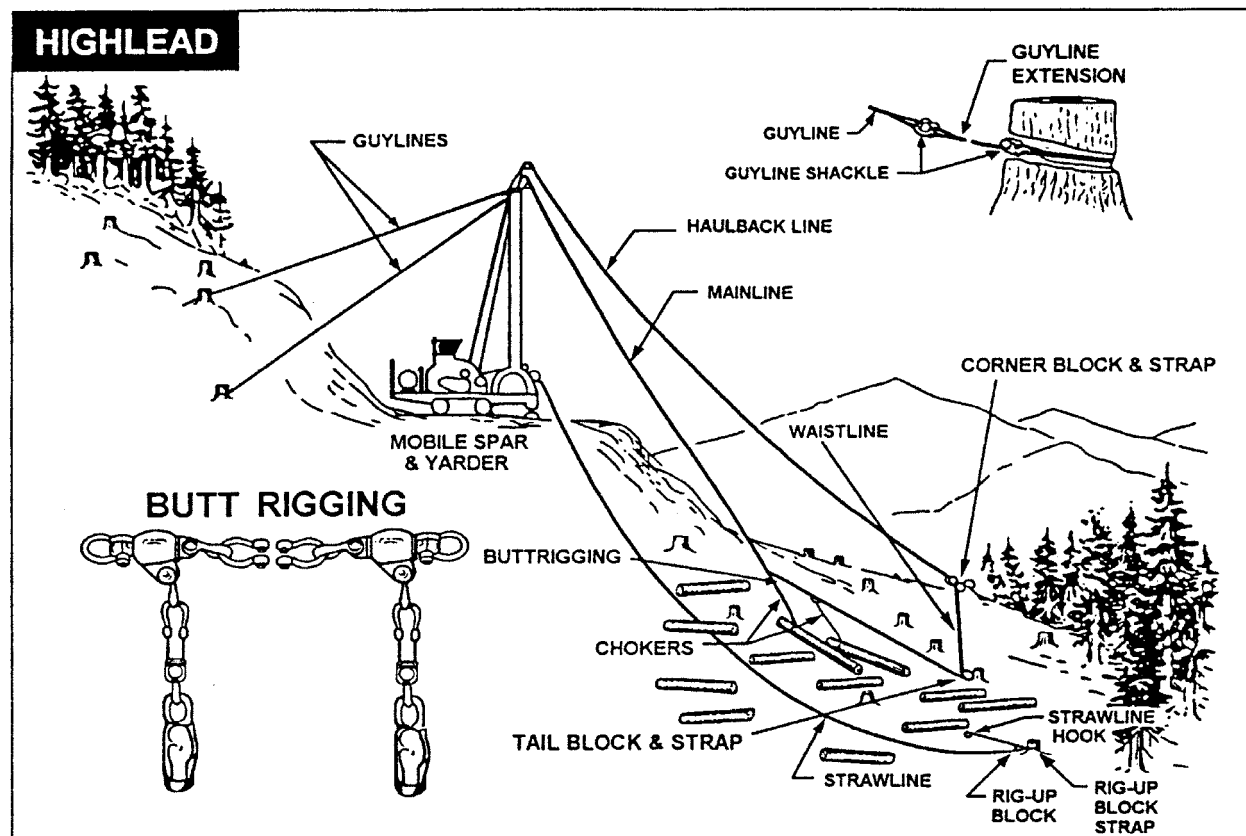


Figure 45: Highlead

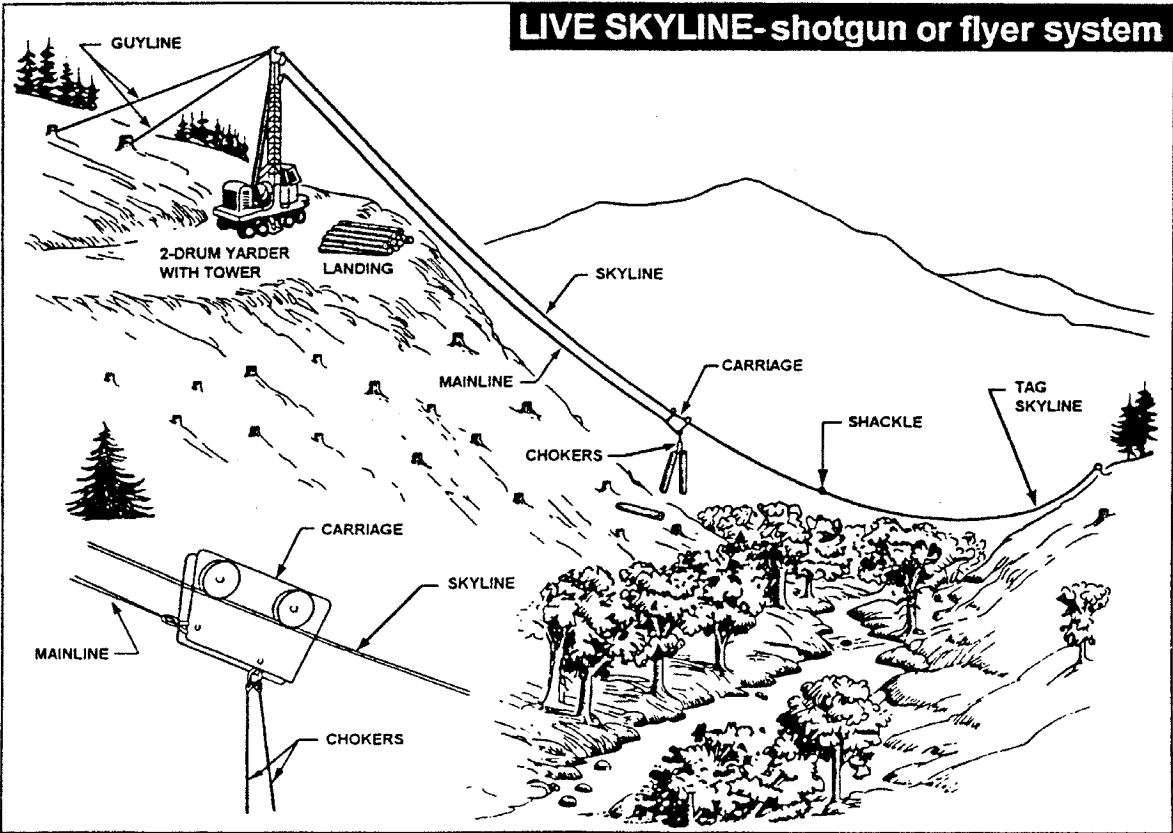


Figure 46: Live Skyline - Shotgun or Flyer System

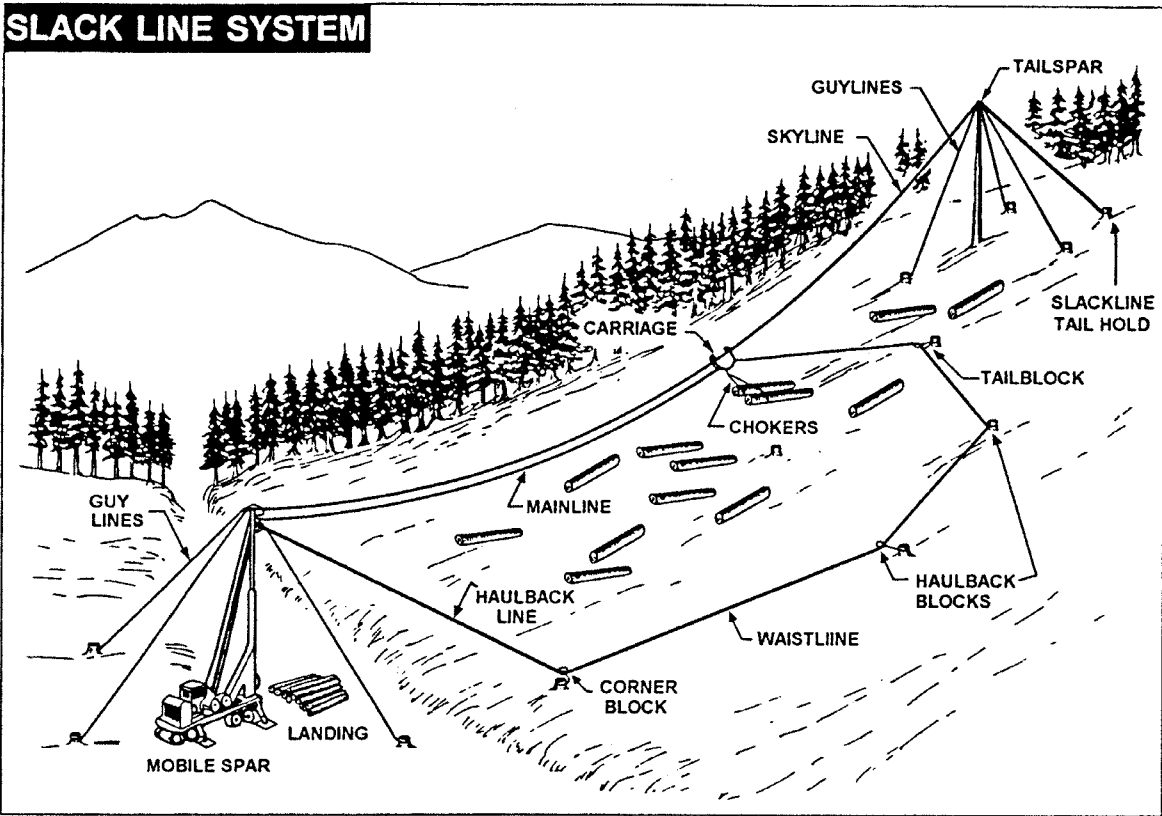


Figure 47: Slack Line System

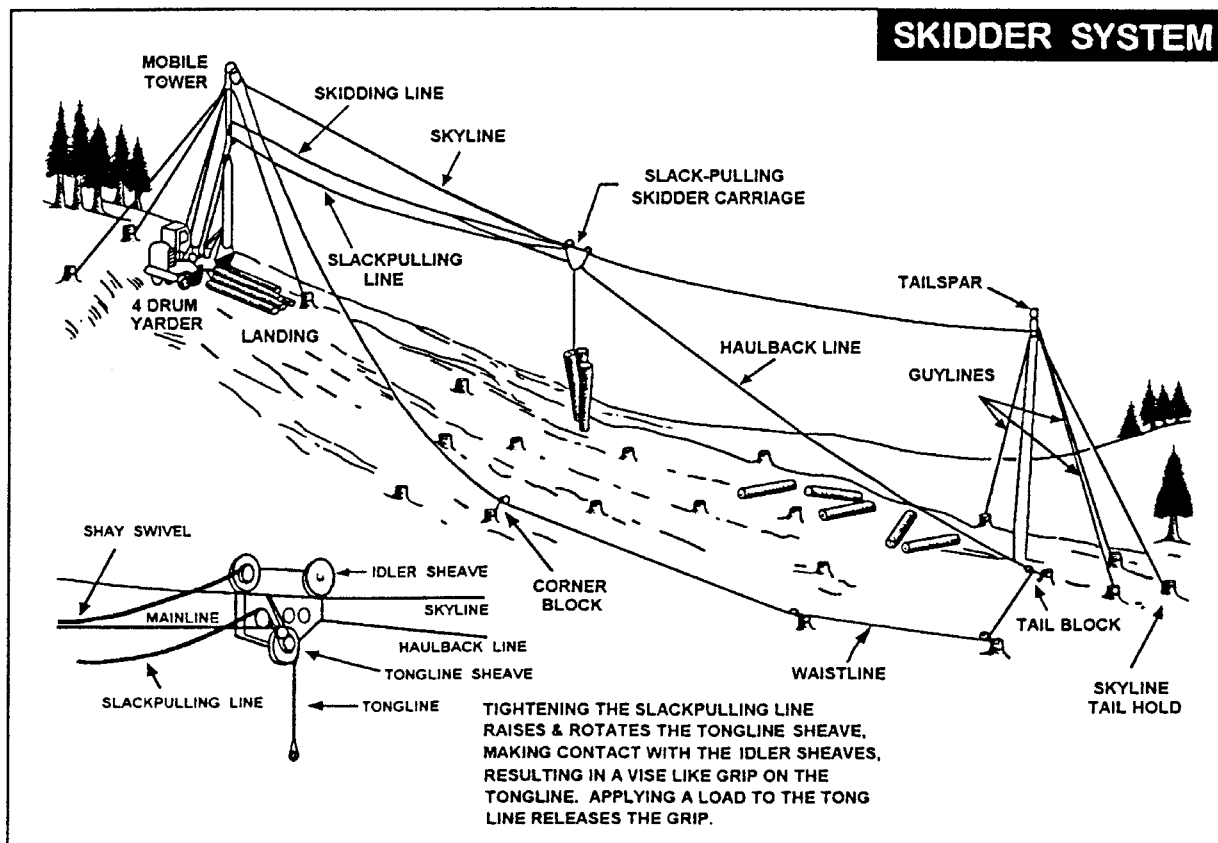


Figure 48: Skidder System

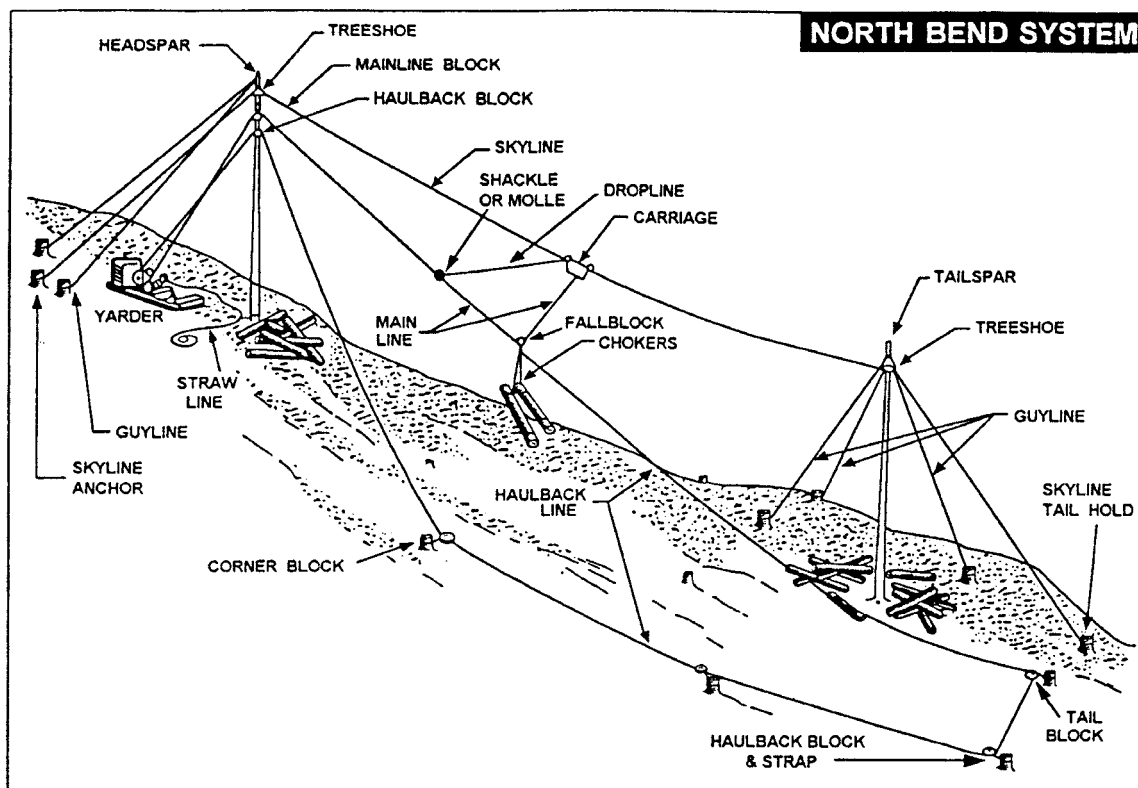


Figure 49: North Bend System

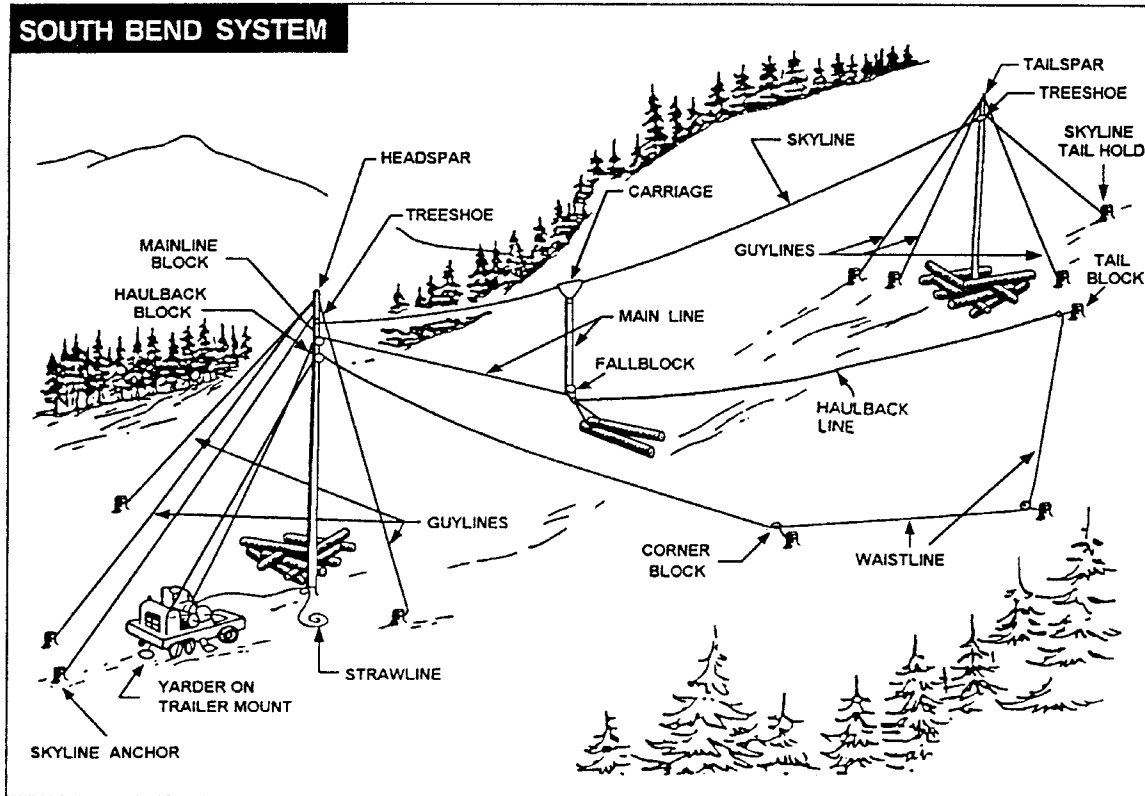


Figure 50: South Bend System

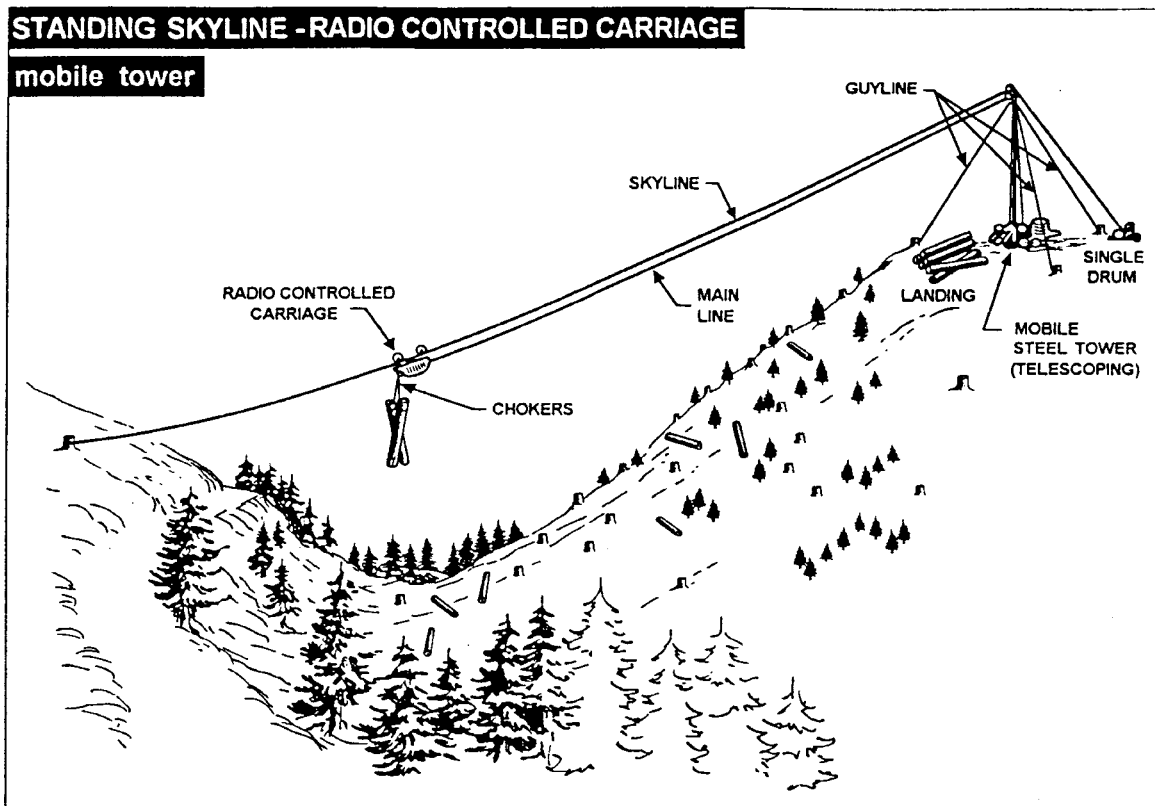


Figure 51: Standing Skyline - Radio Controlled Carriage - Mobile Tower

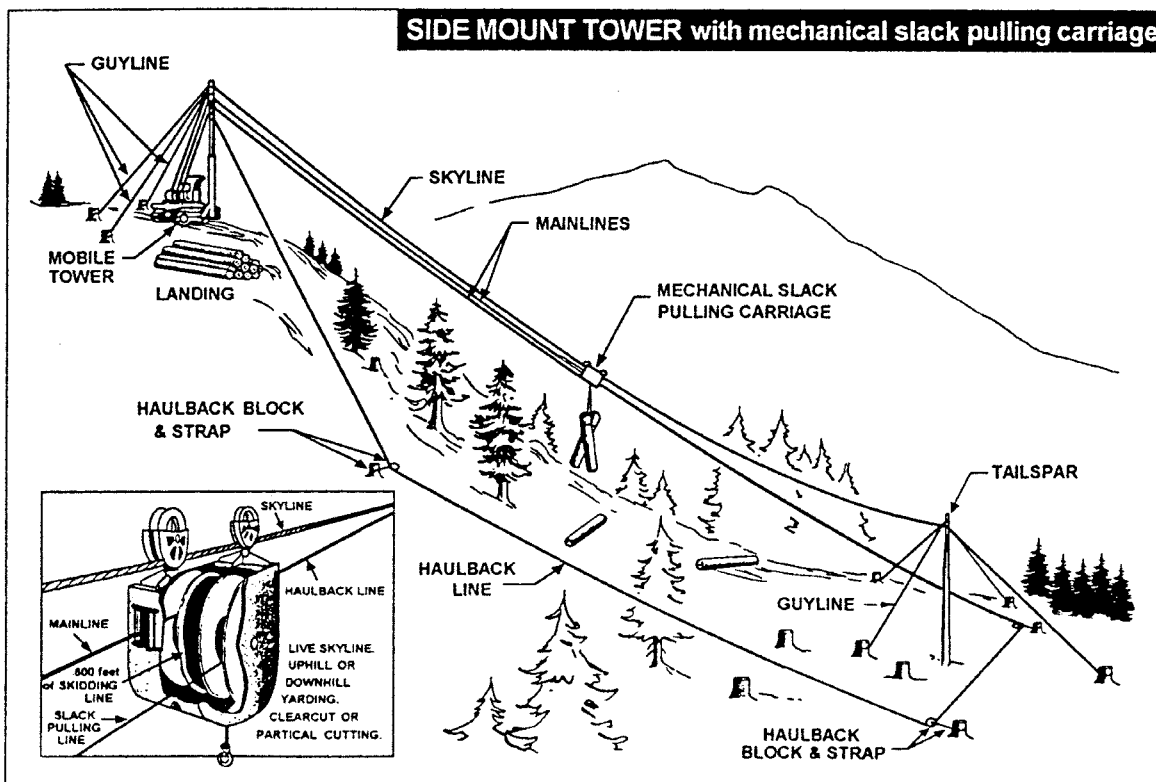


Figure 52: Side Mount Tower with Mechanical Slack Pulling Carriage

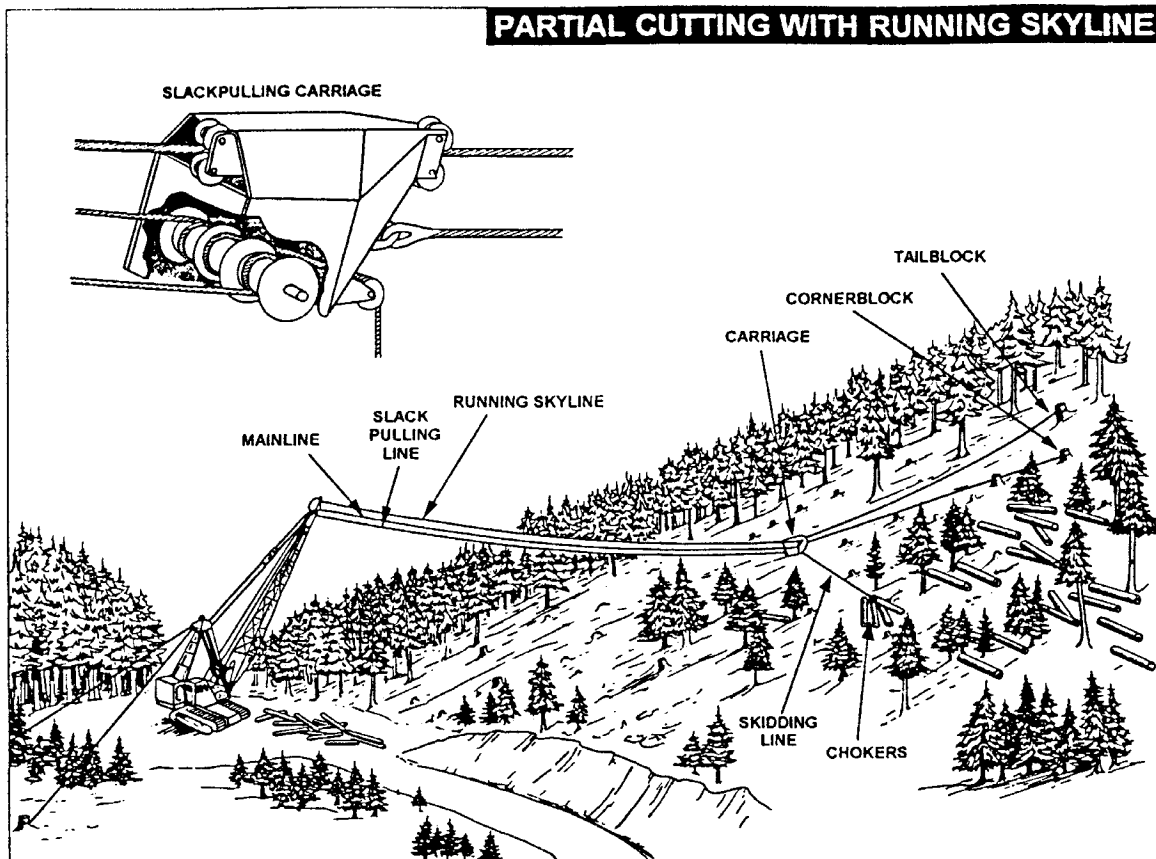


Figure 53: Partial Cutting with Running Skyline

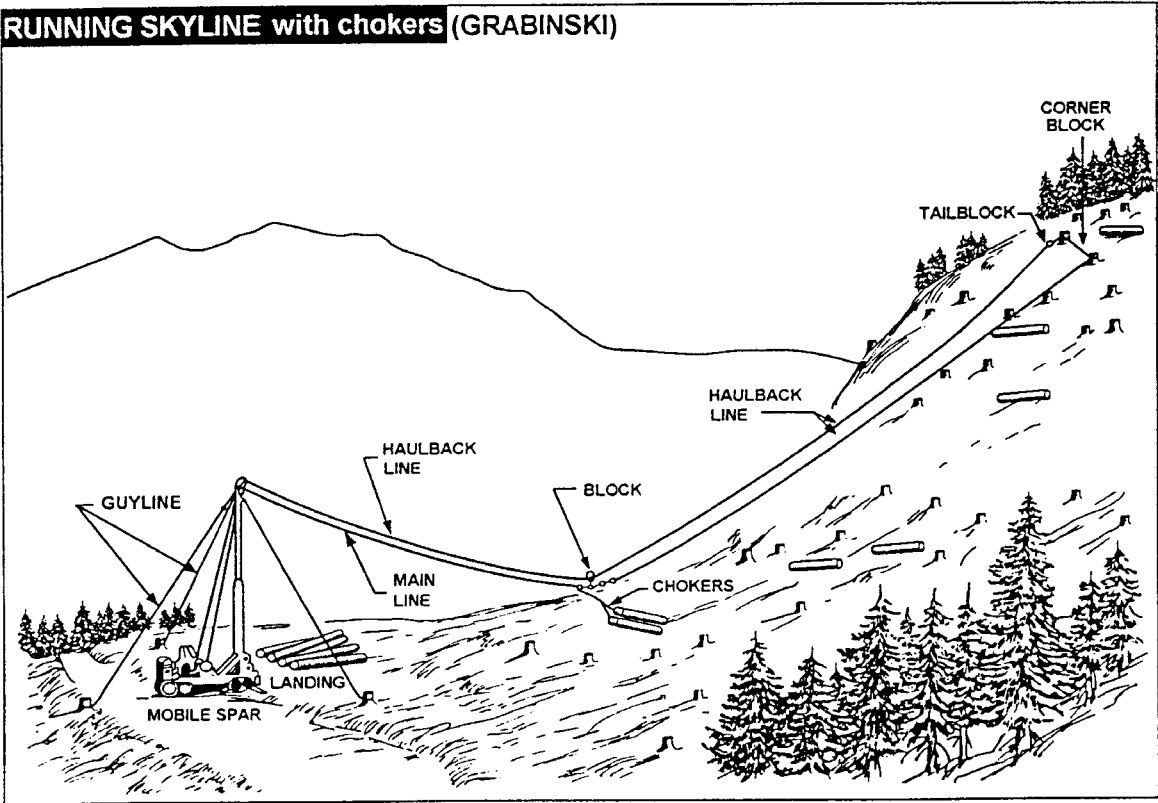


Figure 54: Running Skyline with Chokers (Grabinski)

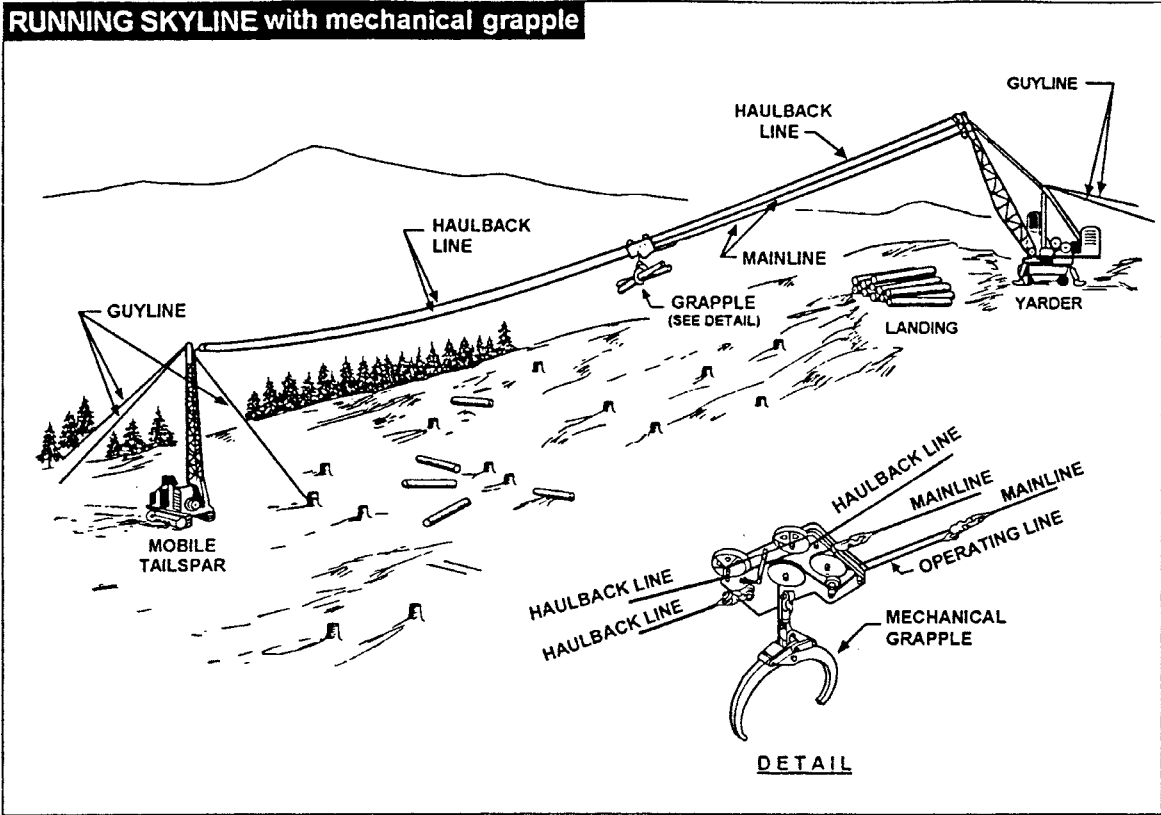


Figure 55: Running Skyline with Mechanical Grapple

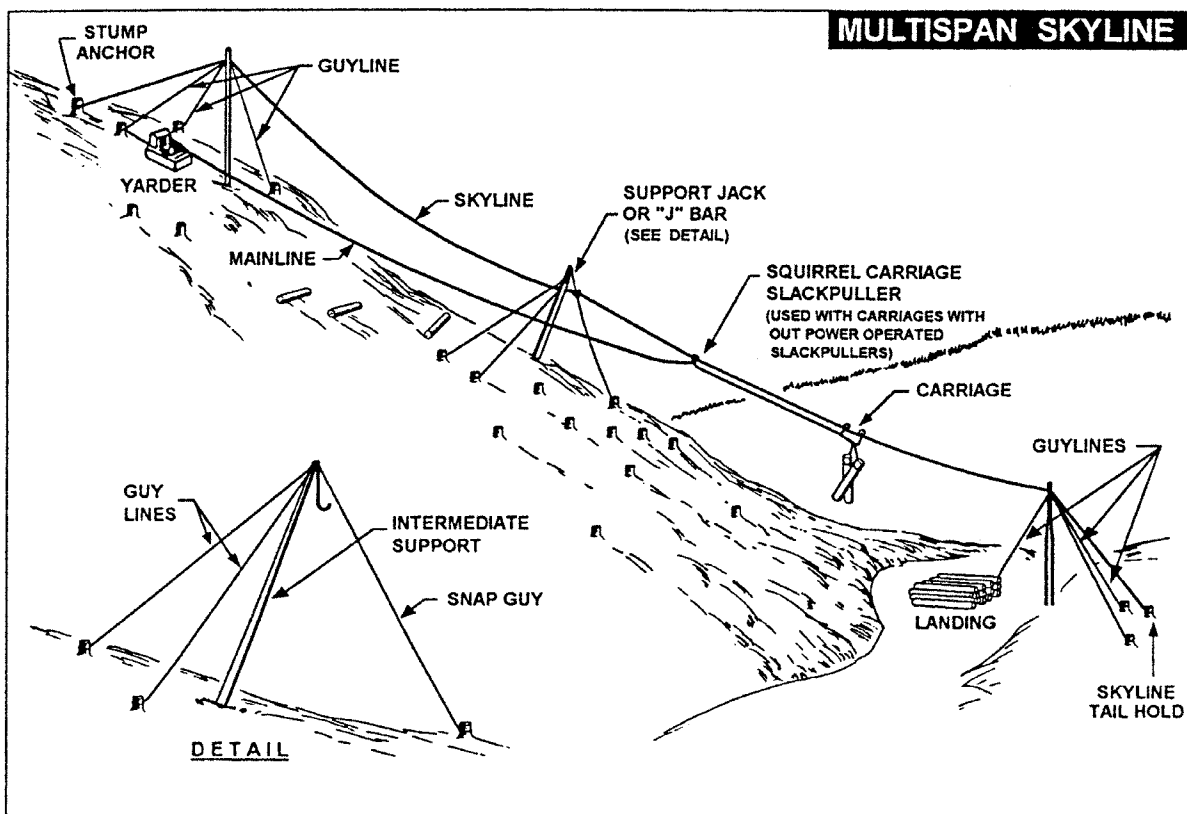


Figure 56: Multi-span Skyline

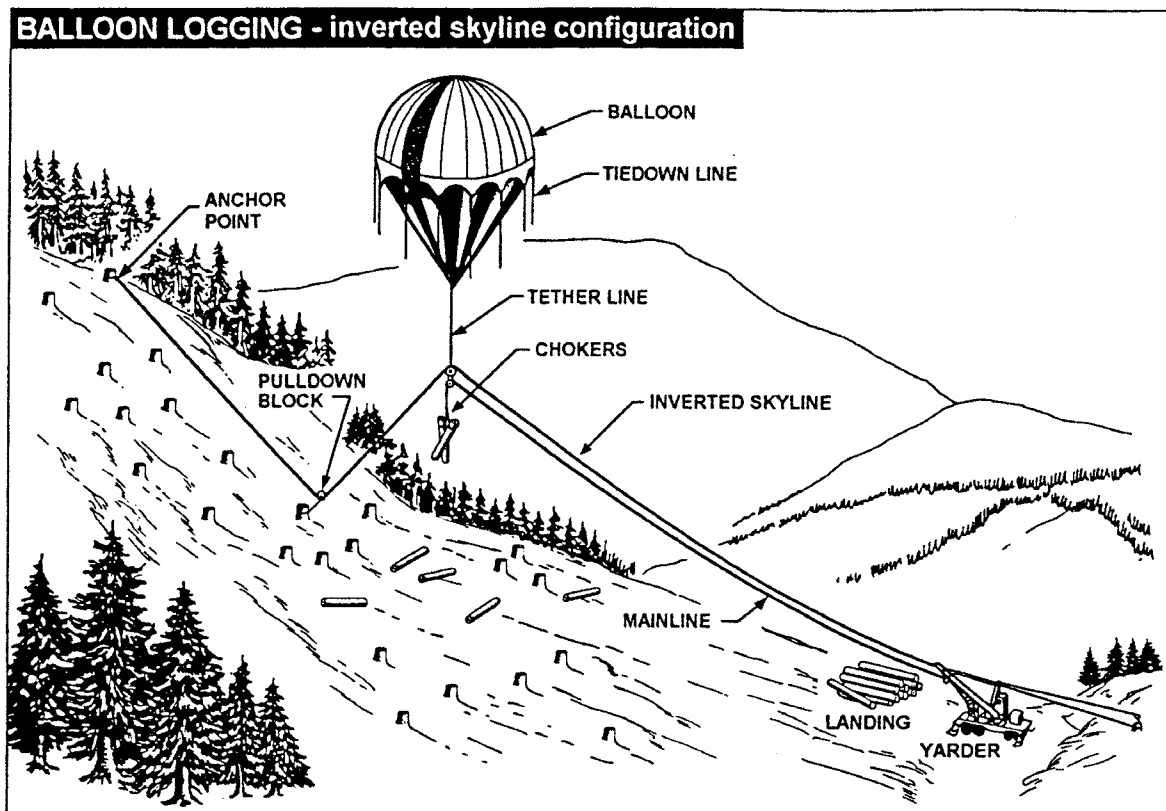


Figure 57: Balloon Logging - Inverted Skyline Configuration

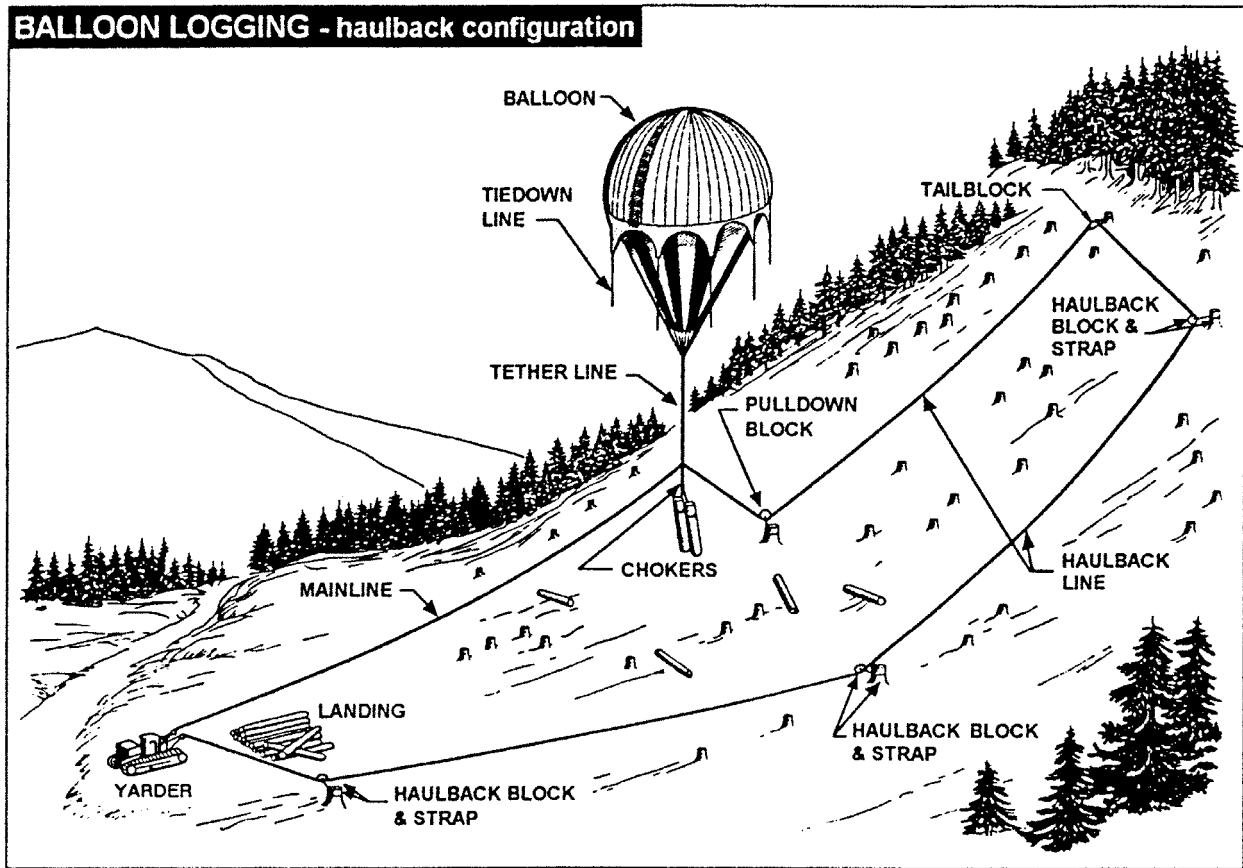


Figure 58: Balloon Logging - Haulback Configuration

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-99013, filed 8/18/99, effective 12/1/99.]

WAC 296-54-99014 Appendix 5—Wooden tree yarding and loading systems.

HIGH LEAD YARDING SYSTEM

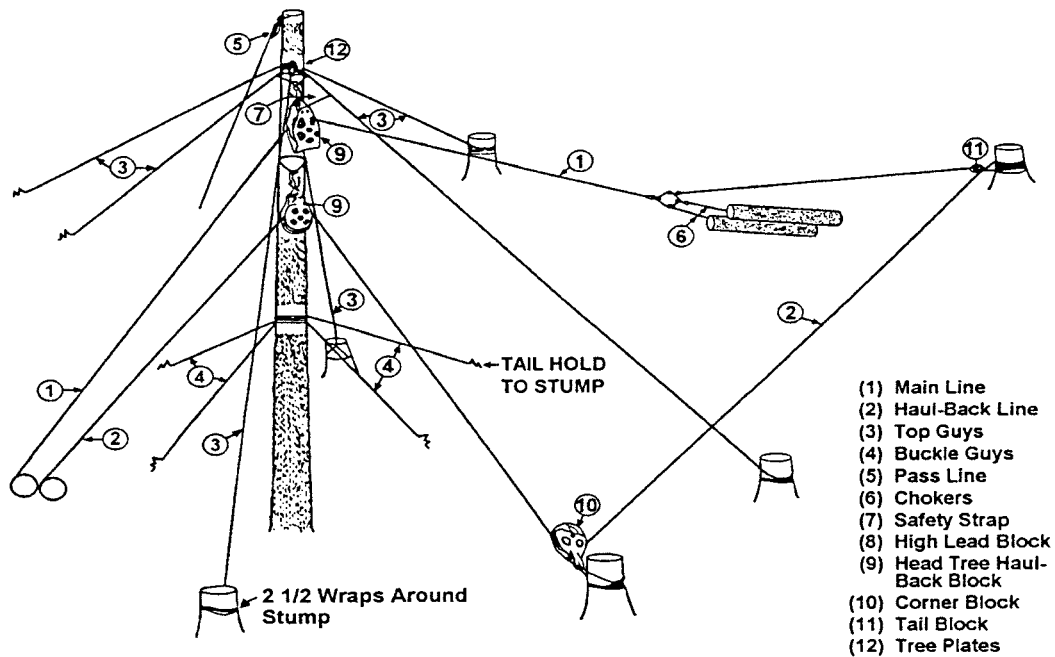


Figure 59: High Lead Yarding System

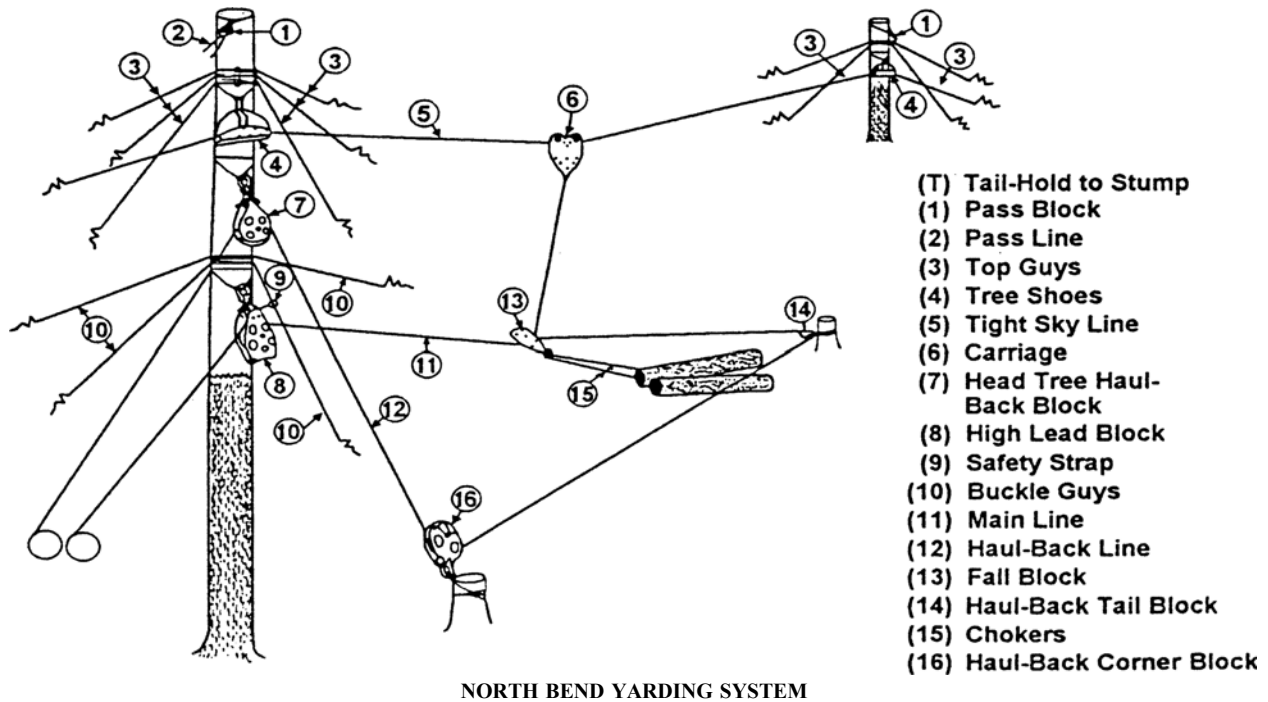


Figure 60: North Bend Yarding System

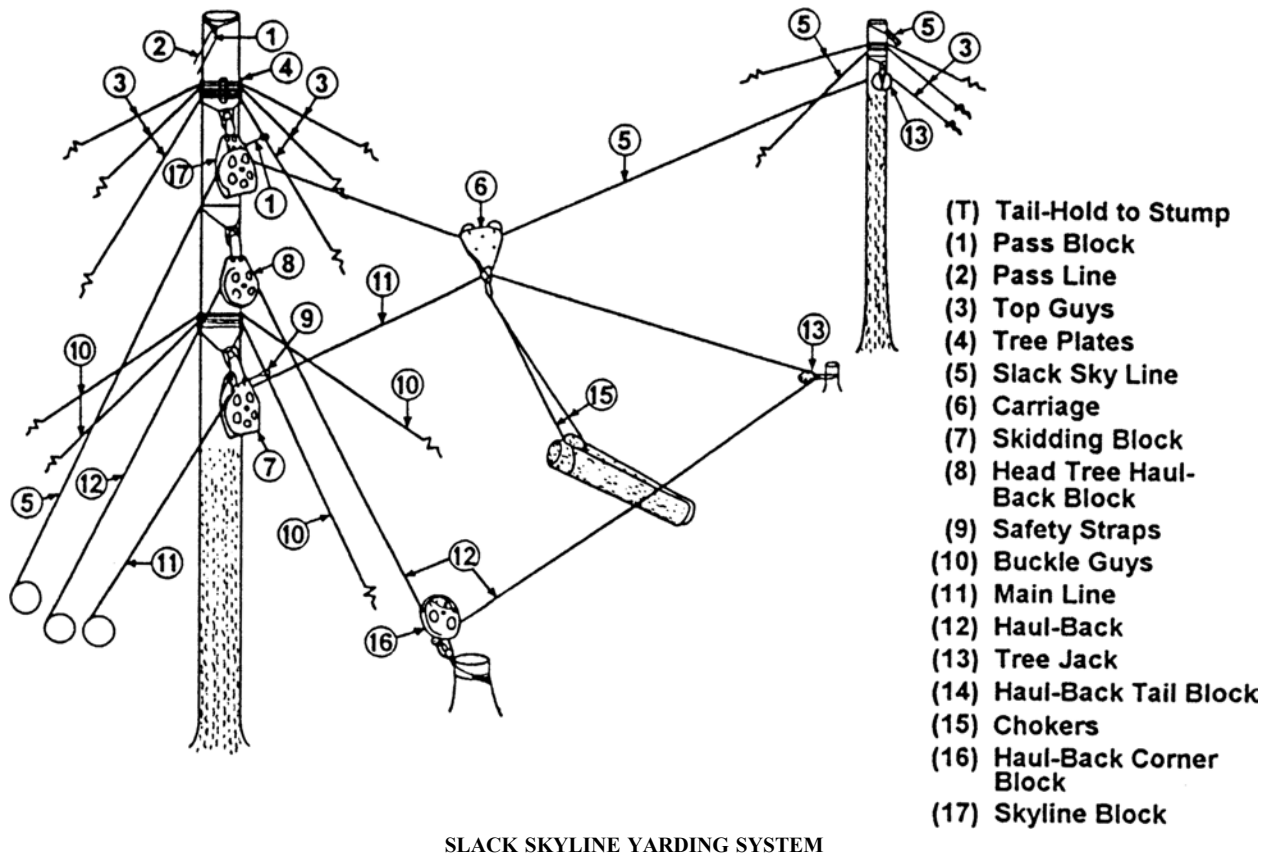


Figure 61: Slack Skyline Yarding System

Heel Boom Loading

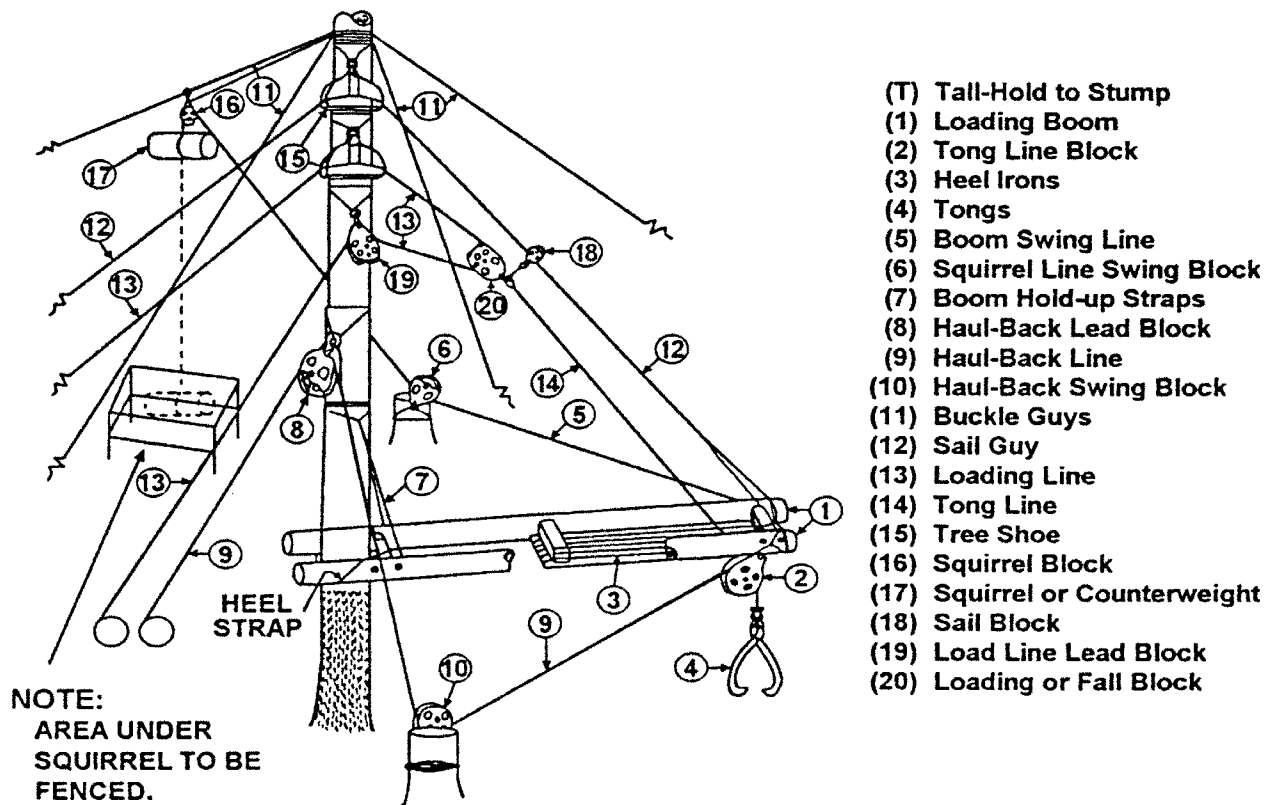


Figure 62: Heel Boom Loading

GUY LINE LOADING

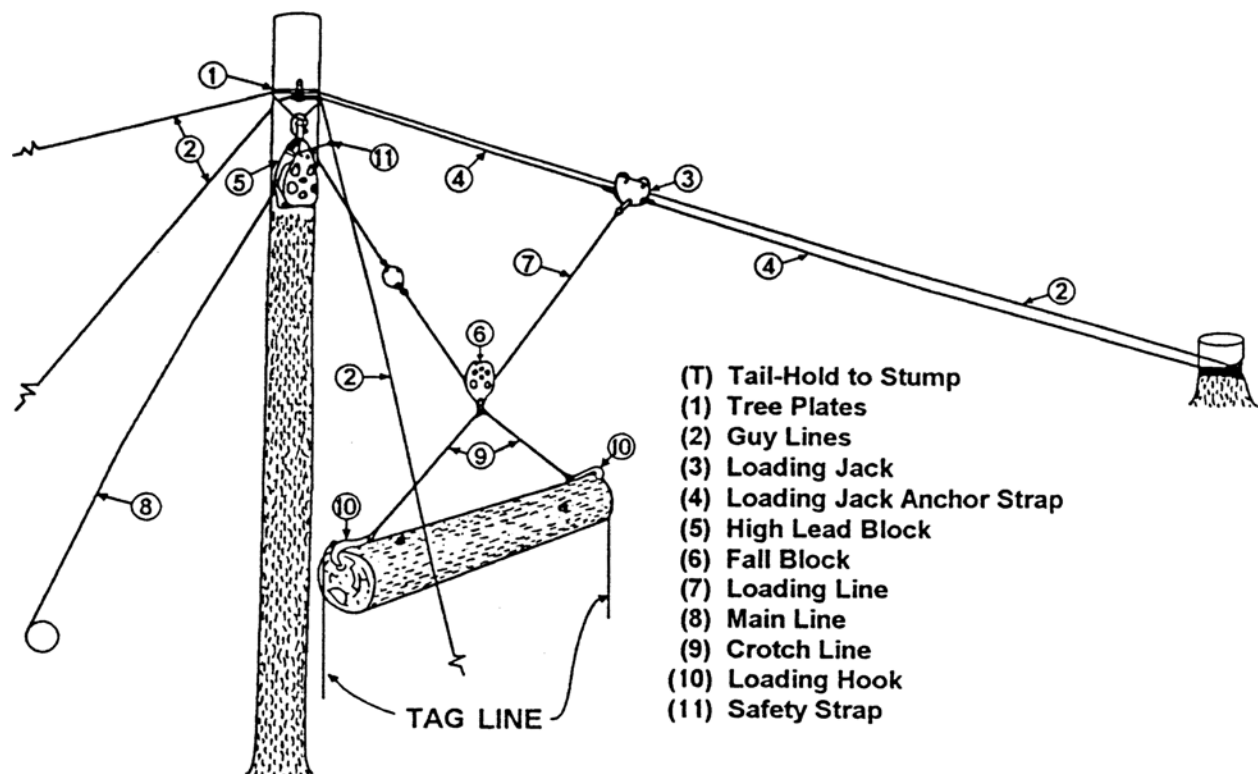


Figure 63: Guy Line Loading

HAYRACK BOOM LOADING

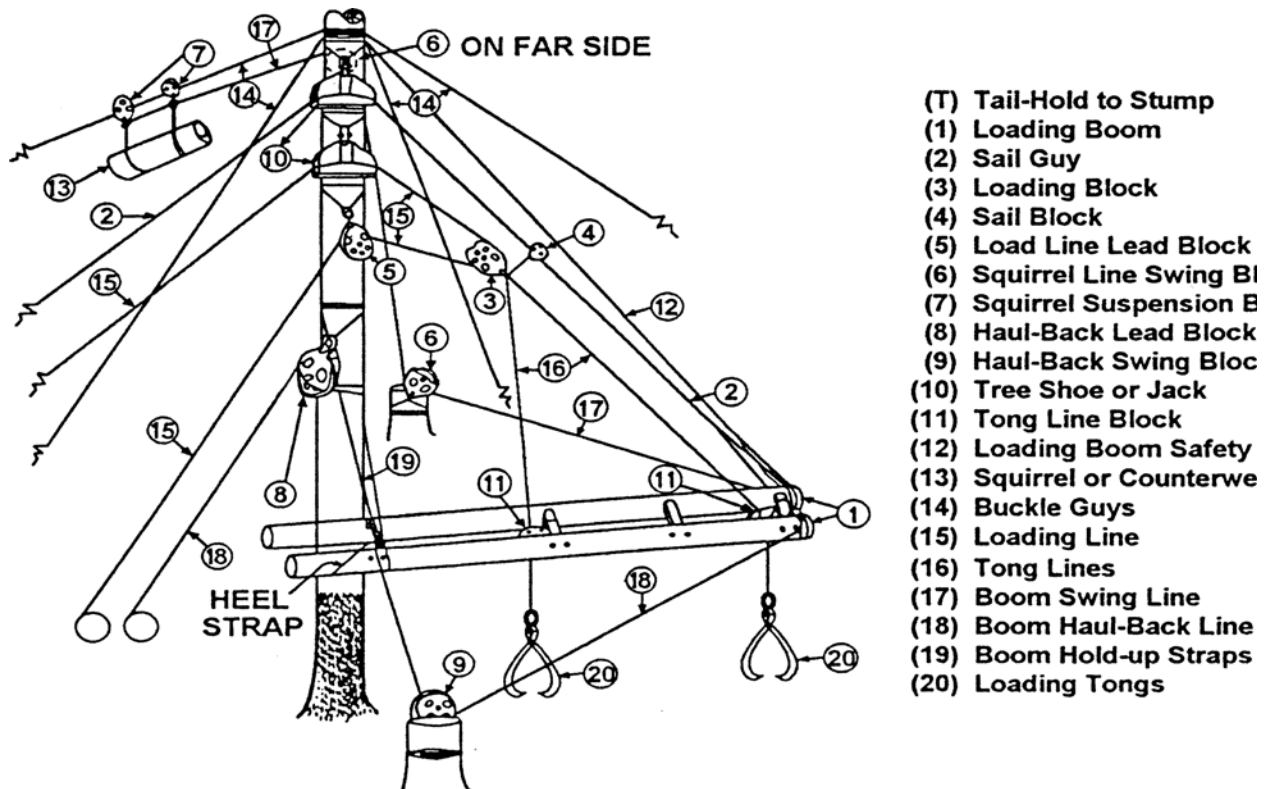
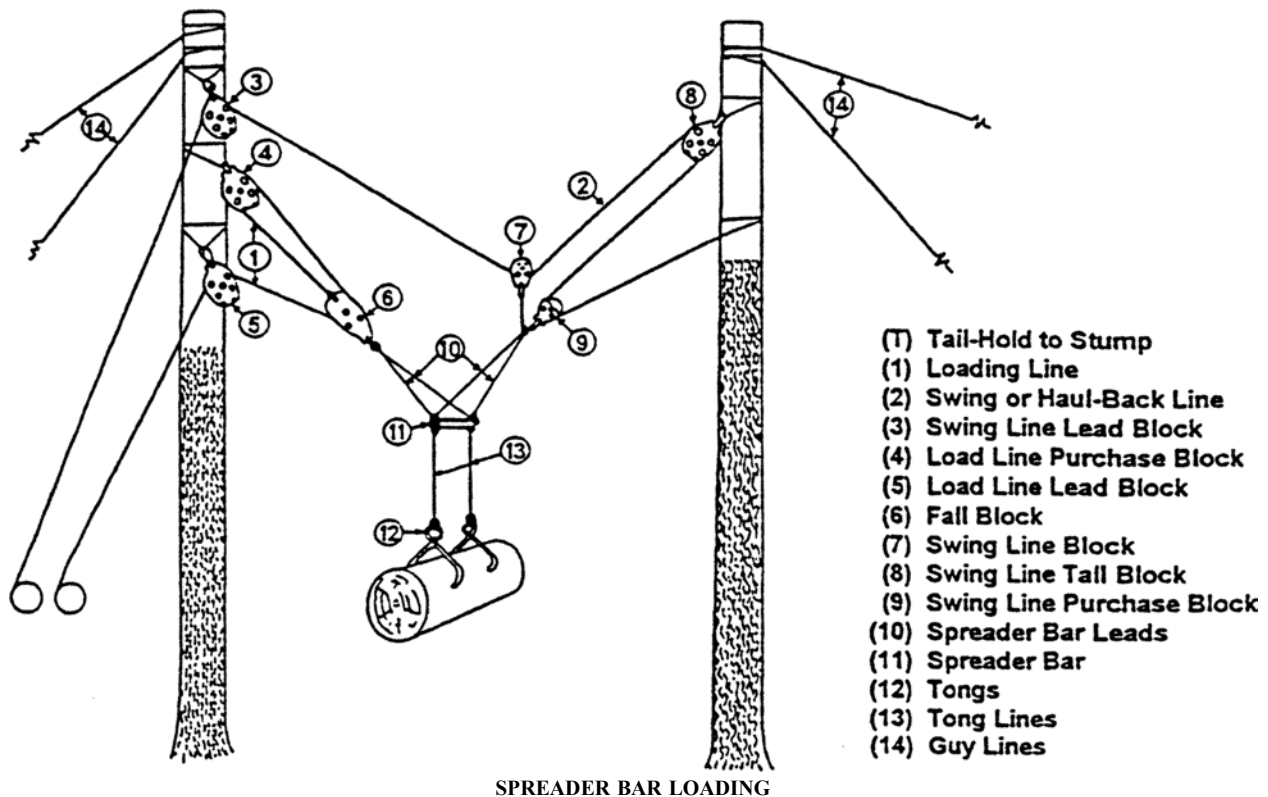


Figure 64: Hayrack Boom Loading



SPREADER BAR LOADING

Figure 65: Spreader Bar Loading

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-117, § 296-54-99014, filed 8/18/99, effective 12/1/99.]

Chapter 296-56 WAC**SAFETY STANDARDS—LONGSHORE, STEVEDORE
AND RELATED WATERFRONT OPERATIONS****WAC****PART A—GENERAL**

296-56-600	Marine terminals.
296-56-60001	Scope and applicability.
296-56-60003	Variance and procedure.
296-56-60005	Definitions.
296-56-60006	Personnel.
296-56-60007	Housekeeping.
296-56-60009	Accident prevention program.

PART B—WATERFRONT OPERATIONS

296-56-60011	Sliding.
296-56-60013	Stacking of cargo and pallets.
296-56-60015	Coopering.
296-56-60017	Line handling.
296-56-60019	Standard gauge railroad operations.
296-56-60021	Signals displayed by each maintenance crew.
296-56-60023	Warning flags or lights.
296-56-60025	Signals unobscured.
296-56-60027	Audible warning system.
296-56-60029	Safety observer on railroad switching.
296-56-60031	Warning at road crossing.
296-56-60033	Flying switches.
296-56-60035	Clearance from railroad tracks.
296-56-60037	Car plates.
296-56-60039	Dockboards (bridge plates).
296-56-60041	Log handling.
296-56-60043	Movement of barges and railcars.
296-56-60045	Communication.
296-56-60047	Open fires.

PART C—HAZARDOUS ATMOSPHERES AND MATERIALS

296-56-60049	Hazardous cargo.
296-56-60051	Handling explosives or hazardous materials.
296-56-60053	Hazardous atmospheres and substances.
296-56-60055	Carbon monoxide.
296-56-60057	Fumigants, pesticides, insecticides and hazardous preservatives (see also WAC 296-56-60049, 296-56-60051 and 296-56-60053).

PART E—CARGO HANDLING GEAR AND EQUIPMENT

296-56-60071	House falls.
296-56-60073	Miscellaneous auxiliary gear.
296-56-60075	Cargo boards and other type pallet boards.
296-56-60077	Powered industrial trucks.
296-56-60079	General rules applicable to vehicles.
296-56-60081	Multipiece and single-piece rim wheels.
296-56-60083	Cranes and derricks.
296-56-60085	Crane load and limit devices.
296-56-60087	Winches.
296-56-60089	Conveyors.
296-56-60091	Spouts, chutes, hoppers, bins, and associated equipment.
296-56-60093	Certification of marine terminal material handling devices.
296-56-60095	Advisory crane certification panel.
296-56-60097	Unit proof load test and inspection.
296-56-60098	Examination and inspection of cranes and derricks.
296-56-60099	Hand tools.

PART F—SPECIALIZED TERMINALS

296-56-60101	General.
296-56-60103	Terminals handling intermodal containers or roll-on roll-off operations.
296-56-60105	Grain elevator terminals.
296-56-60107	Terminal facilities handling menhaden and similar species of fish.

PART G—PERSONAL PROTECTION

296-56-60109	Eye protection.
296-56-60110	Respiratory protection.
296-56-60111	Head protection.
296-56-60113	Foot protection.
296-56-60115	Other protective measures.
296-56-60117	Maintenance and load limits.
296-56-60119	Protection from falling.

296-56-60121	Minimum safety requirements for docks and dock facilities.
296-56-60122	Access to vessels.
296-56-60123	Guarding of edges.
296-56-60125	Clearance heights.
296-56-60127	Cargo doors.
296-56-60129	Platforms and skids.
296-56-60131	Elevators and escalators.
296-56-60133	Manlifts.

PART H—MANLIFTS—ELECTRIC

296-56-60135	Manlifts—Electric.
296-56-60139	Hoistway enclosures and landings.
296-56-60141	Scope and application.
296-56-60143	Hoistway gates.
296-56-60145	Elevator car.
296-56-60147	Elevator doors.
296-56-60149	Counterweight, enclosures, and fastenings.
296-56-60151	Guide rails.
296-56-60153	Hoisting ropes.
296-56-60155	Space under hoistway.
296-56-60157	Car safeties.
296-56-60159	Brakes.
296-56-60161	Car controls and safety devices.
296-56-60167	Hoisting machine mechanisms.
296-56-60169	Elevator car and counterweight buffers.
296-56-60171	General requirements.

PART I—MANLIFTS—HAND POWER

296-56-60180	Scope and application.
296-56-60183	Hoistway landings.
296-56-60185	Hoistway clearances.
296-56-60187	Habitable space under hoistways.
296-56-60189	Hoistway guide rails.
296-56-60191	Buffer springs and overtravel of car.
296-56-60193	Car specifications.
296-56-60195	Counterweights.
296-56-60197	Sheaves.
296-56-60199	Hoisting ropes.
296-56-60201	Operating rope.
296-56-60203	Lighting.
296-56-60205	Overhead supports.
296-56-60207	General requirements.

**PART J—LADDERS, STAIRWAYS OPENINGS, SANITATION,
SIGNS, ETC.**

296-56-60209	Fixed ladders.
296-56-60211	Portable ladders.
296-56-60213	Jacob's ladders.
296-56-60215	Fixed stairways.
296-56-60217	Spiral stairways.
296-56-60219	Employee exits.
296-56-60221	Illumination.
296-56-60223	Passage between levels and across openings.
296-56-60225	Guarding temporary hazards.
296-56-60227	River banks.
296-56-60229	Sanitation.
296-56-60231	Signs and marking.

PART K—RELATED TERMINAL OPERATIONS AND EQUIPMENT

296-56-60233	Related terminal operations and equipment—Machine guarding.
296-56-60235	Welding, cutting and heating (hot work) (see also definition of "hazardous cargo, material, substance or atmosphere").
296-56-60237	Spray painting.
296-56-60239	Compressed air.
296-56-60241	Air receivers.
296-56-60243	Fuel handling and storage.
296-56-60245	Battery charging and changing.
296-56-60247	Prohibited operations.
296-56-60249	Petroleum docks.
296-56-60251	Boat marinas.
296-56-60253	Canneries and cold storage docks.
296-56-60255	Excerpts from Revised Code of Washington.
296-56-99002	Form—Appendix A—Standard signals for longshore crane signals.
296-56-99003	Form—Appendix B—Standard signals for longshore crane signals.

**DISPOSITION OF SECTIONS FORMERLY
CODIFIED IN THIS CHAPTER**

296-56-001	through 296-56-400. [Filed 3/23/60.] Superseded by safety standards for longshore, stevedore and related waterfront operations, filed 9/24/65. See WAC 296-56-401 et seq.	296-56-440	24), filed 12/11/84. Statutory Authority: RCW 49.17.040 and 49.17.050.
296-56-401	Scope and application. [Order 74-14, § 296-56-401, filed 4/22/74; Order 69-3, § 296-56-401, filed 5/26/69, effective 7/1/69; Rules (part), filed 9/24/65; Rule (part), filed 3/23/60.] Repealed by 85-01-022 (Order 84-24), filed 12/11/84. Statutory Authority: RCW 49.17.040 and 49.17.050.	296-56-442	Minimum safety requirements for docks and dock facilities. [Order 74-14, § 296-56-440, filed 4/22/74; Order 69-3, § 296-56-440, filed 5/26/69, effective 7/1/69; § 1, Rules 1.010-1.030, filed 9/24/65; Rule (part), filed 3/23/60.] Repealed by 85-01-022 (Order 84-24), filed 12/11/84. Statutory Authority: RCW 49.17.040 and 49.17.050.
296-56-405	Practical application. [Order 74-14, § 296-56-405, filed 4/22/74.] Repealed by 85-01-022 (Order 84-24), filed 12/11/84. Statutory Authority: RCW 49.17.040 and 49.17.050.	296-56-44201	Crane and spout certification, application. [Order 74-14, § 296-56-442, filed 4/22/74.] Repealed by 85-01-022 (Order 84-24), filed 12/11/84. Statutory Authority: RCW 49.17.040 and 49.17.050.
296-56-410	Introduction. [Order 74-14, § 296-56-410, filed 4/22/74; Introduction, filed 9/24/65; Rules (part), filed 3/23/60.] Repealed by 85-01-022 (Order 84-24), filed 12/11/84. Statutory Authority: RCW 49.17.040 and 49.17.050.	296-56-44203	Qualifications of persons making inspections, issuance of certificates, posting certificates, etc. [Order 74-14, § 296-56-44201, filed 4/22/74.] Repealed by 85-01-022 (Order 84-24), filed 12/11/84. Statutory Authority: RCW 49.17.040 and 49.17.050.
296-56-412	Variance and procedure. [Order 74-14, § 296-56-412, filed 4/22/74.] Repealed by 85-01-022 (Order 84-24), filed 12/11/84. Statutory Authority: RCW 49.17.040 and 49.17.050.	296-56-44205	Unit proof load test and inspection. [Order 74-14, § 296-56-44203, filed 4/22/74.] Repealed by 85-01-022 (Order 84-24), filed 12/11/84. Statutory Authority: RCW 49.17.040 and 49.17.050.
296-56-415	Definitions. [Order 74-14, § 296-56-415, filed 4/22/74.] Repealed by 85-01-022 (Order 84-24), filed 12/11/84. Statutory Authority: RCW 49.17.040 and 49.17.050.	296-56-44207	Examination and inspection of cranes and derricks. [Order 74-14, § 296-56-44205, filed 4/22/74.] Repealed by 85-01-022 (Order 84-24), filed 12/11/84. Statutory Authority: RCW 49.17.040 and 49.17.050.
296-56-420	Education and first-aid standards. [Order 76-7, § 296-56-420, filed 3/1/76; Order 74-14, § 296-56-420, filed 4/22/74; Rules (part), filed 9/24/65; Rules (part), filed 3/23/60.] Repealed by 85-01-022 (Order 84-24), filed 12/11/84. Statutory Authority: RCW 49.17.040 and 49.17.050.	296-56-44209	Equipment and information to be installed or posted on cranes or derricks. [Order 74-14, § 296-56-44207, filed 4/22/74.] Repealed by 85-01-022 (Order 84-24), filed 12/11/84. Statutory Authority: RCW 49.17.040 and 49.17.050.
296-56-430	Management's responsibility. [Order 74-14, § 296-56-430, filed 4/22/74; Rules (part), filed 9/24/65; Rules (part), filed 3/23/60.] Repealed by 85-01-022 (Order 84-24), filed 12/11/84. Statutory Authority: RCW 49.17.040 and 49.17.050.	296-56-44255	Cargo spouts, suckers and similar types of equipment. [Order 74-14, § 296-56-44209, filed 4/22/74.] Repealed by 85-01-022 (Order 84-24), filed 12/11/84. Statutory Authority: RCW 49.17.040 and 49.17.050.
296-56-432	Employee's responsibility. [Order 74-14, § 296-56-432, filed 4/22/74.] Repealed by 85-01-022 (Order 84-24), filed 12/11/84. Statutory Authority: RCW 49.17.040 and 49.17.050.	296-56-446	Radio controlled cranes. [Order 69-3, § 296-56-445, filed 5/26/69, effective 7/1/69.] Repealed by Order 74-14, filed 4/22/74.
296-56-435	Accident prevention program. [Order 74-14, § 296-56-435, filed 4/22/74.] Repealed by 85-01-022 (Order 84-24), filed 12/11/84. Statutory Authority: RCW 49.17.040 and 49.17.050.	296-56-446	Cranes and crane operations—Scope and application. [Order 74-14, § 296-56-446, filed 4/22/74.] Repealed by 85-01-022 (Order 84-24), filed 12/11/84. Statutory Authority: RCW 49.17.040 and 49.17.050.
296-56-436	General safety requirements. [Order 76-7, § 296-56-436, filed 3/1/76; Order 74-14, § 296-56-436, filed 4/22/74.] Repealed by 85-01-022 (Order 84-24), filed 12/11/84. Statutory Authority: RCW 49.17.040 and 49.17.050.	296-56-44601	Operators. [Order 74-14, § 296-56-44601, filed 4/22/74.] Repealed by 85-01-022 (Order 84-24), filed 12/11/84. Statutory Authority: RCW 49.17.040 and 49.17.050.
296-56-43801	Eye protection. [Order 74-14, § 296-56-43801, filed 4/22/74.] Repealed by 85-01-022 (Order 84-24), filed 12/11/84. Statutory Authority: RCW 49.17.040 and 49.17.050.	296-56-44603	Signalmen. [Order 74-14, § 296-56-44603, filed 4/22/74.] Repealed by 85-01-022 (Order 84-24), filed 12/11/84. Statutory Authority: RCW 49.17.040 and 49.17.050.
296-56-43803	Respiratory protection. [Statutory Authority: RCW 49.17.040 and 49.17.050. 83-24-013 (Order 83-34), § 296-56-43803, filed 11/30/83; Order 74-14, § 296-56-43803, filed 4/22/74.] Repealed by 85-01-022 (Order 84-24), filed 12/11/84. Statutory Authority: RCW 49.17.040 and 49.17.050.	296-56-44605	Signals. [Order 74-14, § 296-56-44605, filed 4/22/74.] Repealed by 85-01-022 (Order 84-24), filed 12/11/84. Statutory Authority: RCW 49.17.040 and 49.17.050.
296-56-43805	Protective clothing. [Order 74-14, § 296-56-43805, filed 4/22/74.] Repealed by 85-01-022 (Order 84-24), filed 12/11/84. Statutory Authority: RCW 49.17.040 and 49.17.050.	296-56-44607	Signalman for power units. [Order 74-14, § 296-56-44607, filed 4/22/74.] Repealed by 85-01-022 (Order 84-24), filed 12/11/84. Statutory Authority: RCW 49.17.040 and 49.17.050.
296-56-43807	Foot protection. [Order 74-14, § 296-56-43807, filed 4/22/74.] Repealed by 85-01-022 (Order 84-24), filed 12/11/84. Statutory Authority: RCW 49.17.040 and 49.17.050.	296-56-44609	Radio communication. [Order 74-14, § 296-56-44609, filed 4/22/74.] Repealed by 85-01-022 (Order 84-24), filed 12/11/84. Statutory Authority: RCW 49.17.040 and 49.17.050.
296-56-43809	Head protection. [Order 74-14, § 296-56-43809, filed 4/22/74.] Repealed by 85-01-022 (Order 84-24), filed 12/11/84. Statutory Authority: RCW 49.17.040 and 49.17.050.	296-56-44611	Obstructions. [Order 74-14, § 296-56-44611, filed 4/22/74.] Repealed by 85-01-022 (Order 84-24), filed 12/11/84. Statutory Authority: RCW 49.17.040 and 49.17.050.
296-56-43811	Required clothing, caps, etc. [Order 74-14, § 296-56-43811, filed 4/22/74.] Repealed by 85-01-022 (Order 84-24), filed 12/11/84. Statutory Authority: RCW 49.17.040 and 49.17.050.	296-56-44613	Crane clearance. [Order 74-14, § 296-56-44613, filed 4/22/74.] Repealed by 85-01-022 (Order 84-24), filed 12/11/84. Statutory Authority: RCW 49.17.040 and 49.17.050.
296-56-43813	Protection from falling. [Order 74-14, § 296-56-43813, filed 4/22/74.] Repealed by 85-01-022 (Order 84-24), filed 12/11/84. Statutory Authority: RCW 49.17.040 and 49.17.050.	296-56-44615	Qualifications of machinery operators. [Order 74-14, § 296-56-44615, filed 4/22/74.] Repealed by 85-01-022 (Order 84-24), filed 12/11/84. Statutory Authority: RCW 49.17.040 and 49.17.050.
296-56-43815	Personal flotation devices. [Order 76-7, § 296-56-43815, filed 3/1/76.] Repealed by 85-01-022 (Order 84-	296-56-450	Radio controls. [Order 74-14, § 296-56-44617, filed 4/22/74.] Repealed by 85-01-022 (Order 84-24), filed 12/11/84. Statutory Authority: RCW 49.17.040 and 49.17.050.
		296-56-455	Posting claim procedure. [§ II, Rule 2.010, filed 9/24/65; Rules (part), filed 3/23/60.] Repealed by Order 74-14, filed 4/22/74.
			Inspection of stevedore equipment or gear—Scope and application. [Order 74-14, § 296-56-455, filed 4/22/74.] Repealed by 85-01-022 (Order 84-24), filed 12/11/84. Statutory Authority: RCW 49.17.040 and 49.17.050.

296-56-45501	General requirements. [Order 74-14, § 296-56-45501, filed 4/22/74.] Repealed by 85-01-022 (Order 84-24), filed 12/11/84. Statutory Authority: RCW 49.17.040 and 49.17.050.	296-56-47507	Warning device. [Order 74-14, § 296-56-47507, filed 4/22/74.] Repealed by 85-01-022 (Order 84-24), filed 12/11/84. Statutory Authority: RCW 49.17.040 and 49.17.050.
296-56-45503	Fiber rope and fiber rope slings. [Order 76-7, § 296-56-45503, filed 3/1/76; Order 74-14, § 296-56-45503, filed 4/22/74.] Repealed by 85-01-022 (Order 84-24), filed 12/11/84. Statutory Authority: RCW 49.17.040 and 49.17.050.	296-56-47509	Audible warning system. [Order 74-14, § 296-56-47509, filed 4/22/74.] Repealed by 85-01-022 (Order 84-24), filed 12/11/84. Statutory Authority: RCW 49.17.040 and 49.17.050.
296-56-45505	Wire rope and wire rope slings. [Order 74-14, § 296-56-45505, filed 4/22/74.] Repealed by 85-01-022 (Order 84-24), filed 12/11/84. Statutory Authority: RCW 49.17.040 and 49.17.050.	296-56-47511	Passageway across railroad tracks required. [Order 74-14, § 296-56-47511, filed 4/22/74.] Repealed by 85-01-022 (Order 84-24), filed 12/11/84. Statutory Authority: RCW 49.17.040 and 49.17.050.
296-56-45507	Chains and chain slings. [Order 74-14, § 296-56-45507, filed 4/22/74.] Repealed by 85-01-022 (Order 84-24), filed 12/11/84. Statutory Authority: RCW 49.17.040 and 49.17.050.	296-56-47513	Cars to be immobilized. [Order 74-14, § 296-56-47513, filed 4/22/74.] Repealed by 85-01-022 (Order 84-24), filed 12/11/84. Statutory Authority: RCW 49.17.040 and 49.17.050.
296-56-45509	Shackles. [Order 74-14, § 296-56-45509, filed 4/22/74.] Repealed by 85-01-022 (Order 84-24), filed 12/11/84. Statutory Authority: RCW 49.17.040 and 49.17.050.	296-56-47515	Working in railroad cars. [Order 74-14, § 296-56-47515, filed 4/22/74.] Repealed by 85-01-022 (Order 84-24), filed 12/11/84. Statutory Authority: RCW 49.17.040 and 49.17.050.
296-56-45511	Hooks other than hand hooks. [Order 74-14, § 296-56-45511, filed 4/22/74.] Repealed by 85-01-022 (Order 84-24), filed 12/11/84. Statutory Authority: RCW 49.17.040 and 49.17.050.	296-56-47517	Safety observer on railroad switching. [Order 74-14, § 296-56-47517, filed 4/22/74.] Repealed by 85-01-022 (Order 84-24), filed 12/11/84. Statutory Authority: RCW 49.17.040 and 49.17.050.
296-56-45513	Cargo boards and other type pallet boards. [Order 74-14, § 296-56-45513, filed 4/22/74.] Repealed by 85-01-022 (Order 84-24), filed 12/11/84. Statutory Authority: RCW 49.17.040 and 49.17.050.	296-56-47519	Warning at road crossing. [Order 74-14, § 296-56-47519, filed 4/22/74.] Repealed by 85-01-022 (Order 84-24), filed 12/11/84. Statutory Authority: RCW 49.17.040 and 49.17.050.
296-56-45515	Chutes, gravity conveyors and rollers. [Order 74-14, § 296-56-45515, filed 4/22/74.] Repealed by 85-01-022 (Order 84-24), filed 12/11/84. Statutory Authority: RCW 49.17.040 and 49.17.050.	296-56-47521	Preparation of cars for moving. [Order 74-14, § 296-56-47521, filed 4/22/74.] Repealed by 85-01-022 (Order 84-24), filed 12/11/84. Statutory Authority: RCW 49.17.040 and 49.17.050.
296-56-45517	Disposition of defective material or gear. [Order 74-14, § 296-56-45517, filed 4/22/74.] Repealed by 85-01-022 (Order 84-24), filed 12/11/84. Statutory Authority: RCW 49.17.040 and 49.17.050.	296-56-47523	Flying switches. [Order 74-14, § 296-56-47523, filed 4/22/74.] Repealed by 85-01-022 (Order 84-24), filed 12/11/84. Statutory Authority: RCW 49.17.040 and 49.17.050.
296-56-460	Minimum requirements for first aid—First-aid training. [§ III, Rule 3.010, filed 9/24/65; Rules (part), filed 3/23/60.] Repealed by Order 74-14, filed 4/22/74.	296-56-47525	Car opening devices. [Order 74-14, § 296-56-47525, filed 4/22/74.] Repealed by 85-01-022 (Order 84-24), filed 12/11/84. Statutory Authority: RCW 49.17.040 and 49.17.050.
296-56-46001	Keep clear of lines. [Order 74-14, § 296-56-460 (codified as WAC 296-56-46001), filed 4/22/74.] Repealed by 85-01-022 (Order 84-24), filed 12/11/84. Statutory Authority: RCW 49.17.040 and 49.17.050.	296-56-47527	Safe car floors. [Order 74-14, § 296-56-47527, filed 4/22/74.] Repealed by 85-01-022 (Order 84-24), filed 12/11/84. Statutory Authority: RCW 49.17.040 and 49.17.050.
296-56-461	Greasing power units. [Order 74-14, § 296-56-461, filed 4/22/74.] Repealed by 85-01-022 (Order 84-24), filed 12/11/84. Statutory Authority: RCW 49.17.040 and 49.17.050.	296-56-47529	Clearance from railroad tracks. [Order 74-14, § 296-56-47529, filed 4/22/74.] Repealed by 85-01-022 (Order 84-24), filed 12/11/84. Statutory Authority: RCW 49.17.040 and 49.17.050.
296-56-462	Use of tools. [Order 76-7, § 296-56-462, filed 3/1/76; Order 74-14, § 296-56-462, filed 4/22/74.] Repealed by 85-01-022 (Order 84-24), filed 12/11/84. Statutory Authority: RCW 49.17.040 and 49.17.050.	296-56-47531	Safety while moving cars. [Order 74-14, § 296-56-47531, filed 4/22/74.] Repealed by 85-01-022 (Order 84-24), filed 12/11/84. Statutory Authority: RCW 49.17.040 and 49.17.050.
296-56-465	Jacob's ladders. [Order 74-14, § 296-56-465, filed 4/22/74.] Repealed by 85-01-022 (Order 84-24), filed 12/11/84. Statutory Authority: RCW 49.17.040 and 49.17.050.	296-56-480	Mobile vehicles—Scope and application. [Order 74-14, § 296-56-480, filed 4/22/74; Order § V, Rules 5.010-5.280 filed 9/24/65; Rules (part), filed 3/23/60.] Repealed by 85-01-022 (Order 84-24), filed 12/11/84. Statutory Authority: RCW 49.17.040 and 49.17.050.
296-56-467	Secure storage. [Order 74-14, § 296-56-467, filed 4/22/74.] Repealed by 85-01-022 (Order 84-24), filed 12/11/84. Statutory Authority: RCW 49.17.040 and 49.17.050.	296-56-48001	Traffic lanes. [Order 74-14, § 296-56-48001, filed 4/22/74.] Repealed by 85-01-022 (Order 84-24), filed 12/11/84. Statutory Authority: RCW 49.17.040 and 49.17.050.
296-56-470	Hard hats—General safety standards. [Order 69-3, § 296-56-470, and Appendix A (Forms), filed 5/26/69, effective 7/1/69; § III, Rules 4.010-4.230, filed 9/24/65; Rules (part), filed 3/23/60.] Repealed by Order 74-14, filed 4/22/74. See WAC 296-56-990 through 296-56-99006.	296-56-48003	Duties of operator. [Order 74-14, § 296-56-48003, filed 4/22/74.] Repealed by 85-01-022 (Order 84-24), filed 12/11/84. Statutory Authority: RCW 49.17.040 and 49.17.050.
296-56-475	Standard gauge railroad operations—Scope and application. [Order 74-14, § 296-56-475, filed 4/22/74.] Repealed by 85-01-022 (Order 84-24), filed 12/11/84. Statutory Authority: RCW 49.17.040 and 49.17.050.	296-56-48005	Vehicle equipment and maintenance. [Order 74-14, § 296-56-48005, filed 4/22/74.] Repealed by 85-01-022 (Order 84-24), filed 12/11/84. Statutory Authority: RCW 49.17.040 and 49.17.050.
296-56-47501	Warning flags or light. [Order 74-14, § 296-56-47501, filed 4/22/74.] Repealed by 85-01-022 (Order 84-24), filed 12/11/84. Statutory Authority: RCW 49.17.040 and 49.17.050.	296-56-490	Lift jitneys. [Order 74-14, § 296-56-490, filed 4/22/74; § VI, Rules 6.010-6.100, filed 9/24/65; Rules (part), filed 3/23/60.] Repealed by 85-01-022 (Order 84-24), filed 12/11/84. Statutory Authority: RCW 49.17.040 and 49.17.050.
296-56-47503	Signals unobscured. [Order 74-14, § 296-56-47503, filed 4/22/74.] Repealed by 85-01-022 (Order 84-24), filed 12/11/84. Statutory Authority: RCW 49.17.040 and 49.17.050.	296-56-495	Changing and charging storage batteries. [Order 74-14, § 296-56-495, filed 4/22/74.] Repealed by 85-01-022 (Order 84-24), filed 12/11/84. Statutory Authority: RCW 49.17.040 and 49.17.050.
296-56-47504	Derailed. [Order 74-14, § 296-56-47504, filed 4/22/74.] Repealed by 85-01-022 (Order 84-24), filed 12/11/84. Statutory Authority: RCW 49.17.040 and 49.17.050.	296-56-500	Handling of cargo—Scope and application. [Order 74-14, § 296-56-500, filed 4/22/74; § VII, Rules 7.010-7.110, filed 9/24/65; Rules (part), filed 3/23/60.] Repealed by 85-01-022 (Order 84-24), filed 12/11/84. Statutory Authority: RCW 49.17.040 and 49.17.050.
296-56-47505	Signals displayed by each maintenance crew. [Order 74-14, § 296-56-47505, filed 4/22/74.] Repealed by 85-01-022 (Order 84-24), filed 12/11/84. Statutory Authority: RCW 49.17.040 and 49.17.050.		

296-56-50001	Nonuse of defective slings. [Order 74-14, § 296-56-50001, filed 4/22/74.] Repealed by 85-01-022 (Order 84-24), filed 12/11/84. Statutory Authority: RCW 49.17.040 and 49.17.050.		84-24), filed 12/11/84. Statutory Authority: RCW 49.17.040 and 49.17.050.
296-56-50003	Landing loads. [Order 74-14, § 296-56-50003, filed 4/22/74.] Repealed by 85-01-022 (Order 84-24), filed 12/11/84. Statutory Authority: RCW 49.17.040 and 49.17.050.	296-56-540	Application for waiver or variances. [Rules (part), filed 9/24/65; Rules (part), filed 3/23/60.] Repealed by Order 74-14, filed 4/22/74.
296-56-50005	Secure hoisted cargo. [Order 74-14, § 296-56-50005, filed 4/22/74.] Repealed by 85-01-022 (Order 84-24), filed 12/11/84. Statutory Authority: RCW 49.17.040 and 49.17.050.	296-56-550	Practical application. [Rules (part), filed 9/24/65; Rules (part), filed 3/23/60.] Repealed by Order 74-14, filed 4/22/74.
296-56-50007	Hoisting material by bands or fasteners. [Order 76-7, § 296-56-50007, filed 3/1/76; Order 74-14, § 296-56-50007, filed 4/22/74.] Repealed by 85-01-022 (Order 84-24), filed 12/11/84. Statutory Authority: RCW 49.17.040 and 49.17.050.	296-56-560	Excerpts from Revised Code of Washington. [Order 74-14, § 296-56-560, filed 4/22/74; Rules (part), filed 9/24/65; Rules (part), filed 3/23/60.] Repealed by 85-01-022 (Order 84-24), filed 12/11/84. Statutory Authority: RCW 49.17.040 and 49.17.050.
296-56-50009	Slings for handling pulp. [Order 74-14, § 296-56-50009, filed 4/22/74.] Repealed by 85-01-022 (Order 84-24), filed 12/11/84. Statutory Authority: RCW 49.17.040 and 49.17.050.	296-56-570	Glossary. [Glossary, filed 9/24/65; Rules (part), filed 3/23/60.] Repealed by Order 74-14, filed 4/22/74.
296-56-50010	Containerized cargo secured by bands or wire. [Order 74-14, § 296-56-50010, filed 4/22/74.] Repealed by 85-01-022 (Order 84-24), filed 12/11/84. Statutory Authority: RCW 49.17.040 and 49.17.050.	296-56-590	Standard signals for longshore crane operations. Decodified. [See WAC 296-56-990 through 296-56-99006, filed 5/26/69, effective 7/1/69.]
296-56-50011	Securing glass cases. [Order 74-14, § 296-56-50011, filed 4/22/74.] Repealed by 85-01-022 (Order 84-24), filed 12/11/84. Statutory Authority: RCW 49.17.040 and 49.17.050.	296-56-60059	First-aid and lifesaving facilities. [Statutory Authority: RCW 49.17.040 and 49.17.050. 86-03-064 (Order 86-02), § 296-56-60059, filed 1/17/86; 85-01-022 (Order 84-24), § 296-56-60059, filed 12/11/84.] Repealed by 99-02-024, filed 12/30/98, effective 3/30/99. Statutory Authority: RCW 49.17.040.
296-56-50013	Hoisting bulk cargo. [Order 76-7, § 296-56-50013, filed 3/1/76; Order 74-14, § 296-56-50013, filed 4/22/74.] Repealed by 85-01-022 (Order 84-24), filed 12/11/84. Statutory Authority: RCW 49.17.040 and 49.17.050.	296-56-60060	First-aid training and certification. [Statutory Authority: RCW 49.17.040 and 49.17.050. 86-03-064 (Order 86-02), § 296-56-60060, filed 1/17/86; 85-01-022 (Order 84-24), § 296-56-60060, filed 12/11/84.] Repealed by 99-02-024, filed 12/30/98, effective 3/30/99. Statutory Authority: RCW 49.17.040.
296-56-50015	Hand and eye protection on wire rope. [Order 74-14, § 296-56-50015, filed 4/22/74.] Repealed by 85-01-022 (Order 84-24), filed 12/11/84. Statutory Authority: RCW 49.17.040 and 49.17.050.	296-56-60062	First-aid kit. [Statutory Authority: Chapter 49.17 RCW. 95-04-007, § 296-56-60062, filed 1/18/95, effective 3/1/95. Statutory Authority: RCW 49.17.040 and 49.17.050. 86-03-064 (Order 86-02), § 296-56-60062, filed 1/17/86; 85-01-022 (Order 84-24), § 296-56-60062, filed 12/11/84.] Repealed by 99-02-024, filed 12/30/98, effective 3/30/99. Statutory Authority: RCW 49.17.040.
296-56-50017	Car plates. [Order 74-14, § 296-56-50017, filed 4/22/74.] Repealed by 85-01-022 (Order 84-24), filed 12/11/84. Statutory Authority: RCW 49.17.040 and 49.17.050.	296-56-60065	First-aid station. [Statutory Authority: RCW 49.17.040 and 49.17.050. 86-03-064 (Order 86-02), § 296-56-60065, filed 1/17/86; 85-01-022 (Order 84-24), § 296-56-60065, filed 12/11/84.] Repealed by 99-02-024, filed 12/30/98, effective 3/30/99. Statutory Authority: RCW 49.17.040.
296-56-50019	Dockboards (bridge plates). [Order 74-14, § 296-56-50019, filed 4/22/74.] Repealed by 85-01-022 (Order 84-24), filed 12/11/84. Statutory Authority: RCW 49.17.040 and 49.17.050.	296-56-60067	First-aid room. [Statutory Authority: RCW 49.17.040 and 49.17.050. 86-03-064 (Order 86-02), § 296-56-60067, filed 1/17/86; 85-01-022 (Order 84-24), § 296-56-60067, filed 12/11/84.] Repealed by 99-02-024, filed 12/30/98, effective 3/30/99. Statutory Authority: RCW 49.17.040.
296-56-50021	Trucks and railroad cars. [Order 74-14, § 296-56-50021, filed 4/22/74.] Repealed by 85-01-022 (Order 84-24), filed 12/11/84. Statutory Authority: RCW 49.17.040 and 49.17.050.	296-56-60069	Personnel. [Statutory Authority: Chapter 49.17 RCW. 89-11-035 (Order 89-03), § 296-56-60069, filed 5/15/89, effective 6/30/89. Statutory Authority: RCW 49.17.040 and 49.17.050. 86-03-064 (Order 86-02), § 296-56-60069, filed 1/17/86; 85-10-004 (Order 85-09), § 296-56-60069, filed 4/19/85; 85-01-022 (Order 84-24), § 296-56-60069, filed 12/11/84.] Repealed by 99-02-024, filed 12/30/98, effective 3/30/99. Statutory Authority: RCW 49.17.040.
296-56-50023	Hazardous cargo. [Order 74-14, § 296-56-50023, filed 4/22/74.] Repealed by 85-01-022 (Order 84-24), filed 12/11/84. Statutory Authority: RCW 49.17.040 and 49.17.050.	296-56-60137	Waiver and variance. [Statutory Authority: RCW 49.17.040 and 49.17.050. 85-01-022 (Order 84-24), § 296-56-60137, filed 12/11/84.] Repealed by 85-10-004 (Order 85-09), filed 4/19/85. Statutory Authority: RCW 49.17.040 and 49.17.050.
296-56-50025	Recouping broken cargo. [Order 74-14, § 296-56-50025, filed 4/22/74.] Repealed by 85-01-022 (Order 84-24), filed 12/11/84. Statutory Authority: RCW 49.17.040 and 49.17.050.	296-56-60182	Waiver and variance. [Statutory Authority: RCW 49.17.040 and 49.17.050. 85-01-022 (Order 84-24), § 296-56-60182, filed 12/11/84.] Repealed by 85-10-004 (Order 85-09), filed 4/19/85. Statutory Authority: RCW 49.17.040 and 49.17.050.
296-56-50027	Containerized cargo. [Order 74-14, § 296-56-50027, filed 4/22/74.] Repealed by 85-01-022 (Order 84-24), filed 12/11/84. Statutory Authority: RCW 49.17.040 and 49.17.050.	296-56-990	Form—Appendix A—Certificate of competency. [Order 74-14, Appendix A (codified as WAC 296-56-990), filed 4/22/74; Form, filed 5/26/69, effective 7/1/69.] Repealed by 86-03-064 (Order 86-02), filed 1/17/86. Statutory Authority: RCW 49.17.040 and 49.17.050.
296-56-510	Handling explosives or hazardous materials. [Order 74-14, § 296-56-510, filed 4/22/74; § VIII, Rules 8.010-8.070, filed 9/24/65; Rules (part), filed 3/23/60.] Repealed by 85-01-022 (Order 84-24), filed 12/11/84. Statutory Authority: RCW 49.17.040 and 49.17.050.	296-56-99001	Form—Appendix B—Notice of deficiencies found on certification examination. [Order 74-14, Appendix B (codified as WAC 296-56-99001), filed 4/22/74; Order 69-3, filed 5/26/69, effective 7/1/69.] Repealed by 86-03-064 (Order 86-02), filed 1/17/86. Statutory Authority: RCW 49.17.040 and 49.17.050.
296-56-520	Log handling on docks. [Order 74-14, § 296-56-520, filed 4/22/74; § IX, Rules 9.010-9.090, filed 9/24/65; Rules (part), filed 3/23/60.] Repealed by 85-01-022 (Order 84-24), filed 12/11/84. Statutory Authority: RCW 49.17.040 and 49.17.050.	296-56-99004	Form—Appendix E—Certificate of unit test and/or examination of crane, derrick, or other material handling device. [Order 74-14, Appendix E (codified as
296-56-530	Cranes and crane operations. [§ X, Rules 10.010—10.060, filed 9/24/65; Rules (part), filed 3/23/60.] Repealed by Order 74-14, filed 4/22/74.		
296-56-535	Petroleum docks. [Order 74-14, § 296-56-535, filed 4/22/74.] Repealed by 85-01-022 (Order 84-24), filed 12/11/84. Statutory Authority: RCW 49.17.040 and 49.17.050.		
296-56-53501	Boat marinas. [Order 74-14, § 296-56-53501, filed 4/22/74.] Repealed by 85-01-022 (Order 84-24), filed 12/11/84. Statutory Authority: RCW 49.17.040 and 49.17.050.		
296-56-53503	Canneries and cold storage docks. [Order 74-14, § 296-56-53503, filed 4/22/74.] Repealed by 85-01-022 (Order		

- WAC 296-56-99004), filed 4/22/74; Form, filed 5/26/69, effective 7/1/69.] Repealed by 86-03-064 (Order 86-02), filed 1/17/86. Statutory Authority: RCW 49.17.040 and 49.17.050.
- 296-56-99005 Form—Appendix F—Standard procedure—Testing and examination cranes, derricks, or material handling devices longshore, stevedore, and related waterfront operations. [Order 74-14, Appendix F (codified as WAC 296-56-99005), filed 4/22/74.] Repealed by 86-03-064 (Order 86-02), filed 1/17/86. Statutory Authority: RCW 49.17.040 and 49.17.050.
- 296-56-99006 Form—Appendix G—Standard procedure—Testing and inspection cargo spouts, suckers and similar equipment longshore, stevedore and related waterfront operations. [Order 74-14, Appendix G (codified as WAC 296-56-99006), filed 4/22/74.] Repealed by 86-03-064 (Order 86-02), filed 1/17/86. Statutory Authority: RCW 49.17.040 and 49.17.050.

PART A—GENERAL

WAC 296-56-600 Marine terminals.

[Statutory Authority: RCW 49.17.040 and 49.17.050. 85-01-022 (Order 84-24), § 296-56-600, filed 12/11/84.]

WAC 296-56-60001 Scope and applicability. (1) The rules included in this chapter apply throughout the state of Washington, to any and all waterfront operations under the jurisdiction of the department of labor and industries.

(2) These minimum requirements are promulgated in order to augment the general safety and health standards, and any other safety and health standards promulgated by the department of labor and industries which are applicable to all places of employment under the jurisdiction of the department of labor and industries. The rules of this chapter, and the rules of chapters 296-24, 296-62 and 296-800 WAC are applicable to all longshore, stevedore and related waterfront operations: Provided, That such rules shall not be applicable to those operations under the exclusive safety jurisdiction of the federal government.

(3) The provisions of this chapter shall prevail in the event of a conflict with, or duplication of, provisions contained in chapters 296-24, 296-62 and 296-800 WAC. Specific standards which are applicable include, but are not limited to:

(a) Electrical—Chapter 296-24 WAC Part L, and WAC 296-800-280.

(b) Toxic and hazardous substances are regulated by chapters 296-62 and 296-841 WAC. Where references to this chapter are given they are for informational purposes only. Where specific requirements of this chapter conflict with the provisions of chapters 296-62 and 296-841 WAC, this chapter prevails. Chapter 296-62 WAC does not apply when a substance or cargo is contained within a manufacturer's original, sealed, intact means of packaging or containment complying with the department of transportation or International Maritime Organization requirements.

(c) Hearing loss prevention (noise)—Chapter 296-817 WAC.

(d) Standards for commercial diving operations—Chapter 296-37 WAC.

(e) Safety requirements for scaffolding—Chapter 296-24 WAC Part J-2.

(f) Safe practices of abrasive blasting operations—Chapter 296-24 WAC Part H-2.

(g) Access to employee exposure and medical records—Chapter 296-62 WAC Part B.

(h) Respiratory protection—Chapter 296-842 WAC.

(i) Safety standards for grain handling facilities—Chapter 296-99 WAC.

(j) Chemical hazard communication program—WAC 296-800-170.

(k) Asbestos—Chapters 296-62 Part I-1 and 296-65 WAC.

(l) Permit - required confined spaces and confined space—Chapter 296-62 WAC Part M.

(m) Servicing multipiece and single-piece rim wheels—Chapter 296-24 WAC Part D.

(n) First-aid requirements—WAC 296-800-150.

(o) Employee emergency plans and fire prevention plans—Chapter 296-24 WAC Part G-1.

(4) The provisions of this chapter do not apply to the following:

(a) Fully automated bulk coal handling facilities contiguous to electrical power generating plants.

(b) Facilities subject to the regulations of the office of pipeline safety regulation of the materials transportation bureau, department of transportation, to the extent such regulations apply.

(5) WAC 296-62-074 shall apply to the exposure of every employee to cadmium in every employment and place of employment covered by chapter 296-56 WAC in lieu of any different standard on exposures to cadmium that would otherwise be applicable by virtue of those sections.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. 05-03-093, § 296-56-60001, filed 1/18/05, effective 3/1/05; 03-11-060, § 296-56-60001, filed 5/19/03, effective 8/1/03. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 01-11-038, § 296-56-60001, filed 5/9/01, effective 9/1/01. Statutory Authority: RCW 49.17.040. 99-02-024, § 296-56-60001, filed 12/30/98, effective 3/30/99. Statutory Authority: Chapter 49.17 RCW. 95-04-007, § 296-56-60001, filed 1/18/95, effective 3/1/95; 93-07-044 (Order 93-01), § 296-56-60001, filed 3/13/93, effective 4/27/93. Statutory Authority: Chapter 49.17 RCW and RCW 49.17.040, [49.17].050 and [49.17].060. 92-22-067 (Order 92-06), § 296-56-60001, filed 10/30/92, effective 12/8/92. Statutory Authority: Chapter 49.17 RCW. 91-24-017 (Order 91-07), § 296-56-60001, filed 11/22/91, effective 12/24/91; 89-11-035 (Order 89-03), § 296-56-60001, filed 5/15/89, effective 6/30/89; 88-14-108 (Order 88-11), § 296-56-60001, filed 7/6/88. Statutory Authority: RCW 49.17.040 and 49.17.050. 86-03-064 (Order 86-02), § 296-56-60001, filed 1/17/86; 85-10-004 (Order 85-09), § 296-56-60001, filed 4/19/85; 85-01-022 (Order 84-24), § 296-56-60001, filed 12/11/84.]

WAC 296-56-60003 Variance and procedure. Conditions may exist under which certain state standards will not have practical application. In these cases, the director of the department of labor and industries has made provisions for the issuance of variances. The director or his/her authorized representative may, pursuant to this section, RCW 49.17.080 and 49.17.090, and WAC 296-350-700, upon receipt of application and after investigation by the department, permit a variation from the requirements of this chapter. Any variance is limited to the particular case and application. It shall remain posted during the time which it is in effect. Variance application forms may be obtained from the department.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 01-11-038, § 296-56-60003, filed 5/9/01, effective 9/1/01. Statutory Authority: Chapter 49.17 RCW. 95-04-007, § 296-56-60003, filed 1/18/95, effective 3/1/95. Statutory Authority: RCW 49.17.040 and 49.17.050. 86-03-064

(Order 86-02), § 296-56-60003, filed 1/17/86; 85-01-022 (Order 84-24), § 296-56-60003, filed 12/11/84.]

WAC 296-56-60005 Definitions. "Apron" means that open portion of a marine terminal immediately adjacent to a vessel berth and used in the direct transfer of cargo between the terminal and vessel.

"Assistant director for the division of WISHA services" means the assistant director of WISHA services, department of labor and industries or his/her authorized representative.

"Authorized," in reference to an employee's assignment, means selected by the employer for that purpose.

"Cargo door" (transit shed door) means a door designed to permit transfer of cargo to and from a marine terminal structure.

"Cargo packaging" means any method of containment for shipment, including cases, cartons, crates and sacks, but excluding large units such as intermodal containers, vans or similar devices.

"Confined space" means a space that:

- Is large enough and so configured that an employee can bodily enter and perform assigned work; and
- Has limited or restricted means for entry or exit (for example, tanks, vessels, silos, storage bins, hoppers, vaults, and pits are spaces that may have limited means of entry); and
- Is not designed for continuous employee occupancy.

"Conveyor" means a device designed exclusively for transporting bulk materials, packages or objects in a predetermined path and having fixed or selective points of loading or discharge.

"Danger zone" means any place in or about a machine or piece of equipment where an employee may be struck by or caught between moving parts, caught between moving and stationary objects or parts of the machine, caught between the material and a moving part of the machine, burned by hot surfaces or exposed to electric shock. Examples of danger zones are nip and shear points, shear lines, drive mechanisms, and areas beneath counterweights.

"Designated person" means a person who possesses specialized abilities in a specific area and is assigned by the employer to perform a specific task in that area.

"Dock" means a wharf or pier forming all or part of a waterfront facility, including marginal or quayside berthing facilities; not to be confused with "loading dock" as at a transit shed or container freight station, or with the body of water between piers or wharves.

"Dock facilities" includes all piers, wharves, sheds, aprons, dolphins, cranes, or other gear or equipment owned or controlled by the dock or facility owner, where cargo or materials are loaded, moved or handled to or from a vessel.

"Dockboards" (car and bridge plates) mean devices for spanning short distances between rail cars or highway vehicles and loading platforms that do not expose employees to falls greater than 4 feet (1.22 m).

"Enclosed space" means an indoor space, other than a confined space, that may contain or accumulate a hazardous atmosphere due to inadequate natural ventilation. Examples of enclosed spaces are trailers, railcars, and storage rooms.

"Examination," as applied to material handling devices required to be certified by this chapter, means a comprehensive

survey consisting of the criteria outlined in WAC 296-56-60093 through 296-56-60097. The examination is supplemented by a unit proof test in the case of annual survey.

"Flammable atmosphere" means an atmosphere containing more than ten percent of the lower flammable limit (LEL) of a flammable or combustible vapor or dust mixed with air. Such atmospheres are usually toxic as well as flammable.

"Front-end attachments."

- As applied to power-operated industrial trucks, means the various devices, such as roll clamps, rotating and side-shifting carriages, magnets, rams, crane arms or booms, load stabilizers, scoops, buckets, and dumping bins, attached to the load end for handling lifts as single or multiple units.

- As applied to cranes, means various attachments applied to the basic machine for the performance of functions such as lifting, clamshell or magnet services.

"Fumigant" is a substance or mixture of substances, used to kill pests or prevent infestation, which is a gas or is rapidly or progressively transformed to the gaseous state even though some nongaseous or particulate matter may remain and be dispersed in the treatment space.

"Hazardous cargo, material, substance or atmosphere" means:

- Any substance listed in chapters 296-62 and 296-841 WAC;

- Any material in the hazardous materials table and hazardous materials communications regulations of the Department of Transportation, 49 CFR Part 172;

- Any article not properly described by a name in the hazardous materials table and hazardous materials communications regulations of the Department of Transportation, 49 CFR Part 172, but which is properly classified under the definition of those categories of dangerous articles given in 49 CFR Part 173;

- Atmospheres having concentrations of airborne chemicals in excess of permissible exposure limits as defined in chapter 296-62 WAC; or

- Any atmosphere with an oxygen content of less than nineteen and one-half percent by volume.

"House falls" means spans and supporting members, winches, blocks, and standing and running rigging forming part of a marine terminal and used with a vessel's cargo gear to load or unload by means of married falls.

"Inspection," as applied to material handling devices required to be certified by this chapter, includes a complete visual examination of all visible parts of the device.

"Intermodal container" means a reusable cargo container of rigid construction and rectangular configuration intended to contain one or more articles of cargo or bulk commodities for transportation by water and one or more other transport modes without intermediate cargo handling. The term includes completely enclosed units, open top units, fractional height units, units incorporating liquid or gas tanks and other variations fitting into the container system, demountable or with attached wheels. It does not include cylinders, drums, crates, cases, cartons, packages, sacks, unitized loads or any other form of packaging.

"Loose gear" means removable or replaceable components of equipment or devices which may be used with or as a part of assembled material handling units for purposes such as making connections, changing line direction and multiply-

ing mechanical advantage. Examples include shackles and snatch blocks.

"Marina" means a small harbor or boat basin providing dockage, supplies, and services for small craft.

"Marine terminal" means wharves, bulkheads, quays, piers, docks and other berthing locations and adjacent storage or contiguous areas and structures associated with the primary movement of cargo or materials from vessel to shore or shore to vessel. It includes structures which are devoted to receiving, handling, holding, consolidation, loading or delivery of waterborne shipments and passengers, and areas devoted to the maintenance of the terminal or equipment. The term does not include production or manufacturing areas having their own docking facilities and located at a marine terminal nor storage facilities directly associated with those production or manufacturing areas.

"Permit-required confined space (permit space)" means a confined space that has one or more of the following characteristics:

- Contains or has a potential to contain a hazardous atmosphere;
- Contains a material that has the potential for engulfing an entrant;
- Has an internal configuration such that an entrant could be trapped or asphyxiated by inwardly converging walls or by a floor which slopes downward and tapers to a smaller cross-section; or
- Contains any other recognized serious safety or health hazard.

"Ramps" mean other flat-surface devices for passage between levels and across openings not covered under "dock-boards."

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. 05-03-093, § 296-56-60005, filed 1/18/05, effective 3/1/05. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 00-21-103, § 296-56-60005, filed 10/18/00, effective 2/1/01. Statutory Authority: RCW 49.17.040. 99-02-024, § 296-56-60005, filed 12/30/98, effective 3/30/99. Statutory Authority: Chapter 49.17 RCW. 95-04-007, § 296-56-60005, filed 1/18/95, effective 3/1/95. Statutory Authority: Chapter 49.17 RCW and RCW 49.17.040, [49.17].050 and [49.17].060. 92-22-067 (Order 92-06), § 296-56-60005, filed 10/30/92, effective 12/8/92. Statutory Authority: RCW 49.17.040 and 49.17.050. 86-03-064 (Order 86-02), § 296-56-60005, filed 1/17/86; 85-01-022 (Order 84-24), § 296-56-60005, filed 12/11/84.]

WAC 296-56-60006 Personnel. (1) Qualifications of machinery operators.

(a) Only those employees determined by the employer to be competent by reason of training or experience, who understand the signs, notices, and operating instructions and are familiar with the signal code in use shall be permitted to operate a crane, winch, or other power-operated cargo handling apparatus, or any power-operated vehicle, or give signals to the operator of any hoisting apparatus. Employees being trained and supervised by a designated individual may operate such machinery and give signals to operators during training.

(b) No employee known to have defective uncorrected eyesight or hearing, or to be suffering from heart disease, epilepsy, or similar ailments which may suddenly incapacitate the employee shall be permitted to operate a crane, winch, other power-operated cargo handling apparatus, or a power-operated vehicle.

(c) Persons who have recovered from a heart attack shall be exempted from the provisions of (b) of this subsection, as it pertains to their heart condition, provided:

(i) A medical release is obtained from their attending medical doctor.

(ii) The release shall state that the operation of a crane, winch, power-operated cargo handling apparatus, or power-operated vehicle, will not present a hazard to themselves or others.

(iii) An examination by a medical doctor, and renewal of the work release certification is required annually.

(2) Supervisory accident prevention proficiency.

(a) Immediate supervisors of cargo-handling operations of more than five persons shall satisfactorily complete a course in accident prevention. Employees newly assigned to supervisory duties shall be required to meet the provisions of this subsection (2)(a) within ninety days of such assignment.

(b) The course shall consist of instruction suited to the particular operations involved.

(c) No minor under eighteen years of age shall be employed in occupations involving the operation of any power-operated hoisting apparatus or assisting in such operations by performing work such as hooking on or landing drafts, rigging gear, etc.

[Statutory Authority: RCW 49.17.040. 99-02-024, § 296-56-60006, filed 12/30/98, effective 3/30/99.]

WAC 296-56-60007 Housekeeping. (1) Active work areas shall be kept free of equipment and materials not in use, and clear of debris, projecting nails, strapping and other sharp objects not necessary for the work in progress.

(2) Hatch beams, covers, and pontoons placed in terminal working areas shall be stowed in stable piles with beams secured against tipping or falling. Alternatively, beams may be laid on their sides. When beams and pontoons are stowed in tiers more than one high, dunnage or other suitable material shall be used under and between tiers.

(3) Cargo and material shall not obstruct access to vessels, cranes, vehicles, or buildings. Means of access and egress within buildings shall be unobstructed.

(4) The employer shall eliminate, to the extent possible, conditions causing slippery working or walking surfaces in immediate work areas used by employees.

[Statutory Authority: Chapter 49.17 RCW and RCW 49.17.040, [49.17].050 and [49.17].060. 92-22-067 (Order 92-06), § 296-56-60007, filed 10/30/92, effective 12/8/92. Statutory Authority: RCW 49.17.040 and 49.17.050. 86-03-064 (Order 86-02), § 296-56-60007, filed 1/17/86; 85-01-022 (Order 84-24), § 296-56-60007, filed 12/11/84.]

WAC 296-56-60009 Accident prevention program.

(1) An accident prevention program, which provides equitable management-employee participation, shall be established in all establishments, industrial plants, or operations.

(2) It shall be the responsibility of the employer to initiate and maintain the accident prevention program necessary to comply with this section. The division of WISHA services may be contacted for assistance in initiating and maintaining an effective accident prevention program.

(3) All accident prevention programs shall be tailored to the needs of the particular operation.

(4) Employer and employee representatives, as elected, delegated or appointed, shall attend and actively take part in frequent and regular safety committee meetings.

(5) Accident prevention programs shall provide for employer-employee safety meetings and frequent and regular safety inspections of job sites, materials, equipment, and operating procedures.

(6) A record of safety activities, such as inspections and meetings, shall be maintained by the employer for a period covering the previous twelve months and shall be made available, upon request, to noncompliance personnel of the department of labor and industries.

(7) Employees shall individually comply with all safety rules and cooperate with management in carrying out the accident prevention program.

(8) To make effective the preceding statement and promote on-the-job accident prevention, committees shall be established in each port. These committees shall consist of an equal number of port or stevedore company and longshoremen representatives at the job level with the industry or company safety supervisor serving as secretary and coordinator. Some functions of the committee are to maintain the interest of the workers in accident prevention by providing for their actual participation in the program, to direct their attention to the real causes of accidents, and to provide a means for making practical use of their intimate knowledge of working conditions and practices.

(9) It is intended that this program will produce mutually practical and effective recommendations regarding correction of accident-producing circumstances and conditions.

Note: For first-aid requirements, see WAC 296-800-150.

Note: For emergency plan and fire prevention plan requirements, see chapter 296-24 WAC Part G-1.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 01-11-038, § 296-56-60009, filed 5/9/01, effective 9/1/01. Statutory Authority: RCW 49.17.040. 99-02-024, § 296-56-60009, filed 12/30/98, effective 3/30/99. Statutory Authority: Chapter 49.17 RCW. 95-04-007, § 296-56-60009, filed 1/18/95, effective 3/1/95. Statutory Authority: RCW 49.17.040 and 49.17.050. 86-03-064 (Order 86-02), § 296-56-60009, filed 1/17/86; 85-01-022 (Order 84-24), § 296-56-60009, filed 12/11/84.]

PART B—WATERFRONT OPERATIONS

WAC 296-56-60011 Slinging. (1) Drafts shall be safely slung before being hoisted. Loose dunnage or debris hanging or protruding from loads shall be removed.

(2) Bales of cotton, wool, cork, wood pulp, gunny bags, or similar articles shall be hoisted only by straps strong enough to support the weight of the bale. At least two hooks, each in a separate strap, shall be used.

(3) Unitized loads bound by bands or straps shall only be hoisted by the banding or strapping if the banding or strapping is suitable for hoisting and is strong enough to support the weight of the load.

(4) Additional means of hoisting shall be employed to ensure safe lifting of unitized loads having damaged banding or strapping.

(5) Case hooks shall be used only with cases designed to be hoisted by these hooks.

(6) Loads requiring continuous manual guidance during handling shall be guided by guide ropes (tag lines) that are long enough to control the load.

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(7) Intermodal containers shall be handled in accordance with WAC 296-56-60103.

(8) The employer shall require employees to stay clear of the area beneath overhead drafts or descending lifting gear.

(9) Employees shall not be permitted to ride the hook or the load.

(10) Cargo handling bridles, such as pallet bridles, which are to remain attached to the hoisting gear while hoisting successive drafts, shall be attached by shackles, or other positive means shall be taken to prevent them from becoming accidentally disengaged from the cargo hook.

(11) Drafts of lumber, pipe, dunnage and other pieces, the top layer of which is not bound by the sling, shall be slung in such a manner as to prevent sliders. Double slings shall be used on unstrapped dunnage, except, when due to the size of hatch or deep tank openings, it is impractical to use them.

(12) Hand loaded buckets, tubs, bins and baskets used in handling bulk cargo shall not be loaded above their rim.

[Statutory Authority: RCW 49.17.040. 99-02-024, § 296-56-60011, filed 12/30/98, effective 3/30/99. Statutory Authority: RCW 49.17.040 and 49.17.050. 86-03-064 (Order 86-02), § 296-56-60011, filed 1/17/86; 85-01-022 (Order 84-24), § 296-56-60011, filed 12/11/84.]

WAC 296-56-60013 Stacking of cargo and pallets.

Cargo, pallets, and other material stored in tiers shall be stacked in such a manner as to provide stability against sliding and collapse.

[Statutory Authority: RCW 49.17.040 and 49.17.050. 85-01-022 (Order 84-24), § 296-56-60013, filed 12/11/84.]

WAC 296-56-60015 Coopering. Repair and reconditioning of damaged or leaking cargo packaging (coopering) shall be performed so as not to endanger employees.

[Statutory Authority: RCW 49.17.040 and 49.17.050. 85-01-022 (Order 84-24), § 296-56-60015, filed 12/11/84.]

WAC 296-56-60017 Line handling. (1) In order to provide safe access for handling lines while mooring and unmooring vessels, cargo or material shall not be stowed or vehicles placed where they obstruct the work surface.

(2) When stringpiece or apron width is insufficient for safe footing, grab lines on rails shall be installed on the sides of permanent structures. ("Stringpiece" means a narrow walkway between the water edge of a berth and a shed or other structure.)

(3) Areas around bitts or cleats where workers perform their duties as line handlers shall be lighted as required by this chapter. There shall be a nonslip surface around each bitt or cleat.

(4) Walkways on which mooring hausers must be moved may have the handrail omitted on the line handling side provided a six inch by six inch toeboard is installed.

[Statutory Authority: RCW 49.17.040 and 49.17.050. 86-03-064 (Order 86-02), § 296-56-60017, filed 1/17/86; 85-01-022 (Order 84-24), § 296-56-60017, filed 12/11/84.]

WAC 296-56-60019 Standard gauge railroad operations. WAC 296-56-60019 through 296-56-60041 apply to standard gauge railroad operations.

[Title 296 WAC—p. 1249]

(1) Work shall be performed in railcars only if floors of the railcars are in visibly safe condition for the work activity being conducted and the equipment being used.

(2) A route shall be established to allow employees to pass to and from places of employment without passing under, over or through railcars, or between cars less than ten feet (3 m) apart on the same track.

(3) The employer shall direct that no employees remain in railcars after work is concluded. No employee shall remain in a railcar after work is concluded.

(4) Railcars shall be chocked or otherwise prevented from moving:

(a) While dockboards or carplates are in position; or

(b) While employees are working within, on or under the railcars or near the tracks at the ends of the cars.

(5) When employees are working in, on, or under a railcar, positive means shall be taken to protect them from exposure to impact from moving railcars.

(6) Work being carried on, in, or under cars which subjects employees to the hazard of moving railroad equipment shall be protected by flags and derails set a minimum of fifty feet from one or both ends of the worksite. Where the spur track switch is less than fifty feet from the work location, the switch padlocked in the open position may take the place of the derail. The blue flag shall be placed at that point.

(7) Before cars are moved, unsecured and over-hanging stakes, wire straps, banding, and similar objects shall be removed or placed so as not to create hazards.

(8) The employer shall institute all necessary controls during railcar movement to safeguard personnel. If winches or capstans are employed for movement, employees shall stand clear of the hauling rope and shall not stand between the rope and the cars.

(9) Before being opened fully, doors shall be opened slightly to ensure that the load has not shifted during transit. Special precautions shall be taken if the doors being opened are visibly damaged.

(10) If power industrial trucks are used to open freight car doors, the trucks or the railcar doors shall be equipped with door opening attachments. Employees shall stand clear of the railcar doors while they are being opened and closed.

(11) Only railcar door openers or power trucks equipped with door opening attachments shall be used to open jammed doors.

(12) Employees shall not remain in or on gondolas or flat cars when drafts that create overhead, caught-in, caught-between or struck-by hazards are being landed in or on the railcar. End gates, if raised, shall be secured.

(13) Operators of railcar dumps shall have an unrestricted view of dumping operations and shall have emergency means of stopping movement.

(14) Recessed railroad switches shall be enclosed to provide a level surface.

(15) Warning signs shall be posted where doorways open onto tracks, at blind corners and at similar places where vision may be restricted.

(16) Warning signs shall be posted if insufficient clearance for personnel exists between railcars and structures.

[Statutory Authority: RCW 49.17.040 and 49.17.050. 86-03-064 (Order 86-02), § 296-56-60019, filed 1/17/86; 85-10-004 (Order 85-09), § 296-56-

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60019, filed 4/19/85; 85-01-022 (Order 84-24), § 296-56-60019, filed 12/11/84.]

WAC 296-56-60021 Signals displayed by each maintenance crew. Each maintenance crew shall display and remove its own set of blue signals.

[Statutory Authority: RCW 49.17.040 and 49.17.050. 85-01-022 (Order 84-24), § 296-56-60021, filed 12/11/84.]

WAC 296-56-60023 Warning flags or lights. A blue flag, bright colored flag or blue light shall be displayed at one or both ends of an engine, car or train to indicate that workers are under or about the railway equipment. When such warning devices are displayed, the equipment shall not be coupled to or moved. On a dead end spur, a blue light or flag may be displayed adjacent to the switch opening while cars are being loaded or unloaded.

[Statutory Authority: RCW 49.17.040 and 49.17.050. 86-03-064 (Order 86-02), § 296-56-60023, filed 1/17/86; 85-01-022 (Order 84-24), § 296-56-60023, filed 12/11/84.]

WAC 296-56-60025 Signals unobscured. Equipment which could obscure signals shall not be placed on the track.

[Statutory Authority: RCW 49.17.040 and 49.17.050. 86-03-064 (Order 86-02), § 296-56-60025, filed 1/17/86; 85-01-022 (Order 84-24), § 296-56-60025, filed 12/11/84.]

WAC 296-56-60027 Audible warning system. A clearly audible warning system shall be employed when cars are being moved in areas where workers may be in the vicinity of the tracks. When the audible warning signal might not be heard above the surrounding noises, a person shall be delegated and stationed close enough to the track crew to warn them, by contact, of the oncoming equipment.

[Statutory Authority: RCW 49.17.040 and 49.17.050. 86-03-064 (Order 86-02), § 296-56-60027, filed 1/17/86; 85-01-022 (Order 84-24), § 296-56-60027, filed 12/11/84.]

WAC 296-56-60029 Safety observer on railroad switching. When persons are required to work between railway cars, underneath railway cars or in areas where switching is done, there shall be a person charged with the responsibility to warn of an approaching switch of the railway car or cars, unless other reasonable and practical safeguards are provided.

[Statutory Authority: RCW 49.17.040 and 49.17.050. 86-03-064 (Order 86-02), § 296-56-60029, filed 1/17/86; 85-01-022 (Order 84-24), § 296-56-60029, filed 12/11/84.]

WAC 296-56-60031 Warning at road crossing. An audible whistle, horn or bell shall be sounded by the locomotive engineer to give adequate warning prior to switching across any road crossing. Whenever cars are pushed with a locomotive, a signalman shall be located at the crossing to give signals in conjunction with other warnings by the engineer.

[Statutory Authority: RCW 49.17.040 and 49.17.050. 86-03-064 (Order 86-02), § 296-56-60031, filed 1/17/86; 85-01-022 (Order 84-24), § 296-56-60031, filed 12/11/84.]

(2007 Ed.)

WAC 296-56-60033 Flying switches. Flying switches shall not be used when switching railroad equipment in congested areas or across roadways or walkways.

[Statutory Authority: RCW 49.17.040 and 49.17.050. 85-01-022 (Order 84-24), § 296-56-60033, filed 12/11/84.]

WAC 296-56-60035 Clearance from railroad tracks. Materials shall not be stacked or piled closer than eight and one-half feet from the center line of the railroad tracks.

[Statutory Authority: RCW 49.17.040 and 49.17.050. 85-01-022 (Order 84-24), § 296-56-60035, filed 12/11/84.]

WAC 296-56-60037 Car plates. Whenever workers are required to move cargo into or out of a railway car, a railway car plate shall be used which shall meet the following specifications:

(1) All car plates shall be strong enough to carry maximum loads with a safety factor of three.

(2) All car plates shall be provided with positive stops to prevent shifting of plates. One set of these stops shall be adjustable to allow for different spaces between car door and platform.

(3) Car plates shall be so shaped that edges will always bear on the floor of car and platform to prevent "teetering" or rocking.

(4) All car plates shall have skid resistant surfaces.

(5) All car plates shall be provided with toe or guard plates at the sides with a minimum height of four inches.

(6) All car plates must bear no less than six inches back from edge of platform.

(7) Maximum capacity of car plates shall be marked in a conspicuous place.

(8) Car plates shall be provided with an appropriate fixture to enable the plates to be lifted and moved by fork trucks.

[Statutory Authority: RCW 49.17.040 and 49.17.050. 86-03-064 (Order 86-02), § 296-56-60037, filed 1/17/86; 85-01-022 (Order 84-24), § 296-56-60037, filed 12/11/84.]

WAC 296-56-60039 Dockboards (bridge plates). (1) Portable and powered dockboards shall be strong enough to carry the load imposed.

(2) Portable dockboards shall be secured in position, either by being anchored or equipped with devices which will prevent slipping.

(3) Powered dockboards shall be designed and constructed in accordance with commercial standards CS202-56 (1956) *Industrial Lifts and Hinged Loading Ramps* published by the United States Department of Commerce.

(4) Handholds or other effective means, shall be provided on portable dockboards to permit safe handling.

(5) Positive protection shall be provided to prevent railroad cars from being moved while dockboards or bridge plates are in position.

[Statutory Authority: RCW 49.17.040 and 49.17.050. 86-03-064 (Order 86-02), § 296-56-60039, filed 1/17/86; 85-01-022 (Order 84-24), § 296-56-60039, filed 12/11/84.]

WAC 296-56-60041 Log handling. (1) The employer shall ensure that structures (bunks) used to contain logs have rounded corners and rounded structural parts to avoid sling damage.

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(2) Two or more binders or equivalently safe means of containment shall remain on logging trucks and railcars to secure logs during movement of the truck or car within the terminal. During unloading, logs shall be prevented from moving while binders are being removed.

(3) Logs shall be hoisted by two slings or by other gear designed for safe hoisting.

(4) Logs placed adjacent to vehicle curbs on the dock shall not be over one tier high unless placed in bunks or so stacked as not to roll or otherwise creating a hazard to employees.

(5) Before logs are slung up from the dock, they shall be stably supported to prevent spreading and to allow passage of slings beneath the load. When bunks or similar retaining devices are used, no log shall be higher than the stanchions or retaining members of the device.

(6) A draft of logs for hoisting aboard ship shall not vary in length more than twenty percent.

(7) Audible alarms.

(a) All bidirectional machines, shall be equipped with a horn, distinguishable from the surrounding noise level, which shall be operated as needed when the machine is moving in either direction. The horn shall be maintained in operable condition.

(b) Automatic back-up alarms shall be installed on bidirectional equipment used to handle logs or containers and shall be maintained in operable condition.

[Statutory Authority: Chapter 49.17 RCW and RCW 49.17.040, [49.17].050 and [49.17].060. 92-22-067 (Order 92-06), § 296-56-60041, filed 10/30/92, effective 12/8/92. Statutory Authority: RCW 49.17.040 and 49.17.050. 86-03-064 (Order 86-02), § 296-56-60041, filed 1/17/86; 85-01-022 (Order 84-24), § 296-56-60041, filed 12/11/84.]

WAC 296-56-60043 Movement of barges and railcars. Barges and railcars shall not be moved by cargo runners (running rigging) from vessel cargo booms, cranes or other equipment not suitable for the purpose.

[Statutory Authority: Chapter 49.17 RCW and RCW 49.17.040, [49.17].050 and [49.17].060. 92-22-067 (Order 92-06), § 296-56-60043, filed 10/30/92, effective 12/8/92. Statutory Authority: RCW 49.17.040 and 49.17.050. 86-03-064 (Order 86-02), § 296-56-60043, filed 1/17/86; 85-01-022 (Order 84-24), § 296-56-60043, filed 12/11/84.]

WAC 296-56-60045 Communication. (1) Radio. When practical and safe, crane operators shall be provided with a radio or telephone to be in contact with the signalman or crane chaser in those cases where a signalman or crane chaser is required.

(2) Interference. Cargo handling operations shall not be carried on when noise-producing maintenance, construction or repair work interferes with communication of warnings or instructions.

[Statutory Authority: RCW 49.17.040 and 49.17.050. 85-10-004 (Order 85-09), § 296-56-60045, filed 4/19/85; 85-01-022 (Order 84-24), § 296-56-60045, filed 12/11/84.]

WAC 296-56-60047 Open fires. Open fires and fires in drums or similar containers are prohibited.

[Statutory Authority: RCW 49.17.040 and 49.17.050. 85-01-022 (Order 84-24), § 296-56-60047, filed 12/11/84.]

PART C—HAZARDOUS ATMOSPHERES AND MATERIALS

WAC 296-56-60049 Hazardous cargo. (1) Before cargo handling operations begin, the employer shall ascertain whether any hazardous cargo is to be handled and shall determine the nature of the hazard. The employer shall inform employees of the nature of any hazard and any special precautions to be taken to prevent employee exposure, and shall instruct employees to notify the employer of any leaks or spills.

(2) All hazardous cargo shall be slung and secured so that neither the draft nor individual packages can fall as a result of tipping the draft or slackening of the supporting gear.

(3) If hazardous cargo is spilled or if its packaging leaks, employees shall be removed from the affected area until the employer has ascertained the specific hazards, provided any equipment, clothing, ventilation and fire protection equipment necessary to eliminate or protect against the hazard. Cleanup employees shall be instructed as to the safe method of cleaning up and disposing of the spill, and handling and disposing of leaking containers. Actual cleanup or disposal work shall be conducted under the supervision of a designated person.

(4) The Department of Transportation and the United States Coast Guard impose requirements related to handling, storing and transportation of hazardous cargo (see 33 CFR Part 126, 46 CFR, 49 CFR).

[Statutory Authority: RCW 49.17.040 and 49.17.050. 86-03-064 (Order 86-02), § 296-56-60049, filed 1/17/86; 85-01-022 (Order 84-24), § 296-56-60049, filed 12/11/84.]

WAC 296-56-60051 Handling explosives or hazardous materials. (1) All workers handling explosive or other hazardous material which is properly labeled pursuant to the Washington State Labeling Code, chapters 296-62 and 296-64 WAC, promulgated by the department of labor and industries; or the Explosive Act, chapter 70.74 RCW and chapter 296-52 WAC; or the Federal and Washington State Food, Drug and Cosmetic Acts; the Federal Insecticide, Fungicide and Rodenticide Act, the Washington Pesticide Act, chapter 17.21 RCW; the Federal Hazardous Substances Labeling Act; or the Interstate Commerce Commission and Foreign Commerce regulations; or explosives or other dangerous cargo which is reasonably known by the employers to be mislabeled or to be lacking a required label, shall be thoroughly informed by the employer of the explosive or hazardous nature of the cargo.

(2) In all shipping operations including, but not limited to, handling, storage, and preparation, compliance with the standards of the Interstate Commerce Commission, the United States Coast Guard, or the safety rules developed by the Institute of Makers of Explosives shall be deemed proper and safe methods of operation.

(3) Handling of breakage. If breakage should occur while handling explosives or other hazardous materials, the foreman shall order the work in the immediate area to cease until the hazard has been removed. It shall be the responsibility of the employer to use a safe method of handling such breakage and placing it in a remote, safe location.

(4) No smoking. All workers supervising or engaged in the handling, hoisting, stowing of explosives, combustible oxidizing materials or flammable materials shall smoke only in designated areas. No person shall smoke within one hundred feet of any location where such materials are handled or stored.

(5) Loading chute. In chuting packaged explosives, care must be exercised to ensure that one package is taken from the mat before starting another. Each package shall be completely removed from the mat before another is placed on the chute.

(6) Specifications for chutes. In the loading of explosive merchandise in package form where chutes are used, the chutes shall be constructed only of wood. All fastenings shall be of wooden pins, dowelings, or pegs. Metal fastenings may be used, provided they are countersunk.

(7) Mattress landing buffer. The bottoms of the chutes shall be provided with a stuffed mattress not less than four inches thick and of sufficient width and length to allow for safe landing of packages.

(8) Drafts of hazardous or explosive cargo shall be so slung and secured that neither the draft nor individual packages can fall as a result of tipping the draft or slackening the supporting gear.

[Statutory Authority: RCW 49.17.040 and 49.17.050. 86-03-064 (Order 86-02), § 296-56-60051, filed 1/17/86; 85-01-022 (Order 84-24), § 296-56-60051, filed 12/11/84.]

WAC 296-56-60053 Hazardous atmospheres and substances. (1) Purpose and scope. This section covers areas where a hazardous atmosphere or substance may exist, except where one or more of the following sections apply: WAC 296-56-60049 Hazardous cargo; WAC 296-56-60051 Handling explosives or hazardous materials; WAC 296-56-60055 Carbon monoxide; WAC 296-56-60057 Fumigants, pesticides, insecticides and hazardous preservatives; WAC 296-56-60107 Terminal facilities handling menhaden and similar species of fish; WAC 296-56-60235 Welding, cutting and heating (hot work); and WAC 296-56-60237 Spray painting.

(2) Determination of hazard.

(a) Whenever a room, building, vehicle, railcar or other space contains or has contained a hazardous atmosphere, a designated and appropriately equipped person shall test the atmosphere before entry to determine whether a hazardous atmosphere exists.

(b) Records of results of any tests required by this section shall be maintained for at least thirty days.

(3) Testing during ventilation. When mechanical ventilation is used to maintain a safe atmosphere, tests shall be made by a designated person to ensure that the atmosphere is not hazardous.

(4) Entry into hazardous atmospheres. Only designated persons shall enter hazardous atmospheres. The following provisions shall apply:

(a) Persons entering a space containing a hazardous atmosphere shall be protected by respiratory and emergency protective equipment meeting the requirements of chapter 296-842 WAC;

(b) Persons entering a space containing a hazardous atmosphere shall be instructed in the nature of the hazard, precautions to be taken, and the use of protective and emer-

gency equipment. Standby observers, similarly equipped and instructed, shall continuously monitor the activity of employees within such space; and

(c) Except for emergency or rescue operations, employees shall not enter into any atmosphere which has been identified as flammable or oxygen deficient (less than nineteen and one-half percent oxygen). Persons who may be required to enter flammable or oxygen deficient atmospheres in emergency operations shall be instructed in the dangers attendant to those atmospheres and instructed in the use of self-contained breathing apparatus, which shall be utilized.

(d) To prevent inadvertent employee entry into spaces that have been identified as having hazardous, flammable or oxygen deficient atmospheres, appropriate warning signs or equivalent means shall be posted at all means of access to those spaces.

(5) When the packaging of asbestos cargo leaks, spillage shall be cleaned up by designated employees protected from the harmful effects of asbestos as required by WAC 296-62-07517 and chapter 296-65 WAC.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. 05-03-093, § 296-56-60053, filed 1/18/05, effective 3/1/05. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-56-60053, filed 5/4/99, effective 9/1/99. Statutory Authority: Chapter 49.17 RCW and RCW 49.17.040, [49.17].050 and [49.17].060. 92-22-067 (Order 92-06), § 296-56-60053, filed 10/30/92, effective 12/8/92. Statutory Authority: RCW 49.17.040 and 49.17.050. 86-03-064 (Order 86-02), § 296-56-60053, filed 1/17/86; 85-01-022 (Order 84-24), § 296-56-60053, filed 12/11/84.]

WAC 296-56-60055 Carbon monoxide. (1) Exposure limits. The carbon monoxide content of the atmosphere in a room, building, vehicle, railcar or any enclosed space shall be maintained below fifty parts per million (0.005%) as an eight-hour time-weighted average. Employees shall be removed from the enclosed space if the carbon monoxide concentration exceeds one hundred parts per million (0.01%).

(2) Testing. Tests to determine carbon monoxide concentration shall be made whenever necessary to ensure that employee exposure does not exceed the limits specified in subsection (1) of this section.

(3) Instrumentation. Tests for carbon monoxide concentration shall be made by designated persons using gas detector tube units certified by NIOSH under 30 CFR Part 11 or other measuring instruments whose accuracy is as great or greater.

(4) Records. A record of the date, time, location and result of carbon monoxide tests shall be available for at least thirty days.

[Statutory Authority: RCW 49.17.040 and 49.17.050. 86-03-064 (Order 86-02), § 296-56-60055, filed 1/17/86; 85-01-022 (Order 84-24), § 296-56-60055, filed 12/11/84.]

WAC 296-56-60057 Fumigants, pesticides, insecticides and hazardous preservatives (see also WAC 296-56-60049, 296-56-60051 and 296-56-60053). (1) Whenever cargo in a space is or has been stowed, handled, or treated with a fumigant, pesticide, insecticide, or hazardous preservative, a determination shall be made as to whether a hazardous atmosphere is present in the space. Only employees protected as required in subsection (5) of this section shall enter the space if it is hazardous.

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(2) Tests to determine the atmospheric concentration of chemicals used to treat cargo shall be:

(a) Appropriate for the hazard involved;

(b) Conducted by designated persons; and

(c) Performed at the intervals necessary to ensure that employee exposure does not exceed the permissible exposure limit for the chemical involved, see chapters 296-62 and 296-841 WAC.

(3) Results of any tests shall be available for at least thirty days.

(4) Chemicals shall only be applied to cargoes by designated persons.

(5) Only designated persons shall enter hazardous atmospheres. Whenever a hazardous atmosphere is entered the following provisions apply.

(a) Persons entering a space containing a hazardous atmosphere shall be protected by respiratory and emergency protective equipment meeting the requirements of part G of this standard; and

(b) Persons entering a space containing a hazardous atmosphere shall be instructed in the nature of the hazard, precautions to be taken, and the use of protective and emergency equipment. Standby observers, similarly equipped and instructed, shall continuously monitor the activity of employees within such a space.

(6) Signs shall be clearly posted where fumigants, pesticides or hazardous preservatives have created a hazardous atmosphere. These signs shall note the danger, identify specific chemical hazards, and give appropriate information and precautions, including instructions for the emergency treatment of employees affected by any chemical in use.

(7) In the case of containerized shipments of fumigated tobacco, the contents of the container shall be aerated by opening the container doors for a period of forty-eight hours after the completion of fumigation and prior to loading. When tobacco is within shipping cases having polyethylene or similar bag liners, the aeration period shall be seventy-two hours. The employer shall obtain a written warranty from the fumigation facility stating that the appropriate aeration period has been met.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. 05-03-093, § 296-56-60057, filed 1/18/05, effective 3/1/05. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 00-21-103, § 296-56-60057, filed 10/18/00, effective 2/1/01. Statutory Authority: RCW 49.17.040. 99-02-024, § 296-56-60057, filed 12/30/98, effective 3/30/99. Statutory Authority: Chapter 49.17 RCW and RCW 49.17.040, [49.17].050 and [49.17].060. 92-22-067 (Order 92-06), § 296-56-60057, filed 10/30/92, effective 12/8/92. Statutory Authority: RCW 49.17.040 and 49.17.050. 86-03-064 (Order 86-02), § 296-56-60057, filed 1/17/86; 85-01-022 (Order 84-24), § 296-56-60057, filed 12/11/84.]

PART E—CARGO HANDLING GEAR AND EQUIPMENT

WAC 296-56-60071 House falls. (1) Span beams shall be secured to prevent accidental dislodgement.

(2) A safe means of access shall be provided for employees working with house fall blocks.

(3) Designated employees shall inspect chains, links, shackles, swivels, blocks and other loose gear used in house fall operations before each day's use. Defective gear shall not be used.

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[Statutory Authority: RCW 49.17.040 and 49.17.050. 85-01-022 (Order 84-24), § 296-56-60071, filed 12/11/84.]

WAC 296-56-60073 Miscellaneous auxiliary gear. (1)
Routine inspection.

(a) At the completion of each use, loose gear such as slings, chains, bridles, blocks, and hooks shall be so placed as to avoid damage to the gear. Loose gear shall be inspected and any defects corrected before reuse.

(b) All loose gear shall be inspected by the employer or his/her authorized representative before each use and, when necessary, at intervals during its use, to ensure that it is safe. Any gear which is found upon inspection to be unsafe shall not be used until it is made safe.

(c) Defective gear shall not be used. Distorted hooks, shackles, or similar gear shall be discarded.

(d) Chains or other gear which have been lengthened, altered, or repaired by welding shall be properly heat treated, and before again being put into use, shall be tested and reexamined in the manner set forth in WAC 296-56-60097 and 296-56-60098.

(2) The employer shall maintain a record of the dates and results of the tests with each unit of gear concerned clearly identified. The records shall be available for examination by division of consultation and compliance personnel and the employee safety committee.

(3) Wire rope and wire rope slings.

(a) The employer shall ascertain and adhere to the manufacturer's recommended ratings for wire rope and wire rope slings and shall have such ratings available at the terminal. When the manufacturer is unable to supply such ratings, the employer shall use the tables for wire rope and wire rope slings found in American National Safety Standard for Slings, ANSI/ASME B30.9-1984. A design safety factor of at least five shall be maintained for the common sizes of running wire used as falls, in purchases or in such uses as light load slings. Wire rope with a safety factor of less than five may be used only:

(i) In specialized equipment, such as cranes designed to be used with lesser wire rope safety factors;

(ii) In accordance with design factors in standing rigging applications; or

(iii) For heavy lifts or other purposes for which a safety factor of five is impractical and for which the employer can demonstrate that equivalent safety is ensured.

(b) Wire rope or wire rope slings exhibiting any of the following conditions shall not be used:

(i) Ten randomly distributed broken wires in one rope lay or three or more broken wires in one strand in one rope lay;

(ii) Kinking, crushing, bird caging, or other damage resulting in distortion of the wire rope structure;

(iii) Evidence of heat damage;

(iv) Excessive wear, corrosion, deformation or other defect in the wire or attachments, including cracks in attachments;

(v) Any indication of strand or wire slippage in end attachments; or

(vi) More than one broken wire in the close vicinity of a socket or swaged fitting.

(c) Four by twenty-nine (4 x 29) wire rope shall not be used in any running rigging.

(d) Protruding ends of strands in splices on slings and bridles shall be covered or blunted. Coverings shall be removable so that splices can be examined. Means used to cover or blunt ends shall not damage the wire.

(e) Where wire rope clips are used to form eyes, the employer shall adhere to the manufacturer's recommendations, which shall be available at the terminal. If "U" bolt clips are used and the manufacturer's recommendations are not available, Table C-1 shall be used to determine the number and spacing of clips. "U" bolts shall be applied with the "U" section in contact with the dead end of the rope.

Table C-1— Number and Spacing of U-Bolt Wire Rope Clips

Improved plow steel, rope diam- eter inches/(cm)	Minimum number of clips		Minimum spacing
	Drop forged	Other material	inches/(cm)
1/2 or less (1.3)	3	4	3 (7.6)
5/8 (1.6)	3	4	3 3/4 (9.5)
3/4 (1.9)	4	5	4 1/2 (11.4)
7/8 (2.2)	4	5	5 1/4 (13.3)
1 (2.5)	5	7	6 (15.2)
1 1/8 (2.9)	6	7	6 3/4 (17.1)
1 1/4 (3.2)	6	8	7 1/2 (19.1)
1 3/8 (3.5)	7	8	8 1/4 (21.0)
1 1/2 (3.8)	7	9	9 (22.9)

(f) Wire rope shall not be secured by knots.

(g) Eyes in wire rope bridles, slings, bull wires, or in single parts used for hoisting shall not be formed by wire rope clips or knots.

(h) Eye splices in wire ropes shall have at least three tucks with a whole strand of the rope and two tucks with one-half of the wire cut from each strand. Other forms of splices or connections which are demonstrated to be equally safe may be used.

(i) Except for eye splices in the ends of wires and for endless rope slings, each wire rope used in hoisting or lowering, or in bulling cargo, shall consist of one continuous piece without knot or splice.

(4) Natural fiber rope.

(a) The employer shall ascertain the manufacturer's ratings for the specific natural fiber rope used and have such ratings available at the terminal. The manufacturer's ratings shall be adhered to and a minimum design safety factor of five maintained.

(b) Eye splices shall consist of at least three full tucks. Short splices shall consist of at least six full tucks, three on each side of the center line.

(5) Synthetic rope.

(a) The employer shall adhere to the manufacturer's ratings and use recommendations for the specific synthetic fiber rope used and shall have such ratings available at the terminal.

(b) Unless otherwise recommended by the manufacturer, when synthetic fiber ropes are substituted for manila ropes of less than three inches (7.62 cm) circumference, the substitute shall be of equal size. Where substituted for manila rope of

three inches or more in circumference, the size of the synthetic rope shall be determined from the formula:

$$C = \sqrt{.6(C_s^2) + .4(C_m^2)}$$

Where C = the required circumference of the synthetic rope in inches, C_s = the circumference to the nearest one-quarter inch of a synthetic rope having a breaking strength not less than that of the size manila rope that would be required by subsection (4) of this section, and C_m = the circumference of manila rope in inches which would be required by subsection (4) of this section.

(c) In making such substitution, it shall be ascertained that the inherent characteristics of the synthetic fiber are suitable for hoisting.

(6) Removal of natural and synthetic rope from service. Natural or synthetic rope having any of the following defects shall be removed from service:

- (a) Abnormal wear;
 - (b) Powdered fiber between strands;
 - (c) Sufficient cut or broken fibers to affect the capacity of the rope;
 - (d) Variations in the size or roundness of strands;
 - (e) Discolorations other than stains not associated with rope damage;
 - (f) Rotting; or
 - (g) Distortion or other damage to attached hardware.
- (7) Thimbles. Properly fitting thimbles shall be used where any rope is secured permanently to a ring, shackle or attachment, where practical.

(8) Synthetic web slings.

(a) Slings and nets or other combinations of more than one piece of synthetic webbing assembled and used as a single unit (synthetic web slings) shall not be used to hoist loads in excess of the sling's rated capacity.

(b) Synthetic web slings shall be removed from service if they exhibit any of the following defects:

- (i) Acid or caustic burns;
- (ii) Melting or charring of any part of the sling surface;
- (iii) Snags, punctures, tears or cuts;
- (iv) Broken or worn stitches;
- (v) Distortion or damage to fittings; or
- (vi) Display of visible warning threads or markers designed to indicate excessive wear or damage.

(c) Defective synthetic web slings removed from service shall not be returned to service unless repaired by a sling manufacturer or similar entity. Each repaired sling shall be proof tested by the repairer to twice the slings' rated capacity prior to its return to service. The employer shall retain a certificate of the proof test and make it available for examination.

(d) Synthetic web slings provided by the employer shall only be used in accordance with the manufacturer's recommendations, which shall be made available upon request.

(e) Fittings shall have a breaking strength at least equal to that of the sling to which they are attached and shall be free of sharp edges.

(9) Chains and chain slings used for hoisting.

(a) The employer shall adhere to the manufacturer's recommended ratings for safe working loads for the sizes of the wrought iron and alloy steel chains and chain slings used and

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shall have such ratings available. When the manufacturer is unable to provide such ratings, the employer shall use the tables for chains and chain slings found in American National Safety Standard for Slings, ANSI B30.9-1971.

(b) Proof coil steel chain, also known as common or hardware chain, and other chain not recommended by the manufacturer for slinging or hoisting shall not be used for slinging or hoisting.

(c)(i) Sling chains, including end fastenings, shall be inspected for visible defects before each day's use and as often as necessary during use to ensure integrity of the sling.

(ii) Thorough inspections of chains in use shall be made quarterly to detect wear, defective welds, deformation, increase in length or stretch. The month of inspection shall be indicated on each chain by color of paint on a link or by other effective means.

(iii) Chains shall be removed from service when maximum allowable wear, as indicated in Table C-2, is reached at any point of link.

(iv) Chain slings shall be removed from service when stretch has increased the length of a measured section by more than five percent; when a link is bent, twisted or otherwise damaged; or when a link has a raised scarf or defective weld.

(v) Only designated persons shall inspect chains used for slinging and hoisting.

Table C-2 — Maximum Allowable
Wear at Any Point of Link

Chain size		Maximum allowable wear	
Inches		Inches	(cm)
1/4 (9/32)	(0.6)	3/64	(0.1)
3/8	(1.0)	5/64	(0.2)
1/2	(1.3)	7/64	(0.3)
5/8	(1.6)	9/64	(0.4)
3/4	(1.9)	5/32	(0.4)
7/8	(2.2)	11/64	(0.4)
1	(2.5)	3/16	(0.5)
1 1/8	(2.9)	7/32	(0.6)
1 1/4	(3.2)	1/4	(0.6)
1 3/8	(3.5)	9/32	(0.7)
1 1/2	(3.8)	5/16	(0.8)
1 3/4	(4.4)	1 1/32	(0.9)

(d) Chains shall only be repaired under qualified supervision. Links or portions of chain defective under any of the criteria of WAC 296-56-60073 (9)(c) shall be replaced with properly dimensioned links or connections of material similar to that of the original chain. Before repaired chains are returned to service, they shall be tested to the proof test load recommended by the manufacturer for the original chain. Tests shall be performed by the manufacturer or shall be certified by an agency accredited for the purpose under WAC 296-56-60093. Test certificates shall be available at the terminal.

(e) Wrought iron chains in constant use shall be annealed or normalized at intervals not exceeding six months. Heat treatment certificates shall be available at the terminal. Alloy chains shall not be annealed.

(f) Kinked or knotted chains shall not be used for lifting. Chains shall not be shortened by bolting, wiring or knotting.

Makeshift links or fasteners such as wire, bolts or rods shall not be used.

(g) Hooks, rings, links and attachments affixed to sling chains shall have rated capacities at least equal to that of the chains to which they are attached.

(h) Chain slings shall bear identification of size, grade and rated capacity.

(10) Shackles.

(a) If available, the manufacturer's recommended safe working loads for shackles shall not be exceeded. In the absence of manufacturer's recommendations, Table C-3 shall apply.

(b) Screw pin shackles used aloft in house fall or other gear, except in cargo hook assemblies, shall have their pins moused or otherwise effectively secured.





Table C-3 — Safe Working Loads for Shackles

Material size		Pin diameter		Safe working load in 2,000 lb tons
Inches	(cm)	Inches	(cm)	
1/2	(1.3)	5/8	(1.6)	1.4
5/8	(1.6)	3/4	(1.9)	2.2
3/4	(1.9)	7/8	(2.2)	3.2
7/8	(2.2)	1	(2.5)	4.3
1	(2.5)	1 1/8	(2.9)	5.6
1 1/8	(2.9)	1 1/4	(3.2)	6.7
1 1/4	(3.2)	1 3/8	(3.5)	8.2
1 3/8	(3.5)	1 1/2	(3.8)	10.0
1 1/2	(3.8)	1 5/8	(4.1)	11.9
1 3/4	(4.4)	2	(5.1)	16.2
2	(5.1)	2 1/4	(5.7)	21.2

(c) Tables G-2 through G-5 shall be used to determine the safe working loads of various sizes and classifications of improved plow steel wire rope slings with various types of terminals. For sizes, classifications and grades not included in these tables the safe working load recommended by the manufacturer for specific, identifiable products shall be followed, however, a safety factor of not less than five shall be maintained.

TABLE G-1
MANILA ROPE

In Pounds or Tons of 2,000 Pounds

Circumference	Diameter in Inches	Single Leg	60 Degree	45 Degree	30 Degree
					
		Lbs.	Lbs.	Lbs.	Lbs.
3/4	1/4	120	204	170	120
1	5/16	200	346	282	200
1 1/8	3/8	270	467	380	270
1 1/4	7/16	350	605	493	350
1 3/8	15/32	450	775	635	450
1 1/2	1/2	530	915	798	530
1 3/4	9/16	690	1190	973	690
2	5/8	880	1520	1240	880
2 1/4	3/4	1080	1870	1520	1080
2 1/2	13/16	1300	2250	1830	1300
2 3/4	7/8	1540	2660	2170	1540
3	1	1800	3120	2540	1800
		Tons	Tons	Tons	Tons
3 1/4	1 1/16	1.0	1.7	1.4	1.0
3 1/2	1 1/8	1.2	2.1	1.7	1.2
3 3/4	1 1/4	1.35	2.3	1.9	1.35
4	1 5/16	1.5	2.6	2.1	1.5





Circumference	Diameter in Inches	Single Leg	60 Degree	45 Degree	30 Degree
					
		Lbs.	Lbs.	Lbs.	Lbs.
4 1/2	1 1/2	1.8	3.1	2.5	1.8
5	1 5/8	2.25	3.9	3.2	2.25
5 1/2	1 3/4	2.6	4.5	3.7	2.6
6	2	3.1	5.4	4.4	3.1
6 1/2	2 1/8	3.6	6.2	5.1	3.6

TABLE G-2 RATED CAPACITIES FOR IMPROVED PLOW STEEL, INDEPENDENT WIRE ROPE CORE, WIRE ROPE AND WIRE SLINGS
(IN TONS OF 2,000 POUNDS)

Rope Diameter Inches	Single Leg					
	Vertical			Choker		
	A	B	C	A	B	C
6 x 19 Classification						
1/4"	.59	.56	.53	.44	.42	.40
3/8"	1.3	1.2	1.1	.98	.93	.86
1/2"	2.3	2.2	2.0	1.7	1.6	1.5
5/8"	3.6	3.4	3.0	2.7	2.5	2.2
3/4"	5.1	4.9	4.2	3.8	3.6	3.1
7/8"	6.9	6.6	5.5	5.2	4.9	4.1
1"	9.0	8.5	7.2	6.7	6.4	5.4
1-1/8"	11	10	9.0	8.5	7.8	6.8
6 x 37 Classification						
1-1/4"	13	12	10	9.9	9.2	7.9
1-3/8"	16	15	13	12	11	9.6
1-1/2"	19	17	15	14	13	11
1-3/4"	26	24	20	19	18	15
2"	33	30	26	25	23	20
2-1/4"	41	38	33	31	29	25

(A) — Socket or Swaged Terminal attachment.

(B) — Mechanical Sleeve attachment.

(C) — Hand Tucked Splice attachment.

TABLE G-3 RATED CAPACITIES FOR IMPROVED PLOW STEEL, INDEPENDENT WIRE ROPE CORE, WIRE ROPE SLING (IN TONS OF 2,000 POUNDS)









Rope dia. inches	Two-leg bridle or basket hitch											
	Vertical			60 Degree			45 Degree			30 Degree		
												
	A	B	C	A	B	C	A	B	C	A	B	C
6 x 19 Classification												
1/4"	1.2	1.1	1.0	1.0	.97	.92	.83	.79	.75	.59	.56	.53
3/8"	2.6	2.5	2.3	2.3	2.1	2.0	1.8	1.8	1.6	1.3	1.2	1.1
1/2"	4.6	4.4	3.9	4.0	3.8	3.4	3.2	3.1	2.8	2.3	2.2	2.0
5/8"	7.2	6.8	6.0	6.2	5.9	5.2	5.1	4.8	4.2	3.6	3.4	3.0
3/4"	10	9.7	8.4	8.9	8.4	7.3	7.2	6.9	5.9	5.1	4.9	4.2
7/8"	14	13	11	12	11	9.6	9.8	9.3	7.8	6.9	6.6	5.5
1"	18	17	14	15	15	12	13	12	10	9.0	8.5	7.2
1 1/8"	23	21	18	19	18	16	16	15	13	11	10	9.0
6 x 37 Classification												
1 1/4"	26	24	21	23	21	18	19	17	15	13	12	10
1 3/8"	32	29	25	28	25	22	22	21	18	16	15	13
1 1/2"	38	35	30	33	30	26	27	25	21	19	17	15
1 3/4"	51	47	41	44	41	35	36	33	29	26	24	20
2"	66	61	53	57	53	46	47	43	37	33	30	26
2 1/4"	83	76	66	72	66	57	58	54	47	41	38	33
(A) Socket or Swaged Terminal Attachment. (B) Mechanical Sleeve Attachment. (C) Hand Tucked Splice Attachment.												

TABLE G-4 RATED CAPACITIES FOR IMPROVED PLOW STEEL, FIBER CORE, WIRE ROPE AND WIRE ROPE SLINGS (In Tons of 2,000 pounds)						
Rope dia. Inches	Single leg					
	Vertical			Choker		
	A	B	C	A	B	C
6 x 19 Classification						
1/4	.55	.51	.49	.41	.38	.37
3/8	1.2	1.1	1.1	.91	.85	.80
1/2	2.1	2.0	1.8	1.6	1.5	1.4
5/8	3.3	3.1	2.8	2.5	2.3	2.1
3/4	4.8	4.4	3.9	3.6	3.3	2.9
7/8	6.4	5.9	5.1	4.8	4.5	3.9
1	8.4	7.7	6.7	6.3	5.8	5.0
1-1/8	10	9.5	8.4	7.9	7.1	6.3

TABLE G-4 RATED CAPACITIES FOR IMPROVED PLOW STEEL, FIBER CORE, WIRE ROPE AND WIRE ROPE SLINGS (In Tons of 2,000 pounds)						
Rope dia. Inches	Single leg					
	Vertical			Choker		
	A	B	C	A	B	C
6 x 37 Classification						
1-1/4	12	11	9.8	9.2	8.3	7.4
1-3/8	15	13	12	11	10	8.9
1-1/2	17	16	14	13	12	10
1-3/4	24	21	19	18	16	14
2	31	28	25	23	21	18
(A) — Socket or Swaged Terminal attachment. (B) — Mechanical Sleeve attachment. (C) — Hand Tucked Splice attachment.						





TABLE G-5 RATED CAPACITIES FOR IMPROVED PLOW STEEL, FIBER CORE, WIRE ROPE SLINGS (IN TONS OF 2,000 POUNDS)

Rope dia. inches	Two-leg bridle or basket hitch											
	Vertical			60 Degree			45 Degree			30 Degree		
												
	A	B	C	A	B	C	A	B	C	A	B	C
6 x 19 Classification												
1/4"	1.1	1.0	.99	.95	.88	.85	.77	.72	.70	.55	.51	.49
3/8"	2.4	2.2	2.1	2.1	1.9	1.8	1.7	1.6	1.5	1.2	1.1	1.1

**TABLE G-5 RATED CAPACITIES FOR IMPROVED PLOW STEEL, FIBER CORE, WIRE ROPE SLINGS
(IN TONS OF 2,000 POUNDS)**

	A	B	C	A	B	C	A	B	C	A	B	C
1/2"	4.3	3.9	3.7	3.7	3.4	3.2	3.0	2.8	2.6	2.1	2.0	1.8
5/8"	6.7	6.2	5.6	5.8	5.3	4.8	4.7	4.4	4.0	3.3	3.1	2.8
3/4"	9.5	8.8	7.8	8.2	7.6	6.8	6.7	6.2	5.5	4.8	4.4	3.9
7/8"	13	12	10	11	10	8.9	9.1	8.4	7.3	6.4	5.9	5.1
1"	17	15	13	14	13	11	12	11	9.4	8.4	7.7	6.7
1 1/2"	21	19	17	18	16	14	15	13	12	10	9.5	8.4
6 x 37 Classification												
1 1/4"	25	22	20	21	19	17	17	16	14	12	11	9.8
1 3/8"	30	27	24	26	23	20	21	19	17	15	13	12
1 1/2"	35	32	28	30	27	24	25	22	20	17	16	14
1 3/4"	48	43	38	41	37	33	34	30	27	24	21	19
2"	62	55	49	53	48	43	43	39	35	31	28	25
(A) Socket or Swaged Terminal Attachment. (B) Mechanical Sleeve Attachment. (C) Hand Tucked Splice Attachment.												

**TABLE G-6 ALLOY STEEL CHAIN
(In Tons of 2,000 Pounds)**

Nominal Size Chain Stock Inch	Single Leg 	60 Degree 	45 Degree 	30 Degree 
1/4	1.62	2.82	2.27	1.62
3/8	3.30	5.70	4.65	3.30
1/2	5.62	9.75	7.90	5.62
5/8	8.25	14.25	11.65	8.25
3/4	11.5	19.9	16.2	11.5
7/8	14.3	24.9	20.3	14.3
1	19.3	33.5	27.3	19.8
1 1/8	22.2	38.5	31.5	22.2
1 1/4	28.7	49.7	40.5	28.7
1 3/8	33.5	58.0	47.0	33.5
1 1/2	39.7	68.5	56.0	39.7
1 5/8	42.5	73.5	59.5	42.5
1 3/4	47.0	81.5	62.0	47.0

(11) Hooks other than hand hooks.

(a) The manufacturer's recommendations shall be followed in determining the safe working loads of the various sizes and types of specific and identifiable hooks. All hooks for which no applicable manufacturer's recommendations are available shall be tested to twice the intended safe working load before they are initially put into use. The employer shall maintain a record of the dates and results of such tests.

(b) Loads shall be applied to the throat of the hook since loading the point may overstress, bend, or spring the hook.

(c) Hooks shall be inspected once a month to see that they have not been bent by overloading. Bent or sprung hooks shall not be used.

(d) Crane hooks. Magnetic particle or other suitable crack detecting inspection shall be performed at least once each year. When testing by X ray, the pertinent provisions of the Nuclear Regulatory Commission's standards for protection against radiation, relating to protection against occupational radiation exposure, shall apply.

(e) Any activity which involves the use of radioactive materials or X rays, whether or not under license from the Nuclear Regulatory Commission, shall be performed by competent persons specially trained in the proper and safe operation of such equipment. In the case of materials used under commission license, only persons actually licensed, or

competent persons under direction and supervision of the licensee, shall perform such work.

(f) Teeth of case hooks shall not be split, cracked, or deformed.

(g) Jaws of patent clamp type plate hooks shall be kept in safe condition so that they will grip plates securely.

(12) Pallets.

(a) Pallets shall be made and maintained to safely support and carry loads being handled. Fastenings of reusable pallets used for hoisting shall be bolts and nuts, drive screws (helically threaded nails), annular threaded nails or fastenings of equivalent holding strength.

(b) Damaged pallets shall be stored in designated areas and identified.

(c) Reusable wing or lip-type pallets shall be hoisted by bar bridles or other suitable gear and shall have an overhanging wing or lip of at least three inches (7.62 cm). They shall not be hoisted by wire slings alone.

(d) Loaded pallets that do not meet the requirements of this paragraph shall be hoisted only after being placed on pallets meeting such requirements or shall be handled by other means providing equivalent protection.

(e) Bridles for handling flush end or box-type pallets shall be designed to prevent disengagement from the pallet under load.

(f) Pallets shall be stacked or placed to prevent falling, collapsing or otherwise causing a hazard under standard operating conditions.

(g) Disposable pallets intended only for one use shall not be reused for hoisting.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 00-21-103, § 296-56-60073, filed 10/18/00, effective 2/1/01. Statutory Authority: RCW 49.17.040. 99-02-024, § 296-56-60073, filed 12/30/98, effective 3/30/99. Statutory Authority: Chapter 49.17 RCW. 95-04-007, § 296-60073, filed 1/18/95, effective 3/1/95. Statutory Authority: Chapter 49.17 RCW and RCW 49.17.040, [49.17].050 and [49.17].060. 92-22-067 (Order 92-06), § 296-56-60073, filed 10/30/92, effective 12/8/92. Statutory Authority: Chapter 49.17 RCW. 91-11-070 (Order 91-01), § 296-56-60073, filed 5/20/91, effective 6/20/91. Statutory Authority: RCW 49.17.040 and 49.17.050. 86-03-064 (Order 86-02), § 296-56-60073, filed 1/17/86; 85-10-004 (Order 85-09), § 296-56-60073, filed 4/19/85; 85-01-022 (Order 84-24), § 296-56-60073, filed 12/11/84.]

WAC 296-56-60075 Cargo boards and other type pallet boards. (1) "Cargo board" means the typical wing or lip-type stevedore board hoisted to or from vessels by means of a bar bridle. "Other pallet boards" includes all other platforms used to hold cargo for the purpose of transporting it from place to place.

(2) All pallets and cargo boards shall be of such material and construction as to safely support and carry loads being handled.

(3) All cargo boards shall be sheathed (decked) top and bottom with the top sheathing being of two-inch lumber and extending at least six inches beyond the end stringers.

(4) The outer sheathing boards or boards adjacent thereto on cargo boards shall be fastened to the stringers by bolts and nuts. Other sheathing shall be fastened by bolts and nuts, drive screws (helically threaded nails), annular threaded nails, or fastenings of equivalent strength.

(5) Pallet boards, other than cargo boards, may be hoisted if safe means are provided for the type of board used.

(6) Loaded cargo or pallet boards which do not meet the requirements of this section shall be reboarded or placed on cargo boards meeting the requirements of this section before being hoisted, only if the weight of the load can be safely distributed on the cargo board.

(7) Cargo boards which are not loaded and secured so that the load will not tip or fall shall not be hoisted.

(8) Bridles used to handle flush-end or box-type pallets shall be of such a design as to prevent them from becoming disengaged from the pallet under load.

Note: In areas where a two lip cargo board is being used, that practice shall continue. The department of labor and industries recommends the use of the two lip cargo board.

[Statutory Authority: RCW 49.17.040 and 49.17.050. 86-03-064 (Order 86-02), § 296-56-60075, filed 1/17/86; 85-01-022 (Order 84-24), § 296-56-60075, filed 12/11/84.]

WAC 296-56-60077 Powered industrial trucks. (1) Applicability. This section applies to every type of powered industrial truck used for material or equipment handling within a marine terminal. Employers must comply with the provisions of WAC 296-24-230 and this section. It does not apply to over-the-road vehicles.

(2) General.

(a) Modifications, such as adding counterweights, that might affect the vehicle's capacity or safety shall not be performed without either the manufacturer's prior written approval or the written approval of a professional engineer experienced with the equipment who has consulted with the manufacturer, if available. Capacity, operation and maintenance instruction plates, tags or decals shall be changed to conform to the equipment as modified.

(b) Unauthorized personnel shall not ride on powered industrial trucks. A safe place to ride shall be provided when riding is authorized.

(c) When a powered industrial truck is left unattended, load-engaging means shall be fully lowered, controls neutralized and brakes set. Unless the truck is in view and within twenty-five feet (7.62 m) of the operator, power shall be shut off. Wheels shall be blocked or curbed if the truck is on an incline.

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(d) Powered industrial trucks shall not be operated inside highway vehicles or railcars having damage which could affect operational safety.

(e) Powered industrial trucks shall be marked with their rated capacities, which shall be visible to the operator.

(f) Only stable and safely arranged loads within the rated capacity of the truck shall be handled.

(g) Drivers shall ascend and descend grades slowly.

(h) Drivers shall slow down and sound the horn at crossaisles and other locations where visibility is obstructed.

(i) If the load obstructs the forward view drivers shall travel with the load trailing.

(j) Steering knobs shall not be used unless the truck is equipped with power steering.

(k) When powered industrial trucks use cargo lifting devices that have a means of engagement hidden from the operator, a means shall be provided to enable the operator to determine that the cargo has been engaged.

(l) When cargo is being towed on pipe trucks or similar equipment, a safe means shall be provided to protect the driver from sliding loads.

(3) Maintenance.

(a) Only designated persons shall perform maintenance and repair.

(b) Batteries on all powered trucks shall be disconnected during repairs to the primary electrical system unless power is necessary for testing and repair. On trucks equipped with systems capable of storing residual energy, that energy shall be safely discharged before work on the primary electrical system begins.

(c) Replacement parts whose function might affect operational safety shall be equivalent in strength and performance capability to the original parts which they replace.

(d) Braking systems or other mechanisms used for braking shall be operable and in safe condition.

(e) Powered industrial trucks shall be maintained in safe working order. Safety devices shall not be removed or made inoperative except as otherwise provided in this section. Trucks with a fuel system leak or any other safety defect shall not be operated.

(f) Those repairs to the fuel and ignition systems of industrial trucks which involve fire hazards shall be conducted only in locations designated as safe for such repairs.

(4) Approved trucks.

(a) "Approved power-operated industrial truck" means one listed or approved for the intended use by a nationally recognized testing laboratory.

(b) Approved trucks acquired and used after February 15, 1972, shall bear a label or other identification indicating testing laboratory approval.

(c) When the atmosphere in an area is hazardous and the provisions of United States Coast Guard regulations at 33 CFR 126.15(e) do not apply, only power-operated industrial trucks approved for such locations shall be used.

(5) Duties of operator.

(a) A power-driven vehicle operator's special duties are:

(i) To operate the vehicle in a safe manner.

(ii) To test brakes, steering gear, lights, horns, or other warning devices, clutches, etc., before starting work.

(iii) To have the vehicle at all times under control so that it can be brought to an emergency stop in the clear space in front of the vehicle.

(iv) To back down any incline of two percent or more when traveling with a load on the fork lift jitney.

(b) Unobstructed view. When traveling, power-propelled vehicles shall at all times be operated in a manner giving the operator a reasonably unobstructed view in the direction of travel. Where this is impractical, the operator shall be directed in travel, by a person designated to do so.

(c) Employee riding safety. Operators and authorized passengers shall not be permitted to ride with legs or arms extending outside any vehicle nor shall they be permitted to ride while standing unless the vehicle is designed to be operated from a standing position.

(d) Moving vehicles. Vehicles shall be controlled manually while being pushed or towed except when a tow bar is used. Special precautions shall be taken when pushing vehicles where view is obstructed. Vehicles shall not be pushed with blades of a forklift.

(e) Moving highway trailers. In all cargo operations involving the use of highway trailers, trailers shall be moved in such a manner that the moving trailer is completely under control at all times. Special caution shall be exercised when such trailers are moving on inclines. Trailers shall be loaded in a manner which will prevent the cargo from shifting, and the load in the trailer shall be evenly distributed so as not to cause the trailer to tip to one side.

(f) Prohibited forms of riding. Riding on tongue or handles of trailers or forks of power-propelled vehicles is prohibited.

(g) Regular seats for riders. No one except the operator shall ride on power-driven vehicles unless regular seats are provided to accommodate passengers.

(h) Jumping on or off moving vehicles. Employees shall not jump on or off moving vehicles.

(i) Reporting defects. If a power-driven vehicle is at any time found to be in any way unsafe, the operator shall report same immediately to the person in charge and such vehicle shall not be used for production work until it has been made safe.

(6) Vehicle equipment and maintenance.

(a) Horns and lights. All power-propelled vehicles shall be provided with horns or other warning devices.

(b) Power-propelled vehicles used for night work, when required to travel away from an illuminated work area shall be equipped with a light or lights directed in the direction of travel in order to safely travel about the area.

(c) Guards on operator's platform. Every power truck operated from an end platform or standing position shall be equipped with a substantial guard securely attached to the platform or frame of the vehicle in such a manner as to protect the operator from falling objects and so designed that the operator can easily mount or dismount from the operating station.

(d) Seat cushions. All vehicles having a driver's seat shall be provided with resilient seat cushions fixed in place.

(e) Securing of counterbalances. Counterbalances of all power-driven vehicles shall be positively secured to prevent accidental dislodging, but may be a removable type which may be removed, if desired, prior to hoisting the vehicle.

(f) Exhaust pipes and mufflers. Exhaust pipes and mufflers of internal combustion engines, where workers are exposed to contact shall be isolated or insulated. Exhaust pipes shall be constructed to discharge not less than seventy-two inches above the floor on jitneys and eighty-four inches on forklifts or less than twenty inches from the floor.

(g) Ventilation where internal combustion vehicles are used. Internal combustion engines may be used only in areas where adequate ventilation is provided.

(h) Concentration levels of carbon monoxide gas created by powered industrial truck operations shall not exceed the levels specified in WAC 296-56-60055.

(i) When disputes arise concerning degree of concentration, methods of sampling to ascertain the conditions should be referred to a qualified industrial hygienist.

(j) Cargo truck couplings. Couplings installed on cargo trucks (four-wheelers) shall be of a type which will prevent accidental disengaging.

(k) Operating levers. Operating levers on power-driven vehicles shall be so placed as not to project toward the operator's body.

(l) Front axle assembly. The front axle assembly on all trailers shall be securely fastened to the truck bed.

(m) Air line hook-up. Tractors hauling heavy duty highway trailers shall have an air line brake hook-up.

(n) Floor mats. On power-driven vehicles where the operator stands on a platform, resilient foot mats shall be securely attached.

(o) Cleaning vehicles. All power-propelled vehicles shall be cleaned at frequent intervals to remove any accumulation of dust and grease that may present a hazard.

(7) Forklift trucks.

(a) Overhead guards.

(i) When operators are exposed to overhead falling hazards, forklift trucks shall be equipped with securely attached overhead guards. Guards shall be constructed to protect the operator from falling boxes, cartons, packages, or similar objects.

(ii) Overhead guards shall not obstruct the operator's view, and openings in the top of the guard shall not exceed six inches (15.24 cm) in one of the two directions, width or length. Larger openings are permitted if no opening allows the smallest unit of cargo being handled to fall through the guard.

(iii) Overhead guards shall be built so that failure of the vehicle's mast tilting mechanism will not displace the guard.

(iv) An overhead guard, otherwise required by this paragraph, may be removed only when it would prevent a truck from entering a work space and if the operator is not exposed to low overhead obstructions in the work space.

(v) Overhead guards shall be large enough to extend over the operator during all truck operations, including forward tilt.

(b) Supplies to ship's rail. Cargo or supplies shall not be hoisted to or from ship's rail with a forklift. This does not apply to ramp or side port loading.

(c) Position of forks. When standing, lift forklift forks shall be lowered to floor. When moving, lift forklift forks shall be kept as low as possible.

(d) Forklift use in gangplank moving. Not less than two forklifts shall be used to place or remove gangplanks unless

fork width prevents tipping and manufacturer's rated lifting capacity of the forklift is not exceeded.

(e) Forklift seat covers. Seats on forklifts shall be provided with a removable waterproof cover when they are exposed to the weather.

(f) Raised equipment to be blocked. Workers shall not work below the raised bed of a dump truck, raised buckets of front end loaders, raised blades of tractors or in similar positions without blocking the equipment in a manner that will prevent it from falling. When working under equipment suspended by use of jacks, safety stands or blocking shall be used in conjunction with the jack.

(g) Maximum speed. The maximum speed for forklifts on all docks shall not exceed eight miles per hour. The speed limit shall be prominently posted on such docks.

(h) Load backrest extensions. Where necessary to protect the operator, forklift trucks shall be fitted with a vertical load backrest extension to prevent the load from hitting the mast when the mast is positioned at maximum backward tilt. For this purpose, a "load backrest extension" means a device extending vertically from the fork carriage frame to prevent raised loads from falling backward.

(i) Forks. Forks, fork extensions and other attachments shall be secured so that they cannot be accidentally dislodged, and shall be used only in accordance with the manufacturer's recommendations.

(j) Counterweights. Counterweights shall be so affixed that they cannot be accidentally dislodged.

(k) Capacities and weights.

(i) Forklift truck rated capacities, with and without removable counterweights, shall not be exceeded. Rated capacities shall be marked on the vehicle and shall be visible to the operator. The vehicle weight, with and without counterweight, shall be similarly marked.

(ii) If loads are lifted by two or more trucks working in unison, the total weight of the load shall not exceed the combined rated lifting capacity of all trucks involved.

(l) Lifting of employees. Employees may be elevated by forklift trucks only when a platform is secured to the lifting carriage or forks. The platform shall meet the following requirements:

(i) The platform shall have a railing complying with WAC 296-56-60123(3).

(ii) The platform shall have toeboards complying with WAC 296-56-60123(4), if tools or other objects could fall on employees below.

(iii) When the truck has controls which are elevated with the lifting carriage, means shall be provided for employees on the platform to shut off power to the vehicle.

(iv) Employees on the platform shall be protected from exposure to moving truck parts.

(v) The platform floor shall be skid resistant.

(vi) A truck operator shall be at the truck's controls when employees are elevated unless the truck's controls are elevated with the lifting carriage.

(vii) When the truck has controls elevated with the lifting carriage, means shall be provided for employees on the platform to shut off power to the vehicle.

(viii) While employees are elevated, the truck may be moved only to make minor placement adjustments.

(8) Bulk cargo-moving vehicles.

(a) Where a seated operator may come into contact with projecting overhead members, crawler-type bulk-cargo-moving vehicles that are rider operated shall be equipped with operator guards.

(b) Guards and their attachment points shall be so designed as to be able to withstand, without excessive deflection, a load applied horizontally at the operator's shoulder level equal to the drawbar pull of the machine.

(c) After July 26, 1999, bulk cargo-moving vehicles shall be equipped with rollover protection of such design and construction as to prevent the possibility of the operator being crushed because of a rollover or upset.

(9) Straddle trucks.

(a) Accessibility. Straddle trucks shall have a permanent means of access to the operator's station, including any handholds necessary for safe ascent and descent.

(b) Guarding.

(i) Main sprockets and chains to the wheels shall be guarded as follows:

(A) The upper sprocket shall be fully enclosed;

(B) The upper half of the lower sprocket shall be enclosed; and

(C) The drive chain shall be enclosed to a height of eight feet (2.44 m) except for that portion at the lower half of the lower sprocket.

(ii) Gears shall be fully enclosed and revolving parts which may be contacted by the operator shall be guarded.

(iii) When straddle trucks are used in the vicinity of employees, personnel-deflecting guards shall be provided around leading edges of front and rear wheels.

(c) Visibility. Operator visibility shall be provided in all directions of movement.

(10) Trailer-spotting tractors.

(a) Trailer-spotting tractors (fifth wheels) shall be fitted with any hand grabs and footing necessary for safe access to the fifth wheel.

(b) Rear cab windows shall be of safety glass or equivalent material.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 00-21-103, § 296-56-60077, filed 10/18/00, effective 2/1/01; 00-01-176, § 296-56-60077, filed 12/21/99, effective 3/1/00. Statutory Authority: RCW 49.17.040. 99-02-024, § 296-56-60077, filed 12/30/98, effective 3/30/99. Statutory Authority: RCW 49.17.040 and 49.17.050. 86-03-064 (Order 86-02), § 296-56-60077, filed 1/17/86; 85-10-004 (Order 85-09), § 296-56-60077, filed 4/19/85; 85-01-022 (Order 84-24), § 296-56-60077, filed 12/11/84.]

WAC 296-56-60079 General rules applicable to vehicles.

(1) The requirements of this section apply to general vehicle use within marine terminals except in cases where the provisions of subsections (3) and (13) of this section are preempted by regulations of the department of transportation.

(2) Private vehicle parking in marine terminals shall be allowed only in designated areas.

(3) Trailers shall not be disconnected from tractors at loading docks until the road wheels have been immobilized. The road wheels shall be immobilized from the time the brake system is disconnected until braking is again provided. Supplementary front end support shall be employed as necessary to prevent tipping when a trailer is entered by a material handling vehicle. Rear end support shall be employed if rear

wheels are so far forward as to allow tipping when the trailer is entered.

(4) The employer shall direct motor vehicle operators to comply with any posted speed limits, other traffic control signs or signals, and written traffic instructions.

(5) Stop signs shall be posted at main entrances and exits of structures where visibility is impaired, and at blind intersections, unless direct traffic control, warning mirror systems or other systems of equivalent safety are provided.

(6) Vehicular routes, traffic rules and parking areas shall be established, identified and used.

(7) Vehicle drivers shall warn anyone in traffic lanes of the vehicle's approach.

(8) Signs indicating pedestrian traffic shall be clearly posted at vehicular check-in and check-out lines and similar locations where employees may be working.

(9) A distance of not less than twenty feet (6.1 m) shall be maintained between the first two vehicles in a check-in, check-out, road ability, or vessel loading/discharging line. This distance shall be maintained between any subsequent vehicles behind which employees are required to work.

(10) No unattended vehicle shall be left with its engine running unless secured against movement (see WAC 296-56-60077 for powered industrial trucks).

(11) When the rear of a vehicle is elevated to facilitate loading or discharging, a ramp shall be provided and secured. The vehicle shall be secured against accidental movement during loading or discharging.

(12) Only vehicle floors in safe condition shall be used.

(13) When flatbed trucks, platform containers or similar conveyances are loaded or discharged and the cargo consists of pipe or other products which could spread or roll to endanger employees, the cargo shall be contained to prevent movement.

(14) Vehicles used to transport employees within a terminal shall be maintained in safe working order and safety devices shall not be removed or made inoperable.

[Statutory Authority: RCW 49.17.040, 99-02-024, § 296-56-60079, filed 12/30/98, effective 3/30/99. Statutory Authority: Chapter 49.17 RCW and RCW 49.17.040, [49.17].050 and [49.17].060, 92-22-067 (Order 92-06), § 296-56-60079, filed 10/30/92, effective 12/8/92. Statutory Authority: RCW 49.17.040 and 49.17.050, 86-03-064 (Order 86-02), § 296-56-60079, filed 1/17/86; 85-01-022 (Order 84-24), § 296-56-60079, filed 12/11/84.]

WAC 296-56-60081 Multipiece and single-piece rim wheels. Servicing of multipiece and single-piece rim wheels in marine terminal and other maritime work locations on large vehicles is regulated by requirements of WAC 296-24-21701.

[Statutory Authority: Chapter 49.17 RCW, 88-14-108 (Order 88-11), § 296-56-60081, filed 7/6/88. Statutory Authority: RCW 49.17.040 and 49.17.050, 86-03-064 (Order 86-02), § 296-56-60081, filed 1/17/86; 85-10-004 (Order 85-09), § 296-56-60081, filed 4/19/85; 85-01-022 (Order 84-24), § 296-56-60081, filed 12/11/84.]

WAC 296-56-60083 Cranes and derricks. (1) Scope.

(a) This section through WAC 296-56-60103 applies to every kind of crane and derrick and to any other type of equipment performing the functions of a crane or derrick except as noted in (b) of this subsection.

(b) This section does not apply to small industrial truck-type cranes, container handling toploaders and sideloaders,

chain hoists, and mobile straddle-type cranes incapable of straddling two or more intermodal containers (sixteen feet (4.88 m) in width).

(2) Ratings.

(a) Except for bridge cranes covered by subsection (7) of this section, cranes and derricks having ratings that vary with boom length, radius (outreach) or other variables shall have a durable rating chart visible to the operator, covering the complete range of the manufacturer's (or design) capacity ratings. The rating chart shall include all operating radii (outreach) for all permissible boom lengths and jib lengths as applicable, with and without outriggers, and alternate ratings for optional equipment affecting such ratings. Precautions or warnings specified by the owner or manufacturer shall be included.

(b) The manufacturer's (or design) rated loads for the conditions of use shall not be exceeded.

(c) Designated working loads shall not be increased beyond the manufacturer's ratings or original design limitations unless such increase receives the manufacturer's approval. When the manufacturer's services are not available or where the equipment is of foreign manufacture, engineering design analysis shall be performed or approved by a person accredited for certifying the equipment under WAC 296-56-60093. Cranes shall conform with the manufacturer's specifications or any current ANSI standards that apply. Engineering design analysis shall be performed by a registered professional engineer competent in the field of cranes and derricks. Any structural changes necessitated by the change in rating shall be carried out.

(3) Radius indicator. When the rated load varies with the boom radius, the crane or derrick shall be fitted with a boom angle or radius indicator visible to the operator.

(4) Prohibited usage.

(a) Equipment shall not be used in a manner that exerts sideloading stresses upon the crane or derrick boom.

(b) No crane or derrick having a visible or known defect that affects safe operation shall be used.

(5) Protective devices.

(a) When exposed moving parts such as gears, chains and chain sprockets present a hazard to employees during crane and derrick operations, those parts shall be securely guarded.

(b) Crane hooks shall be latched or otherwise secured to prevent accidental load disengagement.

(c) When hoisting personnel in an approved man basket, the hook shall have a positive safety latch to prevent rollouts.

(6) General.

(a) Operating controls.

(i) Crane and derrick operating controls shall be clearly marked, or a chart indicating their function shall be posted at the operator's position.

(ii) All crane controls shall operate in a uniform manner within a given port.

(iii) Overhead bridge and container gantry crane operating control levers shall be self-centering so that they will automatically move to the "off" position when the operator releases the control.

(b) Booms. Cranes with elevatable booms and without operable automatic limiting devices shall be provided with boom stops if boom elevation can exceed maximum design angles from the horizontal.

(c) Foot pedals. Foot pedals shall have a nonskid surface.

(d) Access. Ladders, stairways, stanchions, grab irons, foot steps or equivalent means shall be provided as necessary to ensure safe access to footwalks, cab platforms, the cab and any portion of the superstructure which employees must reach.

(i) Footwalks shall be of rigid construction, and shall be capable of supporting a load of one hundred pounds (4.79 kPa) per square foot.

(ii) If more than twenty feet (6.1 m) in height, vertical ladders shall comply with WAC 296-56-60209 (4), (5)(a), (5)(b)(iii) and (5)(b)(iv).

(iii) Stairways on cranes shall be equipped with rigid handrails meeting the requirements of WAC 296-56-60123 (5)(a).

(iv) If the top of a ladder or stairway or any position thereof is located where a moving part of a crane, such as a revolving house, could strike an employee ascending or descending the ladder or stairway, a prominent warning sign shall be posted at the foot of the ladder or stairway. A system of communication (such as a buzzer or bell) shall be established and maintained between the foot of the ladder or stairway and the operator's cab.

(e) Operator's station. The cab, controls, and mechanism of the equipment shall be so arranged that the operator has a clear view of the load or signal person, when one is used. Cab glass, when used, shall be safety plate glass or equivalent and good visibility shall be maintained through the glass. Clothing, tools and equipment shall be stored so as not to interfere with access, operation, or the operator's view.

(f) A seat (lap) belt, meeting the requirements of 49 CFR 571.208-210 for a Type 1 seat belt assembly, shall be installed on the operator's seat of high speed container gantry cranes where the seat trolleys.

(g) Counterweights or ballast. Cranes shall be operated only with the specified type and amount of ballast or counterweights. Ballast or counterweight shall be located and secured only as provided in the manufacturer's or design specifications, which shall be available.

(h) Outriggers. Outriggers shall be used according to the manufacturer's specifications or design data, which shall be available. Floats, when used, shall be securely attached to the outriggers. Wood blocks or other support shall be of sufficient size to support the outrigger, free of defects that may affect safety and of sufficient width and length to prevent the crane from shifting or toppling under load.

(i) Exhaust gases. Engine exhaust gases shall be discharged away from the normal position of crane operating personnel.

(j) Electrical equipment shall be so located or enclosed that live parts will not be exposed to accidental contact. Designated persons may work on energized equipment only if necessary during inspection, maintenance, or repair.

(k) Fire extinguisher.

(i) At least one portable fire extinguisher of at least 5-BC rating or equivalent shall be accessible in the cab of the crane or derrick.

(ii) No portable fire extinguisher using carbon tetrachloride or chlorobromomethane extinguishing agents shall be used.

Note: For additional requirements relating to portable fire extinguishers see WAC 296-800-300.

(l) Rope on drums. At least three full turns of rope shall remain on ungrooved drums, and two turns on grooved drums, under all operating conditions. Wire rope shall be secured to drums by clamps, U-bolts, shackles, or equivalent means. Fiber rope fastenings are prohibited.

(m) Assembly or disassembly of boom sections. Mobile crane booms being assembled or disassembled on the ground with or without the support of the boom harness shall be blocked to prevent dropping of the boom or boom sections.

(n) Brakes.

(i) Each independent hoisting unit of a crane shall be equipped with at least one holding brake, applied directly to the motor shaft or gear train.

(ii) Each independent hoisting unit of a crane, except worm geared hoists, the angle of whose worm is such as to prevent the load from accelerating in the lowering direction, shall, in addition to a holding brake, be equipped with a controlled braking means to control lowering speeds.

(iii) Holding brakes for hoist units shall have not less than the following percentage of the rated load hoisting torque at the point where the brake is applied:

(A) One hundred twenty-five percent when used with a controlled braking means.

(B) One hundred percent when used with a mechanically controlled braking means.

(C) One hundred percent when two holding brakes are provided.

(iv) All power control braking means shall be capable of maintaining safe lowering speeds of rated loads.

(o) Each crane or derrick shall be equipped with sufficient lights to maintain five foot candles in the working area around the load hook. All crane ladders and machinery houses shall be illuminated at a minimum of two candle power.

(p) Light fixtures connected to the boom, gantry legs, or machinery house shall be provided with safety devices which will prevent the light fixture from falling in case of bracket failure.

(q) Electronic devices may be installed to prevent collision subject to approval of the accredited certification agency.

(r) On all rail gantry cranes, truck guards shall extend on the ends of the trucks, close to the top of the rail to prevent worker's feet from being caught between the rail and wheel. This subsection does not apply if rail sweeps are present.

(s) All hydraulic cylinders used to control crane booms or to provide crane stability (outriggers) shall be equipped with a pilot operated check valve or a device which will prevent the boom or outrigger from retracting in case of failure of a component of the hydraulic system.

(t) Gantry cranes shall be provided with automatic rail clamps or other devices to prevent the crane from moving when not being used or when power is off.

(7) Rail-mounted cranes (excluding locomotive types).

(a) For the purposes of this section, rail-mounted cranes include bridge cranes and portal cranes.

(b) Rated load marking. The rated loads of bridge cranes shall be plainly marked on each side of the crane and in the cab. If there is more than one hoisting unit, each hoist shall

have its rated load marked on it or on its load block. Marking shall be legible from the ground level.

(c) Wind-indicating devices.

(i) Each rail-mounted bridge and portal crane located outside of an enclosed structure shall be fitted with an operable wind-indicating device.

(ii) The wind indicating device shall provide a visible or audible warning to alert the operator of high wind conditions. That warning shall be transmitted whenever the following circumstances are present:

(A) When wind velocity reaches the warning speed, not exceeding the crane manufacturer's recommendations; and

(B) When wind velocity reaches the shutdown speed, not exceeding the crane manufacturer's recommendations, at which work is to be stopped and the crane secured.

(iii) Instructions. The employer shall post operating instructions for high wind conditions in the operator's cab of each crane. Operators shall be directed to comply with these instructions. The instructions shall include procedures for responding to high wind alerts and for any coordination necessary with other cranes.

(d) Securing of cranes in high winds.

(i) When the wind reaches the crane's warning speed:

(A) Gantry travel shall be stopped; and

(B) The crane shall be readied for shutdown.

(ii) When the wind reaches the crane's shutdown speed:

(A) Any portion of the crane spanning or partially spanning a vessel shall be moved clear of the vessel if safe to do so; and

(B) The crane shall be secured against travel, using all available means of securing.

(e) The employer shall monitor local weather conditions by subscribing to a weather service or using equally effective means.

(f) Stops and bumpers.

(i) The ends of all tracks shall be equipped with stops or bumpers. If a stop engages the tread of the wheel, it shall be of a height not less than the radius of the wheel.

(ii) When more than one crane operates on the same runway or more than one trolley on the same bridge, each crane or trolley shall be equipped with bumpers or equivalent devices at adjacent ends subject to impact.

(g) Employee exposure to crane movement. When employees may be in the vicinity of the tracks, crane trucks shall be equipped with personnel-deflecting guards.

(h) Pedestrian clearance. If the track area is used for employee passage or for work, a minimum clearance of three feet (0.91 m) shall be provided between trucks or the structures of rail-mounted cranes and any other structure or obstruction. When the required clearance is not available on at least one side of the crane's trucks, the area shall not be used and shall be marked and identified.

(i) Warning devices. Rail-mounted cranes shall be equipped with an effective audible and visible travel warning device which shall be used to warn employees who may be in the path of the moving crane.

(j) Communications.

(i) Means of communication shall be provided between the operator's cab and the base of the gantry of all rail-mounted cranes. This requirement may be met by telephone,

radio, sound-signaling system or other effective methods, but not solely by hand-signaling.

(ii) All rail-mounted cranes thirty ton and above capacity shall be equipped with a voice hailing device (PA system) from the operator to the ground, audible within one hundred feet.

(k) Limit switch bypass systems shall be secured during all cargo operations. Such bypass systems shall not be used except in an emergency or during noncargo handling operations such as stowing cranes or derricks or performing repairs. When a situation requiring the use of a bypass system or the readjustment of a limit switch arises, it shall be done only under the direction of a crane mechanic.

(l) Cranes and crane operations—Scope and application. The sections of this chapter, WAC 296-56-60083 through 296-56-60099, apply to cranes, derricks, and crane operations.

(m) Signal persons. A signal person shall be required when a crane operator's visibility is obstructed. When a signal person is required to transmit hand signals, they shall be in such a position that the operator can plainly see the signals.

(n) Signals. All operators and signal persons shall use standard signals as illustrated for longshore crane operations. (See Appendices C and D, at the end of this chapter.)

(o) Signal person for power units. Where power units, such as cranes and winches are utilized and signaling is required, the operator shall be instructed as to who is authorized to give signals. The operator shall take signals only from such authorized person. In case of emergency, any worker shall be authorized to give a stop signal.

(i) No draft shall be hoisted unless the winch or crane operator can clearly see the draft itself or see the signals of any signal person associated with the operation.

(ii) Loads requiring continuous manual guidance while in motion shall be provided with tag lines.

(p) Landing loads. Persons assisting in landing a load shall face the load and use caution to prevent themselves from getting in a position where they may be caught between the load and a fixed object.

(8) Stabilizing of locomotive cranes. Loads may be hoisted by locomotive cranes only if outriggers are in place, unless means are taken to prevent the load being carried by the truck springs of the crane.

(9) Operations.

(a) Use of cranes together. When two or more cranes hoist a load in unison, a designated person shall direct the operation and instruct personnel in positioning, rigging of the load and movements to be made.

(b) Guarding of swing radius. Accessible areas within the swing radius of the body of a revolving crane shall be physically guarded during operations to prevent an employee from being caught between the body of the crane and any fixed structure or between parts of the crane.

(c) Securing mobile crane components in transit. The crane's superstructure and boom shall be secured against rotation and carried in line with the direction of travel except when negotiating turns with an operator in the cab or when the boom is supported on a dolly. The empty hook or other attachment shall be secured.

(d) Unattended cranes. The following steps shall be taken before leaving a crane unattended between work periods:

- (i) Suspended loads, such as those hoisted by lifting magnets or clamshell buckets, shall be landed unless the storage position or maximum hoisting of the suspended device will provide equivalent safety;
- (ii) Clutches shall be disengaged;
- (iii) The power supply shall be shut off;
- (iv) The crane shall be secured against accidental travel; and
- (v) The boom shall be lowered or secured against movement.

(e) Operating near electric power lines.

(i) Clearance. Unless electrical distribution and transmission lines are deenergized and visibly grounded at point of work, or unless insulating barriers not a part of or an attachment to the crane have been erected to prevent physical contact with lines, cranes may be operated near power lines only in accordance with following:

(A) For lines rated 50 kV or below, minimum clearance between the lines and any part of the crane or load shall be ten feet (3.05 m);

(B) For lines rated over 50 kV, minimum clearance between the lines and any part of the crane or load shall be either 10 feet (3.05 m) plus 0.4 inch (10.16 mm) for each 1 kV over 50 kV, or twice the length of the line insulator, but never less than ten feet; and

(C) In transit with no load and boom lowered, the clearance shall be a minimum of four feet (1.22 m).

(ii) Boom guards. Cage-type boom guards, insulating links or proximity warning devices may be used on cranes, but they shall not be used in place of the clearances required by subsection (9)(e)(i) of this section.

(iii) Determination of energized lines. Any overhead line shall be presumed to be energized until the owner of the line indicates that it is not energized.

(10) Protection for employees being hoisted.

(a) No employee shall be hoisted by the load hoisting apparatus of a crane or derrick except:

(i) On intermodal container spreaders, equipped in accordance with this subsection; or

(ii) In a boatswain's chair or other device rigged to prevent it from accidental disengagement from the hook or supporting member; or

(iii) On a platform meeting the following requirements:

(A) Enclosed by a railing or other means providing protection equivalent to that described in WAC 296-56-60123 (3). If equipped with open railings, the platform shall be fitted with toe boards;

(B) Having a safety factor of four based on ultimate strength;

(C) Bearing a plate or permanent marking indicating maximum load rating, which shall not be exceeded, and the weight of the platform itself;

(D) Equipped with a device to prevent access doors, when used, from opening accidentally;

(E) Equipped with overhead protection for employees on the platform if they are exposed to falling objects or overhead hazards;

(F) Secured to the load line by means other than wedge and socket attachments, unless the free (bitter) end of the line is secured back to itself by a clamp placed as close above the wedge as possible.

(b) Except in an emergency, the hoisting mechanism of all overhead and container gantry cranes used to hoist personnel shall operate in power up and power down, with automatic brake application when not hoisting or lowering.

(c) Variable radius booms of a crane or derrick used to hoist personnel shall be so constructed or secured as to prevent accidental boom movement.

(d) Platforms or devices used to hoist employees shall be inspected for defects before each day's use and shall be removed from service if defective.

(e) Employees being hoisted shall remain in continuous sight of and communication with the operator or signal person.

(f) Operators shall remain at the controls when employees are hoisted.

(g) Cranes shall not travel while employees are hoisted, except in emergency or in normal tier to tier transfer of employees during container operations.

(h) When intermodal container spreaders are used to transfer employees to or from the tops of containers, the spreaders shall be equipped with a personnel platform equipped with fixed railings, provided that the railings have one or more openings for access. The openings shall be fitted with a means of closure, such as chains with hooks. Existing railings shall be at least thirty-six inches (0.91 m) in height. New railings installed after October 3, 1983 shall be forty-two inches (1.07 m), plus or minus three inches (7.62 cm), in height. The provisions of (a)(ii)(C), (D), and (F) of this subsection also apply to personnel platforms when container spreaders are used.

(i) Positive safety latch-type hooks or moused hooks shall be used.

(j) Employees shall not be hoisted on intermodal container spreaders while a load is engaged.

Additional requirements are located in WAC 296-24-23533.

(11) Routine inspection.

(a) Designated persons shall visually inspect each crane and derrick on each day of use for defects in functional operating components and shall report any defect found to the employer. The employer shall inform the operator of the findings.

(b) A designated person shall thoroughly inspect all functional components and accessible structural features of each crane or device at monthly intervals.

(c) Any defects found during such inspections which may create a safety hazard shall be corrected before further use. Repairs shall be performed only by designated persons.

(d) A record of monthly inspections shall be maintained for six months in or on the crane or derrick or at the terminal.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 01-17-033, § 296-56-60083, filed 8/8/01, effective 9/1/01; 00-21-103, § 296-56-60083, filed 10/18/00, effective 2/1/01. Statutory Authority: RCW 49.17.040. 99-02-024, § 296-56-60083, filed 12/30/98, effective 3/30/99. Statutory Authority: Chapter 49.17 RCW. 95-04-007, § 296-56-60083, filed 1/18/95, effective 3/1/95. Statutory Authority: Chapter 49.17 RCW and RCW 49.17.040, [49.17].050 and [49.17].060. 92-22-067 (Order 92-06), § 296-56-60083, filed 10/30/92, effective 12/8/92. Statutory Authority: RCW

49.17.040 and 49.17.050. 86-03-064 (Order 86-02), § 296-56-60083, filed 1/17/86; 85-10-004 (Order 85-09), § 296-56-60083, filed 4/19/85; 85-01-022 (Order 84-24), § 296-56-60083, filed 12/11/84.]

WAC 296-56-60085 Crane load and limit devices. (1)

Except as provided in subsection (8) of this section, every crane shall be fitted with a load indicating device or alternative device in proper working condition.

The type or model or any load indicating or alternate device which is used shall provide:

(a) A direct indication in the cab of actual weight hoisted or a means of determining this by referencing a weight indication to crane ratings posted and visible to the operator. The use of a dynamometer or simple scale alone shall not meet this requirement; or

(b) Indications in the cab according to the radius and load at the moment; or

(c) A direct means to prevent an overload from occurring.

(2) Accuracy of the devices required by this section shall be such that any indicated load (or limit), including the sum of actual weight hoisted and additional equipment or "add ons" such as slings, sensors, blocks, etc., is within the range from no less than ninety-five percent of the actual true total load (five percent overload) to one hundred ten percent of the actual true total load (ten percent underload). Such accuracy shall be required over the range of the daily operating variables to be expected under the conditions of use.

(3) The device shall permit the operator to determine, before making any lift, that the indicating or substitute system is operative. In the alternative, if a device is so mounted or attached to preclude such a determination, it may not be used unless it has been certified by the manufacturer to remain operable within the limits stated in subsection (2) of this section for a specific period of use. Checks for accuracy, using known values of load, shall be performed at the time of every certification survey (see WAC 296-56-60093) and at such additional times as may be recommended by the manufacturer.

(4) When a load indicating device or alternative system is so arranged in the supporting system (crane structure) that its failure could cause the load to be dropped, its strength shall not be the limiting factor of the supporting system (crane structure).

(5) Marking shall be conspicuously placed giving: Units of measure in pounds or both pounds and kilograms, capacity of the indicating system, accuracy of the indicating system, and operating instructions and precautions. In the case of systems utilizing indications other than actual weights, the marking shall include data on: The means of measurement, capacity of the system, accuracy of the system, operating instructions and precautions. If the system used provides no read-out, but it is such as to automatically cease crane operation when the rated load limit under any specific condition of use is reached, marking shall be provided giving the make and model of the device installed, a description of what it does, how it is operated, and any necessary precautions regarding the system. All weight indications, other types of loading indications, and other data required shall be readily visible to the operator.

(6) All load indicating devices shall be operative over the full operating radius. Overall accuracy shall be based on actual applied load and not on full scale (full capacity) load.

Explanatory note. For example, if accuracy of the load indicating device is based on full scale load and the device is arbitrarily set at plus or minus ten percent, it would accept a reading between ninety thousand and one hundred ten thousand pounds, at full capacity of a machine with one hundred thousand pounds, maximum rating, but would also allow a reading between zero and twenty thousand pounds, at that outreach (radius) at which the rating would be ten thousand pounds capacity—an unacceptable figure. If, however, accuracy is based on actual applied load under the same conditions, the acceptable range would remain the same with the one hundred thousand pound load but becomes a figure between nine thousand and eleven thousand pounds, a much different and acceptable condition, at the ten thousand pound load.

(7) When the device uses the radius as a factor in its use or in its operating indications, the indicated radius (which may be in feet and/or meters, or degrees of boom angle, depending on the system used) shall be a figure which is within the range of a figure no greater than one hundred ten percent of the actual radius to a figure which is no less than ninety-seven percent of the actual (true) radius. A conversion chart shall be provided whenever it is necessary to convert between degrees of radius and feet or meters.

(8) The load indicating device requirements of this section do not apply to a crane:

(a) Of trolley equipped bridge type while handling container known to be and identified as empty, or loaded, and in either case in compliance with the provisions of WAC 296-56-60103, or while hoisting other lifts by means of a lifting beam supplied by the crane manufacturer for the purpose, and in all cases within the crane rating;

(b) While handling bulk commodities or cargoes by means of clamshell bucket or magnet;

(c) While used to handle or hold hoses in connection with transfer of bulk liquids or other hose handled products; or

(d) While the crane is used exclusively to handle cargo or equipment the total actual gross weight of which is known by means of marking of the unit or units hoisted, when such total actual gross weight never exceeds eleven thousand two hundred pounds, and when eleven thousand two hundred pounds, is less than the rated capacity of the crane at the maximum outreach that is possible under the conditions of use at the time.

(9) Limit switches shall be installed on the main line and whip line assemblies, of all cranes and derricks, which will deactivate the hoisting power when a load reaches the upper limits of travel and at such other places as required by this chapter. Line limit switches shall be tested prior to or at the beginning of each shift to determine if they are functioning properly. Any malfunction shall be reported to the person in charge immediately and shall be repaired prior to use.

[Statutory Authority: RCW 49.17.040. 99-02-024, § 296-56-60085, filed 12/30/98, effective 3/30/99. Statutory Authority: Chapter 49.17 RCW and RCW 49.17.040, [49.17].050 and [49.17].060. 92-22-067 (Order 92-06), § 296-56-60085, filed 10/30/92, effective 12/8/92. Statutory Authority: RCW 49.17.040 and 49.17.050. 86-03-064 (Order 86-02), § 296-56-60085, filed

1/17/86; 85-10-004 (Order 85-09), § 296-56-60085, filed 4/19/85; 85-01-022 (Order 84-24), § 296-56-60085, filed 12/11/84.]

WAC 296-56-60087 Winches. (1) Moving winch parts which present hazards to employees shall be guarded.

(2) Winches shall have clearly identifiable and readily accessible stop controls.

(3) Portable winches shall be secured against accidental shifting while in use.

(4) Portable winches shall be fitted with limit switches if employees have access to areas from which it is possible to be drawn into the winch.

(5) The provisions of WAC 296-56-60083 (6)(l) apply to winches.

[Statutory Authority: RCW 49.17.040, 99-02-024, § 296-56-60087, filed 12/30/98, effective 3/30/99. Statutory Authority: RCW 49.17.040 and 49.17.050, 86-03-064 (Order 86-02), § 296-56-60087, filed 1/17/86; 85-01-022 (Order 84-24), § 296-56-60087, filed 12/11/84.]

WAC 296-56-60089 Conveyors. (1) Guards.

(a) Danger zones at or adjacent to conveyors shall be guarded to protect employees.

(b) An elevated walkway with guardrail or equivalent means of protection shall be provided where employees cross over moving conveyors. Suitable guarding shall be provided when employees pass under moving conveyors.

(2) Moving parts. Conveyor rollers and wheels shall be secured in position.

(3) Positioning. Gravity conveyor sections shall be firmly placed and secured to prevent them from falling.

(4) Braking.

(a) When necessary for safe operation, provisions shall be made for braking objects at the delivery end of the conveyor.

(b) Conveyors using electrically released brakes shall be constructed so that the brakes cannot be released until power is applied, and the brakes are automatically engaged if the power fails or the operating control is returned to the "stop" position.

(5) Stability. Portable conveyors shall be stable within their operating ranges. When used at variable fixed levels, the unit shall be secured at the operating level.

(6) Emergency stop devices. Readily accessible stop controls shall be provided for use in an emergency whenever employees are required to walk or work in the vicinity of the conveyor. The emergency stop device shall be available within easy reach from any position on or adjacent to the conveyor.

(7) Starting powered conveyors. Powered conveyors shall not be started until all employees are clear of the conveyor or have been warned that the conveyor is about to start.

(8) Loading and unloading. The area around conveyor loading and unloading points shall be kept clear of obstructions during conveyor operations.

(9) Lockout/tagout.

(a) Conveyors shall be stopped and their power sources locked out and tagged out during maintenance, repair, and servicing, unless power is necessary for testing.

(b) The starting device shall be locked out and tagged out in the stop position before an attempt is made to remove the

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cause of a jam or overload of the conveying medium, unless it is necessary to have the power on to remove the jam.

(10) Chutes, gravity conveyors and rollers.

(a) Chutes used in the manual handling of cargo shall be adequate for the use to which they are put and shall be kept free of splinters and sharp edges.

(b) Chutes shall be equipped with sideboards of sufficient height to prevent cargo from falling off.

(c) Chutes and gravity roller sections shall be firmly placed or secured to prevent displacement.

(d) Gravity rollers shall be of sufficient strength for the weight of material which is placed upon them. Rollers shall be locked in position to prevent them from falling or jumping out of the frame.

(e) Frames shall be kept free of burrs and sharp edges.

(f) When necessary, provision shall be made for braking objects at the delivery end of the roller or chute.

(11) Safe practices.

(a) Only designated persons shall operate, repair or service powered conveyors.

(b) The employer shall direct employees to stay off operating conveyors.

(c) Conveyors shall be operated only with all overload devices, guards and safety devices in place and functional.

[Statutory Authority: RCW 49.17.040 and 49.17.050, 86-03-064 (Order 86-02), § 296-56-60089, filed 1/17/86; 85-10-004 (Order 85-09), § 296-56-60089, filed 4/19/85; 85-01-022 (Order 84-24), § 296-56-60089, filed 12/11/84.]

WAC 296-56-60091 Spouts, chutes, hoppers, bins, and associated equipment. (1) Standing and running rigging and associated gear used as a permanent part of spouts, chutes or similar devices shall be inspected before each use and shall not be used if it has any functional defects. (See WAC 296-56-60093 for certification requirements.)

(2) Direct communication shall be provided between the discharge or shipboard control end of loading spouts or chutes, and the point in the terminal from which the flow of cargo is controlled.

(3) Chute and hopper openings which present a hazard shall be guarded to prevent employees from falling through.

(4) When employees are working on hoppers, the hopper shall be equipped with a safe walkway and safe means of access.

(5) When necessary for the safety of employees, chutes shall be equipped with sideboards to afford protection from falling objects.

(6) Chutes shall be firmly placed and secured to prevent them from falling.

(7) When necessary for the safety of employees, provisions shall be made for braking objects other than bulk commodities at the delivery end of the chute.

(8) Before an employee enters an empty bin:

(a) Personnel controlling the flow of cargo into the bin shall be notified of the entry; and

(b) The power supply to the equipment carrying the cargo to the bin shall be turned off, locked out and tagged.

(9) Before an employee enters a bin containing a bulk commodity such as coal or sugar, the employer shall ensure that:

(a) Personnel controlling the flow of cargo into the bin shall be notified of the entry;

(b) The power supply to the equipment carrying the cargo to the bin shall be turned off, locked out and tagged;

(c) The employee entering the bin shall wear a life-line and safety harness; and

(d) A standby attendant equipped to perform a rescue shall be continuously stationed outside the bin until the employee has left the bin.

(10) Bin top openings that present a hazard to employees shall be covered to prevent employees from falling into bins.

(11) Chutes and hoppers shall be repaired only by designated persons.

(12)(a) Before power shoveling operations begin, a designated person shall inspect the equipment to be used. The inspection shall include at least the eye bolts, wires, and sheaves.

(b) Power shovels and associated equipment with defects affecting safe operation shall not be used.

(c) Before adjustments are made to a power shovel, wire, or associated equipment, the power supply to the shovel shall be turned off, locked out, and tagged, the belt stopped, and the hopper closed.

[Statutory Authority: Chapter 49.17 RCW and RCW 49.17.040, [49.17].050 and [49.17].060. 92-22-067 (Order 92-06), § 296-56-60091, filed 10/30/92, effective 12/8/92. Statutory Authority: RCW 49.17.040 and 49.17.050. 86-03-064 (Order 86-02), § 296-56-60091, filed 1/17/86; 85-01-022 (Order 84-24), § 296-56-60091, filed 12/11/84.]

WAC 296-56-60093 Certification of marine terminal material handling devices. (1) The employer shall not use any material handling device listed in WAC 296-56-60098(8) until he/she has ascertained that the device has been certified, as evidenced by current and valid documents attesting to compliance with the requirements of WAC 296-56-60097 and 296-56-60098.

(2) Certification surveys are to be completed for the conditions of use found at the time such surveys are performed. Equipment owners or users may change the configurations of the equipment according to the manufacturer's specifications without affecting the established certification status for the equipment.

(3) These rules apply to employment within a marine terminal including the loading, unloading, movement, or other handling of cargo, ship's stores, or gear within the terminal or into or out of any land carrier, holding or consolidation area, or any other activity within and associated with the overall operation and functions of the terminal, such as the use and routine maintenance of facilities and equipment.

(4) Inspection and test certificates shall be issued only for that equipment which meets or exceeds the requirements specified in these rules. All inspection and test certificates shall be issued through the office of the assistant director of the division of consultation and compliance, department of labor and industries, and shall be valid for a period not to exceed one year from the date of issuance.

(5) Equipment requiring certification shall be inspected by individuals who have received a "certificate of competency" from the assistant director, division of WISHA services indicating that they are qualified and capable of performing such work.

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(6) When deficiencies are found they shall be noted on forms provided for such purpose by the division of consultation and compliance. Copies shall be delivered to the owner of the equipment and the division of consultation and compliance at the headquarter's office by the person conducting such tests or inspections.

(7) A certificate of unit test or examination of equipment shall not be issued for any equipment found not to be in compliance with the provisions of this chapter.

(8) Persons desiring a "certificate of competency" shall demonstrate and document their capabilities and qualifications to the assistant director of the division of consultation and compliance, who will issue certificates to those persons who have demonstrated competency. The assistant director reserves the right to revoke such certificates at any time for cause. A "certificate of competency" shall be issued for a period of not more than three years. Applications for renewal may be made not more than sixty days prior to the expiration date shown on the certificate.

(9) The assistant director of the division of consultation and compliance or his/her representative, reserves the right to inspect such equipment or to witness or attend any test or inspection in order to ascertain the adequacy of any certification activity performed.

(10) Unless otherwise exempted, all cranes or derricks required to be certificated by these regulations shall have a current test certificate posted in the operator's cab or station. No person shall operate such crane or derrick unless a current valid certificate is posted.

[Statutory Authority: RCW 49.17.040. 99-02-024, § 296-56-60093, filed 12/30/98, effective 3/30/99. Statutory Authority: Chapter 49.17 RCW. 95-04-007, § 296-56-60093, filed 1/18/95, effective 3/1/95. Statutory Authority: RCW 49.17.040 and 49.17.050. 86-03-064 (Order 86-02), § 296-56-60093, filed 1/17/86; 85-10-004 (Order 85-09), § 296-56-60093, filed 4/19/85; 85-01-022 (Order 84-24), § 296-56-60093, filed 12/11/84.]

WAC 296-56-60095 Advisory crane certification panel. (1) Any person desiring a certificate of competency for crane inspection or certification shall make application to the assistant director of the division of consultation and compliance for the certificate of competency. The application shall include documentation of all qualifications, including all past experience, education, training and any other factors deemed to be relevant to the application.

(2) The advisory crane certification panel shall assist the assistant director of the division of consultation and compliance in his/her duties under this chapter. The panel shall consist of six members. Two members shall represent labor, two members shall represent management, and one member shall be a crane expert. The sixth member shall be chair of the panel. He/she shall be the assistant director of consultation and compliance or his/her designee. The panel shall be responsible for advising the assistant director as to the issuance of any certificate of competency. The panel shall review all applications for certificates of competency. Minutes of meetings shall be kept.

(3) In addition, the panel shall, upon request by the assistant director, render advice concerning any matter which is relevant to crane safety. The panel shall meet twice yearly or more often as deemed necessary by the chairman of the

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panel. Any panel member who is not an employee of the state of Washington shall serve voluntarily.

[Statutory Authority: Chapter 49.17 RCW. 95-04-007, § 296-56-60095, filed 1/18/95, effective 3/1/95. Statutory Authority: RCW 49.17.040 and 49.17.050. 86-03-064 (Order 86-02), § 296-56-60095, filed 1/17/86; 85-01-022 (Order 84-24), § 296-56-60095, filed 12/11/84.]

WAC 296-56-60097 Unit proof load test and inspection. Cranes and derricks shall be proof load tested, rated and certified in tons (2,000 lbs. = 1 ton). Cranes and derricks shall be inspected and unit proof load tested prior to being put into use, after any significant modification or repairs of structural parts, or when deemed necessary by the assistant director of consultation and compliance or his/her designee. However, each crane or derrick shall be unit proof load tested at least once during each twelve-month period. Unit proof load tests shall be carried out by the use of weights as a dead load. When use of weights for unit proof load tests is not possible or reasonable a dynamometer or other recording test equipment may be used. Such equipment shall be tested for accuracy with certified calibrating equipment within twelve months prior to being used and a copy of the certified calibration test shall be made available to authorized representatives of the division of consultation and compliance upon request.

The weight of the objects used for a dead load weight test shall be certified and a record of the weight shall be made available upon request. Any replacements or repairs deemed necessary by the person conducting a test shall be carried out before application of the required proof load unit test.

(1) The proof load tests for derricks shall be conducted as follows:

Safe Working Load	Proof Load
to 20 tons	25% in excess
20-50 tons	5 tons in excess
over 50 tons	10% in excess of manufacturer's recommended lifting capacity.

Proof load shall be applied at the designed maximum and minimum boom angles or radii, or if this is impractical, as close to these as practical. The angles or radii of test shall be stated in the certificate of test. Proof loads shall be swung as far as possible in all directions. The weight of auxiliary handling devices such as spreader bars, robots, clams, magnets, or other gear shall be considered a part of the load. Brakes shall be tested by holding the proof load suspended without other mechanical assistance. After satisfactory completion of a unit proof load test the derrick and all component parts thereof shall be carefully examined and nondestructive tests may be conducted to assure that the equipment is safe for use and has not been damaged in the unit proof load testing process.

(2) Unit proof load tests for cranes shall be carried out with the boom in the least stable direction relative to the mounting, based on the manufacturer's specifications.

Unit proof load tests for cranes shall be based on the manufacturer's load ratings for the conditions of use and shall, except in the case of bridge type cranes utilizing a trolley, consist of application of a proof load of ten percent in excess of the load ratings at maximum and minimum radius, and at such intermediate radii as the certifying authority may deem necessary in the circumstances. (The manufacturer's

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load ratings are usually based upon percentage of tipping loads under some conditions and upon limitations of structural competence at others, as well as on other criteria such as type of crane mounting, whether or not outriggers are used, etc. Some cranes utilizing a trolley may have only one load rating assigned and applicable at any outreach. It is important that the manufacturer's ratings be used.) Trolley equipped cranes shall be subject to a proof load of twenty-five percent in excess of the manufacturer's load rating. In cases of foreign manufacture, the manufacturer's specifications shall be subject to approval by the certifying authority. The weight of all auxiliary handling devices such as magnets, hooks, slings, and clamshell buckets shall be considered part of the load.

(3) If the operation in which equipment is engaged never utilizes more than a fraction of the safe working load rating, the owner of the equipment may, at his/her option, have the crane or derrick certified for and operated at a lesser maximum safe working load in keeping with the use and based on radius and other pertinent factors, however, the equipment concerned shall be physically capable of operation at the original load rating and the load reduction shall not be for the purpose of avoiding correction of any deficiency.

(4) Safe working load ratings shall not be increased beyond the manufacturer's ratings or original design limitations without prior approval by the accredited certification agency. Such prior approval shall be based on the manufacturer's approval of such increase or documented engineering design analysis or both. All necessary structural changes shall be completed prior to approval by the accredited certification agency.

[Statutory Authority: RCW 49.17.040. 99-02-024, § 296-56-60097, filed 12/30/98, effective 3/30/99. Statutory Authority: Chapter 49.17 RCW. 95-04-007, § 296-56-60097, filed 1/18/95, effective 3/1/95. Statutory Authority: RCW 49.17.040 and 49.17.050. 86-03-064 (Order 86-02), § 296-56-60097, filed 1/17/86; 85-01-022 (Order 84-24), § 296-56-60097, filed 12/11/84.]

WAC 296-56-60098 Examination and inspection of cranes and derricks. (1) An examination shall be carried out in conjunction with each annual unit proof load test. The accredited person, or their authorized representative, shall make a determination as to correction of deficiencies found. The examination shall include the following: (Refer to WAC 296-56-60093(8) for definition of accredited person.)

(a) All functional operating mechanisms shall be examined for improper function, maladjustment, and excessive component wear, with particular attention to sheaves, pins, and drums. The examinations shall include operation with partial load, in which all functions and movements, including maximum possible rotation in both directions, are checked.

(b) All safety devices shall be examined for malfunction.

(c) Lines, tanks, valves, drains, pumps, and other parts of air or hydraulic systems shall be examined for deterioration or leakage.

(d) Rope reeving shall comply with the manufacturer's recommendations.

(e) Deformed, cracked, or excessively corroded members in crane structure and boom shall be repaired or replaced as necessary.

(f) Loose bolts, rivets, or other connections shall be corrected.

(g) Worn, cracked, or distorted parts affecting safe operation shall be corrected.

(h) All brakes, used to control the load, boom or travel of the crane, shall be tested. Air, hydraulic, or electrically operated brakes shall be of such design as to set and stop the load if the source of power fails.

(i) Brake and clutch system parts, linings, pawls, and ratchets shall be examined for excessive wear and free operation.

(j) Load, boom angle, or other indicators shall be checked over their full range. Defects in such indicators shall be immediately corrected.

(k) Where used, clamshell buckets or other similar equipment, such as magnets, shall be carefully examined in all respects, with particular attention to closing line wires and sheaves. The accredited person may supplement such examination by requesting any operational tests deemed appropriate.

(l) Careful examination of the junction areas of removable boom sections, particularly for proper seating, cracks, deformities, or other defects in securing bolts and in the vicinity of such bolts, shall be made.

(m) All platforms, steps and footwalks located on cranes where workers are exposed to the hazard of slipping shall be of a nonslip material. Wire rope used for railings on cranes shall be kept taut at all times.

Note: In critical areas such as footwalks along booms, a grating material should be used.

(n) No counterweights in excess weight of the manufacturer's specifications shall be fitted or used.

(o) Such other examination or supplemental functional tests shall be made as may be deemed necessary by the accredited person under the circumstances.

(2) Wire rope.

(a) All wire rope shall be inspected at least once a month, dependent upon conditions to which the wire ropes are subjected, and at intervals not exceeding a twelve-month period. Records of inspection of wire rope shall be kept and shall be available to the department of labor and industries representative. Records shall be kept for one year. Refer to the general safety and health standards, WAC 296-24-24013.

(b) Wire rope shall not be used if in any length of eight diameters, the total number of visible broken wires exceeds ten percent of the total number of wires, or if the rope shows other signs of excessive wear, corrosion, or defect. Particular attention shall be given to the condition of those sections of wire rope adjacent to any terminal connections, those sections exposed to abnormal wear, and those sections not normally exposed for examination.

(c) Documentation available for inspection shall include wire rope test certificates relating to any replacements made since the last unit test or annual examination as required.

(d) Wire rope and replacement wire rope shall be of the same size, same or better grade, and same construction as originally furnished by the equipment manufacturer or contemplated in the design, unless otherwise recommended by the equipment or wire rope manufacturer due to actual working conditions. In the absence of specific requirements, wire rope shall be of a size and construction suitable for the purpose,

and shall have the capacity to handle five times the heaviest expected load, verified by wire rope test certificate.

(e) Wire rope in use on equipment previously constructed and prior to initial certification of said equipment shall not be required to be tested but shall be subject to thorough examination at the time of initial certification of the equipment.

(3)(a) Accessory components. Container spreader bar twist locks shall be carefully examined periodically and at the time of annual examination and inspection. Cracked or deformed hooks shall be discarded immediately and not reused.

(b) Crane hooks and container spreader bar twist lock. Magnetic particle or other suitable crack detecting inspection shall be performed at least once each year. When testing by X ray, the pertinent provisions of the Nuclear Regulatory Commission's standards for protection against radiation, relating to protection against occupational radiation exposure, shall apply.

(4) In the event that heat treatment of any loose gear is recommended by the manufacturer, the latest heat treatment certificate attesting to compliance with the manufacturer's specifications shall be part of the available documentation. Heat treatment shall be carried out in accordance with the specifications of the manufacturer by persons competent to perform such work.

(5) Replacement parts shall be of equal or better quality than the original equipment and suitable for the purpose. Repairs or modifications shall be such as to render the equipment equal to or better than the original construction or design.

(6) In cases of foreign manufactured cranes, there shall be an owner's warranty that the design is adequate for the intended use. The warranty shall be based on a thorough examination of the design specifications by a registered professional engineer familiar with the equipment.

(7) The certifications required by this section shall be performed in accordance with WAC 296-56-60093 by persons accredited by the assistant director of WISHA services.

(8) The marine terminal material handling devices listed below shall be certified in the following manner:

(a) Each crane and derrick shall be tested and examined as a unit annually. A copy of the certificate of tests and examinations shall be posted in the crane operator's cab.

(b) Bulk cargo spouts and suckers, together with any portable extensions and rigging or outriggers supporting them vertically, shall be examined annually. Certificates attesting to the required examination shall be made readily available for inspection.

(c) Vertical pocket or bucket conveyors such as banana, sugar, and grain marine legs (other than those within a grain elevator structure) used within a marine terminal facility shall be examined annually. The annual examination shall include all supporting structures, rigging, mechanical components and observation of all steps of operations. Certificates attesting to the required examinations shall be readily available for inspection.

(d)(i) House fall cargo-handling gear shall be proof load tested as a unit upon initial certification and every fourth year thereafter. An examination shall be carried out in conjunction with each unit proof load test and annually thereafter. The

unit test shall consist of a proof load of twenty-five percent in excess of the rated safe working load. Examinations shall include all supporting structures and components. Certificates attesting to the required tests and examinations shall be readily available for inspection.

(ii) House fall span beams or other house fall block supports shall be marked with the safe working load, which shall not be exceeded.

(e) Special gear.

(i) Special stevedoring gear provided by the employer, the strength of which depends upon components other than commonly used stock items such as shackles, ropes or chains, shall be tested as a unit in accordance with the following table before initially being put into use (see Table A). In addition, any special stevedoring gear that suffers damage necessitating structural repair shall be inspected and retested after repair and before being returned to service.

Table A

Safe Working Load	Proof Load
Up to 20 short tons	25 percent in excess
Over 20 to 50 short tons	5 short tons in excess
Over 50 short tons	10 percent in excess

(ii) Special stevedoring gear provided by the employer that has a SWL of five short tons (10,000 or 4.54 metric tons) or less shall be inspected and tested as a unit before initial use according to (d) and (e) of this subsection or by a designated person (see Table A).

(iii) Every spreader not a part of ship's gear and used for hoisting intermodal containers shall be tested to a proof load equal to twenty-five percent in excess of its rated capacity. Additionally, any spreader which suffers damage necessitating structural repair shall be retested after repair and before being returned to service.

(iv) Certificates attesting to the required tests shall be available for inspection.

(v) All cargo handling gear covered by this section with a SWL greater than five short tons (10,000 lbs. or 4.54 metric tons) shall be proof load tested according to Table A every four years in accordance with subsection (7) of this section or by a designated person.

(f) Wire rope and loose gear used for material handling shall be tested and certified before being placed into use in accordance with the provisions of WAC 296-56-60097. Certificates attesting to the required tests, inspections and examinations shall be available.

(9) Disassembly and reassembly of equipment does not require recertification of the equipment provided that the equipment is reassembled and used in a manner consistent with its certification.

(10) Equipment certified in Washington and transferred to a site in another state does not require recertification in this state upon its return, until the next inspection or examination becomes due as if it had not been moved.

(11) Certification procedures shall not be construed as a substitute for, or cause for elimination of, normal operational inspection and maintenance routine throughout the year.

(12)(a) Every unit of equipment requiring annual certification shall have had such annual certification within the previous twelve months. Equipment requiring annual certification

shall have had such annual certification within the previous twelve months, except that no annual certification is required within twelve months after any required certification. Annual examinations for certification may be accomplished up to one month early without effect on subsequent due dates.

(b) When certified equipment is out of service for six months or more beyond the due date of a certification inspection, an examination equivalent to an initial certification, including unit proof load test, shall be performed before the equipment reenters service.

(13) Loose gear shall bear a legible mark indicating that it has been tested (see WAC 296-56-60097). Single sheave blocks shall be marked with safe working loads and proof test loads. Marks relating to testing shall be identifiable on the related certificates, which shall be available.

(14) The certification requirements of this section do not apply to the following equipment:

(a) Industrial trucks and small industrial crane trucks; and

(b) Any straddle truck not capable of straddling two or more intermodal containers sixteen feet (4.88 m) in width.

(15) Safe working load.

(a) The safe working load of gear as specified in this section shall not be exceeded.

(b) All cargo handling gear provided by the employer with a safe working load greater than five short tons (10,000 lbs. or 4.54 metric tons) shall have its safe working load plainly marked on it.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 00-21-103, § 296-56-60098, filed 10/18/00, effective 2/1/01. Statutory Authority: RCW 49.17.040. 99-02-024, § 296-56-60098, filed 12/30/98, effective 3/30/99. Statutory Authority: Chapter 49.17 RCW. 95-04-007, § 296-56-60098, filed 1/18/95, effective 3/1/95. Statutory Authority: RCW 49.17.040 and 49.17.050. 86-03-064 (Order 86-02), § 296-56-60098, filed 1/17/86; 85-10-004 (Order 85-09), § 296-56-60098, filed 4/19/85; 85-01-022 (Order 84-24), § 296-56-60098, filed 12/11/84.]

WAC 296-56-60099 Hand tools. (1) Hand tools used by employees shall be maintained in safe operating condition.

(2)(a) Hand-held portable electric tools shall be equipped with switches that must be manually held in a closed position to operate the tool.

(b) Portable power-driven circular saws shall be equipped with guards above and below the base plate or shoe. The upper guard shall cover the saw to the depth of the teeth, except for the minimum arc needed to permit the base to be tilted for bevel cuts. The lower guard shall cover the saw to the depth of the teeth, except for the minimum arc needed to allow proper retraction and contact with the work. When the tool is withdrawn from the work, the lower guard shall automatically and instantly return to the covering position.

(3) Only cutting tools shall be used to cut metal strapping or banding used to secure cargo.

[Statutory Authority: RCW 49.17.040 and 49.17.050. 85-10-004 (Order 85-09), § 296-56-60099, filed 4/19/85; 85-01-022 (Order 84-24), § 296-56-60099, filed 12/11/84.]

PART F—SPECIALIZED TERMINALS

WAC 296-56-60101 General. The provisions of this part apply to specialized terminals.

[Statutory Authority: RCW 49.17.040 and 49.17.050. 86-03-064 (Order 86-02), § 296-56-60101, filed 1/17/86; 85-01-022 (Order 84-24), § 296-56-60101, filed 12/11/84.]

WAC 296-56-60103 Terminals handling intermodal containers or roll-on roll-off operations. (1) Every intermodal container shall be legibly and permanently marked with:

- (a) The weight of the container when empty, in pounds;
- (b) The maximum cargo weight the container is designed to carry, in pounds; and
- (c) The sum of the maximum weight of the container with cargo, in pounds (gross container capacity).

(2) No container shall be hoisted by any crane or derrick unless the following conditions have been met:

(a) The employer shall ascertain from the carrier whether a container to be hoisted is loaded or empty. Empty containers shall be identified before loading or discharge in such a manner as will inform every supervisor and foreman on the site and in charge of loading or discharging, and every crane or other hoisting equipment operator and signalman, if any, that the container is empty. Methods of identification may include cargo plans, manifests or markings on the container.

(b) In the case of a loaded container:

(i) The actual gross weight shall be plainly marked so as to be visible to the crane operator, other hoisting equipment operator, signalman, and to every supervisor and foreman on the site and in charge of the operation; or

(ii) The cargo stowage plan or equivalent permanently recorded display serving the same purpose, containing the actual gross weight and the serial number or other positive identification of that specific container, shall be provided to the crane or other hoisting equipment operator and signalman, if any, and to every supervisor and foreman on the site and in charge of the operation.

(c) Every outbound loaded container which is received at a marine terminal ready to load aboard a vessel without further consolidation or loading shall be weighed to obtain the actual gross weight before being hoisted.

(d)(i) When container weighing scales are located at a marine terminal, any outbound container with a load consolidated at that terminal shall be weighed to obtain an actual weight before being hoisted.

(ii) If the terminal has no scales, the actual gross weight may be calculated on the basis of the container's contents and the container's empty weight. The weights used in the calculation shall be posted conspicuously on the container, with the name of the person making the calculation and the date.

(iii) Container weights shall be subject to random sample weight checks at the nearest weighing facility. In cases where such weight checks or experience otherwise indicate consistently inaccurate weights, the weight of containers so calculated at the source from which the inaccurate weights originated shall no longer be recognized as true gross weights. Such containers shall not be hoisted unless actual gross weights have been obtained by weighing.

(e) The following containers are exempted from the requirements of (c) and (d) of this subsection:

- (i) Open type vehicle containers.

(ii) The container is marked on the outside in such a manner that an employee can readily discern that the container is carrying vehicles.

(iii) Containers built specifically for the carriage of compressed gases.

(iv) The container carries only completely assembled vehicles and no other cargo.

(v) The vehicles were loaded into the container at the marine terminal.

(f) The weight of loaded inbound containers from foreign ports shall be determined by weighing or by the method of calculation described in (d)(ii) of this subsection or by shipping documents.

(g) Any scale used within Washington state to weigh containers for the purpose of the requirements of this section shall meet the accuracy standards of the state or local public authority in which the scale is located.

(3) No container shall be hoisted if its actual gross weight exceeds the weight marked as required in subsection (1)(c) of this section, or if it exceeds the capacity of the crane or other hoisting device intended to be used.

(4)(a) Marked or designated areas shall be set aside within a container or roll-on roll-off terminal for passage of employees to and from active cargo transfer points, except where transportation to and from those points is provided by the employer.

(b) The employer shall direct employees to stay clear of the area beneath a suspended container. Employees shall stay clear of the area beneath a suspended container.

(5) Each employee working in the immediate area of container handling equipment or in the terminal's traffic lanes shall wear a high visibility vest (or equivalent protection).

Note to subsection (5): High visibility vests or equivalent protection means high visibility/retroreflective materials which are intended to provide conspicuity of the user by day through the use of high visibility (fluorescent) material and in the dark by vehicle headlights through the use of retroreflective material. The minimum area of material for a vest or equivalent protection is .5m(2)(760 in.(2)) for fluorescent (background) material and .13m(2)(197 in.(2)) for retroreflective material. Vests or equivalent protection, such as high visibility/retro-reflective coveralls, that are available for industrial use, may also be acceptable.

(6) Containers shall be handled using lifting fittings or other arrangements suitable and intended for the purposes as set forth in (a) and (c) of this subsection, unless when damage to an intermodal container makes special means of handling necessary.

(a) Loaded intermodal containers of twenty feet (6.1 m) or more in length shall be hoisted as follows:

(i) When hoisting by the top fittings, the lifting forces shall be applied vertically from at least four top fittings or by means which will safely lift the container without damage. The lifting fittings provided shall be used.

(A) The container being lifted is an ISO closed box container;

(B) The condition of the box is sound;

(C) The speed of hoisting and lowering is moderated when heavily laden containers are encountered;

(D) The lift angle is at eighty to ninety degrees;

(E) The distance between the lifting beam and the load is at least eight feet and 2.4 inches (2.5m); and

(F) The length of the spreader beam is at least 16.3 feet (5 m) for a twenty-foot container, and at least 36.4 feet (11.1 m) for a forty-foot container.

(ii) If hoisted from bottom fittings, the hoisting connections shall bear on the fittings only, making no other contact with the container. The angles of the four bridle legs shall not be less than thirty degrees to the horizontal in the case of forty foot (12.2 m) containers, thirty-seven degrees in the case of thirty foot (9.1 m) containers, or forty-five degrees in the case of twenty foot (6.1 m) containers.

(iii) Lifting containers by fork lift trucks or by grappling arms from above or from one side may be done only if the container is designed for this type of handling.

(b) Other means of hoisting may be used only if the containers and hoisting means are designed for such use.

(c)(i) When using intermodal container spreaders that employ lanyards for activation of load disengagement, all possible precautions shall be taken to prevent accidental release of the load.

(ii) Intermodal container spreader twistlock systems shall be designed and used so that a suspended load cannot accidentally be released.

(d) Flat bed trucks or container chassis used to move intermodal containers shall be equipped with pins, flanges, or other means to prevent the container from shifting.

(e) Flat bed, low boy trailers (mafis) and other similar equipment used to transport containers shall be marked with their cargo capacities and shall not be overloaded.

(f) Each tractor shall have all brake air lines connected when pulling trailers equipped with air brakes and shall have the brakes tested before commencing operations.

(7)(a) Intermodal containers shall be inspected for defects in structural members or fittings before handling.

(b) Any intermodal container found to be unsafe shall be identified as such, promptly removed from service and repaired before being returned to service.

(8) Containers shall not be hoisted unless all engaged chassis twist locks are released.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 00-21-103, § 296-56-60103, filed 10/18/00, effective 2/1/01. Statutory Authority: RCW 49.17.040, 99-02-024, § 296-56-60103, filed 12/30/98, effective 3/30/99. Statutory Authority: Chapter 49.17 RCW and RCW 49.17.040, [49.17].050 and [49.17].060. 92-22-067 (Order 92-06), § 296-56-60103, filed 10/30/92, effective 12/8/92. Statutory Authority: Chapter 49.17 RCW. 89-11-035 (Order 89-03), § 296-56-60103, filed 5/15/89, effective 6/30/89. Statutory Authority: RCW 49.17.040 and 49.17.050. 86-03-064 (Order 86-02), § 296-56-60103, filed 1/17/86; 85-01-022 (Order 84-24), § 296-56-60103, filed 12/11/84.]

WAC 296-56-60105 Grain elevator terminals.

Reserved.

[Statutory Authority: RCW 49.17.040 and 49.17.050. 85-01-022 (Order 84-24), § 296-56-60105, filed 12/11/84.]

WAC 296-56-60107 Terminal facilities handling menhaden and similar species of fish. (1)(a) Tanks in terminal areas used for receiving or storing bailwater for recirculating into vessel holds in discharging operations shall be opened or ventilated to minimize contamination of water circulated to the vessel. Bailwater tanks shall be thoroughly

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drained upon completion of each day's operations and shall be left open to the air. Drainage is unnecessary when bailwater has been treated to remove hydrogen sulfide-producing contaminants and the efficiency of such treatment has been established.

(b) Before employees enter a dock tank, it shall first be drained, rinsed and tested for hydrogen sulfide and oxygen deficiency. Employees shall not enter the tank when the hydrogen sulfide level exceeds twenty ppm or oxygen content is less than nineteen and one-half percent, except in emergencies.

(c) Tests shall be conducted by designated personnel with suitable test equipment and respiratory protective equipment complying with the provisions of this chapter and chapter 296-842 WAC.

(2) Pipelines and hoses on the dock or terminal used for receiving and circulating used bailwater shall be completely drained upon completion of each day's operation and left open to the air.

(3) At least four units of respiratory protective equipment consisting of supplied-air respirators or self-contained breathing apparatus complying with the requirements of chapter 296-842 WAC shall be available in a suitably labeled cabinet for immediate use in case of an emergency caused by oxygen deficiency or hydrogen sulfide. Any employee entering a tank in an emergency shall, in addition to respiratory protective equipment, wear a lifeline and safety harness to facilitate rescue. At least two other employees, similarly equipped, shall be continuously stationed outside the tank to observe and to provide rescue services.

(4) The plant superintendent and foremen shall be trained and knowledgeable about the hazards of hydrogen sulfide and oxygen deficiency. They shall be trained in the use of appropriate respiratory and other protective equipment, and in rescue procedures. Other supervisory plant personnel shall be informed of these hazards and instructed in the necessary safety measures, including use of respiratory and rescue equipment.

(5) Supervisory personnel shall be on hand at dockside to supervise discharging of bailwater from vessels.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. 05-03-093, § 296-56-60107, filed 1/18/05, effective 3/1/05. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 00-21-103, § 296-56-60107, filed 10/18/00, effective 2/1/01. Statutory Authority: Chapter 49.17 RCW and RCW 49.17.040, [49.17].050 and [49.17].060. 92-22-067 (Order 92-06), § 296-56-60107, filed 10/30/92, effective 12/8/92. Statutory Authority: RCW 49.17.040 and 49.17.050. 86-03-064 (Order 86-02), § 296-56-60107, filed 1/17/86; 85-01-022 (Order 84-24), § 296-56-60107, filed 12/11/84.]

PART G—PERSONAL PROTECTION

WAC 296-56-60109 Eye protection. (1)(a) When employees perform work hazardous to the eyes, the employer shall provide eye protection equipment marked or labeled as meeting the manufacturing specifications of American National Standards Practice for Occupational and Educational Eye and Face Protection, ANSI Z87.1-1989, and shall direct that it be used.

(b) For employees wearing corrective spectacles, eye protection equipment required by (a) of this subsection shall be of a type which can be worn over spectacles. Prescription

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ground safety lenses may be substituted if they provide equivalent protection.

(c) For additional requirements covering eye protection against radiant energy, see WAC 296-56-60235(8).

(2) Eye protection equipment shall be maintained in good condition.

(3) Used eye protection equipment shall be cleaned and disinfected before reissuance to another employee.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 00-21-103, § 296-56-60109, filed 10/18/00, effective 2/1/01. Statutory Authority: Chapter 49.17 RCW and RCW 49.17.040, [49.17].050 and [49.17].060. 92-22-067 (Order 92-06), § 296-56-60109, filed 10/30/92, effective 12/8/92. Statutory Authority: RCW 49.17.040 and 49.17.050. 86-03-064 (Order 86-02), § 296-56-60109, filed 1/17/86; 85-01-022 (Order 84-24), § 296-56-60109, filed 12/11/84.]

WAC 296-56-60110 Respiratory protection. The respiratory protection requirements of chapter 296-842 WAC, Respirators, apply.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. 05-20-055, § 296-56-60110, filed 10/3/05, effective 12/1/05; 05-03-093, § 296-56-60110, filed 1/18/05, effective 3/1/05. Statutory Authority: RCW 49.17.040 and 49.17.050. 86-03-064 (Order 86-02), § 296-56-60110, filed 1/17/86; 85-01-022 (Order 84-24), § 296-56-60110, filed 12/11/84.]

WAC 296-56-60111 Head protection. (1) Employees exposed to impact, falling or flying objects, or electric shocks or burns shall wear protective hats.

(2) Protective hats shall bear identifying marks or labels indicating compliance with the manufacturing provisions of American National Standard Safety Requirements for Industrial Head Protection, ANSI Z89.1-1986.

(3) Protective hats previously worn shall be cleaned and disinfected before issuance by the employer to another employee.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 00-21-103, § 296-56-60111, filed 10/18/00, effective 2/1/01. Statutory Authority: RCW 49.17.040 and 49.17.050. 86-03-064 (Order 86-02), § 296-56-60111, filed 1/17/86; 85-01-022 (Order 84-24), § 296-56-60111, filed 12/11/84.]

WAC 296-56-60113 Foot protection. (1) The employer shall ensure that each affected employee wears protective footwear when working in areas where there is a danger of foot injuries due to falling or rolling objects or objects piercing the sole.

(2) Protective shoes shall bear identifying marks or labels indicating compliance with the manufacturing provisions of American National Standard for Men's Safety Toe Footwear, ANSI Z41.1-1991.

(3) The employer shall, through means such as vendors or local stores, make safety shoes readily available to all employees.

[Statutory Authority: RCW 49.17.040. 99-02-024, § 296-56-60113, filed 12/30/98, effective 3/30/99. Statutory Authority: RCW 49.17.040 and 49.17.050. 86-03-064 (Order 86-02), § 296-56-60113, filed 1/17/86; 85-01-022 (Order 84-24), § 296-56-60113, filed 12/11/84.]

WAC 296-56-60115 Other protective measures. (1) Protective clothing.

(a) Employees performing work that requires special protective clothing shall be directed by the employer to wear the necessary special protective clothing.

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(b) When necessary, protective clothing previously worn shall be cleaned and disinfected before reissuance.

(2) Personal flotation devices.

(a) The employer shall provide, and shall direct the wearing of personal flotation devices for those employees, such as line handlers, who are engaged in work in which they may be pulled into the water:

(i) When such employees are working in isolation: or

(ii) Where physical limitations of available working space creates a hazard of falling into the water; or

(iii) Where the work area is obstructed by cargo or other obstacles so as to prevent employees from obtaining safe footing for their work.

(b) Employees working on, over or along water, where the danger of drowning exists, shall be provided with and shall wear approved personal flotation devices.

(i) Employees are not considered exposed to the danger of drowning when:

(A) Working behind standard height and strength guardrails;

(B) Working inside operating cabs or stations which eliminate the possibility of accidental falling into the water;

(C) Wearing approved safety belts with lifeline attached so as to preclude the possibility of falling into the water.

(ii) Prior to and after each use, personal flotation devices shall be inspected for defects which would reduce their designed effectiveness. Defective personal flotation devices shall not be used.

(iii) To meet the requirement of (b) of this subsection, a personal flotation device shall be approved by the United States Coast Guard as a Type I PFD, Type II PFD, Type III PFD, or Type V PFD, or equivalent, pursuant to 46 CFR 160 (Coast Guard Lifesaving Equipment Specifications) and 33 CFR 175.23 (Coast Guard Table of Devices Equivalent to Personal Flotation Devices). Ski belt or inflatable type personal flotation devices are specifically prohibited.

(c) Life rings.

(i) Along docks, walkways or other fixed installations on or adjacent to open water more than five feet deep, approved life rings with line attached shall be provided. The life rings shall be spaced at intervals not to exceed two hundred feet and shall be kept in easily visible and readily accessible locations.

(ii) When employees are assigned work at other casual locations where exposure to drowning exists, at least one approved life ring with line attached shall be provided in the immediate vicinity of the work.

(iii) Work assigned over water where the vertical drop from an accidental fall exceeds fifty feet, is subject to specific procedures approved by the department.

(iv) Lines attached to life rings shall be at least ninety feet (27.43 m) in length, at least one-quarter inch in diameter and have a minimum breaking strength of five hundred pounds.

(v) Life rings must be United States Coast Guard approved thirty inch size (76.2 cm).

(vi) Life rings and attached lines must be maintained to retain at least seventy-five percent of their designed buoyancy and strength.

(3) Emergency facilities. When employees are exposed to hazardous substances which may require emergency bath-

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ing, eye washing or other facilities, the employer shall provide such facilities and maintain them in good working order.

(4) Employers shall instruct employees to report every injury, regardless of severity, to the employer.

(5) Stretchers.

(a) There shall be available for each vessel being worked one Stokes basket stretcher, or its equivalent, permanently equipped with bridles for attaching to the hoisting gear.

(b) Stretchers shall be kept close to vessels and shall be positioned to avoid damage to the stretcher.

(c) A blanket or other suitable covering shall be available.

(d) Stretchers shall have at least four sets of effective patient restraints in operable condition.

(e) Lifting bridles shall be of adequate strength, capable of lifting 1,000 pounds (454 kg) with a safety factor of five, and shall be maintained in operable condition. Lifting bridles shall be provided for making vertical patient lifts at container berths. Stretchers for vertical lifts shall have foot plates.

(f) Stretchers shall be maintained in operable condition. Struts and braces shall be inspected for damage. Wire mesh shall be secured and have no burrs. Damaged stretchers shall not be used until repaired.

(g) Stretchers in permanent locations shall be mounted to prevent damage and shall be protected from the elements if located out-of-doors. If concealed from view, closures shall be marked to indicate the location of the life saving equipment.

(6) Telephone or equivalent means of communication shall be readily available.

(7) Employees working on any bridge or structure leading to a detached vessel berthing installation shall wear United States Coast Guard approved personal flotation devices except where protected by railings, nets, or safety belts and lifelines.

(8) Life ladders. On all docks there shall be substantial built-in-place ladders, spaced at intervals not to exceed four hundred feet, to reach the lowest water use. When portable ladders are to be used, ladders may be bolted to the bullrail or dock structure, or ladders can be secured to an embedded eye bolt in a concrete dock surface. The immediate area where such ladders or fastenings are located shall be painted with a bright color or of a color which contrasts with the surrounding area. There shall be a ladder at each end of the dock.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060. 04-11-066, § 296-56-60115, filed 5/18/04, effective 7/1/04. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 00-21-103, § 296-56-60115, filed 10/18/00, effective 2/1/01. Statutory Authority: RCW 49.17.040. 99-02-024, § 296-56-60115, filed 12/30/98, effective 3/30/99. Statutory Authority: Chapter 49.17 RCW and RCW 49.17.040, [49.17].050 and [49.17].060. 92-22-067 (Order 92-06), § 296-56-60115, filed 10/30/92, effective 12/8/92. Statutory Authority: RCW 49.17.040 and 49.17.050. 86-03-064 (Order 86-02), § 296-56-60115, filed 1/17/86; 85-10-004 (Order 85-09), § 296-56-60115, filed 4/19/85; 85-01-022 (Order 84-24), § 296-56-60115, filed 12/11/84.]

WAC 296-56-60117 Maintenance and load limits. (1)

The structural integrity of docks, piers, wharves, terminals and working surfaces shall be maintained.

(2) Maximum safe load limits, in pounds per square foot (kilograms per square meter), of floors elevated above

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ground level, and pier structures over the water shall be conspicuously posted in all cargo areas.

Exception: Pier structures used primarily for vehicle traffic may be posted in maximum pounds per axle weight.

(3) Maximum safe load limits shall not be exceeded.

(4) All walking and working surfaces in the terminal area shall be maintained in good repair.

(5) All steel plates, boards, etc., used to temporarily cover small holes or weakened surfaces shall be secured in such a manner as to prevent movement.

(6) All large openings or weakened surfaces shall be barricaded on all exposed sides with barricades equipped with blinkers, flashing lights, or reflectors.

(7) Areas around bitts or cleats where workers perform their duties shall be lighted as required in this section and have a nonslip surface around each bitt or cleat.

[Statutory Authority: RCW 49.17.040 and 49.17.050. 86-03-064 (Order 86-02), § 296-56-60117, filed 1/17/86; 85-10-004 (Order 85-09), § 296-56-60117, filed 4/19/85; 85-01-022 (Order 84-24), § 296-56-60117, filed 12/11/84.]

WAC 296-56-60119 Protection from falling. Employees doing maintenance work on cranes, spouts or similar types of equipment, eight feet or more above the ground or surface and not in an area that is protected by any standard safeguards such as walkways with standard railings, or ladders with protective cages, shall wear a safety belt and lanyard which can be attached to the structure.

[Statutory Authority: RCW 49.17.040 and 49.17.050. 86-03-064 (Order 86-02), § 296-56-60119, filed 1/17/86; 85-01-022 (Order 84-24), § 296-56-60119, filed 12/11/84.]

WAC 296-56-60121 Minimum safety requirements for docks and dock facilities. No provision of this section shall be construed to imply that an employer or employees are responsible for repair, construction or otherwise bringing into compliance facilities over which they have no control.

(1) Working prohibited on unsafe docks or dock facilities. Employers shall not allow employees to perform work on docks or dock facilities which the employer should know do not meet the minimum safety requirements of this section.

(2) Known unsafe conditions by employees. Employees shall not work on docks or dock facilities which they should know do not meet the minimum safety requirements of this section.

(3) Bulletin boards. At each dock, pier, warehouse or designated area at the job site, there shall be installed a safety bulletin board.

(4) Posting of notices. It shall be the responsibility of the employer to post at prominent places in or adjacent to the work area, legible notices stating:

(a) The location of stretchers, blankets, first-aid equipment and telephones. (Where possible, directional arrows should point to locations.)

(b) The phone numbers of doctors, ambulance services and hospitals within the area and the phone numbers of the police department or other law enforcement agency. (Where possible these numbers shall also be posted on or inside the cover of first-aid cabinets and kits.)

(5) Ventilation. All areas where employees are required to work shall be ventilated as required by the "general occupational health standards," chapter 296-62 WAC.

(6) Power outlets. Power outlets installed to supply power to vessels shall be located in such a manner that the workers will not come into contact with supply lines. Unprotected power lines shall not be driven over by equipment. If located on the underside or waterside of the bull rail, a well lighted walkway with hand rails shall be provided to the power outlets.

[Statutory Authority: RCW 49.17.040 and 49.17.050. 86-03-064 (Order 86-02), § 296-56-60121, filed 1/17/86; 85-01-022 (Order 84-24), § 296-56-60121, filed 12/11/84.]

WAC 296-56-60122 Access to vessels. (1) Access to vessels. The employer shall not permit employees to board or leave any vessel, except a barge or river towboat, until the following requirements have been met:

(a) Whenever practical a gangway of not less than twenty inches wide walking surface of adequate strength, maintained and secured shall be used. If a gangway is not practical a substantial straight ladder, extending at least thirty-six inches above the upper landing surface and adequately secured against shifting or slipping shall be provided. When conditions are such that neither a gangway nor a straight ladder can be used, a Jacob's ladder meeting the requirements of subsection (4) of this section may be used.

(b) Each side of such gangway, and the turn table if used, shall have a railing with a minimum height of thirty-three inches measured perpendicularly from rail to walking surface at the stanchion, and a mid rail. Rails shall be of wood, pipe, chain, wire or rope and shall be kept taut at all times.

(c) Gangways on vessels inspected and certified by the United States Coast Guard are deemed to meet the foregoing requirements, except in cases where the vessel's regular gangway is not being used.

(d) The gangway shall be kept properly trimmed at all times.

(e) When a fixed tread accommodation ladder is used, and the angle is low enough to require employees to walk on the edge of the treads, cleated duckboards shall be laid over and secured to the ladder.

(f) When the lower end of a gangway overhangs the water between the ship and the dock in such a manner that there is danger of employees falling between the ship and the dock, a net or other suitable protection shall be rigged at the foot of the gangway in such a manner as to prevent employees from falling from the end of the gangway into the water or into the surface.

(g) If the foot of the gangway is more than one foot away from the edge of the apron, the space between them shall be bridged by a firm walkway equipped with railings, with a minimum height of thirty-three inches with midrails on both sides.

(h) Supporting bridles shall be kept clear so as to permit unobstructed passage for employees using the gangway.

(i) When the upper end of the means of access rests on or flush with the top of the bulwark, substantial steps properly secured and equipped with at least one substantial handrail approximately thirty-three inches in height shall be provided between the top of the bulwark and the deck.

(j) Obstructions shall not be laid on or across the gangway.

(k) The means of access shall be illuminated for its full length.

(l) Unless construction of the vessel makes it impossible, the means of access shall be so located that drafts of cargo do not pass over it. Loads shall not be passed over the means of access while employees are on it.

(2) Access to vessels in drydock or between vessels. Gangways meeting the requirements of subsection (1)(a), (b), (i), (j) and (k) of this section shall be provided for access from wingwall to vessel or, when two or more vessels other than barges or river towboats are lying abreast, from one vessel to another.

(3) Access to barges and river towboats.

(a) Ramps for access of vehicles to or between barges shall be of adequate strength, provided with side boards, well maintained and properly secured.

(b) Unless employees can step safely to or from the wharf, float, barge, or river towboat, a ramp meeting the requirements of subsection (1)(a) of this section shall be provided. When a walkway is impractical, a substantial straight ladder, extending at least thirty-six inches above the upper landing surface and adequately secured against shifting or slipping, shall be provided. When conditions are such that neither a walkway nor a straight ladder can be used, a Jacob's ladder meeting the requirements of subsection (4) of this section may be used.

(c) The means of access shall meet the requirements of subsection (1)(i), (j), and (k) of this section.

(4) Jacob's ladders.

(a) Jacob's ladders shall be of the double rung or flat tread type. They shall be well maintained and properly secured.

(b) A Jacob's ladder shall either hang without slack from its lashings or be pulled up entirely.

[Statutory Authority: RCW 49.17.040 and 49.17.050. 86-03-064 (Order 86-02), § 296-56-60122, filed 1/17/86.]

WAC 296-56-60123 Guarding of edges. (1) Vehicle protection.

(a) Vehicle curbs, bull rails, or other effective barriers at least six inches (15.24 cm) in height and six inches in width, shall be provided at the waterside edges of aprons and bulkheads, except where vehicles are prohibited. Curbs or bull rails installed after January 1, 1985, shall be at least ten inches (22.9 cm) in height.

(b) The provisions of (a) of this subsection also apply at the edge of any fixed level above the common floor area from which vehicles may fall, except at loading docks, platforms and skids where cargo is moved by vehicles.

(2) Employee protection.

(a) Guardrails shall be provided at locations where employees are exposed to falls of more than four feet from floor or wall openings or waterside edges, including bridges or gangway-like structures leading to pilings, vessel mooring or berthing installations.

(b) Guardrails are not required:

(i) At loading platforms and docks;

(ii) At waterside edges used for cargo or mooring line handling;

(iii) On the working sides of work platforms, skids, or similar workplaces which abut the work area; or

(iv) On railroad rolling stock, highway vehicles, intermodal containers, or similar equipment.

(c) Where guardrails are impractical due to machinery requirements or work processes, an alternate means of fall protection, such as nets, shall be used.

(3) Criteria for guardrails. Guardrails shall meet the following criteria:

(a) They shall be capable of withstanding a force of at least two hundred pounds (890 N) applied in any direction at mid-span of the top rail (when used), or at the uppermost point if there is no guard rail.

(b) If not of solid baluster, grillwork, slatted, or similar construction, guardrails shall consist of top rails and midrails. Midrails, when used, shall be positioned at approximately half the height of the top rail.

(c) The top surface of guardrails installed before October 3, 1983, shall be at least thirty-six inches (.91 m) high. Those installed after October 3, 1983, shall be forty-two inches (1.07 m) high, plus or minus two inches (5.1 cm), high.

(d) Any nonrigid railing such as chain or wire rope shall have a maximum sag, at the mid-point between posts, of not more than six inches (15.24 cm).

(e) Top rails shall be free of sharp edges and maintained in good repair.

(f) Rail ends shall not overhang. This does not prohibit scrollwork, boxed ends or similar nonhazardous projections.

(4) Toeboards. Toeboards shall be provided when employees below could be exposed to falling objects such as tools. Toeboards shall be at least three and one-half inches (8.9 cm) in height from top edge to floor level, and be capable of withstanding a force of fifty pounds (222 N) applied in any direction. Drainage clearance not in excess of one-eighth inch under toeboards is permitted.

(5) Stair railings. Stair railings shall be capable of withstanding a force of at least two hundred pounds (890 N) applied in any direction, and shall not be more than thirty-six inches (0.91 m) nor less than thirty-two inches (0.81 m) in height from the upper top rail surface to the tread surface in line with the leading edge of the tread. Railings and midrails shall be provided at any stairway having four or more risers, as follows:

(a) For stairways less than forty-four inches (1.12 m) wide, at least one railing; and

(b) For stairways more than forty-four inches (1.12 m) but less than eighty-eight inches (2.24 m) wide, a stair rail or handrail on each side, and if eighty-eight or more inches wide, an additional intermediate handrail.

(6) Condition. Railings shall be maintained free of sharp edges and in good repair.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 00-21-103, § 296-56-60123, filed 10/18/00, effective 2/1/01. Statutory Authority: RCW 49.17.040. 99-02-024, § 296-56-60123, filed 12/30/98, effective 3/30/99. Statutory Authority: Chapter 49.17 RCW and RCW 49.17.040, [49.17].050 and [49.17].060. 92-22-067 (Order 92-06), § 296-56-60123, filed 10/30/92, effective 12/8/92. Statutory Authority: RCW 49.17.040 and 49.17.050. 86-03-064 (Order 86-02), § 296-56-60123, filed 1/17/86; 85-01-022 (Order 84-24), § 296-56-60123, filed 12/11/84.]

(2007 Ed.)

WAC 296-56-60125 Clearance heights. Clearance heights shall be prominently posted where the height is insufficient for vehicles or equipment.

[Statutory Authority: RCW 49.17.040 and 49.17.050. 86-03-064 (Order 86-02), § 296-56-60125, filed 1/17/86; 85-01-022 (Order 84-24), § 296-56-60125, filed 12/11/84.]

WAC 296-56-60127 Cargo doors. (1) Mechanically operated cargo doors.

(a) Cargo door counterweights shall be guarded.

(b) Lift trucks and cranes shall not be used to move mechanically operated doors except when necessary during repair to the doors. Ropes or other guarding shall be provided to prevent entry into any area if the door may fall or slide.

(c) Vertically operated doors partially opened for work or ventilation shall be secured to prevent accidental closing.

(2) Tackle operated cargo doors.

(a) Doors shall be connected to their lifting tackle with shackles or other secure means.

(b) Lifting bridles and tackles shall have a safety factor of five, based upon maximum anticipated static loading conditions.

(c) Devices shall be provided to hold overhead doors in the open position and to secure them when closed.

(d) Lifting gear and hardware shall be maintained in safe condition.

(e) Lifting ropes shall be placed out of the work area and off the floor.

(3) Horizontal sliding.

(a) Horizontal sliding door rollers shall be constructed to prevent the door from disengaging from overhead tracks.

(b) Sliding doors shall be secured to prevent them from swinging.

[Statutory Authority: RCW 49.17.040 and 49.17.050. 86-03-064 (Order 86-02), § 296-56-60127, filed 1/17/86; 85-01-022 (Order 84-24), § 296-56-60127, filed 12/11/84.]

WAC 296-56-60129 Platforms and skids. (1) Platforms and skids extending from piers, transit sheds or lofts and used for landing or hooking drafts shall be provided with guardrails meeting the requirements of WAC 296-56-60123 (3) on all open sides. Alternate means, such as nets or safety belts and lifelines, may be used if guardrails are impractical.

(2) Any employee working below a second-story platform or skid shall be protected from falling objects.

(3) Platforms and skids shall be strong enough to bear the loads handled and shall be maintained in safe condition. Safe working loads, which shall be posted or marked on or adjacent to platforms and skids, shall have a minimum safety factor of five for all parts, based upon maximum anticipated static loading conditions and the ultimate strength of the construction material.

(4) The employer shall provide and maintain platform and skid attachments that will prevent accidental movement of the skid or platform.

[Statutory Authority: RCW 49.17.040 and 49.17.050. 86-03-064 (Order 86-02), § 296-56-60129, filed 1/17/86; 85-01-022 (Order 84-24), § 296-56-60129, filed 12/11/84.]

WAC 296-56-60131 Elevators and escalators. (1) "Elevator" means a permanent hoisting and lowering mecha-

nism with a car or platform moving vertically in guides and serving two or more floors of a structure. The term excludes such devices as conveyors, tiering or piling machines, material hoists, skip or furnace hoists, wharf ramps, lift bridges, car lifts, and dumpers.

(2) "Escalator" means a power-driven continuous moving stairway principally intended for the use of persons.

(3) No elevator or escalator with a defect which affects safety shall be used.

(4) Elevator safety devices shall not be overridden or made inoperable.

(5) Elevators and escalators shall be thoroughly inspected at intervals not exceeding one year. Additional monthly inspections for satisfactory operation shall be conducted by designated persons. Records of the results of the latest annual elevator inspections shall be posted in elevators. Records of annual escalator inspections shall be posted in the vicinity of the escalator or be available at the terminal.

(6) Elevator landing openings shall be provided with doors, gates, or equivalent protection, which shall be in place when the elevator is not at that landing, to prevent employees from falling into the shaft.

(7) The elevator or escalator maximum load limits shall be posted and shall not be exceeded. Elevator load limits shall be posted conspicuously both inside and outside of the car.

(8) Elevators shall be operated only by designated persons except for automatic or door interlocking elevators which provide full shaft door closing and automatic car leveling.

[Statutory Authority: Chapter 49.17 RCW and RCW 49.17.040, [49.17].050 and [49.17].060. 92-22-067 (Order 92-06), § 296-56-60131, filed 10/30/92, effective 12/8/92. Statutory Authority: RCW 49.17.040 and 49.17.050. 86-03-064 (Order 86-02), § 296-56-60131, filed 1/17/86; 85-01-022 (Order 84-24), § 296-56-60131, filed 12/11/84.]

WAC 296-56-60133 Manlifts. (1) Inspection. Manlifts shall be inspected monthly by a designated person. Safety switches shall be checked weekly. Manlifts found to be unsafe shall not be operated until repaired. Inspections shall include at least the following:

- (a) Step fastenings;
- (b) Rails;
- (c) Rail supports and fastenings;
- (d) Roller and slides;
- (e) Belt and belt tension;
- (f) Handholds and fastenings;
- (g) Floor landings;
- (h) Guardrails;
- (i) Lubrication;
- (j) Safety switches;
- (k) Warning signs and lights;
- (l) Illumination;
- (m) Drive pulley;
- (n) Bottom (boot) pulley and clearance;
- (o) Pulley supports;
- (p) Motor;
- (q) Drive mechanism;
- (r) Brake;
- (s) Electrical switches;
- (t) Vibration and misalignment;

(u) "Skip" on up or down run when mounting the step (indicating worn gears); and

(v) Emergency exit ladders.

(2) Inspection records. Inspection records shall be kept for at least one year. The record of the most recent inspection shall be posted in the vicinity of the manlift or in the terminal.

(3) Emergency stop. An emergency stop device shall be available within easy reach from any position on the belt.

(4) Instructions. Manlift use instructions shall be conspicuously posted.

(5) Top floor warning sign and light. An illuminated sign and red light that are visible to the user shall be provided under the top floor opening of the manlift to warn the user to get off at that floor.

(6) Bottom floor warning sign. A sign visible to descending passengers shall be provided to warn them to get off at the bottom floor.

(7) Upper limit stop. An automatic stop device shall be provided to stop the manlift when a loaded step passes the top landing, except that manlifts installed after October 3, 1983, shall have two such devices.

(8) Handholds and steps. Each step shall be provided with a corresponding handhold.

(9) Emergency ladder. A fixed emergency ladder accessible from any position on the lift and meeting the requirements of WAC 296-56-60209 shall be provided for the entire run of the manlift.

(10) Landings.

(a) Clear and unobstructed landing spaces shall be provided at each level. Manlifts constructed after October 3, 1983, that have a distance of fifty feet (15.24 m) or more between floor landings shall have an emergency landing every twenty-five feet (7.62 m) or less of manlift travel.

(b) Open sides of emergency landings shall be protected by guardrails.

(c) Floor landing entrances and exits shall be guarded by mazes, self-closing gates, or equivalent protection.

(d) Landings shall be of sufficient size and strength to support two hundred fifty pounds (1112 N).

(11) Floor opening guards. The ascending sides of manlift floor openings shall be provided with cones or bevel guards to direct the user through the openings.

(12) Maintenance. Manlifts shall be equipped, maintained, and used in accordance with the manufacturer's specifications, which shall be available at the terminal.

(13) Bottom pulley.

(a) The lower pulley shall be supported by the lowest landing.

(b) Sides of the bottom pulley support shall be guarded to prevent contact with the pulley or the steps.

(14) Top clearance. A clearance of at least eleven feet (3.35 m) shall be provided between the top landing and the ceiling.

(15) Brakes. Manlifts shall be equipped with brakes that are:

(a) Self-engaging;

(b) Electrically released; and

(c) Capable of stopping and holding the manlift when the descending side is loaded with the maximum rated load.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 00-21-103, § 296-56-60133, filed 10/18/00, effective 2/1/01. Statutory Authority:

RCW 49.17.040 and 49.17.050. 86-03-064 (Order 86-02), § 296-56-60133, filed 1/17/86; 85-01-022 (Order 84-24), § 296-56-60133, filed 12/11/84.]

PART H—MANLIFTS—ELECTRIC

WAC 296-56-60135 Manlifts—Electric.

[Statutory Authority: RCW 49.17.040 and 49.17.050. 86-03-064 (Order 86-02), § 296-56-60135, filed 1/17/86; 85-10-004 (Order 85-09), § 296-56-60135, filed 4/19/85; 85-01-022 (Order 84-24), § 296-56-60135, filed 12/11/84.]

WAC 296-56-60139 Hoistway enclosures and landings. Hoistways shall be fully enclosed, or enclosed on all landings to a height of six feet above the landing floor or six feet above highest working level or stair level adjacent to the hoistway. Perforated hoistway enclosures can be used where fire resistance is not required, provided:

- (1) Steel wire grill or expanded metal grill shall be at least thirteen U.S. gauge steel wire.
- (2) Openings in the enclosure shall reject a one inch steel ball.
- (3) All hoistway landings shall be properly and adequately lighted.

[Statutory Authority: RCW 49.17.040 and 49.17.050. 86-03-064 (Order 86-02), § 296-56-60139, filed 1/17/86; 85-01-022 (Order 84-24), § 296-56-60139, filed 12/11/84.]

WAC 296-56-60141 Scope and application. WAC 296-56-60141 through 296-56-60171 apply to the installation, design, and use of all one man capacity, electric elevators subject to inspection under RCW 49.17.120.

[Statutory Authority: RCW 49.17.040 and 49.17.050. 86-03-064 (Order 86-02), § 296-56-60141, filed 1/17/86; 85-01-022 (Order 84-24), § 296-56-60141, filed 12/11/84.]

WAC 296-56-60143 Hoistway gates. (1) Hoistway gates may be constructed of wood slat, steel wire grill, expanded metal or solid material, providing all openings reject a two inch ball and resist a two hundred fifty pound horizontal thrust.

- (a) Steel wire and expanded metal gates shall be of at least thirteen gauge steel.
- (b) Wood slats must be not less than two inches wide and one-half inch thick, nominal size.
- (c) Solid material shall be not less than one-eighth inch reinforced sheet steel or one-half inch plywood.
- (2) Hoistway gates may be horizontal swinging, vertical or horizontal sliding or biparting gates.
- (a) Hoistway gates shall extend the full width of the elevator car and from one inch above the landing floor to six feet or more above the floor.
- (b) Horizontal swinging gates shall be prevented from swinging into hoistway.
- (3) Gates shall be equipped with interlocks or mechanical locks and electric contacts designed so that hoistway gates cannot be opened when the car is away from the landing.

[Statutory Authority: RCW 49.17.040 and 49.17.050. 86-03-064 (Order 86-02), § 296-56-60143, filed 1/17/86; 85-01-022 (Order 84-24), § 296-56-60143, filed 12/11/84.]

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WAC 296-56-60145 Elevator car. (1) Elevator cars shall be fully enclosed to car height or to a height of not less than six feet six inches whichever is greater. Elevator cars may be of perforated or solid material provided the material will withstand a horizontal thrust of seventy-five pounds without deflecting one-quarter inch and all openings will reject a one inch ball.

(a) Car frames shall be of substantial metal or wood construction with a safety factor of four for metal frames and six for wood frames.

(b) Wood frames shall be gusseted and bolted or otherwise secured with large washers and lock washers.

(c) The car platform shall not exceed thirty inches inside dimension on each side (6.25 square foot area).

(2) Every car shall have a substantial protective top. The front half may be hinged. The protective top may be made from number nine U.S. wire gauge screen, eleven gauge expanded metal, fourteen gauge sheet steel, or three-quarter inch or heavier plywood. If made of wire screen or metal, the openings shall reject a one-half inch diameter ball.

[Statutory Authority: RCW 49.17.040 and 49.17.050. 86-03-064 (Order 86-02), § 296-56-60145, filed 1/17/86; 85-01-022 (Order 84-24), § 296-56-60145, filed 12/11/84.]

WAC 296-56-60147 Elevator doors. Elevator car doors shall be provided on all elevators, except on fully enclosed hoistways equipped with hoistway gates and enclosed from the top of the hoistway opening to the ceiling on the landing side.

(1) Car doors may be of solid or perforated construction and shall be capable of resisting a seventy-five pound thrust without deflecting one-quarter inch.

(2) Car doors may be biparting or otherwise horizontally swung provided the door swings within the elevator car.

(3) A positive locking latch device which resists a two hundred fifty pound thrust shall be provided.

(4) Interlocks or mechanical locks and electric contacts must be provided on cars operating in open hoistways.

[Statutory Authority: RCW 49.17.040 and 49.17.050. 86-03-064 (Order 86-02), § 296-56-60147, filed 1/17/86; 85-01-022 (Order 84-24), § 296-56-60147, filed 12/11/84.]

WAC 296-56-60149 Counterweight, enclosures, and fastenings. All counterweights shall be fully enclosed for their full length of travel except in closed hoistways where counterweight guide rails have been provided.

(1) Counterweight enclosures shall provide an inspection opening in the bottom of the enclosure large enough to provide for the inspection of cable fastenings, counterweight and buffer. Counterweights of rectangular shape shall be secured by not less than two one-half inch mild steel bolts with lock-nuts. Round counterweights shall be fastened with a center bolt not less than three-quarter inch diameter and secured with a locknut.

(2) Bolt eyes shall be welded closed.

(3) Cable fastenings shall be not less than three U-shaped clamps with U's on the dead side of the rope or babbitted tapered elevator sockets.

[Statutory Authority: RCW 49.17.040 and 49.17.050. 85-01-022 (Order 84-24), § 296-56-60149, filed 12/11/84.]

WAC 296-56-60151 Guide rails. A minimum of two car guide rails shall be provided. They shall:

- (1) Extend at least six inches beyond the maximum travel of the car with buffers compressed.
- (2) Be securely fastened to a vertical supporting member for the full length of elevator travel.
- (3) Be not less than one and one-half inch by one and one-half inch vertical grain fir or equivalent, one-quarter inch by two inch by two inch angle iron or equivalent.
- (4) Not vary more than three-sixteenths inch thickness on brake surfaces for wood guide rails.
- (5) Be secured to resist more than one-half inch total deflection on car safety application and resist a two hundred fifty pound horizontal thrust.

[Statutory Authority: RCW 49.17.040 and 49.17.050. 86-03-064 (Order 86-02), § 296-56-60151, filed 1/17/86; 85-01-022 (Order 84-24), § 296-56-60151, filed 12/11/84.]

WAC 296-56-60153 Hoisting ropes. Hoisting ropes shall be of good grade elevator traction wire rope and shall:

- (1) Be at least two ropes of not less than three-eighths inch diameter providing a safety factor of five.
- (2) Be fastened by at least three U-type cable clamps with the U on the dead return end of the rope or by approved elevator sockets of the babbitted type.
- (3) Be of such length that the car platform will not be more than six inches above the top landing when the counterweight buffer is fully compressed. The counterweight shall be six inches or more away from the counterbalance sheave when the car buffer is fully compressed.

[Statutory Authority: RCW 49.17.040 and 49.17.050. 86-03-064 (Order 86-02), § 296-56-60153, filed 1/17/86; 85-01-022 (Order 84-24), § 296-56-60153, filed 12/11/84.]

WAC 296-56-60155 Space under hoistway. There shall be no habitable space below the elevator hoistway and counterweight shaft unless the floor is designed to withstand an impact one hundred twenty-five percent greater than the impact generated by a free fall of either the car or counterweight from the full height of the hoistway.

[Statutory Authority: RCW 49.17.040 and 49.17.050. 86-03-064 (Order 86-02), § 296-56-60155, filed 1/17/86; 85-01-022 (Order 84-24), § 296-56-60155, filed 12/11/84.]

WAC 296-56-60157 Car safeties. All cars suspended or operated from overhead machinery shall be equipped with an approved car safety capable of stopping and holding the car with rated load.

- (1) Car safeties shall operate mechanically and be independent of interruption of any electrical circuit.
- (2) Car safeties and governor controlled safeties shall automatically operate and the control circuit shall be broken in the event of cable breakage.

[Statutory Authority: RCW 49.17.040 and 49.17.050. 86-03-064 (Order 86-02), § 296-56-60157, filed 1/17/86; 85-01-022 (Order 84-24), § 296-56-60157, filed 12/11/84.]

WAC 296-56-60159 Brakes. All elevators shall be equipped with brakes designed to engage mechanically and release electrically.

(1) Brakes shall be located on the final drive of all elevator machines.

(2) The brake actuating circuit shall be so designed that interruption of power by slack cable switch, control switch, and limit switches actuate the brake.

(3) The brakes shall actuate under short circuit, phase failure, or reverse phase conditions.

[Statutory Authority: RCW 49.17.040 and 49.17.050. 86-03-064 (Order 86-02), § 296-56-60159, filed 1/17/86; 85-01-022 (Order 84-24), § 296-56-60159, filed 12/11/84.]

WAC 296-56-60161 Car controls and safety devices.

(1) Car controls may be automatic pushbutton, constant pressure pushbutton or momentary pushbutton types. Hand rope and car switch controls shall not be used.

(2) Manually operated emergency stop switches shall be installed in all cars not equipped with constant pressure pushbutton controls. The switch shall be clearly marked "emergency stop."

(3) Terminal limiting devices shall operate independently of the car controls and automatically stop the car at the top and bottom terminal landings.

(4) All winding drum machine type elevators shall be equipped with top and bottom final limit switches.

(5) A slack rope device of manual reset design shall be required on all winding drum type machines. The device shall be designed to deenergize the circuit to the drive motor and brake.

(6) All installations shall be equipped with an overspeed governor. This governor shall be set not to exceed one hundred seventy-five feet per minute and shall be designed to deenergize the brake control and motor drive circuits simultaneously with the activation of the car safety mechanism. Car speeds for these types of installations shall not exceed a speed of one hundred twenty-five feet per minute.

[Statutory Authority: RCW 49.17.040 and 49.17.050. 86-03-064 (Order 86-02), § 296-56-60161, filed 1/17/86; 85-01-022 (Order 84-24), § 296-56-60161, filed 12/11/84.]

WAC 296-56-60167 Hoisting machine mechanisms.

(1) Elevator machines shall be driven by approved type units.

(a) On direct drive or approved worm gear driven type, a mechanically actuated, electrically released brake shall be installed on the driving unit.

(b) On V belt driven types, a minimum of four belts, one-half inch minimum size, shall be used to transmit power from the motor to the drive shaft and a mechanically actuated, electrically released brake shall be installed on the final drive shaft.

(2) Wherever practical, elevator machines shall be installed on the top side of their supporting structure.

(3) All components of the driving mechanism and parts subject to stress involved in suspending the load or related equipment shall be designed to withstand eight times the total weight to be suspended, including load, counterweight, car and cables.

(4) Gears shall be made of steel or equivalent material. Cast iron gears are prohibited.

[Statutory Authority: RCW 49.17.040 and 49.17.050. 86-03-064 (Order 86-02), § 296-56-60167, filed 1/17/86; 85-01-022 (Order 84-24), § 296-56-60167, filed 12/11/84.]

WAC 296-56-60169 Elevator car and counterweight buffers. (1) Elevator cars shall be provided with adequate car buffers.

(2) All elevators using a counterweight shall be provided with adequate counterweight buffers.

[Statutory Authority: RCW 49.17.040 and 49.17.050. 86-03-064 (Order 86-02), § 296-56-60169, filed 1/17/86; 85-01-022 (Order 84-24), § 296-56-60169, filed 12/11/84.]

WAC 296-56-60171 General requirements. (1) Adequate lighting shall be provided at each landing and in the shaftway.

(2) A sign bearing the following information shall be conspicuously posted within the car:

- (a) Maximum capacity one person;
- (b) Total load limit in pounds;
- (c) For authorized personnel use only.

(3) A fire extinguisher in proper working condition shall be available in the car.

Note: For additional requirements relating to portable fire extinguishers see WAC 296-800-300.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 01-17-033, § 296-56-60171, filed 8/8/01, effective 9/1/01. Statutory Authority: RCW 49.17.040 and 49.17.050. 86-03-064 (Order 86-02), § 296-56-60171, filed 1/17/86; 85-01-022 (Order 84-24), § 296-56-60171, filed 12/11/84.]

PART I—MANLIFTS—HAND POWER

WAC 296-56-60180 Scope and application. WAC 296-56-60180 through 296-56-60207 apply to the installation, design, and use of all one man capacity, hand power counterweighted elevators subject to inspection under RCW 49.17.120.

[Statutory Authority: RCW 49.17.040 and 49.17.050. 86-03-064 (Order 86-02), § 296-56-60180, filed 1/17/86; 85-01-022 (Order 84-24), § 296-56-60180, filed 12/11/84.]

WAC 296-56-60183 Hoistway landings. (1) Every hoistway landing shall be protected on all sides other than the landing opening side with a standard guard rail and intermediate guard rail. All landings except the bottom landing shall have a toe board installed on all sides except the landing opening side.

(2) All hoistway entrances shall be not less than six feet six inches in height and in no case shall the width exceed the corresponding car dimensions.

(3) All hoistway entrances must be provided with an approved maze or with a hoistway gate which shall:

- (a) Be at least thirty-six inches in height.
- (b) Extend downward to within one inch of the landing sill.

(c) Be of the self-closing type, designed to swing horizontally out from the hoistway and closing against a full jam stop.

(d) Be located within four inches of the hoistway edge of the landing sill.

(e) Have a "DANGER" sign conspicuously posted on the landing side of the hoistway gate.

(f) Withstand a two hundred fifty pound horizontal thrust.

(4) All projections extending inwardly from the hoistway enclosure at the entrance side of the car platform shall be

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bevelled and substantially guarded on the underside by smooth solid material set at an angle of not less than sixty degrees, nor more than seventy-five degrees from the horizontal when cars are not equipped with gates.

[Statutory Authority: RCW 49.17.040 and 49.17.050. 86-03-064 (Order 86-02), § 296-56-60183, filed 1/17/86; 85-01-022 (Order 84-24), § 296-56-60183, filed 12/11/84.]

WAC 296-56-60185 Hoistway clearances. (1) The minimum clearance between the side of the car and a hoistway enclosure shall be one inch.

(2) The clearance between the car platform and the landing sill shall not be less than one-half inch and not more than one and one-half inches.

[Statutory Authority: RCW 49.17.040 and 49.17.050. 85-01-022 (Order 84-24), § 296-56-60185, filed 12/11/84.]

WAC 296-56-60187 Habitable space under hoistways. There shall be no habitable space below the elevator hoistway or counterweight shaft unless the floor is supported to withstand any impact caused by the car or counterweight dropping freely onto the floor.

[Statutory Authority: RCW 49.17.040 and 49.17.050. 85-01-022 (Order 84-24), § 296-56-60187, filed 12/11/84.]

WAC 296-56-60189 Hoistway guide rails. (1) There shall be a minimum of two opposing guide rails extending to a point six inches beyond the full height of travel of the car when the counterweight buffer is fully compressed.

(2) All rails shall be attached by bolts, lag screws or other approved methods to a vertical supporting member which shall not exceed one-half inch deflection with the application of a two hundred fifty pound horizontal thrust at any point.

(3) Wood guide rails shall be at least one and one-half inch by one and one-half inch vertical grain fir or equivalent and shall not vary more than three-sixteenth inch in thickness on the sides which the brakes contact. All joints shall be kept smooth and even.

[Statutory Authority: RCW 49.17.040 and 49.17.050. 86-03-064 (Order 86-02), § 296-56-60189, filed 1/17/86; 85-01-022 (Order 84-24), § 296-56-60189, filed 12/11/84.]

WAC 296-56-60191 Buffer springs and overtravel of car. Substantial spring buffers shall be installed below the car and also below the counterweight. The hoisting rope shall be of such length that the car platform will not be more than eight inches above the top landing when the counterweight buffer spring is fully compressed.

[Statutory Authority: RCW 49.17.040 and 49.17.050. 86-03-064 (Order 86-02), § 296-56-60191, filed 1/17/86; 85-01-022 (Order 84-24), § 296-56-60191, filed 12/11/84.]

WAC 296-56-60193 Car specifications. (1) The car shall be built to the following specifications:

(a) The car platform shall be not greater than thirty inches on either side (6.25 square feet area).

(b) The car frame and platform shall be of steel or sound seasoned wood construction and be designed with a safety factor of not less than four for metal and six for wood, based on a maximum capacity of two hundred fifty pounds.

(c) All frame members shall be securely bolted, riveted or welded and braced. If bolted, lock washers or lock nuts shall be used.

(d) Where wooden frame members are bolted, large washers or metal plates shall be used to minimize the possibility of splitting or cracking the wood.

(2) The sides of the car shall be enclosed by a minimum of two safety guard rails with the top rail not less than thirty-six inches nor more than forty-two inches from the car floor. Rails shall sustain a horizontal thrust of two hundred fifty pounds. If solid material is used it shall be smooth surfaced and not less than one-half inch thickness, if wood; not less than sixteen gauge thickness, if steel; and shall be constructed from the car floor to a height of not less than three feet.

(a) Where the hoistway is not enclosed on the entrance side of the car, a self-locking or drop bar gate must be provided. The car gate may be of the folding type, horizontally swung, provided it swings into the car enclosure. Drop bar gates must be of two bar construction, parallelogram type, and conform to requirements specified for car guard rails.

(b) The car gate shall drop into locking slots or be provided with a positive locking type latch capable of withstanding two hundred fifty pounds horizontal thrust.

(3) Every car shall have a substantial protective top. The front half may be hinged. The protective top may be made from number nine U.S. wire gauge screen, eleven gauge expanded metal, fourteen gauge sheet steel, three-quarter inch or heavier plywood. If made of wire screen or metal, the openings shall reject a one-half inch diameter ball.

(4) Every car shall have a proper rack to hold the balance weights.

(5) A sign bearing the following information shall be conspicuously posted within the car:

- (a) Maximum capacity one person;
- (b) Total load limit in pounds;
- (c) For authorized personnel use only.

(6) Every car shall be equipped with a spring loaded foot brake which:

- (a) Operates independently of the car safeties;
- (b) Operates in both directions and will stop and hold the car and its load;
- (c) Locks the car in its position automatically whenever the operator releases the pressure on the foot pedal.

(7) Every car shall be equipped with a car safety device which:

- (a) Applies to the sides of the main guide rails;
- (b) Stops and holds the car and its load immediately when the hoisting rope breaks.

(8) Every car shall have a minimum clearance of six feet six inches from the top of the car platform to the bottom edge of the crosshead or any other obstruction.

(9) A tool box with minimum dimensions of four inches wide by sixteen inches long by three inches in depth shall be provided and firmly attached to the car structure.

[Statutory Authority: RCW 49.17.040 and 49.17.050. 86-03-064 (Order 86-02), § 296-56-60193, filed 1/17/86; 85-01-022 (Order 84-24), § 296-56-60193, filed 12/11/84.]

WAC 296-56-60195 Counterweights. (1) The assembly of sectional counterweights shall conform to the following requirements:

(a) Rectangular counterweights shall be held together by at least two tie rods one-half inch in diameter fastened with lock washers and double nuts or other approved means.

(b) One three-quarter inch rod may be used to hold the sections of a round counterweight together. Any additional sections or weights shall be secured by an approved means.

(2) The eye bolt for the rope hitch shall be attached to the counterweight in a manner that will prevent the eye bolt from coming loose. The eye of eye bolts shall be welded to prevent it from opening.

(3) Every counterweight runway shall be enclosed with substantial unperforated material for its full distance of travel. Inspection openings shall be provided at either the top or bottom of the counterweight runway. These openings shall be substantially covered at all times except when actually being used for inspection of counterweight fastenings.

(4) Workmen shall load the counterweight for the proper balance of the heaviest person using the elevator and others shall use compensating weights, which shall be available, to maintain a balance.

(5) On elevators with travel of seventy-five feet or more, a compensating chain or cable shall be installed to maintain the proper balance of the counterweight to the car and load in all positions.

[Statutory Authority: RCW 49.17.040 and 49.17.050. 86-03-064 (Order 86-02), § 296-56-60195, filed 1/17/86; 85-01-022 (Order 84-24), § 296-56-60195, filed 12/11/84.]

WAC 296-56-60197 Sheaves. The minimum sheave diameter shall be forty times the diameter of the ropes used, i.e., fifteen inch for three-eighths inch rope.

[Statutory Authority: RCW 49.17.040 and 49.17.050. 85-01-022 (Order 84-24), § 296-56-60197, filed 12/11/84.]

WAC 296-56-60199 Hoisting ropes. (1) Hoisting rope shall be of good grade traction elevator wire rope, and shall:

- (a) Be not less than three-eighths inches in diameter.
- (b) Provide a safety factor of five based on the maximum weight supported.

(c) Be of sufficient length to prevent the counterweight from striking the overhead structure when car is at bottom, and prevent the car from striking the overhead before the counterweight is at its lower limit of travel.

(d) Be fastened at each end by at least three or more clamps, with the "U" of the clamp bearing on the dead end of the rope.

(e) Where passed around a metal or other object less than three times the diameter of the cable, have a thimble of the correct size inserted in the eye.

(2) Approved sockets or fittings with the wire properly turned back and babbitted may be used in place of clamps noted in subsection (1)(d) of this section.

[Statutory Authority: RCW 49.17.040 and 49.17.050. 86-03-064 (Order 86-02), § 296-56-60199, filed 1/17/86; 85-01-022 (Order 84-24), § 296-56-60199, filed 12/11/84.]

WAC 296-56-60201 Operating rope. The operating rope shall be of soft hemp or cotton at least three-quarter inch in diameter. It shall be securely fastened at each end and shall be in proper vertical alignment to prevent bending or cutting

where it passes through the openings in the platform or the protective top of the car.

[Statutory Authority: RCW 49.17.040 and 49.17.050. 86-03-064 (Order 86-02), § 296-56-60201, filed 1/17/86; 85-01-022 (Order 84-24), § 296-56-60201, filed 12/11/84.]

WAC 296-56-60203 Lighting. Adequate lighting shall be provided at each landing and in the shaftway.

[Statutory Authority: RCW 49.17.040 and 49.17.050. 85-01-022 (Order 84-24), § 296-56-60203, filed 12/11/84.]

WAC 296-56-60205 Overhead supports. The overhead supporting members shall be designed, based upon impact loads, with a safety factor of:

- (1) Nine if wood;
- (2) Five if steel.

[Statutory Authority: RCW 49.17.040 and 49.17.050. 86-03-064 (Order 86-02), § 296-56-60205, filed 1/17/86; 85-01-022 (Order 84-24), § 296-56-60205, filed 12/11/84.]

WAC 296-56-60207 General requirements. (1) No person other than an employee or duly authorized person shall ride or be permitted to ride in the car.

(2) Escape ladders shall be installed extending the full length of the hoistway and shall be located in a position so that, in an emergency, a person can safely transfer from the car platform to the ladder. An "IMPAIRED CLEARANCE" sign shall be posted at the bottom of a ladder when the face of the ladder is less than thirty inches from any structure.

(3) An automatic safety dog or device which will prevent the car from leaving the landing until manually released by the operator shall be installed at the bottom landing.

(4) A fire extinguisher in proper working condition shall be available in the car.

Note: For additional requirements relating to portable fire extinguishers see WAC 296-800-300.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 01-17-033, § 296-56-60207, filed 8/8/01, effective 9/1/01. Statutory Authority: RCW 49.17.040 and 49.17.050. 86-03-064 (Order 86-02), § 296-56-60207, filed 1/17/86; 85-01-022 (Order 84-24), § 296-56-60207, filed 12/11/84.]

PART J—LADDERS, STAIRWAYS OPENINGS, SANITATION, SIGNS, ETC.

WAC 296-56-60209 Fixed ladders. (1) Scope. This section applies to all fixed ladders except:

(a) Ladders forming an integral part of railway cars, highway carriers, cargo containers, or other transportation carrier equipment;

(b) Climbing devices such as step bolts or structural members of tanks and towers;

(c) Ladders built into or vertically attached to tubular scaffold framing; and

(d) Ladders used only for fire fighting or emergency purposes are exempt from the provisions of subsection (5) of this section. All other requirements of this section apply.

(2) Definitions.

(a) "Cage" (basket guard) means a barrier enclosing or nearly enclosing a ladder's climbing space and fastened to one or both of the ladder's side rails or to another structure.

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(b) "Fixed ladder" means a ladder, including individual rung ladders, permanently attached to a structure, building, or piece of equipment.

(c) "Ladder safety device" means a support system limiting an employee's drop or fall from the ladder, and which may incorporate friction brakes, lifelines and lanyards, or sliding attachments.

(d) "Well" means a permanent complete enclosure around a fixed ladder, which is attached to the walls of the well.

(3) Defects.

(a) Ladders with broken, split, or missing rungs, steps or rails, broken welds or connections, corrosion or wastage, or other defect which may affect safe use shall be removed from service.

(b) Ladder repairs shall provide strength at least equivalent to that of the original ladder.

(4) Ladder specifications.

(a)(i) Ladders installed before October 3, 1983, shall be capable of withstanding without damage a minimum concentrated load, applied uniformly over a three and one-half inch (8.9 cm) width at the rung center, of two hundred pounds (890 N).

(ii) Ladders installed after October 3, 1983, shall be capable of withstanding two hundred fifty pounds (1112 N) applied as described in (a)(i) of this subsection. If used by more than one employee simultaneously, the ladder as a unit shall be capable of simultaneous additional loading in two hundred fifty pound (1112 N) increments for each additional employee, applied to a corresponding number of rungs. The unit shall have a safety factor of four based on ultimate strength, in the designed service.

(b)(i) Ladders installed before October 3, 1983, shall have rungs evenly spaced from nine to sixteen and one-half inches (22.9 to 41.9 cm) apart, center to center.

(ii) Ladders installed after October 3, 1983, shall have rungs evenly spaced twelve inches apart, plus or minus two inches (30.5 cm, plus or minus 5.08 cm), center to center.

(c)(i) Ladders installed before October 3, 1983, shall have a width between side rails of at least ten inches (25.4 cm).

(ii) Ladders installed after October 3, 1983, shall have a width between side rails of at least twelve inches (30.48 cm).

(d) The minimum distance between the rung center line and the nearest permanent object behind the rung shall be four inches (10.16 cm), except that in ladders installed after October 3, 1983, the minimum distance shall be seven inches (17.78 cm) unless physical limitations make a lesser distance, not less than four and one-half inches (11.43 cm), necessary.

(e) When a ladder passes through an opening or past overhead obstructions, a minimum twenty-four inch (.61 m) clearance shall exist between the climbing side and any obstruction. Where this distance is less than thirty inches (0.76 m), a deflection device shall be installed for guidance through the opening.

(f) The side rails of ladders shall extend at least thirty-six inches (0.91 m) above the top landing surface, unless grab bars or equivalent holds are provided.

(g) Ladders whose pitch exceeds ninety degrees to the horizontal (slanting backward on the climbing side) shall not be used.

(5) Protection against falls.

(a) Fixed ladders more than twenty feet (6.1 m) in height shall be provided with a cage, well, or ladder safety device.

(b) When a well or cage is used, ladders with length of climb exceeding thirty feet (9.14 m) shall comply with the following provisions:

(i) The ladder shall consist of multiple sections not exceeding thirty feet (9.14 m) each;

(ii) Each section shall be horizontally offset from adjacent sections, except as specified in (b)(iv) of this subsection; and

(iii) A landing platform capable of supporting a load of one hundred pounds per square foot (4.79 kPa) and fitted with guardrails complying with WAC 296-56-60123(3) shall be provided at least every thirty feet (9.14 m), except as specified in (b)(iv) of this subsection;

(iv) For ladders installed after October 3, 1983, offset sections and landing platforms are not required if hinged platforms capable of supporting one hundred pounds per square foot (4.79 kPa), and which are kept closed except when opened for passage, are within the cage or well at intervals not exceeding thirty feet (9.14 m).

(c) Ladders equipped with ladder safety devices shall have rest platforms:

(i) Capable of supporting a load of one hundred pounds per square foot (4.79 kPa);

(ii) Located at intervals of one hundred fifty feet (45.7 m) or less; and

(iii) Protected by guardrails complying with WAC 296-56-60123(3) on three sides.

(d) Where used, ladder safety devices shall:

(i) Be installed and maintained in accordance with the manufacturer's instructions, which shall be available for inspection upon request;

(ii) Be repaired only with replacement parts having performance capability at least equal to that of the original parts;

(iii) Have a connection length between carrier centerlines and safety belts of 10 ± 2 inches (25.4 \pm 5.08 cm); and

(iv) Be installed in a manner that does not reduce the ladder's structural capacity.

(e) Ladder cages or wells shall:

(i) Be of rigid construction that allows unobstructed use but prevents an employee from falling through or dislodging the cage or well by falling against it;

(ii) Have smooth inner surfaces;

(iii) Extend at least thirty-six inches (0.91 m) above landings; and

(iv) Extend to within eight feet (2.44 m) above the ground or base, except that a maximum of twenty feet (6.1 m) is permitted where the cage or well would extend into traffic lanes.

(f) Ladders installed after January 1, 1985, on radio, microwave communications, electrical power and similar towers, poles and structures, including stacks and chimneys, shall meet the requirements of this subsection.

(6) Individual rung ladders. Ladders consisting of individual rungs that are attached to walls, conical manhole sections or river cells shall:

(a) Be capable of supporting a load of three hundred fifty pounds (1557 N) without deformation;

(b) Form a continuous ladder, uniformly spaced vertically from twelve inches to sixteen inches (30.5 to 40.6 cm) apart, with a minimum width of ten inches (25.4 cm), and projecting at least four and one-half inches (11.43 cm) from the wall;

(c) Be so constructed that an employee's foot cannot slide off the ends; and

(d) Be firmly attached and without sharp edges.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 00-21-103, § 296-56-60209, filed 10/18/00, effective 2/1/01. Statutory Authority: Chapter 49.17 RCW and RCW 49.17.040, [49.17].050 and [49.17].060. 92-22-067 (Order 92-06), § 296-56-60209, filed 10/30/92, effective 12/8/92. Statutory Authority: RCW 49.17.040 and 49.17.050. 86-03-064 (Order 86-02), § 296-56-60209, filed 1/17/86; 85-10-004 (Order 85-09), § 296-56-60209, filed 4/19/85; 85-01-022 (Order 84-24), § 296-56-60209, filed 12/11/84.]

WAC 296-56-60211 Portable ladders. (1) Scope and applicability. This section applies to all portable ladders, including job-made ladders for temporary use, unless otherwise specified.

(2) Standards for existing manufactured portable ladders.

(a) Rungs of manufactured portable ladders obtained before October 3, 1983, shall be capable of supporting a two hundred pound (890 N) load without deformation.

(b) Rungs shall be evenly spaced from nine to sixteen and one-half inches (22.9 to 41.9 cm), center to center.

(c) Rungs shall be continuous members between rails. Each rung of a double-rung ladder (two side rails and a center rail) shall extend the full width of the ladder.

(d) Width between side rails at the base of the ladder shall be at least twelve inches (30.48 cm) for ladders ten feet (3.05 m) or less in overall length, and shall increase at least one-fourth inch (0.64 cm) for each additional two feet (0.61 m) of ladder length.

(3) Standards for manufactured portable ladders. Manufactured portable ladders obtained after October 3, 1983, shall bear identification indicating that they meet the appropriate ladder construction requirements of the following standards:

ANSI A14.1-1990 Safety Requirements for Portable Wood Ladders

ANSI A14.2-1990 Safety Requirements for Portable Metal Ladders

ANSI A14.5-1992 Safety Requirements for Portable Reinforced Plastic Ladders

(4) Standards for job-made portable ladders. Job-made ladders shall:

(a) Have a minimum and uniform distance between rungs of twelve inches (30.48 cm), center to center;

(b) Be capable of supporting a two hundred fifty pound (1112 N) load without deformation; and

(c) Have a minimum width between side rails of twelve inches (30.48 cm) for ladders ten feet (3.05 m) in height. Width between rails shall increase at least one-fourth inch (0.64 cm) for each additional two feet (0.61 m) of ladder length.

(5) Maintenance and inspection.

(a) The employer shall maintain portable ladders in safe condition. Ladders with the following defects shall not be

used and either shall be tagged as unusable if kept on the premises or shall be removed from the worksite:

- (i) Broken, split or missing rungs, cleats, or steps;
- (ii) Broken or split side rails;
- (iii) Missing or loose bolts, rivets, or fastenings;
- (iv) Defective ropes; or
- (v) Any other structural defect.

(b) Ladders shall be inspected for defects prior to each day's use, and after any occurrence, such as a fall, which could damage the ladder.

(6) Ladder usage.

(a) Ladders made by fastening rungs or devices across a single rail are prohibited.

(b) Ladders shall not be used:

- (i) As guys, braces, or skids; or
- (ii) As platforms, runways, or scaffolds.

(c) Metal and wire-reinforced ladders with wooden side rails shall not be used when employees on the ladder might come into contact with energized electrical conductors.

(d) Individual sections from different multisectional ladders or two or more single straight ladders shall not be tied or fastened together to achieve additional length.

(e) Except for combination ladders, self-supporting ladders shall not be used as single straight ladders.

(f) Unless intended for cantilever operation, nonself-supporting ladders shall not be used to climb above the top support point.

(g) Ladders shall extend at least thirty-six inches (0.91 m) above the upper support level if employees are to leave or mount the ladder at that level, except that where such extension is impractical other equivalent means such as grab bars may be used to provide a hand grip.

(h) Ladders shall be securely positioned on a level and firm base.

(i) Ladders shall be fitted with slip-resistant bases and secured at top or bottom to prevent the ladder from slipping.

(j) Ladders shall be placed so that employees climbing are not exposed to injury from projecting objects or doors that open toward the ladder.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 00-21-103, § 296-56-60211, filed 10/18/00, effective 2/1/01. Statutory Authority: RCW 49.17.040. 99-02-024, § 296-56-60211, filed 12/30/98, effective 3/30/99. Statutory Authority: RCW 49.17.040 and 49.17.050. 86-03-064 (Order 86-02), § 296-56-60211, filed 1/17/86; 85-10-004 (Order 85-09), § 296-56-60211, filed 4/19/85; 85-01-022 (Order 84-24), § 296-56-60211, filed 12/11/84.]

WAC 296-56-60213 Jacob's ladders. (1) Jacob's ladders shall be of the double rung or flat tread type. They shall be well maintained and properly secured to the dock.

(2) A Jacob's ladder shall either hang without slack from its lashings or be pulled up entirely.

[Statutory Authority: RCW 49.17.040 and 49.17.050. 85-01-022 (Order 84-24), § 296-56-60213, filed 12/11/84.]

WAC 296-56-60215 Fixed stairways. (1) Definition. "Fixed stairway" means interior or exterior stairs serving machinery, tanks, or equipment, and stairs to or from floors, platforms, or pits. The term does not apply to stairs intended only for fire exit purposes, to articulated stairs (the angle of which changes with the rise and fall of the base support) or to stairs forming an integral part of machinery.

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(2) New installations.

(a) Fixed stairs installed after October 3, 1983, shall be positioned within the range of thirty degrees to fifty degrees to the horizontal with uniform riser height and tread width throughout each run and be capable of a minimum loading of one hundred pounds per square foot (445 N) and a minimum concentrated load of three hundred pounds (1334 N) at the center of any treadspan. Riser height shall be from six to seven and one-half inches (15.24 to 19.05 cm), stair width a minimum of twenty-two inches (55.88 cm) between vertical barriers, and tread depth a minimum of 12 ± 2 inches (30.48 ± 5.08 cm), and tread nosing shall be straight leading edges.

(b) Stair landings shall be at least twenty inches (50.8 cm) in depth. Where doors or gates open on a stairway, a landing platform shall be provided. Door swing shall not reduce the effective standing area on the landing to less than eighteen inches (45.72 cm) in depth.

(c) Fixed stairs having four or more risers shall have stair railings or handrails complying with WAC 296-56-60123(3).

(d) The railing height from tread surface at the riser face shall be 33 plus or minus 3 inches (83.82 cm plus or minus 7.62 cm).

(e) Restricted areas. When physical features require stairs steeper than those provided for by (a) of this subsection, stairs at angles of fifty degrees to seventy-five degrees from the horizontal may be used if they:

(i) Are capable of supporting a single concentrated load of two hundred pounds (890 N) at the tread centers;

(ii) Have open treads at least four inches (10.16 cm) in depth and eighteen inches (45.72 cm) in width with a uniformly spaced vertical rise between treads of six to nine and one-half inches (15.24 to 24.13 cm); and

(iii) Have handrails that meet the requirements of WAC 296-56-60123(3) on both sides that are not less than thirty inches (76.2 cm) in height from the tread surface at the riser face.

(f) Maintenance. Fixed stairways shall be maintained in safe condition and shall not be obstructed.

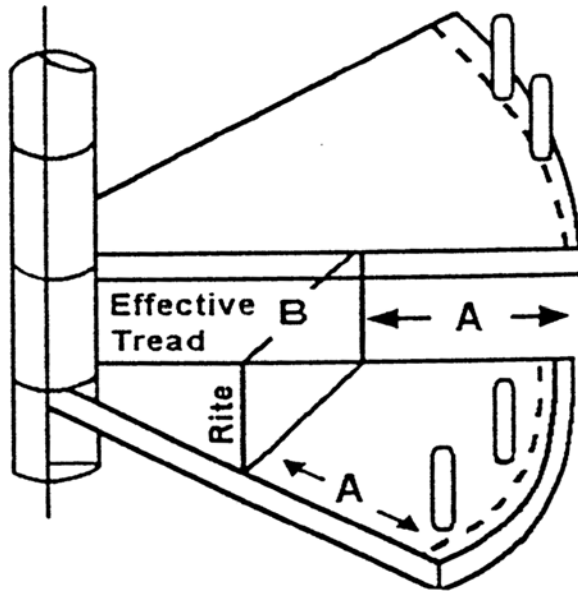
[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 00-21-103, § 296-56-60215, filed 10/18/00, effective 2/1/01. Statutory Authority: Chapter 49.17 RCW and RCW 49.17.040, [49.17].050 and [49.17].060. 92-22-067 (Order 92-06), § 296-56-60215, filed 10/30/92, effective 12/8/92. Statutory Authority: RCW 49.17.040 and 49.17.050. 86-03-064 (Order 86-02), § 296-56-60215, filed 1/17/86; 85-01-022 (Order 84-24), § 296-56-60215, filed 12/11/84.]

WAC 296-56-60217 Spiral stairways. (1) Definition. "Spiral stairway" means one with closed circular form, uniform sector-shaped treads and a supporting column.

(2) Requirements. Spiral stairways shall meet the following requirements:

(a) Stairways shall conform to the minimum dimensions of Figure F-1;

Figure F-1



Spiral Stairway—Minimum Dimensions		
	A (Half-tread width)	B
Normal use by employees	11 inches (27.9 cm)	6 inches (15.2 cm)
Limited access	9 inches (22.9 cm)	5 inches (12.7 cm)

(b) Stairway risers shall be uniform and shall range from six and one-half to ten and one-half inches (16.5 to 26.67 cm) in height;

(c) Minimum loading capability shall be one hundred pounds per square foot (445 N), and minimum tread center concentrated loading shall be three hundred pounds (1334 N);

(d) Railing shall conform to the requirements of WAC 296-56-60123(3). If balusters are used, there shall be a minimum of one per tread. Handrails shall be a minimum of one and one-fourth inches (3.18 cm) in outside diameter; and

(e) Vertical clearance shall be at least six feet, six inches (1.98 m) above the top step.

(3) Maintenance. Spiral stairways shall be maintained in safe condition.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 00-21-103, § 296-56-60217, filed 10/18/00, effective 2/1/01. Statutory Authority: RCW 49.17.040. 99-02-024, § 296-56-60217, filed 12/30/98, effective 3/30/99. Statutory Authority: RCW 49.17.040 and 49.17.050. 86-03-064 (Order 86-02), § 296-56-60217, filed 1/17/86; 85-10-004 (Order 85-09), § 296-56-60217, filed 4/19/85; 85-01-022 (Order 84-24), § 296-56-60217, filed 12/11/84.]

WAC 296-56-60219 Employee exits. (1) Employee exits shall be clearly marked.

(2) If an employee exit is not visible from employees' work stations, directional signs indicating routes to the exit shall be posted.

(3) Exits shall be readily accessible and sufficient in number to provide employees with a convenient means of

escape in emergencies. A clear passage to the exit shall be maintained.

(4) The minimum width of any employee exit shall be twenty-eight inches (71.12 cm).

(5) All fire exits and aiseways of all docks and warehouses shall be clearly marked and kept clear. All main aiseways shall be wide enough to permit passage of a fire truck.

(6) There shall be a twenty-eight inch clearance maintained where employees use a passageway to an exit.

(7) Every building, structure or crane, new or old, shall be provided with an emergency means of egress to permit the prompt escape of occupants in case of fire or other emergency, at all locations with a vertical height of thirty feet or more. Cranes, buildings, or structures erected prior to January 1, 1985, shall comply with the provisions of this standard by July 1, 1986.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 00-21-103, § 296-56-60219, filed 10/18/00, effective 2/1/01. Statutory Authority: RCW 49.17.040 and 49.17.050. 86-03-064 (Order 86-02), § 296-56-60219, filed 1/17/86; 85-10-004 (Order 85-09), § 296-56-60219, filed 4/19/85; 85-01-022 (Order 84-24), § 296-56-60219, filed 12/11/84.]

WAC 296-56-60221 Illumination. Lighting. All areas shall be lighted to meet the requirements of this code.

(1) Active work areas shall be lighted in such a manner that the general area being worked will be illuminated at a minimum intensity of approximately five foot candles measured thirty inches above the dock floor. Supplemental lighting shall be utilized where more than the minimum intensity is necessary for safe operation.

(2) A minimum of three foot candles illumination measured in the manner described above shall be maintained at all points along the bull rail.

(3) The quality of light shall be such that it is reasonably free from glare, and has correct direction, diffusion, and distribution.

(4) Lighting shall not be obstructed by any placement of cargo, structures or other objects which might create a shadow in the work area. Portable lighting shall be provided in those areas that do not meet the minimum requirements of this subsection.

(5) Portable illumination.

(a) All walking and working areas shall be illuminated.

(b) Portable lights shall meet the following requirements:

(i) Portable lights shall be equipped with reflectors and guards to prevent flammable and other material from coming in contact with the bulb, except that guards are not required where the construction of the reflector is such that the bulb is recessed.

(ii) Portable lights shall be equipped with heavy duty electric cords. They may be suspended by such cords only when the means of attachment of the cord to the light is such as to prevent the light from being suspended by the electrical connections.

(iii) All connections and insulation shall be maintained.

(iv) Lighting wires and fixtures for portable lights shall be so arranged as to be free from contact with drafts, running gear, or other moving equipment.

[Statutory Authority: RCW 49.17.040 and 49.17.050. 86-03-064 (Order 86-02), § 296-56-60221, filed 1/17/86; 85-01-022 (Order 84-24), § 296-56-60221, filed 12/11/84.]

WAC 296-56-60223 Passage between levels and across openings. (1) General. The employer shall provide safe means of passage between different surface levels and across openings.

(2) Dockboards (car and bridge plates).

(a) Dockboards shall be strong enough to support the loads imposed on them.

(b) Portable dockboards shall be anchored in position or be equipped with devices to prevent their movement.

(c) Hand holds or other effective means shall be provided on portable dockboards to permit safe handling.

(d) Positive means shall be used to prevent railcars or highway vehicles from being moved while dockboards or bridge plates are in position.

(3) Ramps.

(a) Ramps shall be strong enough to support the loads imposed on them, provided with sideboards, properly secured and well maintained.

(b) Ramps shall be equipped with guardrails meeting the requirements of WAC 296-56-60123(3) if the slope is more than twenty degrees to the horizontal or if employees could fall more than four feet (1.22 m).

(c) Ramps shall have slip-resistant surfaces.

(d) When necessary to prevent displacement by vehicle wheels, steel plates or similar devices, used to temporarily bridge or cover uneven surfaces or tracks, shall be anchored.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 00-21-103, § 296-56-60223, filed 10/18/00, effective 2/1/01. Statutory Authority: Chapter 49.17 RCW and RCW 49.17.040, [49.17].050 and [49.17].060. 92-22-067 (Order 92-06), § 296-56-60223, filed 10/30/92, effective 12/8/92. Statutory Authority: RCW 49.17.040 and 49.17.050. 86-03-064 (Order 86-02), § 296-56-60223, filed 1/17/86; 85-01-022 (Order 84-24), § 296-56-60223, filed 12/11/84.]

WAC 296-56-60225 Guarding temporary hazards. Ditches, pits, excavations, and surfaces in poor repair shall be guarded by readily visible barricades, rails or other equally effective means.

[Statutory Authority: RCW 49.17.040 and 49.17.050. 85-01-022 (Order 84-24), § 296-56-60225, filed 12/11/84.]

WAC 296-56-60227 River banks. (1) This section applies to temporary installations or temporary operations near a river bank.

(2) Where working surfaces at river banks slope so steeply that an employee could slip or fall into the water, the employer shall ensure that the outer perimeter of the working surface is protected by posting or other portable protection such as roping off, and that employees wear a personal flotation device meeting the requirements of WAC 296-56-60115(2).

[Statutory Authority: RCW 49.17.040 and 49.17.050. 85-10-004 (Order 85-09), § 296-56-60227, filed 4/19/85; 85-01-022 (Order 84-24), § 296-56-60227, filed 12/11/84.]

WAC 296-56-60229 Sanitation. (1) Washing and toilet facilities.

(2007 Ed.)

(a) The employer shall provide accessible washing and toilet facilities sufficient for the sanitary requirements of employees. The facilities shall have:

(i) Running water, including hot and cold or tepid water (when cargo handling is conducted at locations without permanent facilities, containers of potable water may be provided in lieu of running water);

(ii) Soap;

(iii) Individual hand towels, clean individual sections of continuous toweling or warm air blowers; and

(iv) Fixed or portable toilets in separate compartments with latch-equipped doors.

(b) Separate toilet facilities shall be provided for male and female employees except when toilet rooms are occupied by only one person at a time. A means of locking shall be provided.

(c) Washing and toilet facilities shall be regularly cleaned and maintained in good order.

(2) Drinking water.

(a) Potable drinking water shall be accessible to employees at all times.

(b) Potable drinking water containers shall be clean, containing only water and ice, and shall be fitted with covers.

(c) Common drinking cups are prohibited.

(3) Prohibited eating areas. Consumption of food or beverages in areas where hazardous materials are being stored or handled shall be prohibited.

(4) Garbage and overboard discharges. Work shall not be conducted in the immediate vicinity of uncovered garbage or in the area of overboard discharges from the vessel's sanitary lines unless employees are protected from the garbage or discharge by a baffle or splash boards.

[Statutory Authority: Chapter 49.17 RCW and RCW 49.17.040, [49.17].050 and [49.17].060. 92-22-067 (Order 92-06), § 296-56-60229, filed 10/30/92, effective 12/8/92. Statutory Authority: Chapter 49.17 RCW. 91-11-070 (Order 91-01), § 296-56-60229, filed 5/20/91, effective 6/20/91. Statutory Authority: RCW 49.17.040 and 49.17.050. 86-03-064 (Order 86-02), § 296-56-60229, filed 1/17/86; 85-01-022 (Order 84-24), § 296-56-60229, filed 12/11/84.]

WAC 296-56-60231 Signs and marking. (1) General. Signs required by this chapter shall be clearly worded and legible. They shall contain a key word or legend indicating the reason for the sign.

(a) Key words are such words as danger, warning, caution.

(b) Legends are more specific explanations such as high voltage, close clearance, pedestrian crossing.

(2) Specific. Every marine terminal shall have conspicuously posted signs as follows:

(a) Locations of first-aid facilities;

(b) Locations of telephones;

(c) Telephone numbers of the closest ambulance service, hospital or other source of medical attention, police, fire department, and emergency squad (if any); and

(d) Locations of fire fighting and emergency equipment and fire exits.

[Statutory Authority: RCW 49.17.040 and 49.17.050. 86-03-064 (Order 86-02), § 296-56-60231, filed 1/17/86; 85-01-022 (Order 84-24), § 296-56-60231, filed 12/11/84.]

PART K—RELATED TERMINAL OPERATIONS AND EQUIPMENT

WAC 296-56-60233 Related terminal operations and equipment—Machine guarding. (1) Definition. "Guarded" means shielded, fenced, or enclosed by covers, casings, shields, troughs, spillways or railings, or guarded by position or location. Examples of guarding methods are guarding by location (positioning hazards so they are inaccessible to employees) and point of operation guarding (using barrier guards, two-hand tripping devices, electronic safety devices, or other such devices).

(2) General.

(a) Danger zones on machines and equipment used by employees shall be guarded.

(b) Where chips and dust produced by machine operation may result in a hazard to the operator, the machinery shall be equipped with an effective exhaust system at the point of origin, or other equally effective means shall be provided to protect the operator.

(c) Fixed machinery shall be secured to prevent shifting.

(d) A power cut-off device for machinery and equipment shall be provided at the operator's working position.

(e) Machines driven by belts and shafting shall be fitted with a belt-locking or equivalent protective device if the belt can be shifted.

(f) In operations where injury to the operator might result if motors were to restart after power failures, provisions shall be made to prevent machines from automatically restarting upon restoration of power.

(g) The power supply to machines shall be turned off, locked out, and tagged out during repair, adjustment, or servicing.

(h) Machines shall be maintained in a safe working condition.

(i) Only designated employees shall maintain or repair machinery and equipment.

(j) Machines with defects that affect the safety of operation shall not be used.

(3) Hand-fed circular rip saws and hand-fed circular crosscut table saws. Unless fixed or manually adjustable enclosures or guarding provides equivalent protection, hand-fed circular rip saws and hand-fed circular crosscut table saws shall be guarded as follows:

(a) They shall be equipped with hoods completely enclosing those portions of the saw above the table and the material being cut;

(b) They shall have spreaders to prevent material from squeezing the saw. Spreaders shall be in true alignment with the saw. Spreaders may be removed only during grooving, dadoing, or rabbeting operations, and shall be replaced at the completion of such operations; and

(c) They shall have nonkickback fingers or dogs to oppose the tendency of the saw to pick up material or throw material toward the operator.

(4) Swing cutoff saws.

(a) Swing cutoff saws shall have hoods completely enclosing the upper half of the saw, the arbor end and the point of operation at all saw positions to protect the operator from material thrown up by the saw. The hood shall automatically cover the lower portion of the blade so that when the

saw returns to the back of the table the hood rises on top of the fence, and when the saw is moved forward the hood drops on top, remaining in contact with the table or the material.

(b) Swing cutoff saws shall have a device to return the saw automatically to the back of the table without rebound. The device shall not be dependent upon rope, cord or springs.

(c) Devices shall be provided to prevent saws from swinging beyond the front or back edges of the table.

(d) Inverted swing cutoff saws shall have hoods covering the part of the saw protruding above the table top or the material being cut. Hoods shall automatically adjust to the thickness of, and remain in contact with, material being cut.

(5) Radial saws. Unless fixed or manually adjustable enclosures or guards provide equivalent protection, radial saws shall be guarded as follows:

(a) The upper hood of radial saws shall enclose the upper portion of the blade up to and including the end of the saw arbor and shall protect the operator from being struck by debris. The sides of the lower exposed portion of the blade shall be guarded to the blade diameter by a device automatically adjusting to the thickness of the stock and remaining in contact with the stock. The lower guard may be removed only when the saw is used for bevel cuts;

(b) Radial saws used for ripping shall have nonkickback fingers or dogs on both sides to oppose the thrust or tendency of the saw to pick up material or throw material toward the operator;

(c) An adjustable stop shall be provided to prevent travel of radial saw blades beyond the table's edge;

(d) Radial saws shall be installed so that the cutting head returns to the starting position without rebound when released; and

(e) The employer shall direct that employees perform ripping and ploughing against the saw turning direction. Rotation direction and an indication of the end of the saw to be used shall be conspicuously marked on the hood.

(6) Band saws and band resaws.

(a) Saw blades and band saw wheels shall be enclosed or guarded, except for the working portion of the blade between the bottom of the guide rolls and the table, to protect employees from point-of-operation hazards and flying debris.

(b) Band saws shall be equipped with brakes to stop the band saw wheel if the blade breaks.

(c) Band saws shall be equipped with a tension control device to keep the blade taut.

(7) Abrasive wheels and machinery.

(a) Abrasive wheels shall be used only on machines having enclosure guards to restrain pieces of grinding wheels and to protect employees if the wheel breaks, except as provided in (b) and (c) of this subsection. Where the operator stands in front of the safety guard opening, the safety guard shall be adjustable or have an adjustable tongue or piece at the top of the opening. The safety guard or the tongue shall be adjusted so that it is always within one-fourth inch of the periphery of the wheel. Guards shall be aligned with the wheel and the strength of fastenings shall be greater than the strength of the guard.

(b) When the work provides equivalent protection, or when the machine is designed as a portable saw, guards may be constructed with the spindle end, nut and outer flange

exposed. When the work entirely covers the side of the wheel, the side covers of the guard may be removed.

(c) Guarding is not required:

(i) For wheels used for internal work while the wheel is contained within the work being ground; or

(ii) For mounted wheels two inches (5 cm) and smaller in diameter used in portable operations.

(d) Work rests shall be used on fixed grinding machines. Work rests shall be rigidly constructed and adjustable for wheel wear. They shall be adjusted closely to the wheel with a maximum opening of one-eighth inch (3.18 mm) and shall be securely clamped. Adjustment shall not be made while the wheel is in motion.

(e) Grinding wheels shall fit freely on the spindle. The spindle nut shall be tightened only enough to hold the wheel in place.

(f) Grinding machine wheels shall turn at a speed that is compatible with the rated speed of the wheel.

(g) Flanges and blotters shall be used only with wheels designed for their use. Flanges shall be of a type ensuring retention of pieces of the wheel in case of breakage.

(h) Abrasive wheels with operational defects shall not be used.

(8) Rotating parts, drives and connections.

(a) Rotating parts, such as gears and pulleys, that are located seven feet (2.13 m) or less above working surfaces shall be guarded to prevent employee contact with moving parts.

(b) Belt, rope and chain drives shall be guarded to prevent employees from coming into contact with moving parts.

(c) Gears, sprockets and chains shall be guarded to prevent employees coming into contact with moving parts. This requirement does not apply to manually operated sprockets.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 00-21-103, § 296-56-60233, filed 10/18/00, effective 2/1/01. Statutory Authority: RCW 49.17.040 and 49.17.050. 86-03-064 (Order 86-02), § 296-56-60233, filed 1/17/86; 85-10-004 (Order 85-09), § 296-56-60233, filed 4/19/85; 85-01-022 (Order 84-24), § 296-56-60233, filed 12/11/84.]

WAC 296-56-60235 Welding, cutting and heating (hot work) (see also definition of "hazardous cargo, material, substance or atmosphere"). (1) Definition. "Hot work" means riveting, welding, flame cutting or other fire or spark-producing operation.

(2) Hot work in confined spaces. Hot work shall not be performed in a confined space until all requirements of chapter 296-62 WAC, Part M, are met.

(3) Fire protection.

(a) To the extent possible, hot work shall be performed in designated locations that are free of fire hazards.

(b) When hot work must be performed in a location that is not free of fire hazards, all necessary precautions shall be taken to confine heat, sparks, and slag so that they cannot contact flammable or combustible material.

(c) Fire extinguishing equipment suitable for the location shall be immediately available and shall be maintained in readiness for use at all times.

(d) When the hot work operation is such that normal fire prevention precautions are not sufficient, additional personnel shall be assigned to guard against fire during hot work and for a sufficient time after completion of the work to

ensure that no fire hazard remains. The employer shall instruct all employees involved in hot work operations as to potential fire hazards and the use of fire fighting equipment.

(e) Drums and containers which contain or have contained flammable or combustible liquids shall be kept closed. Empty containers shall be removed from the hot work area.

(f) When openings or cracks in flooring cannot be closed, precautions shall be taken to ensure that no employees or flammable or combustible materials are exposed to sparks dropping through the floor. Similar precautions shall be taken regarding cracks or holes in walls, open doorways and open or broken windows.

(g) Hot work shall not be performed:

(i) In flammable or potentially flammable atmospheres;

(ii) On or in equipment or tanks that have contained flammable gas or liquid or combustible liquid or dust-producing material, until a designated person has tested the atmosphere inside the equipment or tanks and determined that it is not hazardous; or

(iii) Near any area in which exposed readily ignitable materials such as bulk sulphur, baled paper or cotton are stored. Bulk sulphur is excluded from this prohibition if suitable precautions are followed, the person in charge is knowledgeable and the person performing the work has been instructed in preventing and extinguishing sulphur fires.

(h)(i) Drums, containers or hollow structures that have contained flammable or combustible substances shall either be filled with water or cleaned, and shall then be ventilated. A designated person shall test the atmosphere and determine that it is not hazardous before hot work is performed on or in such structures.

(ii) Before heat is applied to a drum, container or hollow structure, an opening to release built-up pressure during heat application shall be provided.

(4) Gas welding and cutting.

(a) Compressed gas cylinders:

(i) Shall have valve protection caps in place except when in use, hooked up or secured for movement. Oil shall not be used to lubricate caps;

(ii) Shall be hoisted only while secured, as on a cradle or pallet, and shall not be hoisted by magnet, choker sling or cylinder caps;

(iii) Shall be moved only by tilting or rolling on their bottom edges;

(iv) Shall be secured when moved by vehicle;

(v) Shall be secured while in use;

(vi) Shall have valves closed when cylinders are empty, being moved or stored;

(vii) Shall be secured upright except when hoisted or carried;

(viii) Shall not be freed when frozen by prying the valves or caps with bars or by hitting the valve with a tool;

(ix) Shall not be thawed by boiling water;

(x) Shall not be exposed to sparks, hot slag, or flame;

(xi) Shall not be permitted to become part of electrical circuits or have electrodes struck against them to strike arcs;

(xii) Shall not be used as rollers or supports;

(xiii) Shall not have contents used for purposes not authorized by the supplier;

(xiv) Shall not be used if damaged or defective;

(xv) Shall not have gases mixed within, except by gas suppliers;

(xvi) Shall be stored so that oxygen cylinders are separated from fuel gas cylinders and combustible materials by either a minimum distance of twenty feet (6.1 m) or a barrier having a fire-resistance rating of thirty minutes; and

(xvii) Shall not have objects that might either damage the safety device or obstruct the valve placed on top of the cylinder when in use.

(b) Use of fuel gas. Fuel gas shall be used only as follows:

(i) Before regulators are connected to cylinder valves, the valves shall be opened slightly (cracked) and closed immediately to clear away dust or dirt. Valves shall not be cracked if gas could reach possible sources of ignition;

(ii) Cylinder valves shall be opened slowly to prevent regulator damage and shall not be opened more than one and one-half turns. Any special wrench required for emergency closing shall be positioned on the valve stem during cylinder use. For manifolded or coupled cylinders, at least one wrench shall be immediately available. Nothing shall be placed on top of a cylinder or associated parts when the cylinder is in use;

(iii) Pressure-reducing regulators shall be attached to cylinder valves when cylinders are supplying torches or devices equipped with shut-off valves;

(iv) Cylinder valves shall be closed and gas released from the regulator or manifold before regulators are removed;

(v) Leaking fuel gas cylinder valves shall be closed and the gland nut tightened. If the leak continues, the cylinder shall be tagged, removed from service, and moved to a location where the leak will not be hazardous. If a regulator attached to a valve stops a leak, the cylinder need not be removed from the workplace but shall be tagged and may not be used again before it is repaired; and

(vi) If a plug or safety device leaks, the cylinder shall be tagged, removed from service, and moved to a location where the leak will not be hazardous.

(c) Hose.

(i) Fuel gas and oxygen hoses shall be easily distinguishable from each other by color or sense of touch. Oxygen and fuel hoses shall not be interchangeable. Hoses having more than one gas passage shall not be used.

(ii) When oxygen and fuel gas hoses are taped together, not more than four of each twelve inches (10.16 cm of each 30.48 cm) shall be taped.

(iii) Hose shall be inspected before use. Hose subjected to flashback or showing evidence of severe wear or damage shall be tested to twice the normal working pressure but not less than two hundred p.s.i. (1378.96 kPa) before reuse. Defective hose shall not be used.

(iv) Hose couplings shall not unlock or disconnect without rotary motion.

(v) Hose connections shall be clamped or securely fastened to withstand twice the normal working pressure but not less than three hundred p.s.i. (2068.44 kPa) without leaking.

(vi) Gas hose storage boxes shall be ventilated.

(d) Torches.

(i) Torch tip openings shall only be cleaned with devices designed for that purpose.

(ii) Torches shall be inspected before each use for leaking shut-off valves, hose couplings and tip connections. Torches shall be inspected before each use for leaking shut-off valves, hose couplings and tip connections. Torches with such defects shall not be used.

(iii) Torches shall not be lighted from matches, cigarette lighters, other flames or hot work.

(e) Pressure regulators. Pressure regulators, including associated gauges, shall be maintained in safe working order.

(f) Operational precaution. Gas welding equipment shall be maintained free of oil and grease.

(5) Arc welding and cutting.

(a) Manual electrode holders.

(i) The employer shall ensure that only manual electrode holders intended for arc welding and cutting and capable of handling the maximum current required for such welding or cutting shall be used.

(ii) Current-carrying parts passing through those portions of the holder gripped by the user and through the outer surfaces of the jaws of the holder shall be insulated against the maximum voltage to ground.

(b) Welding cables and connectors.

(i) Arc welding and cutting cables shall be insulated, flexible and capable of handling the maximum current required by the operation, taking into account the duty cycles.

(ii) Only cable free from repair or splice for ten feet (3 m) from the electrode holder shall be used unless insulated connectors or splices with insulating quality equal to that of the cable are provided.

(iii) When a cable other than the lead mentioned in (b)(ii) of this subsection wears and exposes bare conductors, the portion exposed shall not be used until it is protected by insulation equivalent in performance capacity to the original.

(iv) Insulated connectors of equivalent capacity shall be used for connecting or splicing cable. Cable lugs, where used as connectors, shall provide electrical contact. Exposed metal parts shall be insulated.

(c) Ground returns and machine grounding.

(i) Ground return cables shall have current-carrying capacity equal to or exceeding the total maximum output capacities of the welding or cutting units served.

(ii) Structures or pipelines, other than those containing gases or flammable liquids or conduits containing electrical circuits, may be used in the ground return circuit if their current-carrying capacity equals or exceeds the total maximum output capacities of the welding or cutting units served.

(iii) Structures or pipelines forming a temporary ground return circuit shall have electrical contact at all joints. Arcs, sparks or heat at any point in the circuit shall cause rejection as a ground circuit.

(iv) Structures or pipelines acting continuously as ground return circuits shall have joints bonded and maintained to ensure that no electrolysis or fire hazard exists.

(v) Arc welding and cutting machine frames shall be grounded, either through a third wire in the cable containing the circuit conductor or through a separate wire at the source of the current. Grounding circuits shall have resistance low enough to permit sufficient current to flow to cause the fuse or circuit breaker to interrupt the current.

(vi) Ground connections shall be mechanically and electrically adequate to carry the current.

(d) When electrode holders are left unattended, electrodes shall be removed and holders placed to prevent employee injury.

(e) Hot electrode holders shall not be dipped in water.

(f) The employer shall ensure that when arc welders or cutters leave or stop work or when machines are moved, the power supply switch is kept in the off position.

(g) Arc welding or cutting equipment having a functional defect shall not be used.

(h)(i) Arc welding and cutting operations shall be separated from other operations by shields, screens, or curtains to protect employees in the vicinity from the direct rays and sparks of the arc.

(ii) Employees in areas not protected from the arc by screening shall be protected by appropriate filter lenses in accordance with subsection (8) of this section. When welders are exposed to their own arc or to each other's arc, they shall wear filter lenses complying with the requirements of subsection (8) of this section.

(i) The control apparatus of arc welding machines shall be enclosed, except for operating wheels, levers, and handles.

(j) Input power terminals, top change devices and live metal parts connected to input circuits shall be enclosed and accessible only by means of insulated tools.

(k) When arc welding is performed in wet or high-humidity conditions, employees shall use additional protection, such as rubber pads or boots, against electric shock.

(6) Ventilation and employee protection in welding, cutting and heating.

(a) Mechanical ventilation requirements. The employer shall ensure that general mechanical ventilation or local exhaust systems shall meet the following requirements:

(i) General mechanical ventilation shall maintain vapors, fumes and smoke below a hazardous level;

(ii) Local exhaust ventilation shall consist of movable hoods positioned close to the work and shall be of such capacity and arrangement as to keep breathing zone concentrations below hazardous levels;

(iii) Exhausts from working spaces shall be discharged into the open air, clear of intake air sources;

(iv) Replacement air shall be clean and respirable; and

(v) Oxygen shall not be used for ventilation, cooling or cleaning clothing or work areas.

(b) Hot work in confined spaces. Except as specified in (c)(ii) and (iii) of this subsection, when hot work is performed in a confined space the employer shall, in addition to the requirements of chapter 296-62 WAC, Part M, ensure that:

(i) General mechanical or local exhaust ventilations shall be provided; or

(ii) Employees in the space shall wear respirators in accordance with chapter 296-842 WAC.

(c) Welding, cutting or heating of toxic metals.

(i) In confined or enclosed spaces, hot work involving the following metals shall only be performed with general mechanical or local exhaust ventilation that ensures that employees are not exposed to hazardous levels of fumes:

(A) Lead base metals;

(B) Cadmium-bearing filler materials; and

(C) Chromium-bearing metals or metals coated with chromium-bearing materials.

(ii) In confined or enclosed spaces, hot work involving the following metals shall only be performed with local exhaust ventilation meeting the requirements of this subsection or by employees wearing supplied air respirators in accordance with chapter 296-842 WAC;

(A) Zinc-bearing base or filler metals or metals coated with zinc-bearing materials;

(B) Metals containing lead other than as an impurity, or coated with lead-bearing materials;

(C) Cadmium-bearing or cadmium-coated base metals; and

(D) Metals coated with mercury-bearing materials.

(iii) Employees performing hot work in confined or enclosed spaces involving beryllium-containing base or filler metals shall be protected by local exhaust ventilation and wear supplied air respirators or self-contained breathing apparatus, in accordance with the requirements of chapter 296-842 WAC.

(iv) The employer shall ensure that employees performing hot work in the open air that involves any of the metals listed in (c)(i) and (ii) of this subsection shall be protected by respirators in accordance with the requirements of chapter 296-842 WAC and those working on beryllium-containing base or filler metals shall be protected by supplied air respirators, in accordance with the requirements of chapter 296-842 WAC.

(v) Any employee exposed to the same atmosphere as the welder or burner shall be protected by the same type of respiratory and other protective equipment as that worn by the welder or burner.

(d) Inert-gas metal-arc welding. Employees shall not engage in and shall not be exposed to the inert-gas metal-arc welding process unless the following precautions are taken:

(i) Chlorinated solvents shall not be used within two hundred feet (61 m) of the exposed arc. Surfaces prepared with chlorinated solvents shall be thoroughly dry before welding is performed on them.

(ii) Employees in areas not protected from the arc by screening shall be protected by appropriate filter lenses in accordance with the requirements of subsection (8) of this section. When welders are exposed to their own arc or to each other's arc, filter lenses complying with the requirements of subsection (8) of this section shall be worn to protect against flashes and radiant energy.

(iii) Employees exposed to radiation shall have their skin covered completely to prevent ultraviolet burns and damage. Helmets and hand shields shall not have leaks, openings or highly reflective surfaces.

(iv) Inert-gas metal-arc welding on stainless steel shall not be performed unless exposed employees are protected either by local exhaust ventilation or by wearing supplied air respirators in accordance with the requirements of chapter 296-842 WAC.

(7) Welding, cutting and heating on preservative coatings.

(a) Before hot work is commenced on surfaces covered by a preservative coating of unknown flammability, a test shall be made by a designated person to determine the coating's flammability. Preservative coatings shall be considered highly flammable when scrapings burn with extreme rapidity.

(b) Appropriate precaution shall be taken to prevent ignition of highly flammable hardened preservative coatings. Highly flammable coatings shall be stripped from the area to be heated. An uncoiled fire hose with fog nozzle, under pressure, shall be immediately available in the hot work area.

(c) Surfaces covered with preservative coatings shall be stripped for at least four inches (10.16 cm) from the area of heat application or employees shall be protected by supplied air respirators in accordance with the requirements of chapter 296-62 WAC.

(8) Protection against radiant energy.

(a) Employees shall be protected from radiant energy eye hazards by spectacles, cup goggles, helmets, hand shields or face shields with filter lenses complying with the requirements of this subsection.

(b) Filter lenses shall have an appropriate shade number, as indicated in Table G-1, for the work performed. Variations of one or two shade numbers are permissible to suit individual preferences.

(c) If filter lenses are used in goggles worn under the helmet, the shade numbers of both lenses equals the value shown in Table G-1 for the operation.

Table G-1.—Filter Lenses for Protection
Against Radiant Energy

Operation	Shade No.
Soldering	2
Torch Brazing	3 or 4
Light cutting, up to 1 inch	3 or 4
Medium cutting, 1-6 inches	4 or 5
Heavy cutting, over 6 inches	5 or 6
Light gas welding, up to 1/8 inch	4 or 5
Medium gas welding, 1/8-1/2 inch	5 or 6
Heavy gas welding, over 1/2 inch	6 or 8
Shielded Metal-Arc Welding 1/16 to 5/32-inch electrodes	10
Inert gas Metal-Arc Welding (nonferrous) 1/16 to 5/32-inch electrodes	11
Shielded Metal-Arc Welding:	
3/16 to 1/4-inch electrodes	12
5/16 and 3/8-inch electrodes	14

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. 05-03-093, § 296-56-60235, filed 1/18/05, effective 3/1/05. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 00-21-103, § 296-56-60235, filed 10/18/00, effective 2/1/01. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-56-60235, filed 5/4/99, effective 9/1/99. Statutory Authority: Chapter 49.17 RCW. 95-04-007, § 296-56-60235, filed 1/18/95, effective 3/1/95. Statutory Authority: Chapter 49.17 RCW and RCW 49.17.040, [49.17].050 and [49.17].060. 92-22-067 (Order 92-06), § 296-56-60235, filed 10/30/92, effective 12/8/92. Statutory Authority: RCW 49.17.040 and 49.17.050. 86-03-064 (Order 86-02), § 296-56-60235, filed 1/17/86; 85-10-004 (Order 85-09), § 296-56-60235, filed 4/19/85; 85-01-022 (Order 84-24), § 296-56-60235, filed 12/11/84.]

WAC 296-56-60237 Spray painting. (1) Scope. This section covers painting operations connected with maintenance of structures, equipment and gear at the marine terminal and of transient equipment serviced at the terminal. It does not apply to overall painting of terminal structures under construction, major repair or rebuilding of terminal structures, or portable spraying apparatus not used regularly in the same location.

(2) Definitions.

(a) "Spraying area" means any area where flammable vapors, mists or combustible residues, dusts or deposits may be present due to paint spraying operations.

(b) "Spray booth" means an enclosure containing a flammable or combustible spraying operation and confining and limiting the escape of paint, vapor and residue by means of a powered exhaust system.

(c) "Approved" means, for the purpose of this section, that the equipment has been approved for the specified use by a nationally recognized testing laboratory.

(3) Spray painting requirements for indoor and outdoor spraying areas and booths.

(a) Shut-off valves, containers or piping with attached hoses or flexible connections shall have shut-off valves closed at the connection when not in use.

(b) Pumps used to transfer paint supplies shall have automatic pressure-relieving devices.

(c) Hoses and couplings shall be inspected before use. Hoses showing deterioration, leakage or weakness in the carcass or at the couplings shall be removed from service.

(d)(i) No open flame or spark-producing equipment shall be within twenty feet (6.1 m) of a spraying area unless it is separated from the spraying area by a fire-retardant partition.

(ii) Hot surfaces shall not be located in spraying areas.

(iii) Whenever combustible residues may accumulate on electrical installations, wiring shall be in rigid conduit or in boxes containing no taps, splices or connections.

(iv) Portable electric lights shall not be used during spraying operations. Lights used during cleaning or repairing operations shall be approved for the location in which they are used.

(e) When flammable or combustible liquids are being transferred between containers, both containers shall be bonded and grounded.

(f)(i) Spraying shall be performed only in designated spray booths or spraying areas.

(ii) Spraying areas shall be kept as free from combustible residue accumulations as practical.

(iii) Residue scrapings, debris, rags, and waste shall be removed from the spraying area as they accumulate.

(g) Spraying with organic peroxides and other dual-component coatings shall only be conducted in sprinkler-equipped spray booths.

(h) Only the quantity of flammable or combustible liquids required for the operation shall be allowed in the spraying area, and in no case shall the amount exceed a one-day supply.

(i) Smoking shall be prohibited and "No Smoking" signs shall be posted in spraying and paint storage areas.

(4) Additional requirements for spraying areas and spray booths.

(a) Distribution or baffle plates shall be of noncombustible material and shall be removable or accessible for cleaning. They shall not be located in exhaust ducts.

(b) Any discarded filter shall be removed from the work area or placed in water.

(c) Filters shall not be used when the material being sprayed is highly susceptible to spontaneous heating and ignition.

(d) Filters shall be noncombustible or of an approved type. The same filter shall not be used when spraying with

different coating materials if the combination of materials may spontaneously ignite.

(e) Spraying areas shall be mechanically ventilated for removal of flammable and combustible vapor and mist.

(f) Mechanical ventilation shall be in operation during spraying operations and long enough thereafter to exhaust hazardous vapor concentrations.

(g) Rotating fan elements shall be nonsparking or the casing shall consist of or be lined with nonsparking material.

(h) Piping systems conveying flammable or combustible liquids to the spraying booth or area shall be made of metal and be both electrically bonded and grounded.

(i) Air exhausted from spray operations shall not contaminate makeup air or other ventilation intakes. Exhausted air shall not be recirculated unless it is first cleaned of any hazardous contaminants.

(j) Original closed containers, approved portable tanks, approved safety cans or a piping system shall be used to bring flammable or combustible liquids into spraying areas.

(k) If flammable or combustible liquids are supplied to spray nozzles by positive displacement pumps, the pump discharge line shall have a relief valve discharging either to a pump section or detached location, or the line shall be equipped with a device to stop the prime mover when discharge pressure exceeds the system's safe operating pressure.

(l) Wiring, motors and equipment in a spray booth shall be of approved explosion-proof type for Class I, Group D locations and conform with the requirements of chapter 296-24 WAC Part L for Class I, Division 1, Hazardous Locations. Wiring, motors and equipment within twenty feet (6.1 m) of any interior spraying area and not separated by vapor-tight partitions shall not produce sparks during operation and shall conform to the requirements of chapter 296-24 WAC Part L for Class I, Division 2, Hazardous Locations.

(m) Outside electrical lights within ten feet (3.05 m) of spraying areas and not separated from the areas by partitions shall be enclosed and protected from damage.

(5) Additional requirements for spray booths.

(a) Spray booths shall be substantially constructed of noncombustible material and have smooth interior surfaces. Spray booth floors shall be covered with noncombustible material. As an aid to cleaning, paper may be used to cover the floor during painting operations if it is removed after the painting is completed.

(b) Spray booths shall be separated from other operations by at least 3 feet (0.91 m) or by fire-retardant partitions or walls.

(c) A space of at least 3 feet (0.91 m) on all sides of the spray booth shall be maintained free of storage or combustible materials.

(d) Metal parts of spray booths, exhaust ducts, pipings, airless high-pressure spray guns and conductive objects being sprayed shall be grounded.

(e) Electric motors driving exhaust fans shall not be located inside booths or ducts.

(f) Belts shall not enter ducts or booths unless the belts are completely enclosed.

(g) Exhaust ducts shall be made of steel, shall have sufficient access doors to permit cleaning, and shall have a minimum clearance of 18 inches (0.46 m) from combustible

materials. Any installed dampers shall be fully opened when the ventilating system is operating.

(h) Spray booths shall not be alternately used to spray different types of coating materials if the combination of the materials may spontaneously ignite unless deposits of the first material are removed from the booth and from exhaust ducts before spraying of the second material begins.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 00-21-103, § 296-56-60237, filed 10/18/00, effective 2/1/01. Statutory Authority: Chapter 49.17 RCW and RCW 49.17.040, [49.17].050 and [49.17].060. 92-22-067 (Order 92-06), § 296-56-60237, filed 10/30/92, effective 12/8/92. Statutory Authority: Chapter 49.17 RCW. 91-24-017 (Order 91-07), § 296-56-60237, filed 11/22/91, effective 12/24/91. Statutory Authority: RCW 49.17.040 and 49.17.050. 86-03-064 (Order 86-02), § 296-56-60237, filed 1/17/86; 85-10-004 (Order 85-09), § 296-56-60237, filed 4/19/85; 85-01-022 (Order 84-24), § 296-56-60237, filed 12/11/84.]

WAC 296-56-60239 Compressed air. Employees shall be protected by appropriate eye protection and personal protective equipment complying with the requirements of WAC 296-56-60109 through 296-56-60115 during cleaning with compressed air. Compressed air used for cleaning shall not exceed a pressure of thirty p.s.i. Compressed air shall not be used to clean employees.

[Statutory Authority: Chapter 49.17 RCW and RCW 49.17.040, [49.17].050 and [49.17].060. 92-22-067 (Order 92-06), § 296-56-60239, filed 10/30/92, effective 12/8/92. Statutory Authority: RCW 49.17.040 and 49.17.050. 86-03-064 (Order 86-02), § 296-56-60239, filed 1/17/86; 85-01-022 (Order 84-24), § 296-56-60239, filed 12/11/84.]

WAC 296-56-60241 Air receivers. (1) Application. This section applies to compressed air receivers and equipment used for operations such as cleaning, drilling, hoisting and chipping. It does not apply to equipment used to convey materials or in transportation applications such as railways, vehicles or cranes.

(2) Gauges and valves.

(a) Air receivers shall be equipped with indicating pressure gauges and spring-loaded safety valves. Safety valves shall prevent receiver pressure from exceeding one hundred ten percent of the maximum allowable working pressure.

(b) No other valves shall be placed between air receivers and their safety valves.

[Statutory Authority: RCW 49.17.040 and 49.17.050. 86-03-064 (Order 86-02), § 296-56-60241, filed 1/17/86; 85-01-022 (Order 84-24), § 296-56-60241, filed 12/11/84.]

WAC 296-56-60243 Fuel handling and storage. (1) Liquid fuel.

(a) Only designated persons shall conduct fueling operations.

(b) In case of spillage, filler caps shall be replaced and spillage disposed of before engines are started.

(c) Engines shall be stopped and operators shall not be on the equipment during refueling operations.

(d) Smoking and open flames shall be prohibited in areas used for fueling, fuel storage or enclosed storage of equipment containing fuel.

(e) Equipment shall be refueled only at designated locations.

(f) Liquid fuels not handled by pump shall be handled and transported only in portable containers designed for that purpose. Portable containers shall be metal, have tight clo-

tures with screw or spring covers and shall be equipped with spouts or other means to allow pouring without spilling. Leaking containers shall not be used.

(g) Flammable liquids shall only be dispensed in the open from a tank or from other vehicles equipped for delivering fuel to another vehicle if:

(i) Dispensing hoses do not exceed fifty feet (15.24 m) in length; and

(ii) Any powered dispensing nozzles are of the automatic-closing type.

(h) Liquid fuel dispensing devices shall be provided with an easily accessible and clearly identified shutoff device, such as a switch or circuit breaker, to shut off the power in an emergency.

(i) Liquid fuel dispensing devices, such as pumps, shall be mounted either on a concrete island or be otherwise protected against collision damage.

(2) Liquefied gas fuels. See WAC 296-24-475 through 296-24-47517.

(a) Fueling locations.

(i) Liquefied gas powered equipment shall be fueled only at designated locations.

(ii) Equipment with permanently mounted fuel containers shall be charged outdoors.

(iii) Equipment shall not be fueled or stored near underground entrances, elevator shafts or other places where gas or fumes might accumulate.

(b) Fuel containers.

(i) When removable fuel containers are used, the escape of fuel when containers are exchanged shall be minimized by:

(A) Automatic quick-closing couplings (closing in both directions when uncoupled) in fuel lines; or

(B) Closing fuel container valves and allowing engines to run until residual fuel is exhausted.

(ii) Pressure-relief valve openings shall be in continuous contact with the vapor space (top) of the cylinder.

(iii) Fuel containers shall be secured to prevent their being jarred loose, slipping or rotating.

(iv) Containers shall be located to prevent damage to the container. If located within a compartment, that compartment shall be vented. Containers near the engine or exhaust system shall be shielded against direct heat radiation.

(v) Container installation shall provide the container with at least the vehicle's road clearance under maximum spring deflection, measured from the bottom of the container or to the lowest fitting on the container or housing, whichever is lower.

(vi) Valves and connections shall be protected from contact damage. Permanent protection shall be provided for fittings on removable containers.

(vii) Defective containers shall be removed from service.

(c) Fueling operations. See WAC 296-24-47517.

(i) Fueling operations for liquefied gas fuels shall also comply with the requirements of subsection (1) of this section.

(ii) Using matches or flames to check for leaks is prohibited.

(iii) Containers shall be examined before recharging and again before reuse for the following:

(A) Dents, scrapes and gouges of pressure vessels;

(B) Damage to valves and liquid level gauges;

(C) Debris in relief valves;

(D) Leakage at valves or connections; and

(E) Deterioration or loss of flexible seals in filling or servicing connections.

(d) Fuel storage. See WAC 296-24-47517(6).

(i) Stored fuel containers shall be located to minimize exposure to excessive temperatures and physical damage.

(ii) Containers shall not be stored near exits, stairways or areas normally used or intended for egress.

(iii) Outlet valves of containers in storage or transport shall be closed. Relief valves shall connect with vapor spaces.

(e) Vehicle storage and servicing.

(i) Liquefied gas fueled vehicles may be stored or serviced inside garages or shops only if there are no fuel system leaks.

(ii) Liquefied gas fueled vehicles under repair shall have container shut-off valves closed unless engine operation is necessary for repairs.

(iii) Liquefied gas fueled vehicles shall not be parked near open flames, sources of ignition or unventilated open pits.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060. 04-11-066, § 296-56-60243, filed 5/18/04, effective 7/1/04. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 00-21-103, § 296-56-60243, filed 10/18/00, effective 2/1/01. Statutory Authority: RCW 49.17.040 and 49.17.050. 86-03-064 (Order 86-02), § 296-56-60243, filed 1/17/86; 85-01-022 (Order 84-24), § 296-56-60243, filed 12/11/84.]

WAC 296-56-60245 Battery charging and changing.

(1) Only designated persons shall change or charge batteries.

(2) Battery charging and changing shall be performed only in areas designated by the employer.

(3) Smoking and other ignition sources are prohibited in charging areas.

(4) Filler caps shall be in place when batteries are being moved.

(5) Parking brakes shall be applied before batteries are charged or changed.

(6) When a jumper battery is connected to a battery in a vehicle, the ground lead shall connect to ground away from the vehicle's battery. Ignition, lights and accessories on the vehicle shall be turned off before connections are made.

(7) Batteries shall be free of corrosion buildup and cap vent holes shall be open.

(8) Adequate ventilation shall be provided during charging.

(9) Facilities for flushing the eyes, body and work area with water shall be provided wherever electrolyte is handled, except when employees are only checking battery electrolyte levels or adding water.

(10) Carboy tilters or siphons shall be used to handle electrolyte in large containers.

(11) Battery handling equipment which could contact battery terminals or cell connectors shall be insulated or otherwise protected.

(12) Metallic objects shall not be placed on uncovered batteries.

(13) When batteries are being charged, the vent caps shall be in place.

(14) Chargers shall be turned off when leads are being connected or disconnected.

(15) Installed batteries shall be secured to avoid physical or electrical contact with compartment walls or components.

[Statutory Authority: RCW 49.17.040 and 49.17.050. 86-03-064 (Order 86-02), § 296-56-60245, filed 1/17/86; 85-01-022 (Order 84-24), § 296-56-60245, filed 12/11/84.]

WAC 296-56-60247 Prohibited operations. (1) Spray painting and abrasive blasting operations shall not be conducted in the vicinity of cargo handling operations.

(2) Welding and burning operations shall not be conducted in the vicinity of cargo handling operations unless such hot work is part of the cargo operation.

[Statutory Authority: RCW 49.17.040 and 49.17.050. 85-01-022 (Order 84-24), § 296-56-60247, filed 12/11/84.]

WAC 296-56-60249 Petroleum docks. (1) Pipe lines which transport petroleum liquids from or to a wharf shall be equipped with valves on shore, so located as to be readily accessible and not endangered by fire on the wharf.

(2) Drip pans, buckets, or other means shall be provided and shall be used to prevent oil spillage upon wharves during loading, disconnecting and draining hoses. After transfer is completed the contents of drip pans and buckets shall be removed and taken to a place of disposal.

(3) Package goods, freight or ship stores shall not be swing-loaded or unloaded during the bulk handling of oils or other flammable liquids in such a manner that the swing-loads will endanger the hose.

(4) Water lights for use at petroleum wharves shall be a type which does not create a source of ignition.

[Statutory Authority: Chapter 49.17 RCW. 88-14-108 (Order 88-11), § 296-56-60249, filed 7/6/88. Statutory Authority: RCW 49.17.040 and 49.17.050. 86-03-064 (Order 86-02), § 296-56-60249, filed 1/17/86; 85-01-022 (Order 84-24), § 296-56-60249, filed 12/11/84.]

WAC 296-56-60251 Boat marinas. (1) All hoisting equipment including derricks, cranes, or other devices used for boat launching, handling cargo, or supplies shall be inspected once a month. Records of this inspection shall be made available upon request.

(2) Floating docks are not required to have bull rails unless lift trucks or other power driven equipment is used on the dock.

(3) "No smoking" signs shall be posted in areas where fueling or flammable material is present.

(4) Flammable material or petroleum products shall be stored in a fireproof storage room or shed.

(5) Slippery surfaces shall be cleaned and nonslip material shall be used if necessary.

[Statutory Authority: RCW 49.17.040 and 49.17.050. 86-03-064 (Order 86-02), § 296-56-60251, filed 1/17/86; 85-01-022 (Order 84-24), § 296-56-60251, filed 12/11/84.]

WAC 296-56-60253 Canneries and cold storage docks. (1) Hoisting equipment used to load or unload cargo or supplies of fishing vessels shall be inspected once a month certified in accordance with the requirements of WAC 296-56-60093. The record of inspection shall be made available upon request.

(2007 Ed.)

(2) Slippery surfaces shall be cleaned and nonslip material shall be used if necessary.

[Statutory Authority: RCW 49.17.040 and 49.17.050. 86-03-064 (Order 86-02), § 296-56-60253, filed 1/17/86; 85-01-022 (Order 84-24), § 296-56-60253, filed 12/11/84.]

WAC 296-56-60255 Excerpts from Revised Code of Washington. (1) RCW 49.28.100 Hours of operators of power equipment in waterfront operations. It shall be unlawful for any employer to permit any of his employees to operate on docks, in warehouses and/or in or on other waterfront properties any power driven mechanical equipment for the purpose of loading cargo on, or unloading cargo from, ships, barges, or other watercraft, or of assisting in such loading or unloading operations, for a period in excess of twelve and one-half hours at any one time without giving such person an interval of eight hours' rest: Provided, however, The provisions of this section and RCW 49.28.110 shall not be applicable in cases of emergency, including fire, violent storms, leaking or sinking ships or services required by the armed forces of the United States.

(2) RCW 51.28.010 Notice of accident—Notification of worker's rights. Whenever any accident occurs to any worker it shall be the duty of such worker or someone in his or her behalf to forthwith report such accident to his or her employer, superintendent or foreman or forewoman in charge of the work, and of the employer to at once report such accident and the injury resulting therefrom to the department pursuant to RCW 51.28.025, as now or hereafter amended, where the worker has received treatment from a physician, has been hospitalized, disabled from work, or has died as the apparent result of such accident and injury.

Upon receipt of such notice of accident, the department shall immediately forward to the worker or his or her beneficiaries or dependents notification, in nontechnical language, of their rights under this title.

[Statutory Authority: RCW 49.17.040 and 49.17.050. 85-01-022 (Order 84-24), § 296-56-60255, filed 12/11/84.]

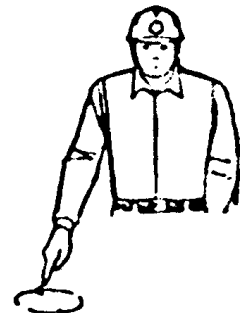
WAC 296-56-99002 Form—Appendix A—Standard signals for longshore crane signals.

APPENDIX A

STANDARD SIGNALS FOR LONGSHORE CRANE SIGNALS

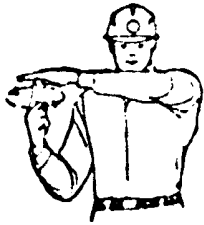


HOIST THE LOAD



LOWER THE LOAD

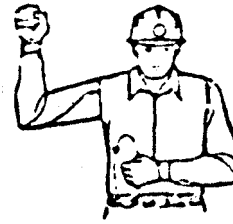
[Title 296 WAC—p. 1295]



HOIST THE LOAD SLOWLY



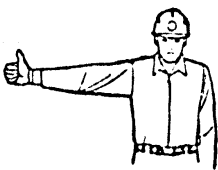
LOWER THE LOAD SLOWLY

FOR MOBILE CRANES
LOCK THE CRAWLER
BELT ON SIDEFOR MOBILE CRANES
TRAVEL BOTH CRAWLER
BELTS IN DIRECTION
INDICATED BY
REVOLVING FISTS

USE MAIN HOOK



USE WHIP HOOK



RAISE THE BOOM



LOWER THE BOOM

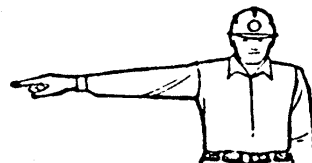
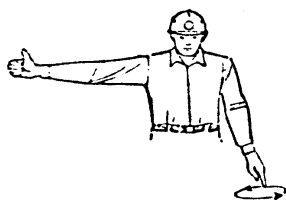
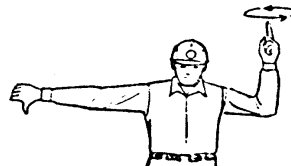
[Statutory Authority: RCW 49.17.040 and 49.17.050. 86-03-064 (Order 86-02), § 296-56-99002, filed 1/17/86; Order 74-14, Appendix D (codified as WAC 296-56-99003), filed 4/22/74; Rules (part), filed 9/24/65; Rules (part), filed 3/23/60.]

WAC 296-56-99003 Form—Appendix B—Standard signals for longshore crane signals.

APPENDIX B STANDARD SIGNALS FOR LONGSHORE CRANE SIGNALS



STOP

SWING LOAD IN
DIRECTION
FINGER POINTSFOR MOBILE CRANES
LOWER THE LOAD
AND
RAISE THE BOOMFOR MOBILE CRANES
HOIST THE LOAD
AND
LOWER THE BOOM

Chapter 296-59 WAC SAFETY STANDARDS FOR SKI AREA FACILITIES AND OPERATIONS

WAC

- 296-59-001 Foreword.
- 296-59-003 Scope and application.
- 296-59-005 Incorporation of other standards.
- 296-59-007 Definitions.
- 296-59-010 Safe place standards.
- 296-59-015 General requirements.
- 296-59-020 Management's responsibility.
- 296-59-025 Employee's responsibility.
- 296-59-027 Work activities which include skiing.
- 296-59-030 Safety bulletin board.
- 296-59-035 First aid.
- 296-59-050 Personal protective equipment, general requirements.
- 296-59-055 Lockout requirements.
- 296-59-060 Vessel or confined area requirements.
- 296-59-065 Fire protection and ignition sources.
- 296-59-070 Illumination.
- 296-59-075 Electrical equipment and distribution.
- 296-59-080 Installation, inspection, and maintenance of pipes, piping systems, and hoses.
- 296-59-085 Scaffolds, construction, use, and maintenance.
- 296-59-090 Mobile equipment and lift trucks.
- 296-59-095 Requirements for cranes and hoists—General safety and health standards to prevail.
- 296-59-115 Ski lift facilities and structures.
- 296-59-120 Ski lift operations.
- 296-59-125 Ski lift aerial work platforms.
- 296-59-130 Ski lift machinery guarding.
- 296-59-135 Appendix 1—Nonmandatory alternative lock-out procedure for ski lifts and tows.

DISPOSITION OF SECTIONS FORMERLY CODIFIED IN THIS CHAPTER

- 296-59-040 First-aid kits and supplies. [Statutory Authority: Chapter 49.17 RCW. 88-14-108 (Order 88-11), § 296-59-040, filed 7/6/88.] Repealed by 00-01-038, filed 12/7/99, effective 2/1/00. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050.
- 296-59-100 Avalanche control. [Statutory Authority: Chapter 49.17 RCW. 88-14-108 (Order 88-11), § 296-59-100, filed 7/6/88.] Repealed by 06-19-074, filed 9/19/06, effective 12/1/06. Statutory Authority: RCW 49.17.010, 49.17.-040, 49.17.050, 49.17.060.
- 296-59-102 Acceptable warning signs for typical avalanche control explosive device(s) duds. [Statutory Authority: Chapter 49.17 RCW. 88-14-108 (Order 88-11), § 296-59-102, filed 7/6/88.] Repealed by 06-19-074, filed 9/19/06,

- effective 12/1/06. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.
- 296-59-103 Storage, makeup, and use of explosives for avalanche control blasting. [Statutory Authority: Chapter 49.17 RCW. 88-14-108 (Order 88-11), § 296-59-103, filed 7/6/88.] Repealed by 06-19-074, filed 9/19/06, effective 12/1/06. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.
- 296-59-105 Handcharge makeup methods. [Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 01-17-033, § 296-59-105, filed 8/8/01, effective 9/1/01. Statutory Authority: Chapter 49.17 RCW. 88-14-108 (Order 88-11), § 296-59-105, filed 7/6/88.] Repealed by 06-19-074, filed 9/19/06, effective 12/1/06. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.
- 296-59-107 Avalanche control blasting. [Statutory Authority: Chapter 49.17 RCW. 88-14-108 (Order 88-11), § 296-59-107, filed 7/6/88.] Repealed by 06-19-074, filed 9/19/06, effective 12/1/06. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.
- 296-59-109 Retrieving misfires or duds. [Statutory Authority: Chapter 49.17 RCW. 88-14-108 (Order 88-11), § 296-59-109, filed 7/6/88.] Repealed by 06-19-074, filed 9/19/06, effective 12/1/06. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.

WAC 296-59-001 Foreword. (1) This vertical standard is promulgated in accordance with applicable provisions of the Washington State Administrative Procedure Act, chapter 34.04 RCW, and the Washington Industrial Safety and Health Act, chapter 49.17 RCW.

(2) The requirements of this chapter shall be applied through the department of labor and industries, division of industrial safety and health, in accordance with administrative procedures provided for in chapter 49.17 RCW, and chapters 296-27, 296-350, 296-360, and 296-800 WAC.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 01-11-038, § 296-59-001, filed 5/9/01, effective 9/1/01. Statutory Authority: Chapter 49.17 RCW. 88-14-108 (Order 88-11), § 296-59-001, filed 7/6/88.]

WAC 296-59-003 Scope and application. (1) The rules of this chapter are applicable to all persons, firms, corporations, or others engaged in the operation of organized ski areas and facilities within the jurisdiction of the department of labor and industries. These rules shall augment the WAC general horizontal standards, specifically referenced WAC vertical standards, and specifically referenced national standards or manuals.

(2) In the event that specific provisions of this chapter may conflict with any other WAC chapter, national standard, or manual, the provisions of this chapter shall prevail.

(3) The rules of this chapter shall not be applied to rescue crews during the time that rescue procedures are in process provided that reasonably prudent methods, equipment, and processes are employed. Personnel directly engaged in rescue operations shall not be subjected to the immediate restraint provisions of RCW 49.17.130.

(4) Nothing herein contained shall prevent the use of existing ski lift and tow equipment during its lifetime unless specific requirements of this chapter require retrofitting or modifications, provided that it shall be in conformance with applicable national or state code requirements at the time of manufacture and be maintained in good condition to conform with safety factors for the materials and method of manufacture used.

(5) Severability. If any provision of this chapter, or its application to any person, firm, corporation, or circumstance is held invalid under state (RCW) or national (Public Law)

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laws, the remainder of this chapter, or the application of the provision to other persons or circumstances is not affected.

(6) Variance and procedure. Recognizing that conditions may exist which do not exactly meet the literal requirements of this or other applicable Title 296 WAC standards, pursuant to RCW 49.17.080 and 49.17.090, the director of the department of labor and industries or his/her authorized representative may permit a variance when other means of providing an equivalent measure of protection are afforded. The specific requirements and procedures for variance application are contained in chapters 296-350 and 296-360 WAC. Application forms may be obtained from the assistant director for safety and health or from regional departmental offices.

[Statutory Authority: Chapter 49.17 RCW. 88-14-108 (Order 88-11), § 296-59-003, filed 7/6/88.]

WAC 296-59-005 Incorporation of other standards.

(1) Lifts and tows shall be designed, installed, operated, and maintained in accordance with American National Standard Institute (ANSI) B77.1-1982, Standards for Passenger Tramways—Aerial Tramways and Lifts, Surface Lifts, and Tows—Safety Requirements.

(2) Future revised editions of ANSI B77.1-1982 may be used for new installations or major modifications of existing installations, as recommended or approved by the equipment manufacturer or a qualified design engineer, except that, where specific provisions exist, variances shall be requested from the department.

(3) Reserved.

(4) The use of military type weapons for avalanche control shall comply with all requirements of the United States government and/or the military branch having jurisdiction. Compliance shall include qualification of employees, security requirements, and storage and handling of ammunition.

(5) The employer shall develop and maintain a chemical hazard communication program as required by WAC 296-800-170, which will provide information to all employees relative to hazardous chemicals or substances to which they are exposed, or may become exposed, in the course of their employment.

(6) When employees perform activities such as construction work or logging, the WAC chapter governing the specific activity shall apply, e.g., chapter 296-155 or 296-54 WAC, et seq.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. 06-19-074, § 296-59-005, filed 9/19/06, effective 12/1/06. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 01-11-038, § 296-59-005, filed 5/9/01, effective 9/1/01. Statutory Authority: Chapter 49.17 RCW. 94-16-145, § 296-59-005, filed 8/3/94, effective 9/12/94; 89-11-035 (Order 89-03), § 296-59-005, filed 5/15/89, effective 6/30/89; 88-14-108 (Order 88-11), § 296-59-005, filed 7/6/88.]

WAC 296-59-007 Definitions. "Act" means the Washington Industrial Safety and Health Act of 1973, RCW 49.17.010 et seq.

"Aerial work platform" means any form of work platform, work chair, or workbasket designed to lift or carry workmen to an elevated work position.

"ANSI" means the American National Standards Institute.

"Approved" means approved by the director of the department of labor and industries except where this code

requires approval by another specific body or jurisdiction authority.

"ASME" means the American Society of Mechanical Engineers.

"Authorized person" means a person approved or assigned by the employer to perform specific duties or to be at specific restricted locations.

"Avalanche" means the sliding or falling of a large amount of snow down a steep slope which has a destructive force due to its mass.

"Belay" means to provide an anchor for a safety line when a person is working in a position exposed to falling or sliding, the mountaineering term.

"Designated" means appointed or authorized by the highest management authority available at the site.

"Department" means the department of labor and industries, division of industrial safety and health, unless the context clearly indicates otherwise.

"Director" means the director of the department of labor and industries or his/her designated representative.

"Hazard" means that condition, potential or inherent, which might cause injury, death, or occupational disease.

"Lift certificate to operate" means an operating certificate issued by the Washington state parks and recreation commission pursuant to chapter 70.88 RCW subsequent to annual inspections as required by chapter 352-44 WAC.

"N.E.C." means the National Electric Code, as published by either the National Fire Protection Association or ANSI.

"Occupied building" means a building regularly occupied in whole or in part as a habitation for human beings, or any church, schoolhouse, railroad station, store, or other building where people are accustomed to assemble.

"Qualified" means one who, by possession of a recognized degree, certificate, license, or professional standing, has successfully demonstrated the personal ability to solve or resolve problems relating to the subject matter, the work, or the project.

"RCW" means the Revised Code of Washington, legislative law.

"ROPS" means rollover protective structure.

"S.A.E." means the society of automotive engineers.

"Safety factor" means the ratio of ultimate breaking strength of any member or piece of material or equipment to the actual working stress or safe load when in use.

"Shall" indicates a mandatory requirement.

"Should" indicates a recommended practice.

"WAC" means the Washington Administrative Code.

"WISHA" means Washington industrial safety and health administration.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. 06-19-074, § 296-59-007, filed 9/19/06, effective 12/1/06. Statutory Authority: Chapter 49.17 RCW. 88-14-108 (Order 88-11), § 296-59-007, filed 7/6/88.]

WAC 296-59-010 Safe place standards. The safe place requirements of the safety and health core rules, WAC 296-800-110, shall be applicable within the scope of chapter 296-59 WAC.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 01-11-038, § 296-59-010, filed 5/9/01, effective 9/1/01. Statutory Authority: Chapter 49.17 RCW. 88-14-108 (Order 88-11), § 296-59-010, filed 7/6/88.]

WAC 296-59-015 General requirements. (1) The use of any machinery, tool, material, or equipment which is not in compliance with any applicable requirement of this chapter is prohibited. Such machine, tool, material, or equipment shall either be identified as unsafe by tagging or locking the controls to render them inoperable or shall be physically removed from its place of operation.

(2) The employer shall permit only those employees qualified by training or experience to operate equipment and machinery.

(3) Employees shall use safeguards provided for their protection.

(4) Loose or ragged clothing, scarfs, or ties shall not be worn while working around moving machinery.

(5) Workers should not be assigned or permitted to occupy work locations directly under other workers. When such practice is unavoidable, all parties shall be made aware of the potential hazard and adequate protective measures shall be taken. When adequate protective measures are not available, one party shall be moved to eliminate the potential exposure.

(6) Employees shall report to their employers the existence of any unsafe equipment or method, or any other hazard which, to their knowledge, is unsafe. Where such unsafe equipment or method or other hazard exists in violation of this chapter it shall be corrected.

(7) Housekeeping.

(a) All places of employment shall be kept clean to the extent that the nature of the work allows.

(b) The floor of every workroom shall be maintained so far as practicable in a dry condition. Where wet processes are used, drainage shall be maintained. Where necessary or appropriate, waterproof footwear shall be worn.

(c) To facilitate cleaning, every floor, working place, and passageway shall be kept free from protruding nails, splinters, loose boards, unnecessary holes and openings or other tripping hazards.

(d) Cleaning and sweeping shall be done in such a manner as to minimize the contamination of the air with dust and so far as is practical, shall be done outside of working hours.

(8) Requirements for warning signs. Ski area operations which use any form of explosive device for avalanche control shall display warning, information placards and/or signs as found in chapter 296-52 WAC, Part G.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. 06-19-074, § 296-59-015, filed 9/19/06, effective 12/1/06. Statutory Authority: Chapter 49.17 RCW. 88-14-108 (Order 88-11), § 296-59-015, filed 7/6/88.]

WAC 296-59-020 Management's responsibility. The "safe work environment" section of the safety and health core rules, WAC 296-800-110, shall be applicable within the scope of chapter 296-59 WAC.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 01-11-038, § 296-59-020, filed 5/9/01, effective 9/1/01. Statutory Authority: Chapter 49.17 RCW. 88-14-108 (Order 88-11), § 296-59-020, filed 7/6/88.]

WAC 296-59-025 Employee's responsibility. The "employee responsibilities" section of the safety and health core rules, WAC 296-800-120, shall be applicable within the scope of chapter 296-59 WAC.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 01-11-038, § 296-59-025, filed 5/9/01, effective 9/1/01. Statutory Authority: Chapter 49.17 RCW. 88-14-108 (Order 88-11), § 296-59-025, filed 7/6/88.]

WAC 296-59-027 Work activities which include skiing. Management shall develop a written safety program for all employees whose job duties include skiing. The program shall include but is not limited to the following:

(1) The skiing ability and physical condition of individuals shall be considered when determining individual job assignments;

(2) The ski equipment used shall be appropriate for the individual when performing any given job assignment;

(3) The condition of all ski equipment shall be checked by a qualified individual at the beginning of each ski season;

(4) Employees shall be instructed not to use ski equipment until it has been checked and approved;

(5) Employees shall be instructed to ski within their ability and in control at all times;

(6) Employees shall be required to check all ski equipment, including adjustments, before starting work each day;

(7) Employees shall be instructed not to use ski equipment which is defective or out of adjustment.

[Statutory Authority: Chapter 49.17 RCW. 88-14-108 (Order 88-11), § 296-59-027, filed 7/6/88.]

WAC 296-59-030 Safety bulletin board. The "safety bulletin board" requirements of the safety and health core rules, WAC 296-800-190, shall be applicable within the scope of chapter 296-59 WAC.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 01-11-038, § 296-59-030, filed 5/9/01, effective 9/1/01. Statutory Authority: Chapter 49.17 RCW. 88-14-108 (Order 88-11), § 296-59-030, filed 7/6/88.]

WAC 296-59-035 First aid. The first-aid provisions of the safety and health core rules, WAC 296-800-150 apply within the scope of chapter 296-59 WAC.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 01-11-038, § 296-59-035, filed 5/9/01, effective 9/1/01; 00-01-038, § 296-59-035, filed 12/7/99, effective 2/1/00. Statutory Authority: Chapter 49.17 RCW. 88-14-108 (Order 88-11), § 296-59-035, filed 7/6/88.]

WAC 296-59-050 Personal protective equipment, general requirements. (1) Application.

(a) Protective equipment, including personal protective equipment for eyes, face, head, and extremities, protective clothing, respiratory devices, and protective shields and barriers, shall be provided, used, and maintained in a sanitary and reliable condition wherever it is indicated by reason of hazards of processes or environment, chemical hazards, radiological hazards, or mechanical irritants encountered in a manner capable of causing injury or impairment in the function of any part of the body through absorption, inhalation, or physical contact.

(b) Employee-owned equipment. Where employees provide their own protective equipment, the employer shall be responsible to assure its adequacy, including proper maintenance, and sanitation of such equipment.

(c) Design, construction, testing, and use of personal protective equipment shall comply with the requirements of the safety and health core rules, WAC 296-800-160; the Occupational health standards—Safety standards for carcinogens,

chapter 296-62 WAC; or the currently applicable ANSI standard.

(2) Eye and face protection. Eye and face protective equipment shall be provided and worn where there is exposure in the work process or environment to hazard of injury, which can be prevented by such equipment.

(3) Occupational head protection. Employees working in areas where there is a possible danger of head injury from impact, or from falling or flying objects, or from electrical shock and burns, shall be protected by protective helmets, i.e., a lift operator would not be required to use a hardhat while operating the lift. However, if that same person is assisting with maintenance operations and is working under a tower where overhead work is being done, that operator would now be required to wear an approved helmet.

(a) Helmets for the protection of employees against impact and/or penetration of falling and flying objects shall meet the specifications contained in American National Standards Institute, Z89.1-1986, Safety Requirements for Industrial Head Protection.

(b) Helmets for the head protection of employees exposed to high voltage electrical shock and burns shall meet the specifications contained in American National Standards Institute, Z89.2-1971, Safety Requirements for Industrial Protective Helmets for Electrical Workers, Class B.

(c) Approved head protection shall be worn by operators of snowmobiles and other mobile oversnow equipment which is not equipped with a rigid metal operator's cab.

(4) Occupational foot protection.

(a) Substantial footwear appropriate for the work conditions encountered shall be worn by all employees.

(b) Where the job assignment includes exposure to slipping hazards, soles and heels of footwear shall be of such material and design as to reduce the hazard of slipping.

(5) Safety belts, lifelines, lanyards, and nets.

(a) Safety belts, lifelines, and lanyards which meet the requirements of ANSI A10.14 shall be provided and used whenever employees are working in locations which expose them to a fall of more than ten feet. The particular work location and application shall dictate which type of belt or harness and length of lanyard is used.

(b) Lifelines shall be secured to an anchorage or structural member capable of supporting a minimum dead weight of five thousand four hundred pounds.

(c) Lifelines used on rock scaling applications or in areas where the lifeline may be subjected to cutting or abrasion shall be a minimum of seven-eighths inch wire core manila rope or equivalent. For all other lifeline applications, three-fourths inch manila rope or equivalent with a minimum break strength of five thousand four hundred pounds may be used.

(d) Each safety belt lanyard shall be a minimum of one-half inch nylon, or equivalent, with a minimum of five thousand four hundred pounds breaking strength.

(e) Employees will not be required to wear a safety belt and lanyard while riding on a standard lift chair while seated in the normal riding position.

(f) Safety nets meeting the requirements of ANSI A10.11 shall be used when other acceptable forms of fall protection are not useable. When used, safety nets shall extend a minimum of eight feet beyond the edge offering exposure, shall be hung with sufficient clearance to prevent user's con-

tact with surfaces or objects below, and shall not be more than twenty-five feet below the fall exposure edge.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 01-11-038, § 296-59-050, filed 5/9/01, effective 9/1/01. Statutory Authority: Chapter 49.17 RCW. 88-14-108 (Order 88-11), § 296-59-050, filed 7/6/88.]

WAC 296-59-055 Lockout requirements. (1) Each employer shall develop a formal written policy and procedure for lockout requirements. The policy shall embody the principles of subsection (2) of this section and shall clearly state that the procedures must be applied in all instances.

(a) The lockout policy shall be posted on all required employee bulletin boards.

(b) The lockout policy and procedures shall be made a part of new employee orientation and employee training programs.

(c) Supervisors and crew leadpersons shall assure compliance with the published policy and procedures in all instances.

(2) Whenever the unexpected start up of machinery, the energizing of electrical circuits, the flow of material in piping systems, or the removal of guards would endanger workers, such exposure shall be prevented by deactivating and locking out the controls as required by this section.

(3) Equipment requirements.

(a) The employer shall provide and each employee shall use as many padlocks, tags, chains, or devices as are necessary to implement these requirements.

(b) Provisions shall be made whereby the source of power or exposure can be locked out in accordance with the requirements of this section.

(c) On electrically powered equipment, "stop/start" control switches shall not be used as lockout switches. Lockout switches must be the primary circuit disconnects and must adequately separate both the power source and any auxiliary power unit from the prime mover so that accidental start up of the equipment being locked out is precluded.

(d) Keyed-alike locks, which all open with identical keys, shall not be issued as personal lockout locks.

(4) Training requirements.

(a) Each person who will be given authority to implement these requirements shall first be thoroughly trained in the requirements and procedures.

(b) Before being given authority to deactivate and lockout a particular system or piece of equipment, authorized personnel shall be made fully aware of all power sources and/or material entry sources which may offer exposure.

(c) Checklists shall be used to implement effective lockout procedures for complex systems or equipment.

(i) Complex is identified as those systems or equipment which require the locking out of four or more controls to assure isolation or which have controls remote from the immediate work area.

(ii) Checklists shall identify all controls necessary to achieve isolation at the intended worksite(s).

(iii) Checklists shall provide a space after each listed control to be used for the identity of the person(s) who performed the lockout and required postlockout tests of each control.

(iv) Checklists shall be prepared by qualified personnel and approved by the responsible area supervisor before each use.

(5) Control procedure.

(a) Each person who could be exposed to the hazard shall apply a personal padlock on each control mechanism. Padlocks shall be applied in such a manner as to physically block the controls from being moved into the operating position. Each lock shall be personally identified or an information tag identifying the owner shall be attached to the lock.

(b) Padlocks used in lockout procedures may only be removed by the person identified on the lock, except, when it is positively determined that the owner/user of the lock has left the premises without removing a lock, the job supervisor may remove the lock in accordance with a specific procedure formulated by the local plant labor management safety committee or approved by the department.

(6) Testing after lockout or tagout. After tagging or locking out equipment, a test shall be conducted to ascertain that the equipment has been made inoperative or the flow of material has been positively stopped. Precautions shall be taken to ascertain that persons will not be subjected to any hazard while conducting the test if the power source or flow of material is not shut off.

(7) Temporary or alternate power to be avoided. Whenever possible, temporary or alternate sources of power to the equipment being worked on shall be avoided. If the use of such power is necessary, all affected employees shall be informed and the source of temporary or alternate power shall be identified.

(8) Where tags or signs are required to implement the lockout and control procedures, the tag and attachment device shall be constructed of such material that it will not be likely to deteriorate in the environment that it will be subjected to.

(9) Provisional exception. Electrical lighting and instrument circuits of two hundred forty volts or less on single phase systems or two hundred seventy-seven volts on three-phase systems may be exempted from the lockout requirements of subsection (5)(a) of this section provided that:

(a) An information tag meeting the requirements of subsection (8) of this section is used in lieu of a padlock.

(b) The information tag shall be placed on the switch or switch cover handle in such a manner as to easily identify the deactivated switchgear.

(10) Deactivating piping systems.

(a) Hazardous material systems are defined as: Gaseous systems that are operated at more than two hundred psig; systems containing any liquid at more than five hundred psig; systems containing any material at more than 130°F; systems containing material which is chemically hazardous as defined by NFPA 704 M Class 3 and 4; systems containing material classified as flammable or explosive as defined in NFPA Class I.

(b) Lockout of piping systems shall provide isolation to the worksite, including backflow where such potential exists and where the system is classified as a hazardous material system. The required method shall be applied based on the content of the system as specified below:

(i) Nonhazardous systems shall be deactivated by locking out either the pump or a single valve.

(ii) Hazardous material systems shall be deactivated by one of the following methods:

(A) Locking out both the pump and one valve between the pump and the worksite;

(B) Locking out two valves between the hazard source and the worksite;

(C) Installing and locking out a blank flange between the hazard source and worksite.

Exception: Aerial tramways and lifts, surface lifts and tows. It is recognized that some inspection, testing, running adjustments, and maintenance tasks cannot be accomplished on this equipment while using standard lockout procedures, particularly when using a work platform suspended from the haulrope. Management of each ski area shall therefore develop a specific written procedure to be used in any instance where any potentially exposed personnel cannot personally lock the controls. The procedure for each area shall meet the following minimum requirements:

(I) The controls shall be attended by a qualified operator at all times when personnel are in potentially exposed work positions and the controls are not padlocked out.

(II) Direct communication capability between the control operator and remote work crew shall be maintained at all times.

(III) All personnel involved shall be thoroughly trained in the exact procedures to be followed.

(IV) Extension tools which minimize personnel exposure shall be used where possible.

(V) The equipment shall be operated at the slowest speed possible consistent with the task at hand.

(VI) This exception shall not be used by more than one workcrew at more than one remote location on any single piece of equipment or system.

(VII) This exception is limited to work on the haulrope, towers, and replacing bullwheel liners. For all other work on the bullwheels or drive operations, the master disconnect shall be deactivated and locked out.

Note: See Appendix 1 for illustrative example.

[Statutory Authority: Chapter 49.17 RCW. 88-14-108 (Order 88-11), § 296-59-055, filed 7/6/88.]

WAC 296-59-060 Vessel or confined area requirements. The requirements of WAC 296-62-145 through 296-62-14529, general occupational health standards for permit-required confined spaces, shall be applicable within the scope of chapter 296-59 WAC.

[Statutory Authority: Chapter 49.17 RCW. 95-04-007, § 296-59-060, filed 1/18/95, effective 3/1/95; 88-14-108 (Order 88-11), § 296-59-060, filed 7/6/88.]

WAC 296-59-065 Fire protection and ignition sources. The requirements of WAC 296-24-585 and 296-800-300, et seq., relating to fire protection requirements, shall be applicable within the scope of chapter 296-59 WAC.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 01-11-038, § 296-59-065, filed 5/9/01, effective 9/1/01. Statutory Authority: Chapter 49.17 RCW. 88-14-108 (Order 88-11), § 296-59-065, filed 7/6/88.]

WAC 296-59-070 Illumination. (1) Sufficient illumination required. All areas shall be sufficiently illuminated in order that persons in the area can safely perform their assigned duties. The recommended levels of illumination specified in the safety and health core rules, WAC 296-800-

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210, shall be followed. When areas are not specifically referred to in chapter 296-800 WAC and the adequacy of illumination for the area or task performed is questionable, a determination of the amount of illumination needed may be made by the division of industrial safety and health.

(2) Emergency or secondary lighting system required.

(a) There shall be an emergency or secondary lighting system which can be actuated immediately upon failure of the normal power supply system. The emergency or secondary lighting system shall provide illumination in the following areas:

(i) Wherever it is necessary for workers to remain at their machine or station to shut down equipment in case of power failure;

(ii) At stairways and passageways or aiseways used by workers as an emergency exit in case of power failure;

(iii) In all plant first-aid and/or medical facilities;

(iv) In emergency power and control room, i.e., in emergency generator rooms unless arranged to start automatically in the event of power failure, or on ski lift motor drive rooms where it would be necessary for employees to switch on the emergency drive system during night skiing.

(b) Emergency lighting facilities shall be checked at least every thirty days for mechanical defects. Defective equipment shall be given priority for repair schedule.

(3) Extension cord type lights. All extension cord type lights shall be provided with proper guards.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 01-11-038, § 296-59-070, filed 5/9/01, effective 9/1/01. Statutory Authority: Chapter 49.17 RCW. 88-14-108 (Order 88-11), § 296-59-070, filed 7/6/88.]

WAC 296-59-075 Electrical equipment and distribution. (1) National Electrical Code to prevail. All electrical installations and electrical utilization equipment shall comply with the National Electrical Code requirements.

Exception: In instances where (N.E.C.) conflicts with ANSI B77.1 with respect to tramways, surface lifts, or tows, ANSI B77.1 shall prevail.

(2) Authorized personnel to do electrical work. Only those persons who are qualified to do the work assigned and are authorized by the employer shall be allowed to perform electrical work on any electrical equipment or wiring installations.

(3) High voltage areas to be guarded. Motor rooms, switch panel rooms, or other areas where persons may come in contact with high voltages shall be fenced off or be enclosed in a separate area. The gate, door, or access to such area shall be posted with a notice stating that only authorized persons are allowed in the area.

(4) Control panels. In areas where mobile equipment operates, floor stand panels shall be protected from being struck by moving equipment. Start or run handles and buttons shall be protected from accidental actuation.

(5) Switches or control devices. Switches, circuit breakers, or other control devices shall be so located that they are readily accessible for activation or deactivation and shall be marked to indicate their function or machine which they control. The positions of ON and OFF shall be marked or indicated and provision shall be made for locking out the circuit.

(6) Starting requirements for electrically driven equipment after power failure. Electrically driven equipment shall

be so designed that it will not automatically start upon restoration of power after a power failure if it will create a hazard to personnel.

(7) Posting equipment automatically activated or remotely controlled. Equipment which is automatically activated or remotely controlled shall be posted, warning persons that machine may start automatically if it will create a hazard to personnel.

[Statutory Authority: Chapter 49.17 RCW. 88-14-108 (Order 88-11), § 296-59-075, filed 7/6/88.]

WAC 296-59-080 Installation, inspection, and maintenance of pipes, piping systems, and hoses. (1) Definitions applicable to this section.

(a) "Hazardous material system" is any system within the following classifications:

(i) "Flammable or explosive" - any system containing materials which are hazardous because they are easily ignited and create a fire or explosion hazard, defined by NFPA as Class I liquids;

(ii) "Chemically active or toxic" - any system containing material which offers corrosion or toxic hazard in itself or can be productive of harmful gases upon release, defined by NFPA 704M as Class 3 and 4 materials;

(iii) "Thermally hazardous" - any system above 130°F which exposes persons to potential thermal burns;

(iv) "Pressurized" - any gaseous system above two hundred psig or liquid system above five hundred psig.

(b) "Piping system" - any fixed piping, either rigid pipe or flexible hose, including all fittings and valves, in either permanent or temporary application.

(2) Design and installation. All new piping systems intended to be used in hazardous material service shall be designed and installed in accordance with applicable provisions of the ASME Code for Pressure Piping or in accordance with applicable provisions of ANSI B31.1 through B31.8. The referenced edition in effect at the time of installation shall be utilized.

Note: Both referenced standard have identical requirements.

(3) Inspection and maintenance.

(a) Management shall develop a formal program of inspections for all hazardous material piping systems. The program shall be based on sound maintenance engineering principles and shall demonstrate due consideration for the manufacturing specifications of the pipe, hose, valves, and fittings, the ambient environment of the installation and the corrosive or abrasive effect of the material handled within the system.

(b) Type and frequency of tests and/or inspections and selection of inspection sites shall be adequate to give indications that minimum safe design operating tolerances are maintained. The tests may include visual and nondestructive methods.

(c) All employers shall submit their formal program of initial and ongoing inspections to the department for approval within one year after the effective date of this requirement.

(d) All existing hazardous material systems shall be inspected to the criteria of this section prior to two years after effective date, or in accordance with a schedule approved by the department.

(4) Inspection records.

(a) Results of inspections and/or tests shall be maintained as a record for each system.

(b) Past records may be discarded provided the current inspection report and the immediate preceding two reports are maintained.

(c) When a system is replaced, a new record shall be established and all past records may be discarded.

(d) The records for each system shall be made available for review by the department upon request.

(e) The employer may omit the inspection requirements for portions of existing systems that are buried or enclosed in permanent structures in such a manner as to prevent exposure to employees even in the event of a failure.

(5) Systems or sections of systems found to be below the minimum design criteria requirements for the current service shall be repaired or replaced with component parts and methods which equal the requirements for new installations.

(6) Identification of piping systems.

(a) Pipes containing hazardous materials shall be identified. It is recommended that USAS A13.1 "Scheme for Identification of Piping Systems" be followed.

(b) Positive identification of piping system content shall be identified by lettered legend giving the name of the content in full or abbreviated form, or a commonly used identification system. Such identification shall be made and maintained at suitable intervals and at valves, fittings, and on both sides of walls or floors. Arrows may be used to indicate the direction of flow. Where it is desirable or necessary to give supplementary information such as hazard of use of the piping system content, this may be done by additional legend or by color applied to the entire piping system or as colored bands. Legends may be placed on colored bands.

Examples of legends which may give both positive identification and supplementary information regarding hazards or use are:

Ammonia	Hazardous liquid or gas
Chlorine	Hazardous liquid or gas
Liquid caustic	Hazardous liquid
Sulphuric acid	Hazardous liquid
Natural gas	Flammable/explosive gas

Note: Manual L-1, published by Chemical Manufacturers Association, Inc., is a valuable guide in respect to supplementary legend.

(c) When color, applied to the entire piping system or as colored bands, is used to give supplementary information it should conform to the following:

CLASSIFICATION	PREDOMINANT COLOR
F-Fire-protection equipment	Red
D-Dangerous materials	Yellow (or orange)
S-Safe materials	Green (or the achromatic colors, white, black, gray, or aluminum)

And, when required, P-Protective materials

Bright blue

(d) Legend boards showing the color and identification scheme in use shall be prominently displayed at each plant. They shall be located so that employees who may be exposed to hazardous material piping systems will have a frequent reminder of the identification program.

(e) All employees who work in the area of hazardous material piping systems shall be given training in the color and identification scheme in use.

[Statutory Authority: Chapter 49.17 RCW. 88-14-108 (Order 88-11), § 296-59-080, filed 7/6/88.]

WAC 296-59-085 Scaffolds, construction, use, and maintenance. (1) Whenever work must be performed at a height which cannot be reached from the floor or permanent platform and where it would not be a safe practice to use a ladder, a properly constructed scaffold shall be provided and used.

(2) Scaffolds shall be constructed and used in compliance with WAC 296-24-860 through 296-24-862.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 01-11-038, § 296-59-085, filed 5/9/01, effective 9/1/01. Statutory Authority: Chapter 49.17 RCW. 88-14-108 (Order 88-11), § 296-59-085, filed 7/6/88.]

WAC 296-59-090 Mobile equipment and lift trucks.

(1) Mobile equipment shall be designed, constructed, maintained, and used in accordance with this section and appropriate ANSI and/or SAE requirements.

(2) Operator training.

(a) Methods shall be devised by management to train personnel in the safe operation of mobile equipment.

(b) Training programs for all mobile equipment shall include the manufacturer's operating instructions when such instructions are available.

(c) Only trained and authorized operators shall be permitted to operate such vehicles.

(3) Special duties of operator. Special duties of the operator of a power-driven vehicle shall include the following:

(a) Test brakes, steering gear, lights, horns, warning devices, clutches, etc., before operating vehicle;

(b) Not move a vehicle while an unauthorized rider is on the vehicle;

(c) Slow down and sound horn upon approaching blind corners or other places where vision or clearance is limited;

(d) Comply with all speed and traffic regulations and other applicable rules;

(e) Have the vehicle being operated under control at all times so that he can safely stop the vehicle in case of emergency; and

(f) Keep the load on the uphill side when driving a fork-lift vehicle on a grade.

(4) Operator to be in proper position. Control levers of lift trucks, front end loaders, or similar types of equipment shall not be operated except when the operator is in his proper operating position.

(5) Raised equipment to be blocked. Employees shall not work below the raised bed of a dump truck, raised buckets of front end loaders, raised blades of tractors or in similar positions without blocking the equipment in a manner that will prevent it from falling. When working under equipment suspended by use of jacks, safety stands or blocking shall be used in conjunction with the jack.

(6) Precautions to be taken while inflating tire. Unmounted split rim wheels shall be placed in a safety cage or other device shall be used which will prevent a split rim from striking the worker if it should dislodge while the tire is being inflated.

(2007 Ed.)

(7) Reporting suspected defects. If, in the opinion of the operator, a power-driven vehicle is unsafe, the operator shall report the suspected defect immediately to the person in charge. Any defect which would make the vehicle unsafe to operate under existing conditions shall be cause for immediate removal from service. The vehicle shall not be put back into use until it has been made safe.

(8) Safe speed. Vehicles shall not be driven faster than a safe speed compatible with existing conditions.

(9) Unobstructed view.

(a) Vehicle operators shall have a reasonably unobstructed view of the direction of travel. Where this is not possible, the operator shall be directed by a person or by a safe guidance means or device.

(b) Where practical, mirrors shall be installed at blind corners or intersections which will allow operators to observe oncoming traffic.

(c) It is recommended that vehicles operating in congested areas be provided with an automatic audible or visual alarm system.

(10) Passengers to ride properly.

(a) Passengers shall not be permitted to ride with legs or arms extending outside the running lines of the cab, FOPS, or ROPS of any vehicle.

(b) Passengers on mobile oversnow equipment shall ride within the cab unless exterior seating is provided. The exterior seating may include the cargo bed provided that the bed is equipped with sideboards and a tailgate at least ten inches high. If passengers are permitted to stand in the bed, adequate handholds shall be provided.

(c) The number of passengers and seating arrangements within the cab on any mobile equipment shall not interfere with the operator's ability to safely operate the equipment.

(d) Exterior passengers shall not be permitted on mobile oversnow equipment which has snow grooming equipment mounted on the bed or when the machine is towing any kind of equipment, sleds, etc.

(e) Operators shall use good judgment with respect to speed and terrain when carrying exterior passengers.

(11) Horns and lights.

(a) Every vehicle shall be provided with an operable horn distinguishable above the surrounding noise level.

(b) Any vehicle required to travel away from an illuminated area shall be equipped with a light or lights which adequately illuminate the direction of travel.

(12) Brakes on power-driven vehicles. Vehicles shall be equipped with brakes and devices which will hold a parked vehicle with load on any grade on which it may be used. The brakes and parking devices shall be kept in proper operating condition at all times.

(13) Cleaning vehicles. All vehicles shall be kept free of excessive accumulations of dust and grease which may present a hazard.

(14) Lifting capacity of vehicle to be observed. At no time shall a load in excess of the manufacturer's maximum lifting capacity rating be lifted or carried. Such lifting capacity may only be altered with the approval of the equipment manufacturer or a qualified design engineer.

(15) Posting rated capacity. The maximum rated lifting capacity of all lift trucks shall at all times be posted on the

vehicle in such a manner that it is readily visible to the operator.

(16) Carrying loose material. Lift trucks shall not be used to carry loose loads of pipe, steel, iron, lumber, palletized material, rolls of paper, or barrels unless adequate clearance is provided and the loads are stabilized.

(17) Position of lift forks or clamps. The forks or clamps of lift trucks shall be kept as low as possible while the vehicle is moving. They shall be lowered to the ground or floor when the vehicle is parked.

(18) Walking under loads prohibited. No person shall be allowed under the raised load of a lift truck, backhoe, or front end loader.

(19) Hoisting of personnel on vehicle forks prohibited. Personnel shall not be hoisted by standing directly on the forks of vehicles.

(20) Using forklifts as elevated work platforms. A platform or structure built specifically for hoisting persons may be used providing the following requirements are met:

(a) The structure must be securely attached to the forks and shall have standard guardrails and toeboards installed on all sides;

(b) The hydraulic system shall be so designed that the lift mechanism will not drop faster than one hundred thirty-five feet per minute in the event of a failure in any part of the system. Forklifts used for elevating work platforms shall be identified that they are so designed;

(c) A safety strap shall be installed or the control lever shall be locked to prevent the boom from tilting;

(d) An operator shall attend the lift equipment while workers are on the platform;

(e) The operator shall be in the normal operating position while raising or lowering the platform. A qualified operator shall remain in attendance whenever an employee is on the work platform;

(f) The vehicle shall not travel from point to point while workers are on the platform except that inching or maneuvering at very slow speed is permissible; and

(g) The area between workers on the platform and the mast shall be adequately guarded to prevent contact with chains or other shear points.

(21) Overhead guards on lift trucks. All lift trucks shall be equipped with an overhead guard constructed and installed to conform to USAS B56.1-1969 "Safety Code for Powered Industrial Trucks." This guard may be removed only when it cannot be used due to the nature of the work being performed in which case loads shall be maintained so as not to create a hazard to the operator.

(22) Protection from exhaust system. Any exhaust system which might be exposed to contact shall be properly insulated or isolated to protect personnel. Exhaust systems on lift trucks and jitneys shall be constructed to discharge either within twenty inches from the floor or eighty-four inches or more above the floor. The exhausted gases shall be directed away from the operator. The equipment shall be designed in such a manner that the operator will not be exposed to the fumes.

(23) Emergency exit from mobile equipment. Mobile equipment with an enclosed cab shall be provided with an escape hatch or other method of exit in case the regular exit cannot be used.

(24) Vehicle wheels chocked. When driving mobile equipment onto the bed of a vehicle, the wheels of the vehicle shall be chocked.

(25) Prevent trailer from tipping. Suitable methods shall be used or devices installed which will prevent the trailer from tipping while being loaded or unloaded.

(26) Refueling. Gasoline or LPG engines shall be shut off during refueling.

(27) Close valve on LPG container. Whenever vehicles using LP gas as a fuel are parked overnight or stored for extended periods of time indoors, with the fuel container in place, the service valve of the fuel container shall be closed.

(28) LPG tanks. LPG vehicle fuel tanks shall be installed and protected in a manner which will minimize the possibility of damage to the tank.

(29) Inspecting and testing of LPG containers. LPG containers shall be inspected and tested as required by chapter 296-24 WAC.

(30) Spinners on steering wheels. The use of spinners on steering wheels shall be prohibited unless an antikick device is installed or the equipment has a hydraulic steering system.

(31) The requirements of chapter 296-817 WAC, Hearing loss prevention (noise), apply to mobile equipment operation.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060. 03-11-060, § 296-59-090, filed 5/19/03, effective 8/1/03. Statutory Authority: Chapter 49.17 RCW. 88-14-108 (Order 88-11), § 296-59-090, filed 7/6/88.]

WAC 296-59-095 Requirements for cranes and hoists—General safety and health standards to prevail. All applicable rules for design, construction, maintenance, operation, and testing of cranes and hoists contained in the General safety and health standards, chapter 296-24 WAC, shall be met.

[Statutory Authority: Chapter 49.17 RCW. 88-14-108 (Order 88-11), § 296-59-095, filed 7/6/88.]

WAC 296-59-115 Ski lift facilities and structures. (1) Existing ski lift facilities and structures shall not be required to be retrofitted with standard construction work platforms, walkways, stairs or guardrails on exterior surfaces when such features would add significantly to snow loading considerations. When such standard protective features are omitted, alternative personal protective measures shall be used where possible. Examples include but are not limited to: Safety belt and lanyard, ladder climbing safety devices, temporary work platforms or scaffolds, temporary or removable handrails, guardrails, or walkways.

(2) Snow removal.

(a) During the operating season, standard guardrails which would interfere with snow removal may be omitted in areas where it can be anticipated that frequent snow removal will be necessary to maintain operability of ski lift apparatus. Examples could include but are not limited to the motor house roof or loading and unloading areas.

(b) Personnel barricades, signs, or other devices shall be used to deflect traffic or warn personnel of existing fall hazards.

(3) All ski lift towers installed after the effective date of this standard shall be equipped with permanent ladders or steps which meet the following minimum requirements:

(a) The minimum design live load shall be a single concentrated load of two hundred pounds.

(b) The number and position of additional concentrated live load units of two hundred pounds each as determined from anticipated usage of the ladder shall be considered in the design.

(c) The live loads imposed by persons occupying the ladder shall be considered to be concentrated at such points as will cause the maximum stress in the structural member being considered.

(d) The weight of the ladder and attached appurtenances together with the live load shall be considered in the design of rails and fastenings.

(e) All rungs shall have a minimum diameter of three-fourths inch.

(f) The distance between rungs on steps shall not exceed twelve inches and shall be uniform throughout the ladder length. The top rung shall be located at the level of the landing or equipment served by the ladder.

(g) The minimum clear length of rungs or steps shall be sixteen inches on new installations.

(h) Rungs, cleats, and steps shall be free of sharp edges, burrs, or projections which may be a hazard.

(i) The rungs of an individual-rung ladder shall be so designed that the foot cannot slide off the end. (A suggested design is shown in Figure D-1, at the end of this section.)

(j) Side rails which might be used as a climbing aid shall be of such cross sections as to afford adequate gripping surface without sharp edges or burrs.

(k) Fastenings. Fastenings shall be an integral part of fixed ladder design.

(l) All splices made by whatever means shall meet design requirements as noted in (a) of this subsection. All splices and connections shall have smooth transition with original members and with no sharp or extensive projections.

(m) Adequate means shall be employed to protect dissimilar metals from electrolytic action when such metals are joined.

(n) Welding. All welding shall be in accordance with the "Code for Welding in Building Construction" (AWS D1.0-1966).

(o) Protection from deterioration. Metal ladders and appurtenances shall be painted or otherwise treated to resist corrosion and rusting when location demands.

(4) Installation and clearance.

(a) Pitch.

(i) The preferred pitch of fixed ladders is between the range of seventy-five degrees and ninety degrees with the horizontal (Figure D-4).

(ii) Substandard pitch. Fixed ladders shall be considered as substandard if they are installed within the substandard pitch range of forty-five and seventy-five degrees with the horizontal. Substandard fixed ladders are permitted only where it is found necessary to meet conditions of installation. This substandard pitch range is considered as a critical range to be avoided, if possible.

(iii) Pitch greater than ninety degrees. Ladders having a pitch in excess of ninety degrees with the horizontal are prohibited.

(b) Clearances.

(i) The perpendicular distance from the centerline of the rungs to the nearest permanent object on the climbing side of the ladder shall be thirty-six inches for a pitch of seventy-six degrees, and thirty inches for a pitch of ninety degrees (Figure D-2), with minimum clearances for intermediate pitches varying between these two limits in proportion to the slope.

(ii) A clear width of at least fifteen inches shall be provided each way from the centerline of the ladder in the climbing space.

(iii) The side rails of through or side-step ladder extensions shall extend three and one-half feet above parapets and landings.

(A) For through ladder extensions, the rungs shall be omitted from the extension and shall have not less than eighteen nor more than twenty-four inches clearance between rails.

(B) For side-step or offset fixed ladder sections, at landings, the side rails and rungs shall be carried to the next regular rung beyond or above the three and one-half feet minimum.

(iv) Grab bars shall be spaced by a continuation of the rung spacing when they are located in the horizontal position. Vertical grab bars shall have the same spacing as the ladder side rails. Grab bar diameters shall be the equivalent of the round-rung diameters.

(v) Clearance in back of ladder. The distance from the centerline of rungs, cleats, or steps to the nearest permanent object in back of the ladder shall be not less than seven inches, except that when unavoidable obstructions are encountered, minimum clearances as shown in Figure D-3 shall be provided.

(vi) Clearance in back of grab bar. The distance from the centerline of the grab bar to the nearest permanent object in back of the grab bars shall be not less than four inches. Grab bars shall not protrude on the climbing side beyond the rungs of the ladder which they serve.

(c) The step-across distance from the nearest edge of a ladder to the nearest edge of the equipment or structure shall be not more than twelve inches, or less than two and one-half inches. However, the step-across distance may be as much as twenty inches provided:

(i) The climber is wearing a safety belt and lanyard; and

(ii) The lanyard is attached to the tower structure before the climber steps off the ladder.

(5) Ski lift towers are not required to be equipped with ladder cages, platforms or landings.

(6) Maintenance and use.

(a) All ladders shall be maintained in a safe condition. All ladders shall be inspected regularly, with the intervals between inspections being determined by use and exposure.

(b) When ascending or descending, the climber must face the ladder.

(c) Personnel shall not ascend or descend ladders while carrying tools or materials which could interfere with the free use of both hands.

(7) Personnel shall be provided with and shall use ladder safety devices or safety belt and lanyard whenever feasible.

(8) Personnel shall not place mobile equipment or personal equipment such as skis, ski poles, or large tools within the falling radius of the lift tower while climbing or working on the lift tower.

(9) Ski lift towers and terminals are not required to be equipped with sheave guards on the haulrope wheels.

(10) Ski lift towers are not required to be equipped with work platforms.

(11) Personnel shall use personal protective equipment such as a safety belt and lanyard when working at unprotected elevated locations. Exception to this requirement shall only be permitted for emergency rescue or emergency inspection if a safety belt and lanyard is not immediately available. Required personal protective equipment shall be made available as quickly as possible.

(12) When fixed ladders on towers do not reach all the way down to the ground or snow level, a specifically designed and constructed portable ladder shall be used for access to and from the fixed ladder. Portable ladders shall be constructed and maintained to the following requirements:

(a) The portable ladder shall be constructed in accordance with applicable provisions of subsection (3) of this section.

(b) The portable ladder shall be constructed with a minimum of two attachment hooks near the top to be utilized for securing the portable ladder onto the fixed ladder.

(c) The attachment hooks shall be installed to support the portable ladder near the fixed ladder siderails.

(d) Rungs or steps on the portable ladder shall be spaced to be identical with rungs or steps on the fixed ladder when the portable ladder is attached for use. The design criteria shall be to achieve a horizontal plane relationship on the top (walking surface) portion of both steps when overlapping is necessary.

(e) The portable ladder shall be equipped with a hold-out device near the bottom to assure clearance behind the steps as required by subsection (4)(b)(v) of this section.

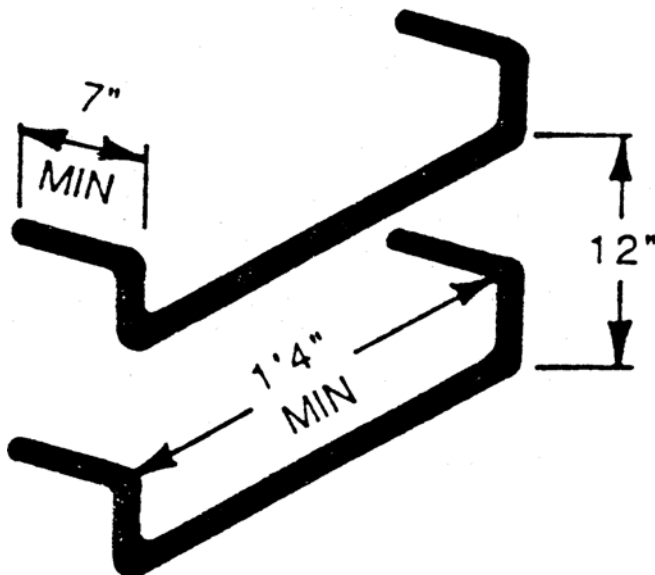
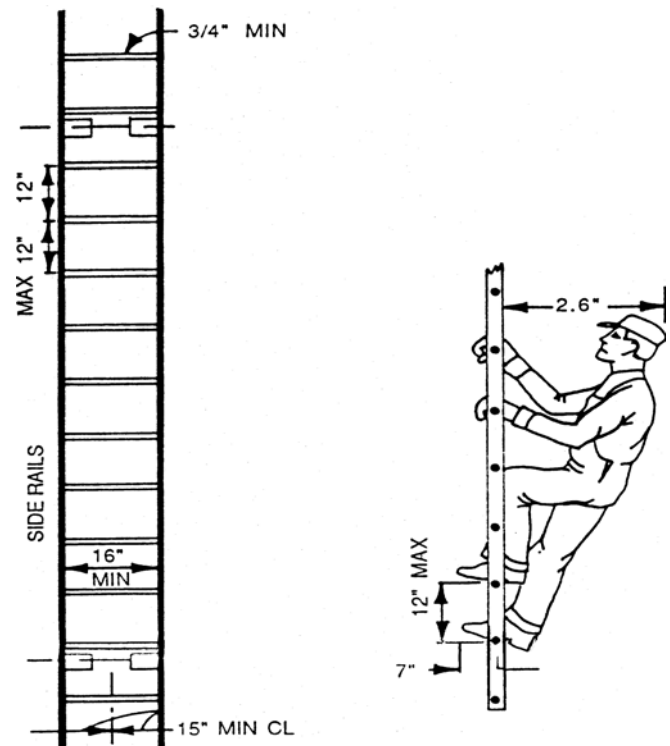
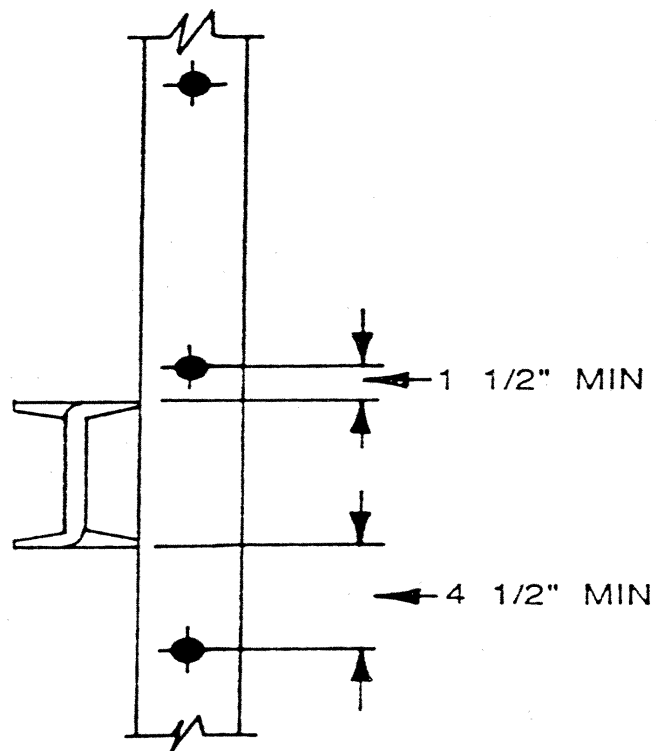


FIGURE D-1

FIGURE D-2
Minimum Ladder ClearanceFIGURE D-3
Clearance for Unavoidable Obstruction
at Rear of Fixed Ladder.

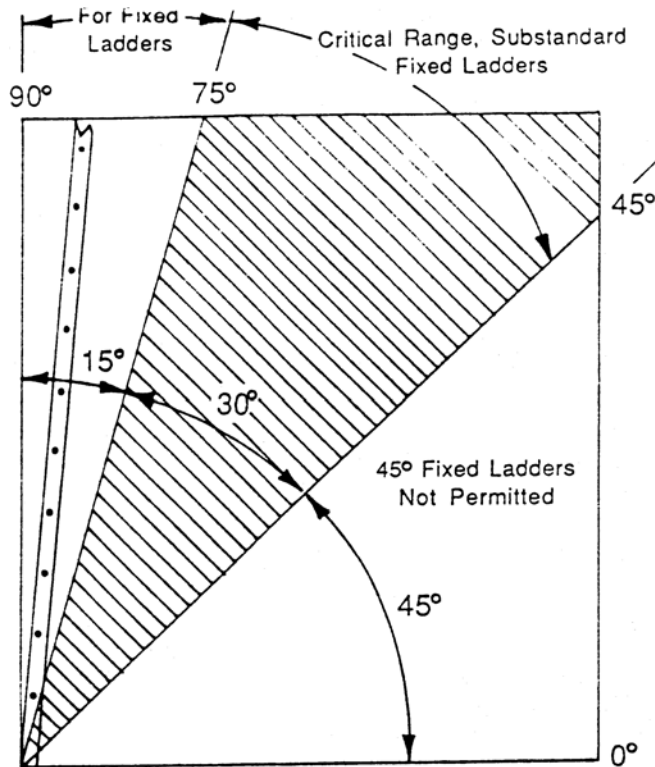


FIGURE D-4
Fixed Ladder Range

[Statutory Authority: Chapter 49.17 RCW. 88-14-108 (Order 88-11), § 296-59-115, filed 7/6/88.]

WAC 296-59-120 Ski lift operations. (1) Operators.

(a) Only trained and qualified lift operators shall be permitted to operate any lift while it is carrying passengers.

(b) Management designated trainees shall only be permitted to operate a lift while under the direct supervision of a qualified operator or trainer.

(c) Initial training of operators shall be accomplished when the lift is not carrying passengers.

(d) Operator training shall include:

- (i) Standard and emergency start up procedures;
- (ii) Standard and emergency stopping procedures;
- (iii) Lockout procedures;
- (iv) Corrective actions for operating malfunctions;

(v) Specific instructions on who to contact for different kinds of rescue emergencies;

(vi) Specific instructions on standard operating procedures with respect to the hazard of loading or unloading passengers proximate to the moving lift chairs.

(2) Operators and helpers shall prepare and maintain the loading and unloading work stations in a leveled condition and, to the extent possible, free from slipping hazards caused by ice, ruts, excessive snow accumulation, tools, etc.

(3) Daily start up procedure.

(a) Loading station operators shall test all operating controls and stopping controls before permitting any personnel or passengers to load on the lift.

(b) The lift must travel a distance of two times the longest tower span before any employee can load on a chair to go to the remote station.

(2007 Ed.)

(c) A qualified operator shall be the first passenger on each lift each day.

Exception: The avalanche control team and the emergency rescue team may use any operable lift at anytime for that work. They may use lifts without a remote operator provided that direct communications are maintained to the operator and the operator has successfully completed normal daily safety and operating control checks at the operating station in use.

(d) Enroute to the remote station, the remote operator shall visually inspect each tower as the chair or gondola proceeds to the remote station.

(e) The remote operator shall stop the system when he/she has reached the remote control station. The operator shall then conduct the daily safety and operating control checks on the remote station.

(f) The remote operator shall ensure that the unloading area is groomed to adequately accommodate normal unloading.

(g) When all controls are checked and functioning correctly and the unloading area is prepared, the remote operator shall communicate to the operator that the system can be placed in normal operation.

(4) Operators shall report to their work station wearing adequate clothing for inclement weather which may be encountered. This requirement shall include reasonably water resistant footwear which shall have a slip resistant sole tread.

(5) While the lift is in operation and carrying passengers, operators shall not permit any activity in the loading/unloading areas which could distract their attention from the principle duty of safely loading or unloading passengers.

(6) Means of communication shall be maintained between the top operator and bottom operator stations.

[Statutory Authority: Chapter 49.17 RCW. 88-14-108 (Order 88-11), § 296-59-120, filed 7/6/88.]

WAC 296-59-125 Ski lift aerial work platforms. (1) Construction and loading.

(a) All aerial work platforms shall be constructed to sustain the permissible loading with a safety factor of four. The load permitted shall be calculated to include:

(i) The weight of the platform and all suspension components;

(ii) The weight of each permitted occupant calculated at two hundred fifty pounds per person including limited hand-tools;

(iii) The weight of any additional heavy tools, equipment, or supplies for tasks commonly accomplished from the work platform.

(b) The floor of the platform shall not have openings larger than two inches in the greatest dimension.

(c) The platform shall be equipped with toeboards at least four inches high on all sides.

(d) Guardrails.

(i) The platform shall be equipped with standard height and strength guardrails where such guardrails will pass through the configuration of all lifts on which it is intended to be used.

(ii) Where guardrails must be less than thirty-six inches high in order to clear carriages, guideage, etc., guardrails

shall be as high as will clear the obstructions but never less than twelve inches high.

(iii) If the work platform is equipped with an upper work level, the upper level platform shall be equipped with a toe-board at least four inches high.

(iv) Each platform shall be equipped with a lanyard attachment ring for each permissible occupant to attach a safety belt lanyard.

(v) Each lanyard attachment ring shall be of such strength as to sustain five thousand four hundred pounds of static loading for each occupant permitted to be attached to a specific ring.

(vi) Attachment rings shall be permanently located as close to the center balance point of the platform as is practical.

(vii) The rings may be movable, for instance, up and down a central suspension rod, but shall not be completely removable.

(e) Platform attachment.

(i) The platform shall be suspended by either a standard wire rope four part bridle or by solid metal rods, bars, or pipe.

(ii) The attachment means chosen shall be of a type which will prevent accidental displacement.

(iii) The attachment means shall be adjusted so that the platform rides level when empty.

(f) Maintenance.

(i) Every aerial work platform shall be subjected to a complete annual inspection by qualified personnel.

(ii) The inspection shall include all structural members, welding, bolted or treaded fittings, and the suspension components.

(iii) Any defect noted shall be repaired before the platform is placed back in service.

(iv) A written record shall be kept for each annual inspection. The record shall include:

(A) The inspector identification;

(B) All defects found;

(C) The identity of repair personnel;

(D) Identity of the postrepair inspector who accepted the platform for use.

(g) The platform shall be clearly identified as to the number of permissible passengers and the weight limit of additional cargo permitted.

(i) Signs shall be applied on the outside of each side panel.

(ii) Signs shall be maintained in clearly legible condition.

(h) Unless the side guardrail assembly is at least thirty-six inches high on all sides, signs shall be placed on the inside floor or walls to clearly inform all passengers that they must use a safety belt and lanyard at all times when using the platform.

(2) Work platform use.

(a) Platforms shall be attached to the haulrope with an attachment means which develops a four to one strength factor for the combined weight of the platform and all permissible loading.

(b) The haulrope attachment means shall be designed to prevent accidental displacement.

(c) Trained and competent personnel shall attach and inspect the platform before each use.

(d) Passengers shall be provided with and shall use the correct safety harness and lanyard for the intended work.

(e) Any time a passenger's position is not protected by a standard guardrail at least thirty-six inches high, the individual shall be protected by a short lanyard which will not permit free-fall over the platform edge.

(f) When personnel are passengers on a work platform and their work position requires the use of a safety harness and lanyard, the lanyard shall be attached to the work platform, not to the haulrope or tower.

(g) Work platform passengers shall face in the direction of travel when the lift is moving.

(h) Tools, equipment and supplies shall be loaded on the platform in such a fashion that the loaded platform can safely pass all towers and appurtenances.

(i) Heavy tools, equipment or supplies shall be secured in place if they could fall over or roll within the platform and create a hazard for passengers.

(j) When the work crew is traveling on the work platform, the lift shall be operated at a speed which is safe for that particular system and the conditions present.

Note: See Appendix 2 for operating procedure requirements.

[Statutory Authority: Chapter 49.17 RCW. 88-14-108 (Order 88-11), § 296-59-125, filed 7/6/88.]

WAC 296-59-130 Ski lift machinery guarding. (1)

Moving machine parts that are located within normal reach shall be fitted with safety guards in compliance with chapter 296-806 WAC, Machine safety.

(a) The coupling apparatus for the ski lift emergency drive may be provided with a removable or swing guard.

(b) When removable or swing guards are used, the guard and mounting means shall be so designed and constructed as to sustain a two hundred fifty pound weight loading without displacement.

(2) All guards shall be maintained in good condition and shall be secured in place when the equipment is in operation except for inspection and adjustment purposes.

(3) The drive machinery and primary control apparatus shall be installed in a facility which can prevent access by unauthorized personnel. The access door shall have a sign which states that entry is restricted to authorized personnel.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060. 04-14-028, § 296-59-130, filed 6/29/04, effective 1/1/05. Statutory Authority: Chapter 49.17 RCW. 88-14-108 (Order 88-11), § 296-59-130, filed 7/6/88.]

WAC 296-59-135 Appendix 1—Nonmandatory alternative lock-out procedure for ski lifts and tows. (1)

To ensure the safety of all personnel engaged in lift maintenance activities, we insist that the following procedure be strictly adhered to.

(a) Criteria.

(i) Equipment shall be deactivated and locked or tagged out before an employee is placed in a position where there is a hazard created by exposure to the components of ski lift or tows, equipment and/or systems.

(ii) This procedure relies on positive communication to indicate when lock-out safety is assured. At any time this crew is working at a location remote from the control station,

this procedure shall be used by only one work crew whose members are working in close proximity to one another.

(iii) The operator and all potentially exposed employees shall have a positive means of communication at all times. If anyone loses the communication means, it shall be restored before exposure can occur or lock-out or tag-out can be broken.

(iv) Other radio transmissions breaking in or overriding the communications between control operator and remote work crew, if not controlled, can be a problem. There are considerations that should be followed:

(A) The first preferred method is to provide an isolated radio channel for communications between operator and remote work crew.

(B) If an isolated radio frequency is not possible, the entire area crew should be trained to recognize the radio conversation characteristics of this type of work to be notified when the work is in progress and be required to restrict use of their radios.

(v) All personnel working under this procedure shall be thoroughly trained in the specific procedures to be followed and their individual requirements. The ski lift or tow controls shall be under control of a fully qualified operator at all times.

(vi) Signs shall be posted in motor rooms on the control panel or the master disconnect stating "men working on lifts."

(vii) The control operator shall not leave the close proximity of the control station unless the master disconnect is thrown to the off position and padlocked.

(viii) The "standby drive" shall be locked out of service in such a manner that precludes the operation of the lift by jumping ignition, throwing a clutch, or hooking up a coupling, etc., whenever work is being performed on the equipment or system.

Methods for securing "standby drive" may be, but are not limited to the following:

(A) Removal to secure a location or locking up "standby" drive coupling chain, belts, etc.;

(B) Denying access to the standby motor by locking motor room door.

(ix) When the crew is working at either terminal in proximity of bullwheels, shafts, guideage, gears, belts, chains, etc., the master disconnect shall be thrown to the off position and padlocked.

(b) Work chair.

(i) Prior to crew loading on work chair, controls and communications shall be thoroughly checked to confirm that they are in good working condition.

(ii) The operator and work crew shall discuss and determine the safe speed for that particular lift. At no time shall the work chair travel around either terminal bullwheel except at a very slow speed.

(iii) Employees riding in the work chair shall face the direction of travel when chair is in motion.

(iv) Employees in work chair shall pay special attention to ensure that equipment or tools, etc., will not be entangled on towers, ramps, or terminals as work chair passes by.

(v) Safety belts are required and there is a designated device on each work chair to hook onto. At no time will it be allowed to hook onto the tower or tower equipment while in the work chair, or hook onto a moving part of the lift if standing on the tower.

(c) Operator and controls.

(i) Manual reset stop switches are required on all lifts. The operator shall check and confirm that the lift cannot be started from any control location when the stop switch is depressed. The operator will leave the stop switch depressed until remote crew directs that they are ready to move.

(ii) Communications between operator and remote work crew will be on name basis. This is especially important if there are other radio communications or other crews working on other lifts.

(2) Summation.

(a) If all these rules are adhered to, the operator can use the control circuit stop switch for repetitive type maintenance on towers. If the remote crew is to be at the location for some time, it is recommended that the operator throw the master disconnect switch to the off position and padlock it.

(b) A padlock on the disconnect switch is required when anybody is working on either terminal.

[Statutory Authority: Chapter 49.17 RCW. 88-23-054 (Order 88-25), § 296-59-135, filed 11/14/88.]

Chapter 296-62 WAC

GENERAL OCCUPATIONAL HEALTH STANDARDS

WAC

PART A—GENERAL

296-62-005	Occupational health and environmental control—Foreword.
296-62-010	Purpose and scope.
296-62-020	Definitions applicable to all sections of this chapter.
296-62-040	Unconstitutionality clause.
296-62-050	Application for waiver or variances.
296-62-051	Ergonomics.

PART B—ACCESS TO RECORDS

Note: Access to records has been moved to chapter 296-802 WAC.

PART B-1 TRADE SECRETS

296-62-05301	Definitions.
296-62-05305	Meet certain conditions if you withhold trade secret information.
296-62-05310	Reveal trade secret information when it is needed in order to treat a medical or first-aid emergency.
296-62-05315	Reveal trade secret information in nonemergency situations when requested by a health professional, employee, or designated representative.
296-62-05320	Deny a written request for disclosure of a specific chemical identity in the manner specified in this rule.
296-62-05325	Understand what is a trade secret.

PART C-1

RETAIN DEPARTMENT OF TRANSPORTATION LABELING

296-62-055	Retain labeling required by the department of transportation.
296-62-05510	Scope.
296-62-05520	Retain readily visible DOT labeling.

PART D—CONTROLS AND DEFINITIONS

296-62-060	Control requirements in addition to those specified.
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PART E—RESPIRATORY PROTECTION

Note: The respiratory protection rules for general industry have been moved to chapter 296-842 WAC. The respiratory protection rules for the agriculture industry have been moved to chapter 296-307 WAC, part Y-5.

PART F—CARCINOGENS

296-62-073	Carcinogens—Scope and application.
296-62-07302	List of carcinogens.
296-62-07304	Definitions.
296-62-07306	Requirements for areas containing carcinogens listed in WAC 296-62-07302.
296-62-07308	General regulated area requirements.

296-62-07310 Signs, information and training.
 296-62-07312 Reports.
 296-62-07314 Medical surveillance.
 296-62-07316 Premixed solutions.

PART G—CARCINOGENS (SPECIFIC)

296-62-07329 Vinyl chloride.
 296-62-07336 Acrylonitrile.
 296-62-07337 Appendix A—Substance safety data sheet for acrylonitrile.
 296-62-07338 Appendix B—Substance technical guidelines for acrylonitrile.
 296-62-07339 Appendix C—Medical surveillance guidelines for acrylonitrile.
 296-62-07340 Appendix D—Sampling and analytical methods for acrylonitrile.
 296-62-07342 1,2-Dibromo-3-chloropropane.
 296-62-07343 Appendix A—Substance safety data sheet for DBCP.
 296-62-07344 Appendix B—Substance technical guidelines for DBCP.
 296-62-07346 Appendix C—Medical surveillance guidelines for DBCP.
 296-62-07354 Appendices—Inorganic arsenic.
 296-62-07355 Ethylene oxide.
 296-62-07357 Definitions.
 296-62-07359 Permissible exposure limits (PEL).
 296-62-07361 Exposure monitoring.
 296-62-07363 Regulated areas.
 296-62-07365 Methods of compliance.
 296-62-07367 Respiratory protection and personal protective equipment.
 296-62-07369 Emergency situations.
 296-62-07371 Medical surveillance.
 296-62-07373 Communication of EtO hazards to employees.
 296-62-07375 Recordkeeping.
 296-62-07377 Observation of monitoring.
 296-62-07381 Appendices.
 296-62-07383 Appendix A—Substance safety data sheet for ethylene oxide (nonmandatory).
 296-62-07385 Appendix B—Substance technical guidelines for ethylene oxide (nonmandatory).
 296-62-07387 Appendix C—Medical surveillance guidelines for ethylene oxide (nonmandatory).
 296-62-07389 Appendix D—Sampling and analytical methods for ethylene oxide (nonmandatory).
 296-62-074 Cadmium.
 296-62-07401 Scope.
 296-62-07403 Definitions.
 296-62-07405 Permissible exposure limit (PEL).
 296-62-07407 Exposure monitoring.
 296-62-07409 Regulated areas.
 296-62-07411 Methods of compliance.
 296-62-07413 Respirator protection.
 296-62-07415 Emergency situations.
 296-62-07417 Protective work clothing and equipment.
 296-62-07419 Hygiene areas and practices.
 296-62-07421 Housekeeping.
 296-62-07423 Medical surveillance.
 296-62-07425 Communication of cadmium hazards to employees.
 296-62-07427 Recordkeeping.
 296-62-07429 Observation of monitoring.
 296-62-07433 Appendices.
 296-62-07441 Appendix A, substance safety data sheet—Cadmium.
 296-62-07443 Appendix B—Substance technical guidelines for cadmium.
 296-62-07447 Appendix D—Occupational health history interview with reference to cadmium exposure directions.
 296-62-07449 Appendix E—Cadmium in workplace atmospheres.
 296-62-07451 A short description of Appendix F to 29 CFR 1910.1027—Nonmandatory protocol for biological monitoring.
 296-62-07460 Butadiene.
 296-62-07470 Methylene chloride.
 296-62-07473 Appendix A.
 296-62-07475 Appendix B.
 296-62-07477 Appendix C.

PART H—AIR CONTAMINANTS

Note: The air contaminant rules for general industry have been moved to chapter 296-841 WAC. The air contaminant rules for the agriculture industry have been moved to chapter 296-307 WAC, part Y-6.

PART I—AIR CONTAMINANTS (SPECIFIC)

296-62-07517 Reserved.

296-62-07519 Thiram.
 296-62-07521 Lead.
 296-62-07525 Appendix A substance safety data sheet—Benzene.
 296-62-07527 Appendix B substance technical guidelines—Benzene.
 296-62-07529 Appendix C medical surveillance guidelines for benzene.
 296-62-07531 Appendix D sampling and analytical methods for benzene monitoring and measurement procedures.
 296-62-07540 Formaldehyde.
 296-62-07542 Appendix A—Substance technical guideline for formalin.
 296-62-07544 Appendix B—Sampling strategy and analytical methods for formaldehyde.
 296-62-07546 Appendix C medical surveillance—Formaldehyde.
 296-62-07548 Appendix D—Nonmandatory medical disease questionnaire.
 296-62-076 Methylene dianiline.
 296-62-07601 Scope and application.
 296-62-07603 Definitions.
 296-62-07605 Permissible exposure limits (PEL).
 296-62-07607 Emergency situations.
 296-62-07609 Exposure monitoring.
 296-62-07611 Regulated areas.
 296-62-07613 Methods of compliance.
 296-62-07615 Respiratory protection.
 296-62-07617 Protective work clothing and equipment.
 296-62-07619 Hygiene facilities and practices.
 296-62-07621 Communication of hazards to employees.
 296-62-07623 Housekeeping.
 296-62-07625 Medical surveillance.
 296-62-07627 Medical removal—Temporary medical removal of an employee.
 296-62-07629 Medical removal protection benefits.
 296-62-07631 Recordkeeping.
 296-62-07633 Observation of monitoring.
 296-62-07637 Appendices.
 296-62-07654 Appendix A to WAC 296-62-076—Substance data sheet, for 4,4'-methylenedianiline.
 296-62-07656 Appendix B to WAC 296-62-076—Substance technical guidelines, MDA.
 296-62-07658 Appendix C to WAC 296-62-076—Medical surveillance guidelines for MDA.
 296-62-07660 Appendix D to WAC 296-62-076—Sampling and analytical methods for MDA monitoring and measurement procedures.

PART I-I—ASBESTOS, TREMOLITE, ANTHOPHYLLITE, AND ACTINOLITE

296-62-077 Asbestos, tremolite, anthophyllite, and actinolite.
 296-62-07701 Scope and application.
 296-62-07703 Definitions.
 296-62-07705 Permissible exposure limits (PEL).
 296-62-07706 Multiemployer worksites.
 296-62-07709 Exposure assessment and monitoring.
 296-62-07711 Regulated areas.
 296-62-07712 Requirements for asbestos activities in construction and shipyard work.
 296-62-07713 Methods of compliance for asbestos activities in general industry.
 296-62-07715 Respiratory protection.
 296-62-07717 Protective work clothing and equipment.
 296-62-07719 Hygiene facilities and practices.
 296-62-07721 Communication of hazards to employees.
 296-62-07722 Employee information and training.
 296-62-07723 Housekeeping.
 296-62-07725 Medical surveillance.
 296-62-07727 Recordkeeping.
 296-62-07728 Competent person.
 296-62-07733 Appendices.
 296-62-07735 Appendix A—WISHA reference method—Mandatory.
 296-62-07737 Appendix B—Detailed procedure for asbestos sampling and analysis—Nonmandatory.
 296-62-07741 Appendix D—Medical questionnaires—Mandatory.
 296-62-07743 Appendix E—Interpretation and classification of chest roentgenograms—Mandatory.
 296-62-07745 Appendix F—Work practices and engineering controls for automotive brake and clutch inspection, disassembly, repair and assembly—Mandatory.
 296-62-07747 Appendix G—Substance technical information for asbestos—Nonmandatory.
 296-62-07749 Appendix H—Medical surveillance guidelines for asbestos—Nonmandatory.
 296-62-07751 Appendix I—Work practices and engineering controls for Class I asbestos operations—Nonmandatory.

- 296-62-07753 Appendix J—Polarized light microscopy of asbestos—Nonmandatory.
 296-62-07755 Appendix K—Smoking cessation program information for asbestos, tremolite, anthophyllite, and actinolite—Nonmandatory.

PART I-2—HEXAVALENT CHROMIUM

- 296-62-08003 Hexavalent chromium.
 296-62-08005 Definitions.
 296-62-08007 Permissible exposure limit (PEL).
 296-62-08009 Exposure determination.
 296-62-08011 Regulated areas.
 296-62-08013 Methods of compliance.
 296-62-08015 Respiratory protection.
 296-62-08017 Protective work clothing and equipment.
 296-62-08019 Hygiene areas and practices.
 296-62-08021 Housekeeping.
 296-62-08023 Medical surveillance.
 296-62-08025 Communication of chromium (VI) hazards to employees.
 296-62-08027 Recordkeeping.
 296-62-08029 Dates.

PART J—BIOLOGICAL AGENTS

Note: The bloodborne pathogen rules for general industry have been moved to chapter 296-823 WAC.

PART J-1—PHYSICAL AGENTS

- 296-62-090 Physical agents.
 296-62-09001 Definitions.
 296-62-09004 Ionizing radiation.
 296-62-09005 Nonionizing radiation.
 296-62-09007 Pressure.
 296-62-09009 Vibration.
 296-62-09013 Temperature, radiant heat, or temperature-humidity combinations.

PART K—HEARING CONSERVATION

Note: The hearing conservation rules for general industry have been moved to chapter 296-817 WAC. The hearing conservation rules for the agriculture industry have been moved to chapter 296-307 WAC, part Y-7.

PART L—ATMOSPHERES AND VENTILATION

- 296-62-100 Oxygen deficient atmospheres.
 296-62-110 Ventilation.
 296-62-11001 Definition.
 296-62-11003 Ventilation guide.
 296-62-11005 Adequate system.
 296-62-11007 Exhaust.
 296-62-11009 Make-up air quantity.
 296-62-11011 Design and operation.
 296-62-11013 Compatibility of systems.
 296-62-11015 Abrasive blasting.
 296-62-11017 Grinding, polishing, and buffing operations.
 296-62-11019 Spray-finishing operations.

PART M—CONFINED SPACES

Note: The confined spaces rules for general industry have been moved to chapter 296-809 WAC. The confined spaces rules for the agriculture industry have been moved to chapter 296-307 WAC, part Y-8.

PART N—COTTON DUST

- 296-62-14533 Cotton dust.
 296-62-14535 Appendix A—Air sampling and analytical procedures for determining concentrations of cotton dust.
 296-62-14537 Appendix B-I through B-III—Respiratory questionnaire.
 296-62-14539 Appendix C—Spirometry prediction tables for normal males and females.
 296-62-14541 Appendix D—Pulmonary function standards for cotton dust standard.
 296-62-14543 Appendix E—Vertical elutriator equivalency protocol.

PART O—COKE OVENS

- 296-62-200 Coke oven emissions.
 296-62-20001 Definitions.
 296-62-20003 Permissible exposure limit.
 296-62-20005 Regulated areas.
 296-62-20007 Exposure monitoring and measurement.
 296-62-20009 Methods of compliance.
 296-62-20011 Respiratory protection.
 296-62-20013 Protective clothing and equipment.
 296-62-20015 Hygiene facilities and practices.
 296-62-20017 Medical surveillance.

- 296-62-20019 Employee information and training.
 296-62-20021 Precautionary signs and labels.
 296-62-20023 Recordkeeping.
 296-62-20025 Observation of monitoring.
 296-62-20027 Appendix A—Coke oven emissions substance information sheet.
 296-62-20029 Appendix B—Industrial hygiene and medical surveillance guidelines.

PART P—HAZARDOUS WASTE OPERATIONS AND TREATMENT, STORAGE, AND DISPOSAL FACILITIES

Note: The hazardous waste rules for general industry have been moved to chapter 296-843 WAC.

PART Q—HAZARDOUS CHEMICALS IN LABORATORIES

Note: The hazardous chemicals in laboratories rules for general industry have been moved to chapter 296-828 WAC.

DISPOSITION OF SECTIONS FORMERLY CODIFIED IN THIS CHAPTER

- 296-62-030 Revisions. [Order 70-8, § 296-62-030, filed 7/31/70, effective 9/1/70; Rule 3.010, effective 8/1/63.] Repealed by Order 73-3, filed 5/7/73.
 296-62-05101 What is the purpose of this rule? [Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 00-12-024, § 296-62-05101, filed 5/26/00, effective 7/1/02.] Repealed by Initiative 841, approved 11/4/03, effective 12/4/03.
 296-62-05103 Which employers are covered by this rule? [Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].-050. 00-12-024, § 296-62-05103, filed 5/26/00, effective 7/1/02.] Repealed by Initiative 841, approved 11/4/03, effective 12/4/03.
 296-62-05105 What is a "caution zone job"? [Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 00-12-024, § 296-62-05105, filed 5/26/00, effective 7/1/02.] Repealed by Initiative 841, approved 11/4/03, effective 12/4/03.
 296-62-05110 When do employers' existing ergonomics activities comply with this rule? [Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 00-12-024, § 296-62-05110, filed 5/26/00, effective 7/1/02.] Repealed by Initiative 841, approved 11/4/03, effective 12/4/03.
 296-62-05120 Which employees must receive ergonomics awareness education and when? [Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 00-12-024, § 296-62-05120, filed 5/26/00, effective 7/1/02.] Repealed by Initiative 841, approved 11/4/03, effective 12/4/03.
 296-62-05122 What must be included in ergonomics awareness education? [Statutory Authority: RCW 49.17.010, [49.17].-040, and [49.17].050. 00-12-024, § 296-62-05122, filed 5/26/00, effective 7/1/02.] Repealed by Initiative 841, approved 11/4/03, effective 12/4/03.
 296-62-05130 What options do employers have for analyzing and reducing WMSD hazards? [Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 00-12-024, § 296-62-05130, filed 5/26/00, effective 7/1/02.] Repealed by Initiative 841, approved 11/4/03, effective 12/4/03.
 296-62-05140 How must employees be kept involved and informed? [Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 01-23-060, § 296-62-05140, filed 11/20/01, effective 7/1/02; 00-12-024, § 296-62-05140, filed 5/26/00, effective 7/1/02.] Repealed by Initiative 841, approved 11/4/03, effective 12/4/03.
 296-62-05150 How are terms and phrases used in this rule? [Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].-050. 00-12-024, § 296-62-05150, filed 5/26/00, effective 7/1/02.] Repealed by Initiative 841, approved 11/4/03, effective 12/4/03.
 296-62-05160 When must employers comply with this rule? [Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].-050. 00-12-024, § 296-62-05160, filed 5/26/00, effective 7/1/02.] Repealed by Initiative 841, approved 11/4/03, effective 12/4/03.
 296-62-05172 Appendix A: Illustrations of physical risk factors. [Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 00-12-024, § 296-62-05172, filed 5/26/00, effective 7/1/02.] Repealed by Initiative 841, approved 11/4/03, effective 12/4/03.

296-62-05174	Appendix B: Criteria for analyzing and reducing WMSD hazards for employers who choose the specific performance approach. [Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 00-12-024, § 296-62-05174, filed 5/26/00, effective 7/1/02.] Repealed by Initiative 841, approved 11/4/03, effective 12/4/03.		Repealed by 04-10-026, filed 4/27/04, effective 8/1/04. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060. Later promulgation, see chapter 296-802 WAC.
296-62-05176	Appendix C: Standard industry classification (SIC) codes. [Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 00-12-024, § 296-62-05176, filed 5/26/00, effective 7/1/02.] Repealed by Initiative 841, approved 11/4/03, effective 12/4/03.	296-62-05215	Transfer of records. [Statutory Authority: Chapter 49.17 RCW. 89-11-035 (Order 89-03), § 296-62-05215, filed 5/15/89, effective 6/30/89. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-18-029 (Order 81-21), § 296-62-05215, filed 8/27/81.] Repealed by 04-10-026, filed 4/27/04, effective 8/1/04. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060. Later promulgation, see chapter 296-802 WAC.
296-62-052	Access to employee exposure and medical records. [Statutory Authority: Chapter 49.17 RCW. 89-11-035 (Order 89-03), § 296-62-052, filed 5/15/89, effective 6/30/89. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-18-029 (Order 81-21), § 296-62-052, filed 8/27/81.] Repealed by 04-10-026, filed 4/27/04, effective 8/1/04. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060. Later promulgation, see chapter 296-802 WAC.	296-62-05217	Appendices. [Statutory Authority: Chapter 49.17 RCW. 89-11-035 (Order 89-03), § 296-62-05217, filed 5/15/89, effective 6/30/89. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-18-029 (Order 81-21), § 296-62-05217, filed 8/27/81.] Repealed by 04-10-026, filed 4/27/04, effective 8/1/04. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060. Later promulgation, see chapter 296-802 WAC.
296-62-05201	Purpose. [Statutory Authority: Chapter 49.17 RCW. 89-11-035 (Order 89-03), § 296-62-05201, filed 5/15/89, effective 6/30/89. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-18-029 (Order 81-21), § 296-62-05201, filed 8/27/81.] Repealed by 04-10-026, filed 4/27/04, effective 8/1/04. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060. Later promulgation, see chapter 296-802 WAC.	296-62-05219	Effective date. [Statutory Authority: Chapter 49.17 RCW. 89-11-035 (Order 89-03), § 296-62-05219, filed 5/15/89, effective 6/30/89. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-18-029 (Order 81-21), § 296-62-05219, filed 8/27/81.] Repealed by 04-10-026, filed 4/27/04, effective 8/1/04. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060. Later promulgation, see chapter 296-802 WAC.
296-62-05203	Scope and application. [Statutory Authority: Chapter 49.17 RCW. 89-11-035 (Order 89-03), § 296-62-05203, filed 5/15/89, effective 6/30/89. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-18-029 (Order 81-21), § 296-62-05203, filed 8/27/81.] Repealed by 04-10-026, filed 4/27/04, effective 8/1/04. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060. Later promulgation, see chapter 296-802 WAC.	296-62-05221	Appendix A—Sample authorization letter for the release of employee medical record information to a designated representative. [Statutory Authority: Chapter 49.17 RCW. 89-11-035 (Order 89-03), § 296-62-05221, filed 5/15/89, effective 6/30/89. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-18-029 (Order 81-21), § 296-62-05221, filed 8/27/81.] Repealed by 04-10-026, filed 4/27/04, effective 8/1/04. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060. Later promulgation, see chapter 296-802 WAC.
296-62-05205	Definitions. [Statutory Authority: Chapter 49.17 RCW. 89-11-035 (Order 89-03), § 296-62-05205, filed 5/15/89, effective 6/30/89. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-18-029 (Order 81-21), § 296-62-05205, filed 8/27/81.] Repealed by 04-10-026, filed 4/27/04, effective 8/1/04. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060. Later promulgation, see chapter 296-802 WAC.	296-62-05223	Appendix B—Availability of NIOSH Registry of Toxic Effects of Chemical Substances (RTECS). [Statutory Authority: Chapter 49.17 RCW. 89-11-035 (Order 89-03), § 296-62-05223, filed 5/15/89, effective 6/30/89. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-18-029 (Order 81-21), § 296-62-05223, filed 8/27/81.] Repealed by 04-10-026, filed 4/27/04, effective 8/1/04. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060. Later promulgation, see chapter 296-802 WAC.
296-62-05207	Preservation of records. [Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 01-11-038, § 296-62-05207, filed 5/9/01, effective 9/1/01. Statutory Authority: Chapter 49.17 RCW. 89-11-035 (Order 89-03), § 296-62-05207, filed 5/15/89, effective 6/30/89. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-18-029 (Order 81-21), § 296-62-05207, filed 8/27/81.] Repealed by 04-10-026, filed 4/27/04, effective 8/1/04. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060. Later promulgation, see chapter 296-802 WAC.	296-62-054	Manufacturers, importers and distributors—Hazard communication. [Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060. 03-01-096, § 296-62-054, filed 12/17/02, effective 6/1/03. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 01-11-038, § 296-62-054, filed 5/9/01, effective 9/1/01. Statutory Authority: Chapter 49.17 RCW. 88-14-108 (Order 88-11), § 296-62-054, filed 7/6/88. Statutory Authority: RCW 49.17.040 and 49.17.050. 84-22-012 (Order 84-22), § 296-62-054, filed 10/30/84; 84-13-001 (Order 84-14), § 296-62-054, filed 6/7/84.] Repealed by 03-10-068, filed 5/6/03, effective 8/1/03. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060. Later promulgation, see WAC 296-307-560 through 296-307-56050.
296-62-05209	Access to records. [Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 01-17-033, § 296-62-05209, filed 8/8/01, effective 9/1/01. Statutory Authority: Chapter 49.17 RCW. 89-11-035 (Order 89-03), § 296-62-05209, filed 5/15/89, effective 6/30/89. Statutory Authority: RCW 49.17.040 and 49.17.050. 83-24-013 (Order 83-34), § 296-62-05209, filed 11/30/83. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-18-029 (Order 81-21), § 296-62-05209, filed 8/27/81.] Repealed by 04-10-026, filed 4/27/04, effective 8/1/04. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060. Later promulgation, see chapter 296-802 WAC.	296-62-05402	Determine whether the chemicals you produce in your workplace or import are hazardous. [Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 01-11-038, § 296-62-05402, filed 5/9/01, effective 9/1/01.] Repealed by 03-10-068, filed 5/6/03, effective 8/1/03. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060. Later promulgation, see WAC 296-307-560 through 296-307-56050.
296-62-05211	Trade secrets. [Statutory Authority: Chapter 49.17 RCW. 89-11-035 (Order 89-03), § 296-62-05211, filed 5/15/89, effective 6/30/89. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-18-029 (Order 81-21), § 296-62-05211, filed 8/27/81.] Repealed by 01-11-038, filed 5/9/01, effective 9/1/01. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.	296-62-05403	Scope and application. [Statutory Authority: RCW 49.17.010, [49.17].050 and [49.17].060. 95-22-015, § 296-62-05403, filed 10/20/95, effective 1/16/96. Statutory Authority: Chapter 49.17 RCW. 94-16-145, § 296-62-05403, filed 8/3/94, effective 9/12/94; 88-14-108 (Order 88-11), § 296-62-05403, filed 7/6/88; 87-24-051 (Order 87-24), § 296-62-05403, filed 11/30/87. Statutory Authority: RCW 49.17.230, 49.70.180, 49.17.040, 49.17.050 and 49.17.240. 86-12-004 (Order 86-22), §
296-62-05213	Employee information. [Statutory Authority: Chapter 49.17 RCW. 89-11-035 (Order 89-03), § 296-62-05213, filed 5/15/89, effective 6/30/89. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-18-029 (Order 81-21), § 296-62-05213, filed 8/27/81.]		

	296-62-05403, filed 5/22/86. Statutory Authority: RCW 49.17.040 and 49.17.050. 85-10-004 (Order 85-09), § 296-62-05403, filed 4/19/85; 84-22-012 (Order 84-22), § 296-62-05403, filed 10/30/84; 84-13-001 (Order 84-14), § 296-62-05403, filed 6/7/84.] Repealed by 01-11-038, filed 5/9/01, effective 9/1/01. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].-050.	
296-62-05404	Use these criteria in making hazard determinations. [Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 01-11-038, § 296-62-05404, filed 5/9/01, effective 9/1/01.] Repealed by 03-10-068, filed 5/6/03, effective 8/1/03. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060. Later promulgation, see WAC 296-307-560 through 296-307-56050.	296-62-05412
296-62-05405	Definitions applicable to this part. [Statutory Authority: RCW 49.17.010, [49.17].050 and [49.17].060. 95-22-015, § 296-62-05405, filed 10/20/95, effective 1/16/96. Statutory Authority: Chapter 49.17 RCW. 94-16-145, § 296-62-05405, filed 8/3/94, effective 9/12/94; 88-14-108 (Order 88-11), § 296-62-05405, filed 7/6/88; 87-24-051 (Order 87-24), § 296-62-05405, filed 11/30/87. Statutory Authority: RCW 49.17.050(2) and 49.17.040, 87-10-008 (Order 87-06), § 296-62-05405, filed 4/27/87. Statutory Authority: RCW 49.17.230, 49.70.180, 49.17.040, 49.17.050 and 49.17.240. 86-12-004 (Order 86-22), § 296-62-05405, filed 5/22/86. Statutory Authority: RCW 49.17.040 and 49.17.050. 85-10-004 (Order 85-09), § 296-62-05405, filed 4/19/85; 84-22-012 (Order 84-22), § 296-62-05405, filed 10/30/84; 84-13-001 (Order 84-14), § 296-62-05405, filed 6/7/84.] Repealed by 01-11-038, filed 5/9/01, effective 9/1/01. Statutory Authority: RCW 49.17.010, [49.17].-040, and [49.17].050.	296-62-05413
296-62-05406	Determine whether the chemicals you produce or import are health hazards. [Statutory Authority: RCW 49.17.-010, [49.17].040, and [49.17].050. 01-11-038, § 296-62-05406, filed 5/9/01, effective 9/1/01.] Repealed by 03-10-068, filed 5/6/03, effective 8/1/03. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060. Later promulgation, see WAC 296-307-560 through 296-307-56050.	296-62-05415
296-62-05407	Hazard determination. [Statutory Authority: RCW 49.17.010, [49.17].050 and [49.17].060. 95-22-015, § 296-62-05407, filed 10/20/95, effective 1/16/96. Statutory Authority: Chapter 49.17 RCW. 94-16-145, § 296-62-05407, filed 8/3/94, effective 9/12/94; 88-14-108 (Order 88-11), § 296-62-05407, filed 7/6/88. Statutory Authority: RCW 49.17.230, 49.70.180, 49.17.040, 49.17.050 and 49.17.240. 86-12-004 (Order 86-22), § 296-62-05407, filed 5/22/86. Statutory Authority: RCW 49.17.040 and 49.17.050. 84-13-001 (Order 84-14), § 296-62-05407, filed 6/7/84.] Repealed by 01-11-038, filed 5/9/01, effective 9/1/01. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.	296-62-05417
296-62-05408	Obtain or develop a material safety data sheet for each hazardous chemical you produce or import. [Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].-050. 01-11-038, § 296-62-05408, filed 5/9/01, effective 9/1/01.] Repealed by 03-10-068, filed 5/6/03, effective 8/1/03. Statutory Authority: RCW 49.17.010, 49.17.-040, 49.17.050, and 49.17.060. Later promulgation, see WAC 296-307-560 through 296-307-56050.	296-62-05419
296-62-05409	Written hazard communication program. [Statutory Authority: Chapter 49.17 RCW. 94-16-145, § 296-62-05409, filed 8/3/94, effective 9/12/94; 88-14-108 (Order 88-11), § 296-62-05409, filed 7/6/88. Statutory Authority: RCW 49.17.040 and 49.17.050. 84-13-001 (Order 84-14), § 296-62-05409, filed 6/7/84.] Repealed by 01-11-038, filed 5/9/01, effective 9/1/01. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.	296-62-05421
296-62-05410	Label clearly each container of hazardous chemicals that leaves your workplace. [Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 01-11-038, § 296-62-05410, filed 5/9/01, effective 9/1/01.] Repealed by 03-10-068, filed 5/6/03, effective 8/1/03. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060. Later promulgation, see WAC 296-307-560 through 296-307-56050.	296-62-05423
296-62-05411	Labels and other forms of warning. [Statutory Authority: Chapter 49.17 RCW. 95-04-006, § 296-62-05411, filed 1/18/95, effective 3/10/95; 94-16-145, § 296-62-05411, filed 8/3/94, effective 9/12/94; 88-14-108 (Order 88-11), § 296-62-05411, filed 7/6/88. Statutory Authority: RCW 49.17.040 and 49.17.050. 85-10-004 (Order 85-09), § 296-62-05411, filed 4/19/85; 84-13-001 (Order 84-14), § 296-62-05411, filed 6/7/84.] Repealed by 01-11-038, filed 5/9/01, effective 9/1/01. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.	296-62-05425
	Provide material safety data sheets. [Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 01-11-038, § 296-62-05412, filed 5/9/01, effective 9/1/01.] Repealed by 03-10-068, filed 5/6/03, effective 8/1/03. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060. Later promulgation, see WAC 296-307-560 through 296-307-56050.	
	Material safety data sheets. [Statutory Authority: RCW 49.17.040, [49.17].050 and [49.17].060. 97-11-055, § 296-62-05413, filed 5/20/97, effective 8/1/97. Statutory Authority: RCW 49.17.010, [49.17].050 and [49.17].-060. 95-22-015, § 296-62-05413, filed 10/20/95, effective 1/16/96. Statutory Authority: Chapter 49.17 RCW. 94-16-145, § 296-62-05413, filed 8/3/94, effective 9/12/94; 88-14-108 (Order 88-11), § 296-62-05413, filed 7/6/88. Statutory Authority: RCW 49.17.230, 49.70.180, 49.17.040, 49.17.050 and 49.17.240. 86-12-004 (Order 86-22), § 296-62-05413, filed 5/22/86. Statutory Authority: RCW 49.17.040 and 49.17.050. 85-10-004 (Order 85-09), § 296-62-05413, filed 4/19/85; 84-22-012 (Order 84-22), § 296-62-05413, filed 10/30/84; 84-13-001 (Order 84-14), § 296-62-05413, filed 6/7/84.] Repealed by 01-11-038, filed 5/9/01, effective 9/1/01. Statutory Authority: RCW 49.17.010, [49.17].-040, and [49.17].050.	
	Employee information and training. [Statutory Authority: Chapter 49.17 RCW. 94-16-145, § 296-62-05415, filed 8/3/94, effective 9/12/94. Statutory Authority: RCW 49.17.230, 49.70.180, 49.17.040, 49.17.050 and 49.17.240. 86-12-004 (Order 86-22), § 296-62-05415, filed 5/22/86. Statutory Authority: RCW 49.17.040 and 49.17.050. 84-13-001 (Order 84-14), § 296-62-05415, filed 6/7/84.] Repealed by 01-11-038, filed 5/9/01, effective 9/1/01. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.	
	Trade secrets. [Statutory Authority: Chapter 49.17 RCW. 94-16-145, § 296-62-05417, filed 8/3/94, effective 9/12/94; 88-14-108 (Order 88-11), § 296-62-05417, filed 7/6/88. Statutory Authority: RCW 49.17.230, 49.70.180, 49.17.040, 49.17.050 and 49.17.240. 86-12-004 (Order 86-22), § 296-62-05417, filed 5/22/86. Statutory Authority: RCW 49.17.040 and 49.17.050. 84-22-012 (Order 84-22), § 296-62-05417, filed 10/30/84; 84-13-001 (Order 84-14), § 296-62-05417, filed 6/7/84.] Repealed by 01-11-038, filed 5/9/01, effective 9/1/01. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.	
	Effective dates. [Statutory Authority: Chapter 49.17 RCW. 94-16-145, § 296-62-05419, filed 8/3/94, effective 9/12/94. Statutory Authority: RCW 49.17.040 and 49.17.050. 84-13-001 (Order 84-14), § 296-62-05419, filed 6/7/84.] Repealed by 01-11-038, filed 5/9/01, effective 9/1/01. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.	
	Appendix A—Health hazard definitions (mandatory). [Statutory Authority: Chapter 49.17 RCW. 94-16-145, § 296-62-05421, filed 8/3/94, effective 9/12/94; 88-14-108 (Order 88-11), § 296-62-05421, filed 7/6/88. Statutory Authority: RCW 49.17.040 and 49.17.050. 85-10-004 (Order 85-09), § 296-62-05421, filed 4/19/85; 84-22-012 (Order 84-22), § 296-62-05421, filed 10/30/84; 84-13-001 (Order 84-14), § 296-62-05421, filed 6/7/84.] Repealed by 01-11-038, filed 5/9/01, effective 9/1/01. Statutory Authority: RCW 49.17.010, [49.17].-040, and [49.17].050.	
	Appendix B—Hazard determination (mandatory). [Statutory Authority: Chapter 49.17 RCW. 94-16-145, § 296-62-05423, filed 8/3/94, effective 9/12/94; 88-14-108 (Order 88-11), § 296-62-05423, filed 7/6/88. Statutory Authority: RCW 49.17.040 and 49.17.050. 84-13-001 (Order 84-14), § 296-62-05423, filed 6/7/84.] Repealed by 01-11-038, filed 5/9/01, effective 9/1/01. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.	
	Appendix C—Information sources (advisory). [Statutory Authority: Chapter 49.17 RCW. 94-16-145, § 296-62-05425, filed 8/3/94, effective 9/12/94; 88-14-108 (Order 88-11), § 296-62-05425, filed 7/6/88. Statutory	

	Authority: RCW 49.17.230, 49.70.180, 49.17.040, 49.17.050 and 49.17.240. 86-12-004 (Order 86-22), § 296-62-05425, filed 5/22/86. Statutory Authority: RCW 49.17.040 and 49.17.050. 85-10-004 (Order 85-09), § 296-62-05425, filed 4/19/85; 84-13-001 (Order 84-14), § 296-62-05425, filed 6/7/84.] Repealed by 01-11-038, filed 5/9/01, effective 9/1/01. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.	
296-62-05427	Appendix D. [Statutory Authority: Chapter 49.17 RCW. 94-16-145, § 296-62-05427, filed 8/3/94, effective 9/12/94. Statutory Authority: RCW 49.17.050(2) and 49.17.040. 87-10-008 (Order 87-06), § 296-62-05427, filed 4/27/87. Statutory Authority: RCW 49.17.230, 49.70.180, 49.17.040, 49.17.050 and 49.17.240. 86-12-004 (Order 86-22), § 296-62-05427, filed 5/22/86.] Repealed by 01-11-038, filed 5/9/01, effective 9/1/01. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.	
296-62-05429	Appendix E—Guidelines for employer compliance (advisory). [Statutory Authority: Chapter 49.17 RCW. 94-16-145, § 296-62-05429, filed 8/3/94, effective 9/12/94.] Repealed by 01-11-038, filed 5/9/01, effective 9/1/01. Statutory Authority: RCW 49.17.010, [49.17].-040, and [49.17].050.	
296-62-070	Chemical agents (airborne or contact). [Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].-050. 02-16-047, § 296-62-070, filed 8/1/02, effective 10/1/02; Order 70-8, § 296-62-070, filed 7/31/70, effective 9/1/70; Section VII, effective 8/1/63.] Repealed by 03-10-068, filed 5/6/03, effective 8/1/03. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060. Later promulgation, see WAC 296-307-009.	
296-62-07001	Definitions (airborne chemical agents). [Order 73-3, § 296-62-07001, filed 5/7/73.] Repealed by 03-10-068, filed 5/6/03, effective 8/1/03. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060. Later promulgation, see WAC 296-307-009.	
296-62-07003	Definitions (contact chemical agents). [Order 73-3, § 296-62-07003, filed 5/7/73.] Repealed by 03-10-068, filed 5/6/03, effective 8/1/03. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060. Later promulgation, see WAC 296-307-009.	
296-62-07005	Control of chemical agents. [Order 73-3, § 296-62-07005, filed 5/7/73.] Repealed by 03-10-068, filed 5/6/03, effective 8/1/03. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060. Later promulgation, see WAC 296-307-018.	
296-62-07007	Labeling of chemical agents. [Order 73-3, § 296-62-07007, filed 5/7/73.] Repealed by 90-09-026 (Order 90-01), filed 4/10/90, effective 5/25/90. Statutory Authority: Chapter 49.17 RCW.	
296-62-071	Respiratory protection. [Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060. 03-20-114, § 296-62-071, filed 10/1/03, effective 1/1/04. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-071, filed 5/4/99, effective 9/1/99. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-16-016 (Order 81-19), § 296-62-071, filed 7/27/81.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	
296-62-07101	To whom does chapter 296-62 WAC, Part E apply? [Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 01-11-038, § 296-62-07101, filed 5/9/01, effective 9/1/01; 99-10-071, § 296-62-07101, filed 5/4/99, effective 9/1/99. Statutory Authority: RCW 49.17.040 and 49.17.050. 82-08-026 (Order 82-10), § 296-62-07101, filed 3/30/82. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-16-016 (Order 81-19), § 296-62-07101, filed 7/27/81.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	
296-62-07102	When are you allowed to rely on respirators to protect employees from breathing contaminated air? [Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07102, filed 5/4/99, effective 9/1/99.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	
296-62-07103	What are your responsibilities as an employer? [Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07103, filed 5/4/99, effective 9/1/99. Statutory Authority: RCW 49.17.040,	296-62-07105
	49.17.050 and 49.17.240. 81-16-016 (Order 81-19), § 296-62-07103, filed 7/27/81.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	
	Definitions. [Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 00-21-100, § 296-62-07105, filed 10/18/00, effective 1/1/01; 99-10-071, § 296-62-07105, filed 5/4/99, effective 9/1/99. Statutory Authority: Chapter 49.17 RCW. 95-04-007, § 296-62-07105, filed 1/18/95, effective 3/1/95; 94-15-096 (Order 94-07), § 296-62-07105, filed 7/20/94, effective 9/20/94; 93-19-142 (Order 93-04), § 296-62-07105, filed 9/22/93, effective 11/1/93; 91-24-017 (Order 91-07), § 296-62-07105, filed 11/22/91, effective 12/24/91. RCW 49.17.040, 49.17.050 and 49.17.240. 81-16-016 (Order 81-19), § 296-62-07105, filed 7/27/81.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	
	When is a respiratory protection program required? [Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07107, filed 5/4/99, effective 9/1/99. Statutory Authority: Chapter 49.17 RCW. 90-09-026 (Order 90-01), § 296-62-07107, filed 4/10/90, effective 5/25/90. Statutory Authority: RCW 49.17.040 and 49.17.050. 82-03-023 (Order 82-1), § 296-62-07107, filed 1/15/82. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-16-016 (Order 81-19), § 296-62-07107, filed 7/27/81.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	296-62-07107
	When must you update your written respiratory protection program? [Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07109, filed 5/4/99, effective 9/1/99. Statutory Authority: RCW 49.17.040 and 49.17.050. 82-13-045 (Order 82-22), § 296-62-07109, filed 6/11/82; 82-03-023 (Order 82-1), § 296-62-07109, filed 1/15/82. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-16-016 (Order 81-19), § 296-62-07109, filed 7/27/81.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	296-62-07109
	What must be included in your written respiratory protection program? [Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07111, filed 5/4/99, effective 9/1/99. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-16-016 (Order 81-19), § 296-62-07111, filed 7/27/81.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	296-62-07111
	What are the requirements for a program administrator? [Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07113, filed 5/4/99, effective 9/1/99. Statutory Authority: RCW 49.17.040, [49.17].050 and [49.17].060. 97-19-014, § 296-62-07113, filed 9/5/97, effective 11/5/97. Statutory Authority: Chapter 49.17 RCW. 91-24-017 (Order 91-07), § 296-62-07113, filed 11/22/91, effective 12/24/91; 88-14-108 (Order 88-11), § 296-62-07113, filed 7/6/88. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-16-016 (Order 81-19), § 296-62-07113, filed 7/27/81.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	296-62-07113
	Who pays for the respirators, training, medical evaluations, and fit testing? [Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07115, filed 5/4/99, effective 9/1/99. Statutory Authority: Chapter 49.17 RCW. 88-14-108 (Order 88-11), § 296-62-07115, filed 7/6/88. Statutory Authority: RCW 49.17.040 and 49.17.050. 83-24-013 (Order 83-34), § 296-62-07115, filed 11/30/83; 82-08-026 (Order 82-10), § 296-62-07115, filed 3/30/82. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-16-016 (Order 81-19), § 296-62-07115, filed 7/27/81.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	296-62-07115
	What must you do when employees choose to wear respirators when respirators are not required? [Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].-	296-62-07117

	050. 00-21-100, § 296-62-07117, filed 10/18/00, effective 1/1/01; 99-10-071, § 296-62-07117, filed 5/4/99, effective 9/1/99. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-16-016 (Order 81-19), § 296-62-07117, filed 7/27/81.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	
296-62-07119	Identification of air-purifying respirator canisters. [Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-16-016 (Order 81-19), § 296-62-07119, filed 7/27/81.] Repealed by 99-10-071, filed 5/4/99, effective 9/1/99. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050.	
296-62-07121	Effective date. [Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-16-016 (Order 81-19), § 296-62-07121, filed 7/27/81.] Repealed by 99-10-071, filed 5/4/99, effective 9/1/99. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050.	
296-62-07130	What must be considered when selecting any respirator? [Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07130, filed 5/4/99, effective 9/1/99.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	296-62-07156
296-62-07131	What else must you consider when selecting a respirator for use in atmospheres that are not IDLH? [Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 00-21-100, § 296-62-07131, filed 10/18/00, effective 1/1/01; 99-10-071, § 296-62-07131, filed 5/4/99, effective 9/1/99.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	296-62-07160
296-62-07132	What else must you consider when selecting a respirator for use in IDLH atmospheres? [Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07132, filed 5/4/99, effective 9/1/99.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	296-62-07161
296-62-07133	What else must you consider when selecting a respirator for emergency and rescue use? [Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07133, filed 5/4/99, effective 9/1/99.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	296-62-07162
296-62-07150	What are the general requirements for medical evaluations? [Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 00-21-100, § 296-62-07150, filed 10/18/00, effective 1/1/01; 99-10-071, § 296-62-07150, filed 5/4/99, effective 9/1/99.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	296-62-07170
296-62-07151	Who must perform medical evaluations? [Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07151, filed 5/4/99, effective 9/1/99.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	296-62-07171
296-62-07152	What information must you provide to the PLHCP in addition to the questionnaire? [Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07152, filed 5/4/99, effective 9/1/99.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	296-62-07172
296-62-07153	How must the medical evaluations and the questionnaire be administered? [Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07153, filed 5/4/99, effective 9/1/99.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	296-62-07175
296-62-07154	Who must review the questionnaire and determine what, if any, follow-up evaluations are needed? [Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07154, filed 5/4/99, effective 9/1/99.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	296-62-07176
296-62-07155	What must be included in the PLHCP's written recommendation? [Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 00-21-100, § 296-62-07155, filed 10/18/00, effective 1/1/01; 99-10-071, § 296-62-07155, filed 5/4/99, effective 9/1/99.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	296-62-07177
		296-62-07178
		296-62-07179
		296-62-07182

	RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07182, filed 5/4/99, effective 9/1/99.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.		49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07209, filed 5/4/99, effective 9/1/99.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.
296-62-07184	How must filters, cartridges and canisters be labeled? [Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07184, filed 5/4/99, effective 9/1/99.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	296-62-07210	What are the isoamyl acetate fit testing procedures (QLFT)? [Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07210, filed 5/4/99, effective 9/1/99.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.
296-62-07186	What are the general training requirements? [Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07186, filed 5/4/99, effective 9/1/99.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	296-62-07212	Saccharin solution aerosol protocol (QLFT). [Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07212, filed 5/4/99, effective 9/1/99.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.
296-62-07188	How do you know if you adequately trained your employees? [Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07188, filed 5/4/99, effective 9/1/99.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	296-62-07213	What are the taste threshold screening procedures for saccharin (QLFT)? [Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07213, filed 5/4/99, effective 9/1/99.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.
296-62-07190	When must your employees be trained? [Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 00-21-100, § 296-62-07190, filed 10/18/00, effective 1/1/01; 99-10-071, § 296-62-07190, filed 5/4/99, effective 9/1/99.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	296-62-07214	What is the saccharin solution aerosol fit testing procedure (QLFT)? [Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07214, filed 5/4/99, effective 9/1/99.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.
296-62-07192	How must you evaluate the effectiveness of your respiratory protection program? [Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07192, filed 5/4/99, effective 9/1/99.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	296-62-07217	Bitrex™ (denatonium benzoate) solution aerosol qualitative fit testing (QLFT) protocol. [Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07217, filed 5/4/99, effective 9/1/99.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.
296-62-07194	What are the recordkeeping requirements? [Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07194, filed 5/4/99, effective 9/1/99.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	296-62-07218	What is the taste threshold screening procedure for Bitrex™ (QLFT)? [Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07218, filed 5/4/99, effective 9/1/99.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.
296-62-07201	Appendix A-1: General fit testing requirements for respiratory protection—Mandatory. [Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07201, filed 5/4/99, effective 9/1/99.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	296-62-07219	What is the Bitrex™ solution aerosol fit testing procedure (QLFT)? [Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07219, filed 5/4/99, effective 9/1/99.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.
296-62-07202	What are the general requirements for fit testing? [Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07202, filed 5/4/99, effective 9/1/99.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	296-62-07222	Irritant smoke (stannic chloride) protocol (QLFT). [Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07222, filed 5/4/99, effective 9/1/99.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.
296-62-07203	What are the fit test exercise requirements? [Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07203, filed 5/4/99, effective 9/1/99.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	296-62-07223	What are the general requirements and precautions for irritant smoke fit testing (QLFT)? [Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07223, filed 5/4/99, effective 9/1/99.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.
296-62-07205	Appendix A-2: Qualitative fit testing (QLFT) protocols for respiratory protection—Mandatory. [Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07205, filed 5/4/99, effective 9/1/99.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	296-62-07224	What is the sensitivity screening check protocol for irritant smoke (QLFT)? [Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07224, filed 5/4/99, effective 9/1/99.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.
296-62-07206	What are the general qualitative fit testing (QLFT) protocols? [Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07206, filed 5/4/99, effective 9/1/99.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	296-62-07225	What is the irritant smoke fit testing procedure (QLFT)? [Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07225, filed 5/4/99, effective 9/1/99.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.
296-62-07208	Isoamyl acetate protocol (a QLFT). [Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07208, filed 5/4/99, effective 9/1/99.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	296-62-07230	Appendix A-3: Quantitative fit testing (QNFT) protocols for respiratory protection—Mandatory. [Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07230, filed 5/4/99, effective 9/1/99.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05.
296-62-07209	What are the odor threshold screening procedures for isoamyl acetate (QLFT)? [Statutory Authority: RCW		

	tive 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	296-62-07247	What are the controlled negative pressure (CNP) fit testing requirements and procedures (QNFT)? [Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].-050. 99-10-071, § 296-62-07247, filed 5/4/99, effective 9/1/99.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.
296-62-07231	What are the general requirements for quantitative fit testing (QNFT)? [Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07231, filed 5/4/99, effective 9/1/99.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	296-62-07248	What test exercises are required for controlled negative pressure (CNP) fit testing (QNFT)? [Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07248, filed 5/4/99, effective 9/1/99.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.
296-62-07233	Generated aerosol quantitative fit testing protocol (QNFT). [Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07233, filed 5/4/99, effective 9/1/99.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	296-62-07251	Appendix B-1: User seal check procedures—Mandatory. [Statutory Authority: RCW 49.17.010, [49.17].-040 and [49.17].050. 99-10-071, § 296-62-07251, filed 5/4/99, effective 9/1/99.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.
296-62-07234	What equipment is required for generated aerosol fit testing (QNFT)? [Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07234, filed 5/4/99, effective 9/1/99.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	296-62-07253	Appendix B-2: Respirator cleaning procedures—Mandatory. [Statutory Authority: RCW 49.17.010, [49.17].-040 and [49.17].050. 99-10-071, § 296-62-07253, filed 5/4/99, effective 9/1/99.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.
296-62-07235	What are the procedures for generated aerosol quantitative fit testing (QNFT)? [Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07235, filed 5/4/99, effective 9/1/99.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	296-62-07255	Appendix C: WISHA respirator medical evaluation questionnaire—Mandatory. [Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 00-21-100, § 296-62-07255, filed 10/18/00, effective 1/1/01; 99-10-071, § 296-62-07255, filed 5/4/99, effective 9/1/99.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.
296-62-07236	How are fit factors calculated (QNFT)? [Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].-050. 99-10-071, § 296-62-07236, filed 5/4/99, effective 9/1/99.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	296-62-07257	Appendix D: Health care provider respirator recommendation form—Nonmandatory. [Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07257, filed 5/4/99, effective 9/1/99.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.
296-62-07238	Ambient aerosol condensation nuclei counter (CNC) quantitative fit testing protocol. [Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07238, filed 5/4/99, effective 9/1/99.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	296-62-07260	Appendix E: Additional information regarding respirator selection—Nonmandatory. [Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07260, filed 5/4/99, effective 9/1/99.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.
296-62-07239	General information about ambient aerosol condensation nuclei counter (CNC) protocol (QNFT). [Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].-050. 99-10-071, § 296-62-07239, filed 5/4/99, effective 9/1/99.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	296-62-07261	How do you classify respiratory hazards? [Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].-050. 99-10-071, § 296-62-07261, filed 5/4/99, effective 9/1/99.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.
296-62-07240	What are the general requirements for ambient aerosol condensation nuclei counter (CNC) protocol (QNFT)? [Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07240, filed 5/4/99, effective 9/1/99.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	296-62-07263	What are oxygen deficient respiratory hazards? [Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07263, filed 5/4/99, effective 9/1/99.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.
296-62-07242	What are the Portacount fit testing procedures? [Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07242, filed 5/4/99, effective 9/1/99.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	296-62-07265	What needs to be considered when combinations of contaminants occur in the workplace? [Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07265, filed 5/4/99, effective 9/1/99.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.
296-62-07243	How is the Portacount test instrument used? [Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07243, filed 5/4/99, effective 9/1/99.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	296-62-07267	What are the two major types of respirators? [Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].-050. 99-10-071, § 296-62-07267, filed 5/4/99, effective 9/1/99.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.
296-62-07245	Controlled negative pressure (CNP) quantitative fit testing protocol (QNFT). [Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07245, filed 5/4/99, effective 9/1/99.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	296-62-07269	What are air-purifying respirators (APRs)? [Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07269, filed 5/4/99, effective 9/1/99.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.
296-62-07246	How does controlled negative pressure (CNP) fit testing work (QNFT)? [Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07246, filed 5/4/99, effective 9/1/99.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	296-62-07271	What are the general limitations for air-purifying respirators (APRs)? [Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07271, filed 5/4/99, effective 9/1/99.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory

	Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.		
296-62-07273	What are particulate-removing respirators? [Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].-050. 99-10-071, § 296-62-07273, filed 5/4/99, effective 9/1/99.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	296-62-07303	11/13/80. Statutory Authority: RCW 49.17.040, 49.17.050, 49.17.240, chapters 42.30 and 43.22 RCW. Alpha-Naphthylamine. [Order 74-35, § 296-62-07303, filed 9/20/74.] Repealed by 80-17-014 (Order 80-20), filed 11/13/80. Statutory Authority: RCW 49.17.040, 49.17.050, 49.17.240, chapters 42.30 and 43.22 RCW.
296-62-07275	What are vapor- and gas-removing respirators? [Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07275, filed 5/4/99, effective 9/1/99.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	296-62-07305	4,4'-Methylene bis (2-chloroaniline). [Order 74-35, § 296-62-07305, filed 9/20/74.] Repealed by 80-17-014 (Order 80-20), filed 11/13/80. Statutory Authority: RCW 49.17.040, 49.17.050, 49.17.240, chapters 42.30 and 43.22 RCW.
296-62-07277	What are combination particulate- and vapor- and gas-removing respirators? [Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07277, filed 5/4/99, effective 9/1/99.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	296-62-07307	Methyl chloromethyl ether. [Order 74-35, § 296-62-07307, filed 9/20/74.] Repealed by 80-17-014 (Order 80-20), filed 11/13/80. Statutory Authority: RCW 49.17.040, 49.17.050, 49.17.240, chapters 42.30 and 43.22 RCW.
296-62-07279	What types of filters, canisters and cartridges are available for air-purifying respirators (APRs)? [Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].-050. 99-10-071, § 296-62-07279, filed 5/4/99, effective 9/1/99.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	296-62-07309	3,3'-Dichlorobenzidine (and its salts). [Order 74-35, § 296-62-07309, filed 9/20/74.] Repealed by 80-17-014 (Order 80-20), filed 11/13/80. Statutory Authority: RCW 49.17.040, 49.17.050, 49.17.240, chapters 42.30 and 43.22 RCW.
296-62-07281	How do atmosphere-supplying respirators work? [Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07281, filed 5/4/99, effective 9/1/99.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	296-62-07311	Bis-Chloromethyl ether. [Order 74-35, § 296-62-07311, filed 9/20/74.] Repealed by 80-17-014 (Order 80-20), filed 11/13/80. Statutory Authority: RCW 49.17.040, 49.17.050, 49.17.240, chapters 42.30 and 43.22 RCW.
296-62-07283	What are the capabilities and limitations of atmosphere-supplying respirators? [Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07283, filed 5/4/99, effective 9/1/99.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	296-62-07313	Beta-Naphthylamine. [Order 74-35, § 296-62-07313, filed 9/20/74.] Repealed by 80-17-014 (Order 80-20), filed 11/13/80. Statutory Authority: RCW 49.17.040, 49.17.050, 49.17.240, chapters 42.30 and 43.22 RCW.
296-62-07285	What is a supplied-air respirator? [Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07285, filed 5/4/99, effective 9/1/99.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	296-62-07315	Benzidine. [Order 74-35, § 296-62-07315, filed 9/20/74.] Repealed by 80-17-014 (Order 80-20), filed 11/13/80. Statutory Authority: RCW 49.17.040, 49.17.050, 49.17.240, chapters 42.30 and 43.22 RCW.
296-62-07287	What are the general capabilities and limitations of supplied-air respirators? [Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07287, filed 5/4/99, effective 9/1/99.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	296-62-07317	4-Aminodiphenyl. [Order 74-35, § 296-62-07317, filed 9/20/74.] Repealed by 80-17-014 (Order 80-20), filed 11/13/80. Statutory Authority: RCW 49.17.040, 49.17.050, 49.17.240, chapters 42.30 and 43.22 RCW.
296-62-07289	What are combination supplied-air and air-purifying respirators? [Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07289, filed 5/4/99, effective 9/1/99.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	296-62-07319	Ethyleneimine. [Order 76-6, § 296-62-07319, filed 3/1/76.] Repealed by 80-17-014 (Order 80-20), filed 11/13/80. Statutory Authority: RCW 49.17.040, 49.17.050, 49.17.240, chapters 42.30 and 43.22 RCW.
296-62-07291	What are combination supplied-air respirators with auxiliary self-contained air supply? [Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07291, filed 5/4/99, effective 9/1/99.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	296-62-07321	Beta-Propiolactone. [Order 74-35, § 296-62-07321, filed 9/20/74.] Repealed by 80-17-014 (Order 80-20), filed 11/13/80. Statutory Authority: RCW 49.17.040, 49.17.050, 49.17.240, chapters 42.30 and 43.22 RCW.
296-62-07293	What is a self-contained breathing apparatus respirator (SCBA)? [Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07293, filed 5/4/99, effective 9/1/99.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	296-62-07323	2-Acetylaminofluorene. [Order 74-35, § 296-62-07323, filed 9/20/74.] Repealed by 80-17-014 (Order 80-20), filed 11/13/80. Statutory Authority: RCW 49.17.040, 49.17.050, 49.17.240, chapters 42.30 and 43.22 RCW.
296-62-07295	What are the limitations for self-contained breathing apparatus respirators (SCBA)? [Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07295, filed 5/4/99, effective 9/1/99.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	296-62-07325	4-Dimethylaminoazobenzene. [Order 74-35, § 296-62-07325, filed 9/20/74.] Repealed by 80-17-014 (Order 80-20), filed 11/13/80. Statutory Authority: RCW 49.17.040, 49.17.050, 49.17.240, chapters 42.30 and 43.22 RCW.
296-62-07301	4-Nitrobiphenyl. [Order 74-35, § 296-62-07301, filed 9/20/74.] Repealed by 80-17-014 (Order 80-20), filed	296-62-07327	N-Nitrosodimethylamine—Carcinogen standard report form. [Order 74-35, § 296-62-07327 and Carcinogen Standard Report Form, filed 9/20/74.] Repealed by 80-17-014 (Order 80-20), filed 11/13/80. Statutory Authority: RCW 49.17.040, 49.17.050, 49.17.240, chapters 42.30 and 43.22 RCW.
		296-62-07335	Benzene. [Statutory Authority: RCW 49.17.040, 49.17.050, 49.17.240, chapters 42.30, and 43.22 RCW. 78-09-092 (Order 78-16), § 296-62-07335, filed 8/31/78.] Repealed by 80-11-010 (Order 80-14), filed 8/8/80. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240.
		296-62-07341	Acrylonitrile. [Statutory Authority: RCW 49.17.040 and 49.17.050. 86-16-009 (Order 86-28), § 296-62-07341, filed 7/25/86. Statutory Authority: RCW 49.17.040, 49.17.050, and 49.17.240. 81-18-029 (Order 81-21), § 296-62-07341, filed 8/27/81; 81-16-015 (Order 81-20), § 296-62-07341, filed 7/27/81; 80-11-010 (Order 80-14), § 296-62-07341, filed 8/8/80. Statutory Authority: RCW 49.17.040, 49.17.050, 49.17.240, chapters 42.30, and 43.22 RCW. 78-07-052 (Order 78-10), § 296-62-07341, filed 6/28/78.] Repealed by 88-11-021 (Order 88-04), filed 5/11/88. Statutory Authority: Chapter 49.17 RCW.
		296-62-07345	1,2-Dibromo-3-chloropropane. [Statutory Authority: RCW 49.17.040 and 49.17.050. 86-16-009 (Order 86-28), § 296-62-07345, filed 7/25/86. Statutory Authority: RCW 49.17.040, 49.17.050, and 49.17.240. 81-18-029 (Order 81-21), § 296-62-07345, filed 8/27/81; 81-16-015 (Order 81-20), § 296-62-07345, filed 7/27/81; 80-

	11-010 (Order 80-14), § 296-62-07345, filed 8/8/80. Statutory Authority: RCW 49.17.040, 49.17.050, and 49.17.240, chapters 42.30, and 43.22 RCW. 78-07-052 (Order 78-10), § 296-62-07345, filed 6/28/78.] Repealed by 88-11-021 (Order 88-04), filed 5/11/88. Statutory Authority: Chapter 49.17 RCW.	
296-62-07347	Inorganic arsenic. [Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060. 03-18-090, § 296-62-07347, filed 9/2/03, effective 11/1/03. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 01-11-038, § 296-62-07347, filed 5/9/01, effective 9/1/01; 99-17-094, § 296-62-07347, filed 8/17/99, effective 12/1/99; 99-10-071, § 296-62-07347, filed 5/4/99, effective 9/1/99; 98-02-030, § 296-62-07347, filed 12/31/97, effective 1/31/98. Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-62-07347, filed 7/20/94, effective 9/20/94. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-18-029 (Order 81-21), § 296-62-07347, filed 8/27/81; 81-16-015 (Order 81-20), § 296-62-07347, filed 7/27/81; 79-08-115 (Order 79-9), § 296-62-07347, filed 7/31/79; 79-02-037 (Order 79-1), § 296-62-07347, filed 1/23/79.] Repealed by 05-01-173, filed 12/21/04, effective 5/1/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	296-62-07503
296-62-07349	Lead. [Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-18-029 (Order 81-21), § 296-62-07349, filed 8/27/81; 81-16-015 (Order 81-20), § 296-62-07349, filed 7/27/81; 80-11-009 (Order 80-16), § 296-62-07349, filed 8/8/80.] Decoded by 82-13-045 (Order 82-22), filed 6/11/82. Statutory Authority: RCW 49.17.040 and 49.17.050. Later promulgation, see WAC 296-62-07521.	296-62-07505
296-62-07353	Ethylene oxide. [Statutory Authority: RCW 49.17-050(2) and 49.14.040 [49.17.040]. 87-07-022 (Order 87-01), § 296-62-07353, filed 3/12/87. Statutory Authority: RCW 49.17.040 and 49.17.050. 86-16-009 (Order 86-28), § 296-62-07353, filed 7/25/86; 85-10-004 (Order 85-09), § 296-62-07353, filed 4/19/85; 85-01-022 (Order 84-24), § 296-62-07353, filed 12/11/84.] Repealed by 87-24-051 (Order 87-24), filed 11/30/87. Statutory Authority: Chapter 49.17 RCW.	296-62-07507
296-62-07379	Dates. [Statutory Authority: Chapter 49.17 RCW. 88-23-054 (Order 88-25), § 296-62-07379, filed 11/14/88; 87-24-051 (Order 87-24), § 296-62-07379, filed 11/30/87.] Repealed by 99-10-071, filed 5/4/99, effective 9/1/99. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050.	296-62-07509
296-62-07431	Dates. [Statutory Authority: Chapter 49.17 RCW. 93-07-044 (Order 93-01), § 296-62-07431, filed 3/13/93, effective 4/27/93.] Repealed by 99-10-071, filed 5/4/99, effective 9/1/99. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050.	296-62-07510
296-62-07445	Appendix C—Qualitative and quantitative fit testing procedures—(Fit test protocols). [Statutory Authority: Chapter 49.17 RCW. 96-09-030, § 296-62-07445, filed 4/10/96, effective 6/1/96; 93-21-075 (Order 93-06), § 296-62-07445, filed 10/20/93, effective 12/1/93; 93-07-044 (Order 93-01), § 296-62-07445, filed 3/13/93, effective 4/27/93.] Repealed by 99-10-071, filed 5/4/99, effective 9/1/99. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050.	296-62-07511
296-62-075	Air contaminants. [Statutory Authority: RCW 49.17-010, 49.17.040, 49.17.050, and 49.17.060. 03-20-115, § 296-62-075, filed 10/1/03, effective 1/1/04. Statutory Authority: RCW 49.17.040, [49.17].050 and [49.17].060. 97-19-014, § 296-62-075, filed 9/5/97, effective 11/5/97. Statutory Authority: Chapter 49.17 RCW. 89-15-002 (Order 89-06), § 296-62-075, filed 7/6/89, effective 8/7/89; Order 73-3, § 296-62-075, filed 5/7/73.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	296-62-07513
296-62-07501	Airborne contaminants. [Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050. 02-12-098, § 296-62-07501, filed 6/5/02, effective 8/1/02. Statutory Authority: RCW 49.17.040, [49.17].050 and [49.17].060. 97-19-014, § 296-62-07501, filed 9/5/97, effective 11/5/97. Statutory Authority: Chapter 49.17 RCW. 89-15-002 (Order 89-06), § 296-62-07501, filed 7/6/89, effective 8/7/89. Statutory Authority: RCW 49.17.040 and 49.17.050. 82-03-023 (Order 82-1), § 296-62-07501, filed 1/15/82. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-16-015 (Order	296-62-07515
	81-20), § 296-62-07501, filed 7/27/81; 80-11-010 (Order 80-14), § 296-62-07501, filed 8/8/80; Order 73-3, § 296-62-07501, filed 5/7/73.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	
	Ceiling vs. time-weighted average limits. [Statutory Authority: Chapter 49.17 RCW. 89-15-002 (Order 89-06), § 296-62-07503, filed 7/6/89, effective 8/7/89. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 80-11-010 (Order 80-14), § 296-62-07503, filed 8/8/80; Order 73-3, § 296-62-07503, filed 5/7/73.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	
	"Skin" notation. [Statutory Authority: Chapter 49.17 RCW. 89-15-002 (Order 89-06), § 296-62-07505, filed 7/6/89, effective 8/7/89. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 80-11-010 (Order 80-14), § 296-62-07505, filed 8/8/80; Order 73-3, § 296-62-07505, filed 5/7/73.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	
	Mixtures. [Statutory Authority: Chapter 49.17 RCW. 90-03-029 (Order 89-20), § 296-62-07507, filed 1/11/90, effective 2/26/90; 89-15-002 (Order 89-06), § 296-62-07507, filed 7/6/89, effective 8/7/89. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 80-11-010 (Order 80-14), § 296-62-07507, filed 8/8/80; Order 73-3, § 296-62-07507, filed 5/7/73.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	
	Nuisance dusts. [Statutory Authority: Chapter 49.17 RCW. 93-01-067 (Order 92-15), § 296-62-07509, filed 12/11/92, effective 1/15/93. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 80-11-010 (Order 80-14), § 296-62-07509, filed 8/8/80; Order 73-3, § 296-62-07509, filed 5/7/73.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	
	Total particulate. [Statutory Authority: RCW 49.17.040, [49.17].050 and [49.17].060. 97-19-014, § 296-62-07510, filed 9/5/97, effective 11/5/97. Statutory Authority: Chapter 49.17 RCW. 89-15-002 (Order 89-06), § 296-62-07510, filed 7/6/89, effective 8/7/89. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 80-11-010 (Order 80-14), § 296-62-07510, filed 8/8/80; Order 73-3, § 296-62-07510, filed 5/7/73.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	
	Simple asphyxiants. [Statutory Authority: Chapter 49.17 RCW. 89-15-002 (Order 89-06), § 296-62-07511, filed 7/6/89, effective 8/7/89. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 80-11-010 (Order 80-14), § 296-62-07511, filed 8/8/80; Order 73-3, § 296-62-07511, filed 5/7/73.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	
	Physical factors. [Statutory Authority: RCW 49.17.040, 49.17.050, and 49.17.240. 80-11-010 (Order 80-14), § 296-62-07513, filed 8/8/80; Order 73-3, § 296-62-07513, filed 5/7/73.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	
	Control of chemical agents. [Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050, and 49.26.130. 00-06-075, § 296-62-07515, filed 3/1/00, effective 4/10/00. Statutory Authority: RCW 49.17.040, [49.17].050 and [49.17].060. 98-10-029, § 296-62-07515, filed 4/24/98, effective 7/24/98; 97-19-014, § 296-62-07515, filed 9/5/97, effective 11/5/97. Statutory Authority: Chapter 49.17 RCW. 96-17-056, § 296-62-07515, filed 8/20/96, effective 10/15/96; 93-01-067 (Order 92-15), § 296-62-07515, filed 12/11/92, effective 1/15/93; 91-11-070 (Order 91-01), § 296-62-07515, filed 5/20/91, effective 6/20/91; 90-03-029 (Order 89-20), § 296-62-07515, filed 1/11/90, effective 2/26/90; 89-15-002 (Order 89-06), § 296-62-07515, filed 7/6/89, effective 8/7/89; 88-14-108 (Order 88-11), § 296-62-07515, filed 7/6/88; 87-24-051 (Order 87-24), § 296-62-07515, filed 11/30/87. Statutory Authority: RCW 49.17.040 and 49.17.050. 86-16-009 (Order 86-28), § 296-62-07515, filed 7/25/86; 85-01-022 (Order 84-24), § 296-62-07515, filed 12/11/84; 82-13-045 (Order 82-22), § 296-62-	

	07515, filed 6/11/82. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-16-015 (Order 81-20), § 296-62-07515, filed 7/27/81; 80-11-010 (Order 80-14), § 296-62-07515, filed 8/8/80. Statutory Authority: RCW 49.17.040, 49.17.150 and 49.17.240. 79-08-115 (Order 79-9), § 296-62-07515, filed 7/31/79; Order 73-3, § 296-62-07515, filed 5/7/73.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.		Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050.
296-62-07523	Benzene. [Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. 05-01-172, § 296-62-07523, filed 12/21/04, effective 3/1/05. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].-050. 01-11-038, § 296-62-07523, filed 5/9/01, effective 9/1/01; 99-10-071, § 296-62-07523, filed 5/4/99, effective 9/1/99. Statutory Authority: Chapter 49.17 RCW. 88-21-002 (Order 88-23), § 296-62-07523, filed 10/6/88, effective 11/7/88.] Repealed by 05-13-152, filed 6/21/05, effective 8/1/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	296-62-07707	Identification. [Statutory Authority: Chapter 49.17 RCW. 89-21-018 (Order 89-10), § 296-62-07707, filed 10/10/89, effective 11/24/89; 87-24-051 (Order 87-24), § 296-62-07707, filed 11/30/87. Statutory Authority: RCW 49.17.050(2) and 49.17.040. 87-10-008 (Order 87-06), § 296-62-07707, filed 4/27/87.] Repealed by 97-01-079, filed 12/17/96, effective 3/1/97. Statutory Authority: RCW 49.17.040, [49.17].050 and [49.17].-060.
	Appendix E qualitative and quantitative fit testing procedures. [Statutory Authority: Chapter 49.17 RCW. 96-09-030, § 296-62-07533, filed 4/10/96, effective 6/1/96; 94-15-096 (Order 94-07), § 296-62-07533, filed 7/20/94, effective 9/20/94; 88-21-002 (Order 88-23), § 296-62-07533, filed 10/6/88, effective 11/7/88.] Repealed by 99-10-071, filed 5/4/99, effective 9/1/99. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050.	296-62-07729	Observation of monitoring. [Statutory Authority: RCW 49.17.050(2) and 49.17.040. 87-10-008 (Order 87-06), § 296-62-07729, filed 4/27/87.] Repealed by 87-24-051 (Order 87-24), filed 11/30/87. Statutory Authority: Chapter 49.17 RCW.
296-62-07533	Appendix E qualitative and quantitative fit testing procedures. [Statutory Authority: Chapter 49.17 RCW. 96-09-030, § 296-62-07533, filed 4/10/96, effective 6/1/96; 94-15-096 (Order 94-07), § 296-62-07533, filed 7/20/94, effective 9/20/94; 88-21-002 (Order 88-23), § 296-62-07533, filed 10/6/88, effective 11/7/88.] Repealed by 99-10-071, filed 5/4/99, effective 9/1/99. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050.	296-62-07731	Dates. [Statutory Authority: Chapter 49.17 RCW. 91-03-044 (Order 90-18), § 296-62-07731, filed 1/10/91, effective 2/12/91; 89-11-035 (Order 89-03), § 296-62-07731, filed 5/15/89, effective 6/30/89; 87-24-051 (Order 87-24), § 296-62-07731, filed 11/30/87. Statutory Authority: RCW 49.17.050(2) and 49.17.040. 87-10-008 (Order 87-06), § 296-62-07731, filed 4/27/87.] Repealed by 97-01-079, filed 12/17/96, effective 3/1/97. Statutory Authority: RCW 49.17.040, [49.17].050 and [49.17].060.
296-62-07550	Appendix E—Qualitative and quantitative fit testing procedures. [Statutory Authority: Chapter 49.17 RCW. 96-09-030, § 296-62-07550, filed 4/10/96, effective 6/1/96; 88-21-002 (Order 88-23), § 296-62-07550, filed 10/6/88, effective 11/7/88.] Repealed by 99-10-071, filed 5/4/99, effective 9/1/99. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050.	296-62-07739	Appendix C—Qualitative and quantitative fit testing procedures—Mandatory. [Statutory Authority: Chapter 49.17 RCW. 96-09-030, § 296-62-07739, filed 4/10/96, effective 6/1/96; 87-24-051 (Order 87-24), § 296-62-07739, filed 11/30/87. Statutory Authority: RCW 49.17.050(2) and 49.17.040. 87-10-008 (Order 87-06), § 296-62-07739, filed 4/27/87.] Repealed by 99-10-071, filed 5/4/99, effective 9/1/99. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050.
296-62-07635	Effective date. [Statutory Authority: Chapter 49.17 RCW. 93-04-111 (Order 92-15), § 296-62-07635, filed 2/3/93, effective 3/15/93.] Repealed by 99-10-071, filed 5/4/99, effective 9/1/99. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050.	296-62-07761	Nonasbestiform tremolite, anthophyllite, and actinolite. [Statutory Authority: Chapter 49.17 RCW. 87-24-051 (Order 87-24), § 296-62-07761, filed 11/30/87.] Repealed by 97-19-014, filed 9/5/97, effective 11/5/97. Statutory Authority: RCW 49.17.040, [49.17].050 and [49.17].060.
296-62-07639	Start up dates. [Statutory Authority: Chapter 49.17 RCW. 93-04-111 (Order 92-15), § 296-62-07639, filed 2/3/93, effective 3/15/93.] Repealed by 99-10-071, filed 5/4/99, effective 9/1/99. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050.	296-62-080	Biological agents. [Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-16-047, § 296-62-080, filed 8/1/02, effective 10/1/02; Order 73-3, § 296-62-080, filed 5/7/73; Order 70-8, § 296-62-080, filed 7/31/70, effective 9/1/70; Rule 8.010, effective 8/1/63.] Repealed by 03-10-068, filed 5/6/03, effective 8/1/03. Statutory Authority: RCW 49.17.010, 49.17.-040, 49.17.050, and 49.17.060. Later promulgation, see WAC 296-307-018.
296-62-07662	Appendix E to WAC 296-62-076—Qualitative and quantitative fit testing procedures. [Statutory Authority: Chapter 49.17 RCW. 93-04-111 (Order 92-15), § 296-62-07662, filed 2/3/93, effective 3/15/93.] Repealed by 99-10-071, filed 5/4/99, effective 9/1/99. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050.	296-62-08001	Bloodborne pathogens. [Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060. 03-09-110, § 296-62-08001, filed 4/22/03, effective 8/1/03. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 01-13-078, § 296-62-08001, filed 6/19/01, effective 8/6/01. Statutory Authority: Chapter 49.17 RCW. 93-01-067 (Order 92-15), § 296-62-08001, filed 12/11/92, effective 1/15/93; 92-08-100 (Order 92-01), § 296-62-08001, filed 4/1/92, effective 5/5/92.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.
296-62-07664	Appendix E-1—Qualitative fit test protocols. [Statutory Authority: Chapter 49.17 RCW. 93-04-111 (Order 92-15), § 296-62-07664, filed 2/3/93, effective 3/15/93.] Repealed by 99-10-071, filed 5/4/99, effective 9/1/99. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050.	296-62-08050	Appendix A—Hepatitis B vaccine declination—Mandatory. [Statutory Authority: Chapter 49.17 RCW. 92-08-100 (Order 92-01), § 296-62-08050, filed 4/1/92, effective 5/5/92.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.
296-62-07666	Appendix E-1-a—Isoamyl acetate (banana oil) protocol. [Statutory Authority: Chapter 49.17 RCW. 93-04-111 (Order 92-15), § 296-62-07666, filed 2/3/93, effective 3/15/93.] Repealed by 99-10-071, filed 5/4/99, effective 9/1/99. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050.	296-62-09003	Lighting and illumination. [Statutory Authority: RCW 49.17.040 and 49.17.050. 83-24-013 (Order 83-34), § 296-62-09003, filed 11/30/83; 82-13-045 (Order 82-22), § 296-62-09003, filed 6/11/82; Order 76-6, § 296-62-09003, filed 3/1/76; Order 73-3, § 296-62-09003, filed 5/7/73.] Repealed by 01-11-038, filed 5/9/01, effective 9/1/01. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.
296-62-07668	Appendix E-1-b—Saccharin solution aerosol protocol. [Statutory Authority: Chapter 49.17 RCW. 96-09-030, § 296-62-07668, filed 4/10/96, effective 6/1/96; 93-04-111 (Order 92-15), § 296-62-07668, filed 2/3/93, effective 3/15/93.] Repealed by 99-10-071, filed 5/4/99, effective 9/1/99. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050.	296-62-09011	Occupational noise exposure. [Statutory Authority: RCW 49.17.040 and 49.17.050. 82-03-023 (Order 82-1), § 296-62-09011, filed 1/15/82. Statutory Authority: RCW 49.17.040, 49.17.050, and 49.17.240. 81-16-016 (Order 81-19), § 296-62-09011, filed 7/27/81; 80-11-010 (Order 80-14), § 296-62-09011, filed 8/8/80; Order 73-3, § 296-62-09011, filed 5/7/73.] Repealed by 83-24-
296-62-07670	Appendix E-1-c—Irritant fume protocol. [Statutory Authority: Chapter 49.17 RCW. 93-04-111 (Order 92-15), § 296-62-07670, filed 2/3/93, effective 3/15/93.] Repealed by 99-10-071, filed 5/4/99, effective 9/1/99. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050.		
296-62-07672	Appendix E-2—Quantitative fit test procedures. [Statutory Authority: Chapter 49.17 RCW. 93-04-111 (Order 92-15), § 296-62-07672, filed 2/3/93, effective 3/15/93.] Repealed by 99-10-071, filed 5/4/99, effective 9/1/99.		

	013 (Order 83-34), filed 11/30/83. Statutory Authority: RCW 49.17.040 and 49.17.050.		
296-62-09015	Hearing conservation. [Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060. 03-11-060, § 296-62-09015, filed 5/19/03, effective 8/1/03. Statutory Authority: RCW 49.17.040 and 49.17.050. 83-24-013 (Order 83-34), § 296-62-09015, filed 11/30/83; 82-03-023 (Order 82-1), § 296-62-09015, filed 1/15/82.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	296-62-09037	Access to information and training materials. [Statutory Authority: RCW 49.17.040 and 49.17.050. 82-03-023 (Order 82-1), § 296-62-09037, filed 1/15/82.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.
296-62-09017	Definitions. [Statutory Authority: RCW 49.17.040 and 49.17.050. 83-24-013 (Order 83-34), § 296-62-09017, filed 11/30/83; 82-03-023 (Order 82-1), § 296-62-09017, filed 1/15/82.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	296-62-09039	Warning signs. [Statutory Authority: RCW 49.17.040 and 49.17.050. 83-24-013 (Order 83-34), § 296-62-09039, filed 11/30/83; 82-03-023 (Order 82-1), § 296-62-09039, filed 1/15/82.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.
296-62-09019	Monitoring. [Statutory Authority: RCW 49.17.040 and 49.17.050. 83-24-013 (Order 83-34), § 296-62-09019, filed 11/30/83; 82-03-023 (Order 82-1), § 296-62-09019, filed 1/15/82.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	296-62-09041	Recordkeeping. [Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060. 04-10-026, § 296-62-09041, filed 4/27/04, effective 8/1/04. Statutory Authority: RCW 49.17.040 and 49.17.050. 83-24-013 (Order 83-34), § 296-62-09041, filed 11/30/83; 82-03-023 (Order 82-1), § 296-62-09041, filed 1/15/82.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.
296-62-09021	Method of noise measurement. [Statutory Authority: RCW 49.17.040 and 49.17.050. 83-24-013 (Order 83-34), § 296-62-09021, filed 11/30/83; 82-03-023 (Order 82-1), § 296-62-09021, filed 1/15/82.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	296-62-09043	Appendices. [Statutory Authority: RCW 49.17.040 and 49.17.050. 83-24-013 (Order 83-34), § 296-62-09043, filed 11/30/83; 82-03-023 (Order 82-1), § 296-62-09043, filed 1/15/82.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.
296-62-09023	Calibration of monitoring equipment. [Statutory Authority: RCW 49.17.040 and 49.17.050. 83-24-013 (Order 83-34), § 296-62-09023, filed 11/30/83; 82-03-023 (Order 82-1), § 296-62-09023, filed 1/15/82.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	296-62-09045	Effective dates. [Statutory Authority: RCW 49.17.040 and 49.17.050. 82-03-023 (Order 82-1), § 296-62-09045, filed 1/15/82.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.
296-62-09024	Employee notification. [Statutory Authority: RCW 49.17.040 and 49.17.050. 83-24-013 (Order 83-34), § 296-62-09024, filed 11/30/83.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	296-62-09047	Appendix A—Audiometric measuring instruments. [Statutory Authority: RCW 49.17.040 and 49.17.050. 83-24-013 (Order 83-34), § 296-62-09047, filed 11/30/83; 82-03-023 (Order 82-1), § 296-62-09047, filed 1/15/82.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.
296-62-09025	Observation of monitoring. [Statutory Authority: RCW 49.17.040 and 49.17.050. 82-03-023 (Order 82-1), § 296-62-09025, filed 1/15/82.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	296-62-09049	Appendix B—Audiometric test rooms. [Statutory Authority: RCW 49.17.040 and 49.17.050. 82-03-023 (Order 82-1), § 296-62-09049, filed 1/15/82.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.
296-62-09026	Noise control. [Statutory Authority: RCW 49.17.040 and 49.17.050. 83-24-013 (Order 83-34), § 296-62-09026, filed 11/30/83.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	296-62-09051	Appendix C—Acoustic calibration of audiometers. [Statutory Authority: RCW 49.17.040 and 49.17.050. 83-24-013 (Order 83-34), § 296-62-09051, filed 11/30/83; 82-13-045 (Order 82-22), § 296-62-09051, filed 6/11/82; 82-03-023 (Order 82-1), § 296-62-09051, filed 1/15/82.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.
296-62-09027	Audiometric testing program. [Statutory Authority: RCW 49.17.040 and 49.17.050. 83-24-013 (Order 83-34), § 296-62-09027, filed 11/30/83; 82-03-023 (Order 82-1), § 296-62-09027, filed 1/15/82.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	296-62-09053	Appendix D—Methods for estimating the adequacy of hearing protector attenuation. [Statutory Authority: RCW 49.17.040 and 49.17.050. 83-24-013 (Order 83-34), § 296-62-09053, filed 11/30/83; 82-03-023 (Order 82-1), § 296-62-09053, filed 1/15/82.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.
296-62-09029	Audiometric test requirements. [Statutory Authority: RCW 49.17.040 and 49.17.050. 83-24-013 (Order 83-34), § 296-62-09029, filed 11/30/83; 82-03-023 (Order 82-1), § 296-62-09029, filed 1/15/82.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	296-62-09055	Appendix E—Noise exposure computation. [Statutory Authority: RCW 49.17.040 and 49.17.050. 83-24-013 (Order 83-34), § 296-62-09055, filed 11/30/83.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.
296-62-09031	Hearing protectors. [Statutory Authority: RCW 49.17.040 and 49.17.050. 83-24-013 (Order 83-34), § 296-62-09031, filed 11/30/83; 82-13-045 (Order 82-22), § 296-62-09031, filed 6/11/82; 82-03-023 (Order 82-1), § 296-62-09031, filed 1/15/82.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	296-62-11021	Open surface tanks. [Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-15-102, § 296-62-11021, filed 7/17/02, effective 10/1/02; 01-11-038, § 296-62-11021, filed 5/9/01, effective 9/1/01; 99-10-071, § 296-62-11021, filed 5/4/99, effective 9/1/99. Statutory Authority: Chapter 49.17 RCW. 91-24-017 (Order 91-07), § 296-62-11021, filed 11/22/91, effective 12/24/91. RCW 49.17.040, 49.17.050, and 49.17.240. 81-16-015 (Order 81-20), § 296-62-11021, filed 7/27/81; 80-11-010 (Order 80-14), § 296-62-11021, filed 8/8/80; Order 73-3, § 296-62-11021, filed 5/7/73.] Repealed by 03-10-068, filed 5/6/03, effective 8/1/03. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060.
296-62-09033	Hearing protector attenuation. [Statutory Authority: RCW 49.17.040 and 49.17.050. 83-24-013 (Order 83-34), § 296-62-09033, filed 11/30/83; 82-13-045 (Order 82-22), § 296-62-09033, filed 6/11/82; 82-03-023 (Order 82-1), § 296-62-09033, filed 1/15/82.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.		
296-62-09035	Training program. [Statutory Authority: RCW 49.17.040 and 49.17.050. 83-24-013 (Order 83-34), § 296-62-09035, filed 11/30/83; 82-03-023 (Order 82-1),		

	Later promulgation, see chapter 296-307 WAC, Part U-3.				Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.
296-62-120	Respiratory protection. [Order 70-8, § 296-62-120 filed 7/31/70, effective 9/1/70; Rule 12.010, effective 8/1/63.] Repealed by Order 73-3, filed 5/7/73.	296-62-14120	Permit system. [Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-22-046, § 296-62-14120, filed 10/29/99, effective 2/1/00.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.		
296-62-12000	Environmental tobacco smoke in office work environments—Scope and application. [Statutory Authority: Chapter 49.17 RCW. 94-07-086 (Order 93-18), § 296-62-12000, filed 3/16/94, effective 9/1/94.] Repealed by 01-11-038, filed 5/9/01, effective 9/1/01. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].-050.	296-62-14125	Required entry permit information. [Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-22-046, § 296-62-14125, filed 10/29/99, effective 2/1/00.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.		
296-62-12003	Definitions. [Statutory Authority: Chapter 49.17 RCW. 94-07-086 (Order 93-18), § 296-62-12003, filed 3/16/94, effective 9/1/94.] Repealed by 01-11-038, filed 5/9/01, effective 9/1/01. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.	296-62-14130	Training. [Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-22-046, § 296-62-14130, filed 10/29/99, effective 2/1/00.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.		
296-62-12005	Controls for environmental tobacco smoke. [Statutory Authority: Chapter 49.17 RCW. 94-07-086 (Order 93-18), § 296-62-12005, filed 3/16/94, effective 9/1/94.] Repealed by 01-11-038, filed 5/9/01, effective 9/1/01. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.	296-62-14135	Duties of authorized entrants. [Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-22-046, § 296-62-14135, filed 10/29/99, effective 2/1/00.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.		
296-62-12007	Effective date. [Statutory Authority: Chapter 49.17 RCW. 94-07-086 (Order 93-18), § 296-62-12007, filed 3/16/94, effective 9/1/94.] Repealed by 06-12-074, filed 6/6/06, effective 9/1/06. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	296-62-14140	Duties of attendants. [Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-22-046, § 296-62-14140, filed 10/29/99, effective 2/1/00.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.		
296-62-12009	Appendix—Smoking cessation program information—Nonmandatory. [Statutory Authority: Chapter 49.17 RCW. 94-07-086 (Order 93-18), § 296-62-12009, filed 3/16/94, effective 9/1/94.] Repealed by 01-11-038, filed 5/9/01, effective 9/1/01. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050.	296-62-14145	Duties of entry supervisors. [Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-22-046, § 296-62-14145, filed 10/29/99, effective 2/1/00.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.		
296-62-130	Emergency washing facilities. [Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-16-047, § 296-62-130, filed 8/1/02, effective 10/1/02. Statutory Authority: RCW 49.17.040. 99-07-063, § 296-62-130, filed 3/17/99, effective 6/17/99. Statutory Authority: RCW 49.17.040 and 49.17.050. 85-10-004 (Order 85-09), § 296-62-130, filed 4/19/85; Order 73-3, § 296-62-130, filed 5/7/73; Order 70-8, § 296-62-130, filed 7/31/70, effective 9/1/70; Rule 13.010, effective 8/1/63.] Repealed by 03-10-068, filed 5/6/03, effective 8/1/03. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060. Later promulgation, see chapter 296-307 WAC, Part B.	296-62-14150	Rescue and emergency services. [Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-22-046, § 296-62-14150, filed 10/29/99, effective 2/1/00.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.		
296-62-140	Industrial sanitation. [Order 70-8, § 296-62-140, filed 7/31/70, effective 9/1/70; Rule 14.010, effective 8/1/63.] Repealed by Order 73-3, filed 5/7/73.	296-62-14155	Employee participation. [Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050. 02-12-098, § 296-62-14155, filed 6/5/02, effective 8/1/02; 99-22-046, § 296-62-14155, filed 10/29/99, effective 2/1/00.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.		
296-62-141	Permit-required confined spaces. [Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060. 04-03-081, § 296-62-141, filed 1/20/04, effective 5/1/04. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-22-046, § 296-62-141, filed 10/29/99, effective 2/1/00.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	296-62-14170	Appendices to WAC 296-62-141—Permit-required confined spaces. [Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-22-046, § 296-62-14170, filed 10/29/99, effective 2/1/00.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.		
296-62-14100	Scope and application. [Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-22-046, § 296-62-14100, filed 10/29/99, effective 2/1/00.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	296-62-14171	Appendix A—Permit-required confined space decision flow chart. [Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050. 02-12-098, § 296-62-14171, filed 6/5/02, effective 8/1/02; 99-22-046, § 296-62-14171, filed 10/29/99, effective 2/1/00.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.		
296-62-14105	Definitions. [Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050. 02-12-098, § 296-62-14105, filed 6/5/02, effective 8/1/02; 99-22-046, § 296-62-14105, filed 10/29/99, effective 2/1/00.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	296-62-14172	Appendix B—Procedures for atmospheric testing. [Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-22-046, § 296-62-14172, filed 10/29/99, effective 2/1/00.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.		
296-62-14110	General requirements. [Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050. 02-12-098, § 296-62-14110, filed 6/5/02, effective 8/1/02; 99-22-046, § 296-62-14110, filed 10/29/99, effective 2/1/00.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	296-62-14173	Appendix C—Examples of permit-required confined space programs. [Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-22-046, § 296-62-14173, filed 10/29/99, effective 2/1/00.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.		
296-62-14115	Permit-required confined space program (permit space program). [Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-22-046, § 296-62-14115, filed 10/29/99, effective 2/1/00.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory	296-62-14174	Appendix D—Sample permits. [Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-22-046, § 296-62-14174, filed 10/29/99, effective 2/1/00.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05.		

	Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.		(Order 83-19), § 296-62-14515, filed 7/13/83, effective 9/12/83; 82-13-045 (Order 82-22), § 296-62-14515, filed 6/11/82; Order 73-3, § 296-62-14515, filed 5/7/73.] Repealed by 99-22-046, filed 10/29/99, effective 2/1/00. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050.
296-62-14175	Appendix E—Sewer system entry. [Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-22-046, § 296-62-14175, filed 10/29/99, effective 2/1/00.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	296-62-14517	Duties of entry supervisors. [Statutory Authority: Chapter 49.17 RCW. 95-04-007, § 296-62-14517, filed 1/18/95, effective 3/1/95; Order 73-3, § 296-62-14517, filed 5/7/73.] Repealed by 99-22-046, filed 10/29/99, effective 2/1/00. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050.
296-62-14176	Appendix F—Rescue team or rescue service evaluation criteria. [Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-22-046, § 296-62-14176, filed 10/29/99, effective 2/1/00.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	296-62-14519	Rescue and emergency services. [Statutory Authority: Chapter 49.17 RCW. 95-04-007, § 296-62-14519, filed 1/18/95, effective 3/1/95; 91-24-017 (Order 91-07), § 296-62-14519, filed 11/22/91, effective 12/24/91; Order 73-3, § 296-62-14519, filed 5/7/73.] Repealed by 99-22-046, filed 10/29/99, effective 2/1/00. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050.
296-62-145	Permit-required confined spaces. [Statutory Authority: Chapter 49.17 RCW. 95-04-007, § 296-62-145, filed 1/18/95, effective 3/1/95; Order 73-3, § 296-62-145 reference section, filed 5/7/73.] Repealed by 99-22-046, filed 10/29/99, effective 2/1/00. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050.	296-62-14520	Appendices to WAC 296-62-145—Permit-required confined spaces. [Statutory Authority: Chapter 49.17 RCW. 95-04-007, § 296-62-14520, filed 1/18/95, effective 3/1/95.] Repealed by 99-22-046, filed 10/29/99, effective 2/1/00. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050.
296-62-14500	Scope and application. [Statutory Authority: Chapter 49.17 RCW. 95-04-007, § 296-62-14500, filed 1/18/95, effective 3/1/95.] Repealed by 99-22-046, filed 10/29/99, effective 2/1/00. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050.	296-62-14521	Appendix A—Permit-required confined space decision flow chart. [Statutory Authority: Chapter 49.17 RCW. 95-04-007, § 296-62-14521, filed 1/18/95, effective 3/1/95; Order 73-3, § 296-62-14521, filed 5/7/73.] Repealed by 99-22-046, filed 10/29/99, effective 2/1/00. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050.
296-62-14501	Definitions. [Statutory Authority: RCW 49.17.040, [49.17].050 and [49.17].060. 95-17-036, § 296-62-14501, filed 8/9/95, effective 9/25/95. Statutory Authority: Chapter 49.17 RCW. 95-04-007, § 296-62-14501, filed 1/18/95, effective 3/1/95; 91-24-017 (Order 91-07), § 296-62-14501, filed 11/22/91, effective 12/24/91. RCW 49.17.040, 49.17.050, and 49.17.240. 80-11-010 (Order 80-14), § 296-62-14501, filed 8/8/80; Order 73-3, § 296-62-14501, filed 5/7/73.] Repealed by 99-22-046, filed 10/29/99, effective 2/1/00. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050.	296-62-14523	Appendix B—Procedures for atmospheric testing. [Statutory Authority: Chapter 49.17 RCW. 95-04-007, § 296-62-14523, filed 1/18/95, effective 3/1/95; Order 73-3, § 296-62-14523, filed 5/7/73.] Repealed by 99-22-046, filed 10/29/99, effective 2/1/00. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050.
296-62-14503	General requirements. [Statutory Authority: Chapter 49.17 RCW. 95-04-007, § 296-62-14503, filed 1/18/95, effective 3/1/95; 91-11-070 (Order 91-01), § 296-62-14503, filed 5/20/91, effective 6/20/91; Order 73-3, § 296-62-14503, filed 5/7/73.] Repealed by 99-22-046, filed 10/29/99, effective 2/1/00. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050.	296-62-14525	Appendix C—Examples of permit-required confined space programs. [Statutory Authority: Chapter 49.17 RCW. 95-04-007, § 296-62-14525, filed 1/18/95, effective 3/1/95; 91-24-017 (Order 91-07), § 296-62-14525, filed 11/22/91, effective 12/24/91. Statutory Authority: RCW 49.17.040 and 49.17.050. 82-03-023 (Order 82-1), § 296-62-14525, filed 1/15/82; Order 73-3, § 296-62-14525, filed 5/7/73.] Repealed by 99-22-046, filed 10/29/99, effective 2/1/00. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050.
296-62-14505	Permit-required confined space program (permit space program). [Statutory Authority: Chapter 49.17 RCW. 95-04-007, § 296-62-14505, filed 1/18/95, effective 3/1/95; Order 73-3, § 296-62-14505, filed 5/7/73.] Repealed by 99-22-046, filed 10/29/99, effective 2/1/00. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050.	296-62-14527	Appendix D—Sample permits. [Statutory Authority: Chapter 49.17 RCW. 95-04-007, § 296-62-14527, filed 1/18/95, effective 3/1/95; Order 73-3, § 296-62-14527, filed 5/7/73.] Repealed by 99-22-046, filed 10/29/99, effective 2/1/00. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050.
296-62-14507	Permit system. [Statutory Authority: Chapter 49.17 RCW. 95-04-007, § 296-62-14507, filed 1/18/95, effective 3/1/95. Statutory Authority: RCW 49.17.040, 49.17.050, and 49.17.240. 81-16-015 (Order 81-20), § 296-62-14507, filed 7/27/81; 80-11-010 (Order 80-14), § 296-62-14507, filed 8/8/80; Order 73-3, § 296-62-14507, filed 5/7/73.] Repealed by 99-22-046, filed 10/29/99, effective 2/1/00. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050.	296-62-14529	Appendix E—Sewer system entry. [Statutory Authority: Chapter 49.17 RCW. 95-04-007, § 296-62-14529, filed 1/18/95, effective 3/1/95; Order 73-3, § 296-62-14529, filed 5/7/73.] Repealed by 99-22-046, filed 10/29/99, effective 2/1/00. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050.
296-62-14509	Entry permit. [Statutory Authority: Chapter 49.17 RCW. 95-04-007, § 296-62-14509, filed 1/18/95, effective 3/1/95; Order 73-3, § 296-62-14509, filed 5/7/73.] Repealed by 99-22-046, filed 10/29/99, effective 2/1/00. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050.	296-62-14531	Exposure to cotton dust in cotton gins. [Statutory Authority: RCW 49.17.040, 49.17.050, and 49.17.240. 81-18-029 (Order 81-21), § 296-62-14531, filed 8/27/81; 81-16-015 (Order 81-20), § 296-62-14531, filed 7/27/81; 80-11-010 (Order 80-14), § 296-62-14531, filed 8/8/80. Statutory Authority: RCW 49.17.040, 49.17.150 and 49.17.240. 79-02-037 (Order 79-1), § 296-62-14531, filed 1/23/79.] Repealed by 87-24-051 (Order 87-24), filed 11/30/87. Statutory Authority: Chapter 49.17 RCW.
296-62-14511	Training. [Statutory Authority: Chapter 49.17 RCW. 95-04-007, § 296-62-14511, filed 1/18/95, effective 3/1/95; 91-24-017 (Order 91-07), § 296-62-14511, filed 11/22/91, effective 12/24/91; Order 73-3, § 296-62-14511, filed 5/7/73.] Repealed by 99-22-046, filed 10/29/99, effective 2/1/00. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050.	296-62-146	Appendices. [Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-18-029 (Order 81-21), § 296-62-146, filed 8/27/81.] Repealed by 87-24-051 (Order 87-24), filed 11/30/87. Statutory Authority: Chapter 49.17 RCW.
296-62-14513	Duties of authorized entrants. [Statutory Authority: Chapter 49.17 RCW. 95-04-007, § 296-62-14513, filed 1/18/95, effective 3/1/95; Order 73-3, § 296-62-14513, filed 5/7/73.] Repealed by 99-22-046, filed 10/29/99, effective 2/1/00. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050.	296-62-14601	Appendix A—Requirements for classification and respiratory use of workers exposed to cotton dust in gins. [Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-18-029 (Order 81-21), § 296-62-14601, filed 8/27/81.] Repealed by 88-23-054 (Order 88-25), filed 11/14/88. Statutory Authority: Chapter 49.17 RCW.
296-62-14515	Duties of attendants. [Statutory Authority: Chapter 49.17 RCW. 95-04-007, § 296-62-14515, filed 1/18/95, effective 3/1/95; 91-24-017 (Order 91-07), § 296-62-14515, filed 11/22/91, effective 12/24/91. Statutory Authority: RCW 49.17.040 and 49.17.050. 83-15-017		

296-62-14603	Appendix B-1—Respiratory questionnaire. [Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-18-029 (Order 81-21), § 296-62-14603, filed 8/27/81.] Repealed by 87-24-051 (Order 87-24), filed 11/30/87. Statutory Authority: Chapter 49.17 RCW.		12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.
296-62-14605	Appendix C—Spirometry prediction tables for normal males and females. [Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-18-029 (Order 81-21), § 296-62-14605, filed 8/27/81.] Repealed by 88-23-054 (Order 88-25), filed 11/14/88. Statutory Authority: Chapter 49.17 RCW.	296-62-30105	Elements of a safety and health program. [Statutory Authority: RCW 49.17.040. 99-07-097, § 296-62-30105, filed 3/23/99, effective 6/23/99.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.
296-62-14607	Appendix D—Pulmonary function standards for cotton dust standard. [Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-18-029 (Order 81-21), § 296-62-14607, filed 8/27/81.] Repealed by 88-23-054 (Order 88-25), filed 11/14/88. Statutory Authority: Chapter 49.17 RCW.	296-62-30110	Safety considerations during the initial site excavation. [Statutory Authority: RCW 49.17.040. 99-07-097, § 296-62-30110, filed 3/23/99, effective 6/23/99.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.
296-62-150	Appendix I—Threshold limit values for 1969. [Order 70-8, § 296-62-150, filed 7/31/70, effective 9/1/70; Rules (part), effective 12/1/63.] Repealed by Order 73-3, filed 5/7/73.	296-62-30115	Notifying contractors and subcontractors of procedures and hazards. [Statutory Authority: RCW 49.17.040. 99-07-097, § 296-62-30115, filed 3/23/99, effective 6/23/99.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.
296-62-155	Appendix I—Adopted values. [Order 70-8, § 296-62-155, filed 7/31/70, effective 9/1/70; Rules (part), effective 12/1/63.] Repealed by Order 73-3, filed 5/7/73.	296-62-30120	Availability of the safety and health program. [Statutory Authority: RCW 49.17.040. 99-07-097, § 296-62-30120, filed 3/23/99, effective 6/23/99.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.
296-62-157	Threshold limit values of physical agents for 1969. [Order 70-8, § 296-62-157, filed 7/31/70, effective 9/1/70.] Repealed by Order 73-3, filed 5/7/73.	296-62-30125	Organizational structure of the site safety and health program. [Statutory Authority: RCW 49.17.040. 99-07-097, § 296-62-30125, filed 3/23/99, effective 6/23/99.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.
296-62-160	Appendix II—Levels of illumination currents. [Appendix II, effective 12/1/63.] Repealed by Order 70-8, filed 7/31/70, effective 9/1/70. Also repealed by Order 73-3, filed 5/7/73.	296-62-30130	Comprehensive workplan of the site program. [Statutory Authority: RCW 49.17.040. 99-07-097, § 296-62-30130, filed 3/23/99, effective 6/23/99.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.
296-62-165	Appendix III—Nonionizing radiation. [Order 70-8, § 296-62-165, filed 7/31/70, effective 9/1/70; Appendix III, effective 8/1/63.] Repealed by Order 73-3, filed 5/7/73.	296-62-30135	Overview of a site-specific safety and health plan. [Statutory Authority: RCW 49.17.040. 99-07-097, § 296-62-30135, filed 3/23/99, effective 6/23/99.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.
296-62-170	Appendix IV—Temperature, radiant heat, humidity, or air velocity combinations. [Order 70-8, § 296-62-170, filed 7/31/70, effective 9/1/70; Appendix IV, effective 8/1/63.] Repealed by Order 73-3, filed 5/7/73.	296-62-30140	Preentry briefing of the site-specific safety and health plan. [Statutory Authority: RCW 49.17.040. 99-07-097, § 296-62-30140, filed 3/23/99, effective 6/23/99.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.
296-62-175	References. [Order 70-8, § 296-62-175, filed 7/31/70, effective 9/1/70.] Repealed by Order 73-3, filed 5/7/73.	296-62-30145	Effectiveness of site safety and health plan. [Statutory Authority: RCW 49.17.040. 99-07-097, § 296-62-30145, filed 3/23/99, effective 6/23/99.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.
296-62-180	Appendix V—Use and care of respiratory protective equipment, compressed air supply for respirators. [Order 70-8, § 296-62-180, filed 7/31/70, effective 9/1/70.] Repealed by Order 73-3, filed 5/7/73.	296-62-30200	Site characterization and analysis. [Statutory Authority: RCW 49.17.040. 99-07-097, § 296-62-30200, filed 3/23/99, effective 6/23/99. Statutory Authority: Chapter 49.17 RCW. 94-16-145, § 296-62-30200, filed 8/3/94, effective 9/12/94; 90-20-091 (Order 90-14), § 296-62-30200, filed 10/1/90, effective 11/15/90; 89-21-018 (Order 89-10), § 296-62-30200, filed 10/10/89, effective 11/24/89; 88-21-002 (Order 88-23), § 296-62-30200, filed 10/6/88, effective 11/7/88.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.
296-62-185	References. [Order 70-8, § 296-62-185, filed 7/31/70, effective 9/1/70.] Repealed by Order 73-3, filed 5/7/73.	296-62-30205	Preliminary evaluation. [Statutory Authority: RCW 49.17.040. 99-07-097, § 296-62-30205, filed 3/23/99, effective 6/23/99.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.
296-62-300	Hazardous waste operations and treatment, storage, and disposal facilities. [Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060. 04-02-053, § 296-62-300, filed 1/5/04, effective 5/1/04. Statutory Authority: RCW 49.17.040. 99-07-097, § 296-62-300, filed 3/23/99, effective 6/23/99. Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-62-300, filed 7/20/94, effective 9/20/94; 91-24-017 (Order 91-07), § 296-62-300, filed 11/22/91, effective 12/24/91; 90-20-091 (Order 90-14), § 296-62-300, filed 10/1/90, effective 11/15/90; 89-21-018 (Order 89-10), § 296-62-300, filed 10/10/89, effective 11/24/89; 88-21-002 (Order 88-23), § 296-62-300, filed 10/6/88, effective 11/7/88.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	296-62-30210	Hazard identification. [Statutory Authority: RCW 49.17.040. 99-07-097, § 296-62-30210, filed 3/23/99, effective 6/23/99.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.
296-62-30001	Scope and application. [Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 01-11-038, § 296-62-30001, filed 5/9/01, effective 9/1/01. Statutory Authority: RCW 49.17.040. 99-07-097, § 296-62-30001, filed 3/23/99, effective 6/23/99.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	296-62-30215	Required information. [Statutory Authority: RCW 49.17.040. 99-07-097, § 296-62-30215, filed 3/23/99, effective 6/23/99.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.
296-62-30003	Definitions. [Statutory Authority: RCW 49.17.040. 99-07-097, § 296-62-30003, filed 3/23/99, effective 6/23/99.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	296-62-30220	Personal protective equipment. [Statutory Authority: RCW 49.17.040. 99-07-097, § 296-62-30220, filed
296-62-3010	Overview of a written safety and health program. [Statutory Authority: RCW 49.17.040. 99-07-097, § 296-62-3010, filed 3/23/99, effective 6/23/99. Statutory Authority: Chapter 49.17 RCW. 95-04-007, § 296-62-3010, filed 1/18/95, effective 3/1/95; 89-21-018 (Order 89-10), § 296-62-3010, filed 10/10/89, effective 11/24/89; 88-21-002 (Order 88-23), § 296-62-3010, filed 10/6/88, effective 11/7/88.] Repealed by 05-01-166, filed		

	3/23/99, effective 6/23/99.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.		
296-62-30225	Monitoring. [Statutory Authority: RCW 49.17.040, 99-07-097, § 296-62-30225, filed 3/23/99, effective 6/23/99.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.		
296-62-30230	Risk identification. [Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 01-11-038, § 296-62-30230, filed 5/9/01, effective 9/1/01. Statutory Authority: RCW 49.17.040, 99-07-097, § 296-62-30230, filed 3/23/99, effective 6/23/99.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	296-62-30430	Training content for 24-hour hazardous waste cleanup course. [Statutory Authority: RCW 49.17.040, 99-07-097, § 296-62-30430, filed 3/23/99, effective 6/23/99.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.
296-62-30235	Employee notification. [Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 01-11-038, § 296-62-30235, filed 5/9/01, effective 9/1/01. Statutory Authority: RCW 49.17.040, 99-07-097, § 296-62-30235, filed 3/23/99, effective 6/23/99.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	296-62-30435	16-hour supplemental training for hazardous waste sites. [Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 01-11-038, § 296-62-30435, filed 5/9/01, effective 9/1/01. Statutory Authority: RCW 49.17.040, 99-07-097, § 296-62-30435, filed 3/23/99, effective 6/23/99.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.
296-62-3030	Site control. [Statutory Authority: RCW 49.17.040, 99-07-097, § 296-62-3030, filed 3/23/99, effective 6/23/99. Statutory Authority: Chapter 49.17 RCW. 89-21-018 (Order 89-10), § 296-62-3030, filed 10/10/89, effective 11/24/89; 88-21-002 (Order 88-23), § 296-62-3030, filed 10/6/88, effective 11/7/88.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	296-62-30440	Additional 8 hours of training for supervisors and managers. [Statutory Authority: RCW 49.17.040, 99-07-097, § 296-62-30440, filed 3/23/99, effective 6/23/99.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.
296-62-30305	Site control program. [Statutory Authority: RCW 49.17.040, 99-07-097, § 296-62-30305, filed 3/23/99, effective 6/23/99.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	296-62-30445	Qualifications for trainers. [Statutory Authority: RCW 49.17.040, 99-07-097, § 296-62-30445, filed 3/23/99, effective 6/23/99.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.
296-62-30310	Elements of the site control program. [Statutory Authority: RCW 49.17.040, 99-07-097, § 296-62-30310, filed 3/23/99, effective 6/23/99.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	296-62-30450	Training certification. [Statutory Authority: RCW 49.17.040, 99-07-097, § 296-62-30450, filed 3/23/99, effective 6/23/99.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.
296-62-30315	Site work zones. [Statutory Authority: RCW 49.17.040, 99-07-097, § 296-62-30315, filed 3/23/99, effective 6/23/99.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	296-62-30455	Training requirements for emergency response. [Statutory Authority: RCW 49.17.040, 99-07-097, § 296-62-30455, filed 3/23/99, effective 6/23/99.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.
296-62-3040	General training requirements and the employees covered. [Statutory Authority: RCW 49.17.040, 99-07-097, § 296-62-3040, filed 3/23/99, effective 6/23/99. Statutory Authority: Chapter 49.17 RCW. 95-04-007, § 296-62-3040, filed 1/18/95, effective 3/1/95; 91-24-017 (Order 91-07), § 296-62-3040, filed 11/22/91, effective 12/24/91; 90-20-091 (Order 90-14), § 296-62-3040, filed 10/1/90, effective 11/15/90; 89-21-018 (Order 89-10), § 296-62-3040, filed 10/10/89, effective 11/24/89; 88-21-002 (Order 88-23), § 296-62-3040, filed 10/6/88, effective 11/7/88.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	296-62-30460	Refresher training. [Statutory Authority: RCW 49.17.040, 99-07-097, § 296-62-30460, filed 3/23/99, effective 6/23/99.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.
296-62-30405	Elements covered in training. [Statutory Authority: RCW 49.17.040, 99-07-097, § 296-62-30405, filed 3/23/99, effective 6/23/99.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	296-62-30465	Equivalent training. [Statutory Authority: RCW 49.17.040, 99-07-097, § 296-62-30465, filed 3/23/99, effective 6/23/99.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.
296-62-30410	Initial training. [Statutory Authority: RCW 49.17.040, 99-07-097, § 296-62-30410, filed 3/23/99, effective 6/23/99.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	296-62-3050	Medical surveillance. [Statutory Authority: RCW 49.17.040, 99-07-097, § 296-62-3050, filed 3/23/99, effective 6/23/99. Statutory Authority: Chapter 49.17 RCW. 91-11-070 (Order 91-01), § 296-62-3050, filed 5/20/91, effective 6/20/91; 90-20-091 (Order 90-14), § 296-62-3050, filed 10/1/90, effective 11/15/90; 89-21-018, § 296-62-3050, filed 10/10/89, effective 11/24/89; 88-21-002 (Order 88-23), § 296-62-3050, filed 10/6/88, effective 11/7/88.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.
296-62-30415	Management and supervisor training. [Statutory Authority: RCW 49.17.040, 99-07-097, § 296-62-30415, filed 3/23/99, effective 6/23/99.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	296-62-30505	Employees covered. [Statutory Authority: RCW 49.17.040, 99-07-097, § 296-62-30505, filed 3/23/99, effective 6/23/99.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.
296-62-30420	Law enforcement at illicit drug labs. [Statutory Authority: RCW 49.17.040, 99-07-097, § 296-62-30420, filed 3/23/99, effective 6/23/99.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	296-62-30510	Frequency of medical examinations and consultations. [Statutory Authority: RCW 49.17.040, 99-07-097, § 296-62-30510, filed 3/23/99, effective 6/23/99.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.
296-62-30425	Training course content for 40 and 80 hour hazardous waste cleanup courses. [Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 01-11-038, §	296-62-30515	Content of medical examinations and consultations. [Statutory Authority: RCW 49.17.040, 99-07-097, § 296-62-30515, filed 3/23/99, effective 6/23/99.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.
		296-62-30520	Examination by a physician and costs. [Statutory Authority: RCW 49.17.040, 99-07-097, § 296-62-30520, filed 3/23/99, effective 6/23/99.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory

	Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.		
296-62-30525	Information provided to the physician. [Statutory Authority: RCW 49.17.040, 99-07-097, § 296-62-30525, filed 3/23/99, effective 6/23/99.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	296-62-3090	General requirements for handling drums and containers. [Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 01-11-038, § 296-62-3090, filed 5/9/01, effective 9/1/01. Statutory Authority: RCW 49.17.040, 99-07-097, § 296-62-3090, filed 3/23/99, effective 6/23/99. Statutory Authority: Chapter 49.17 RCW. 93-19-142 (Order 93-04), § 296-62-3090, filed 9/22/93, effective 11/1/93; 91-11-070 (Order 91-01), § 296-62-3090, filed 5/20/91, effective 6/20/91; 89-21-018, § 296-62-3090, filed 10/10/89, effective 11/24/89; 88-21-002 (Order 88-23), § 296-62-3090, filed 10/6/88, effective 11/7/88.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.
296-62-30530	Physician's written opinion. [Statutory Authority: RCW 49.17.040, 99-07-097, § 296-62-30530, filed 3/23/99, effective 6/23/99.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.		
296-62-30535	Recordkeeping of medical surveillance activities. [Statutory Authority: RCW 49.17.040, 99-07-097, § 296-62-30535, filed 3/23/99, effective 6/23/99.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	296-62-30905	Opening drums and containers. [Statutory Authority: RCW 49.17.040, 99-07-097, § 296-62-30905, filed 3/23/99, effective 6/23/99.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.
296-62-3060	Engineering controls, work practices, and personal protective equipment for employee protection. [Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. 05-03-093, § 296-62-3060, filed 1/18/05, effective 3/1/05. Statutory Authority: RCW 49.17.040, 99-07-097, § 296-62-3060, filed 3/23/99, effective 6/23/99. Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-62-3060, filed 7/20/94, effective 9/20/94; 90-20-091 (Order 90-14), § 296-62-3060, filed 10/1/90, effective 11/15/90; 89-21-018, § 296-62-3060, filed 10/10/89, effective 11/24/89; 88-21-002 (Order 88-23), § 296-62-3060, filed 10/6/88, effective 11/7/88.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	296-62-30910	Material handling equipment. [Statutory Authority: RCW 49.17.040, 99-07-097, § 296-62-30910, filed 3/23/99, effective 6/23/99.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.
296-62-30605	Personal protective equipment selection. [Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 01-11-038, § 296-62-30605, filed 5/9/01, effective 9/1/01. Statutory Authority: RCW 49.17.040, 99-07-097, § 296-62-30605, filed 3/23/99, effective 6/23/99.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	296-62-30915	Radioactive wastes. [Statutory Authority: RCW 49.17.040, 99-07-097, § 296-62-30915, filed 3/23/99, effective 6/23/99.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.
296-62-30610	Totally encapsulating chemical protective suits. [Statutory Authority: RCW 49.17.040, 99-07-097, § 296-62-30610, filed 3/23/99, effective 6/23/99.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	296-62-30920	Shock-sensitive wastes. [Statutory Authority: RCW 49.17.040, 99-07-097, § 296-62-30920, filed 3/23/99, effective 6/23/99.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.
296-62-30615	Personal protective equipment (PPE) program. [Statutory Authority: RCW 49.17.040, 99-07-097, § 296-62-30615, filed 3/23/99, effective 6/23/99.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	296-62-30925	Laboratory waste packs. [Statutory Authority: RCW 49.17.040, 99-07-097, § 296-62-30925, filed 3/23/99, effective 6/23/99.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.
296-62-3070	Monitoring concentrations of hazardous substances. [Statutory Authority: RCW 49.17.040, 99-07-097, § 296-62-3070, filed 3/23/99, effective 6/23/99. Statutory Authority: Chapter 49.17 RCW. 90-20-091 (Order 90-14), § 296-62-3070, filed 10/1/90, effective 11/15/90; 89-21-018, § 296-62-3070, filed 10/10/89, effective 11/24/89; 88-21-002 (Order 88-23), § 296-62-3070, filed 10/6/88, effective 11/7/88.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	296-62-30930	Sampling of drum and container contents. [Statutory Authority: RCW 49.17.040, 99-07-097, § 296-62-30930, filed 3/23/99, effective 6/23/99.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.
296-62-30705	Monitoring during initial entry. [Statutory Authority: RCW 49.17.040, 99-07-097, § 296-62-30705, filed 3/23/99, effective 6/23/99.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	296-62-30935	Shipping and transport of drums. [Statutory Authority: RCW 49.17.040, 99-07-097, § 296-62-30935, filed 3/23/99, effective 6/23/99.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.
296-62-30710	Periodic monitoring. [Statutory Authority: RCW 49.17.040, 99-07-097, § 296-62-30710, filed 3/23/99, effective 6/23/99.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	296-62-30940	Tanks and vaults procedures. [Statutory Authority: RCW 49.17.040, 99-07-097, § 296-62-30940, filed 3/23/99, effective 6/23/99.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.
296-62-30715	Monitoring of high-risk employees. [Statutory Authority: RCW 49.17.040, 99-07-097, § 296-62-30715, filed 3/23/99, effective 6/23/99.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	296-62-3100	Decontamination procedures. [Statutory Authority: RCW 49.17.040, 99-07-097, § 296-62-3100, filed 3/23/99, effective 6/23/99. Statutory Authority: Chapter 49.17 RCW. 89-21-018, § 296-62-3100, filed 10/10/89, effective 11/24/89; 88-21-002 (Order 88-23), § 296-62-3100, filed 10/6/88, effective 11/7/88.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.
296-62-3080	Informational programs. [Statutory Authority: RCW 49.17.040, 99-07-097, § 296-62-3080, filed 3/23/99, effective 6/23/99. Statutory Authority: Chapter 49.17 RCW. 89-21-018, § 296-62-3080, filed 10/10/89, effective 11/24/89; 88-21-002 (Order 88-23), § 296-62-3080,	296-62-31005	Location of decontamination areas. [Statutory Authority: RCW 49.17.040, 99-07-097, § 296-62-31005, filed 3/23/99, effective 6/23/99.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.
		296-62-31010	Decontamination of equipment and solvents. [Statutory Authority: RCW 49.17.040, 99-07-097, § 296-62-31010, filed 3/23/99, effective 6/23/99.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.
		296-62-31015	Decontamination of personal protective clothing and equipment. [Statutory Authority: RCW 49.17.040, 99-07-097, § 296-62-31015, filed 3/23/99, effective 6/23/99.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.

296-62-31020	Showers and change rooms used for decontamination. [Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060. 03-18-090, § 296-62-31020, filed 9/2/03, effective 11/1/03. Statutory Authority: RCW 49.17.040. 99-07-097, § 296-62-31020, filed 3/23/99, effective 6/23/99.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	296-62-31330	Washing facilities. [Statutory Authority: RCW 49.17.040. 99-07-097, § 296-62-31330, filed 3/23/99, effective 6/23/99.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.
296-62-3110	Emergency response plan for employees at uncontrolled hazardous waste sites. [Statutory Authority: RCW 49.17.040. 99-07-097, § 296-62-3110, filed 3/23/99, effective 6/23/99. Statutory Authority: Chapter 49.17 RCW. 90-20-091 (Order 90-14), § 296-62-3110, filed 10/1/90, effective 11/15/90; 90-09-026 (Order 90-01), § 296-62-3110, filed 4/10/90, effective 5/25/90; 89-21-018 (Order 89-10), § 296-62-3110, filed 10/10/89, effective 11/24/89; 88-21-002 (Order 88-23), § 296-62-3110, filed 10/6/88, effective 11/7/88.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	296-62-31335	Showers and change rooms. [Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060. 03-18-090, § 296-62-31335, filed 9/2/03, effective 11/1/03. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 01-17-033, § 296-62-31335, filed 8/8/01, effective 9/1/01. Statutory Authority: RCW 49.17.040. 99-07-097, § 296-62-31335, filed 3/23/99, effective 6/23/99.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.
296-62-31105	Elements of an emergency response plan at uncontrolled hazardous waste sites. [Statutory Authority: RCW 49.17.040. 99-07-097, § 296-62-31105, filed 3/23/99, effective 6/23/99.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	296-62-3138	New technology programs. [Statutory Authority: RCW 49.17.040. 99-07-097, § 296-62-3138, filed 3/23/99, effective 6/23/99. Statutory Authority: Chapter 49.17 RCW. 89-21-018, § 296-62-3138, filed 10/10/89, effective 11/24/89.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.
296-62-31110	Procedures for handling emergency incidents at uncontrolled hazardous waste sites. [Statutory Authority: RCW 49.17.040. 99-07-097, § 296-62-31110, filed 3/23/99, effective 6/23/99.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	296-62-3140	Certain operations conducted under the Resource Conservation and Recovery Act of 1976 (RCRA). [Statutory Authority: RCW 49.17.040. 99-07-097, § 296-62-3140, filed 3/23/99, effective 6/23/99. Statutory Authority: Chapter 49.17 RCW. 94-16-145, § 296-62-3140, filed 8/3/94, effective 9/12/94; 91-24-017 (Order 91-07), § 296-62-3140, filed 11/22/91, effective 12/24/91; 90-20-091 (Order 90-14), § 296-62-3140, filed 10/1/90, effective 11/15/90; 89-21-018, § 296-62-3140, filed 10/10/89, effective 11/24/89; 88-21-002 (Order 88-23), § 296-62-3140, filed 10/6/88, effective 11/7/88.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.
296-62-3112	Emergency response to hazardous substance releases. [Statutory Authority: Chapter 49.17 RCW. 90-20-091 (Order 90-14), § 296-62-3112, filed 10/1/90, effective 11/15/90; 89-21-018, § 296-62-3112, filed 10/10/89, effective 11/24/89.] Repealed by 99-07-097, filed 3/23/99, effective 6/23/99. Statutory Authority: RCW 49.17.040.	296-62-31405	Safety and health program under RCRA. [Statutory Authority: RCW 49.17.040. 99-07-097, § 296-62-31405, filed 3/23/99, effective 6/23/99.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.
296-62-3120	Illumination. [Statutory Authority: RCW 49.17.040. 99-07-097, § 296-62-3120, filed 3/23/99, effective 6/23/99. Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-62-3120, filed 7/20/94, effective 9/20/94; 89-21-018, § 296-62-3120, filed 10/10/89, effective 11/24/89; 88-21-002 (Order 88-23), § 296-62-3120, filed 10/6/88, effective 11/7/88.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	296-62-31410	Hazard communication program requirements under RCRA. [Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 01-11-038, § 296-62-31410, filed 5/9/01, effective 9/1/01. Statutory Authority: RCW 49.17.040. 99-07-097, § 296-62-31410, filed 3/23/99, effective 6/23/99.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.
296-62-3130	Sanitation at temporary workplaces. [Statutory Authority: RCW 49.17.040. 99-07-097, § 296-62-3130, filed 3/23/99, effective 6/23/99. Statutory Authority: Chapter 49.17 RCW. 89-21-018, § 296-62-3130, filed 10/10/89, effective 11/24/89; 88-21-002 (Order 88-23), § 296-62-3130, filed 10/6/88, effective 11/7/88.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	296-62-31415	Medical surveillance program requirements under RCRA. [Statutory Authority: RCW 49.17.040. 99-07-097, § 296-62-31415, filed 3/23/99, effective 6/23/99.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.
296-62-31305	Potable water. [Statutory Authority: RCW 49.17.040. 99-07-097, § 296-62-31305, filed 3/23/99, effective 6/23/99.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	296-62-31420	Decontamination program requirements under RCRA. [Statutory Authority: RCW 49.17.040. 99-07-097, § 296-62-31420, filed 3/23/99, effective 6/23/99.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.
296-62-31310	Nonpotable water. [Statutory Authority: RCW 49.17.040. 99-07-097, § 296-62-31310, filed 3/23/99, effective 6/23/99.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	296-62-31425	New technology programs requirements under RCRA. [Statutory Authority: RCW 49.17.040. 99-07-097, § 296-62-31425, filed 3/23/99, effective 6/23/99.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.
296-62-31315	Toilet facilities. [Statutory Authority: RCW 49.17.040. 99-07-097, § 296-62-31315, filed 3/23/99, effective 6/23/99.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	296-62-31430	Material handling program requirements under RCRA. [Statutory Authority: RCW 49.17.040. 99-07-097, § 296-62-31430, filed 3/23/99, effective 6/23/99.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.
296-62-31320	Food handling. [Statutory Authority: RCW 49.17.040. 99-07-097, § 296-62-31320, filed 3/23/99, effective 6/23/99.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	296-62-31435	Training program for new employees under RCRA. [Statutory Authority: RCW 49.17.040. 99-07-097, § 296-62-31435, filed 3/23/99, effective 6/23/99.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.
296-62-31325	Temporary sleeping quarters. [Statutory Authority: RCW 49.17.040. 99-07-097, § 296-62-31325, filed 3/23/99, effective 6/23/99.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	296-62-31440	Training program for current employees. [Statutory Authority: RCW 49.17.040. 99-07-097, § 296-62-31440, filed 3/23/99, effective 6/23/99.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory

	Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	296-62-3190	Appendix D—References. [Statutory Authority: RCW 49.17.040, 99-07-097, § 296-62-3190, filed 3/23/99, effective 6/23/99. Statutory Authority: Chapter 49.17 RCW. 90-20-091 (Order 90-14), § 296-62-3190, filed 10/1/90, effective 11/15/90; 89-21-018 (Order 89-10), § 296-62-3190, filed 10/10/89, effective 11/24/89; 88-21-002 (Order 88-23), § 296-62-3190, filed 10/6/88, effective 11/7/88.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.
296-62-31445	RCRA requirements for trainers. [Statutory Authority: RCW 49.17.040, 99-07-097, § 296-62-31445, filed 3/23/99, effective 6/23/99.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.		
296-62-31450	Emergency response program requirements under RCRA. [Statutory Authority: RCW 49.17.040, 99-07-097, § 296-62-31450, filed 3/23/99, effective 6/23/99.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	296-62-3195	Appendix E—Training curriculum guidelines. [Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060, 05-03-093, § 296-62-3195, filed 1/18/05, effective 3/1/05. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 01-11-038, § 296-62-3195, filed 5/9/01, effective 9/1/01. Statutory Authority: RCW 49.17.040, 99-07-097, § 296-62-3195, filed 3/23/99, effective 6/23/99. Statutory Authority: Chapter 49.17 RCW. 95-04-006, § 296-62-3195, filed 1/18/95, effective 3/10/95.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.
296-62-31455	Emergency response plan under RCRA. [Statutory Authority: RCW 49.17.040, 99-07-097, § 296-62-31455, filed 3/23/99, effective 6/23/99.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.		
296-62-31460	Elements of an emergency response plan under RCRA. [Statutory Authority: RCW 49.17.040, 99-07-097, § 296-62-31460, filed 3/23/99, effective 6/23/99.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	296-62-400	Occupational exposure to hazardous chemicals in laboratories. [Statutory Authority: Chapter 49.17 RCW. 90-17-051 (Order 90-10), § 296-62-400, filed 8/13/90, effective 9/24/90.] Repealed by 06-02-060, filed 1/3/06, effective 4/1/06. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060.
296-62-31465	Training requirements for emergency response under RCRA. [Statutory Authority: RCW 49.17.040, 99-07-097, § 296-62-31465, filed 3/23/99, effective 6/23/99.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	296-62-40001	Scope and application. [Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060, 05-03-093, § 296-62-40001, filed 1/18/05, effective 3/1/05. Statutory Authority: Chapter 49.17 RCW. 90-17-051 (Order 90-10), § 296-62-40001, filed 8/13/90, effective 9/24/90.] Repealed by 06-02-060, filed 1/3/06, effective 4/1/06. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060.
296-62-31470	Procedures for handling emergency incidents under RCRA. [Statutory Authority: RCW 49.17.040, 99-07-097, § 296-62-31470, filed 3/23/99, effective 6/23/99.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	296-62-40003	Definitions applicable to all sections of this chapter. [Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 01-11-038, § 296-62-40003, filed 5/9/01, effective 9/1/01. Statutory Authority: Chapter 49.17 RCW. 90-17-051 (Order 90-10), § 296-62-40003, filed 8/13/90, effective 9/24/90.] Repealed by 06-02-060, filed 1/3/06, effective 4/1/06. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060.
296-62-3150	Start up dates. [Statutory Authority: Chapter 49.17 RCW. 88-21-002 (Order 88-23), § 296-62-3150, filed 10/6/88, effective 11/7/88.] Repealed by 89-21-018 (Order 89-10), filed 10/10/89, effective 11/24/89. Statutory Authority: Chapter 49.17 RCW.	296-62-40005	Permissible exposure limits. [Statutory Authority: Chapter 49.17 RCW. 90-17-051 (Order 90-10), § 296-62-40005, filed 8/13/90, effective 9/24/90.] Repealed by 06-02-060, filed 1/3/06, effective 4/1/06. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060.
296-62-3152	Appendices to Part P—Hazardous waste operations and TSD facilities. [Statutory Authority: RCW 49.17.040, 99-07-097, § 296-62-3152, filed 3/23/99, effective 6/23/99. Statutory Authority: Chapter 49.17 RCW. 89-21-018, § 296-62-3152, filed 10/10/89, effective 11/24/89; 88-21-002 (Order 88-23), § 296-62-3152, filed 10/6/88, effective 11/7/88.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	296-62-40007	Employee exposure determination. [Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060, 05-03-093, § 296-62-40007, filed 1/18/05, effective 3/1/05. Statutory Authority: Chapter 49.17 RCW. 90-17-051 (Order 90-10), § 296-62-40007, filed 8/13/90, effective 9/24/90.] Repealed by 06-02-060, filed 1/3/06, effective 4/1/06. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060.
296-62-3160	Appendix A—Personal protective equipment test methods. [Statutory Authority: RCW 49.17.040, 99-07-097, § 296-62-3160, filed 3/23/99, effective 6/23/99. Statutory Authority: Chapter 49.17 RCW. 91-24-017 (Order 91-07), § 296-62-3160, filed 11/22/91, effective 12/24/91; 90-20-091 (Order 90-14), § 296-62-3160, filed 10/1/90, effective 11/15/90; 89-21-018, § 296-62-3160, filed 10/10/89, effective 11/24/89; 88-21-002 (Order 88-23), § 296-62-3160, filed 10/6/88, effective 11/7/88.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	296-62-40009	Chemical hygiene plan—General. [Statutory Authority: Chapter 49.17 RCW. 90-17-051 (Order 90-10), § 296-62-40009, filed 8/13/90, effective 9/24/90.] Repealed by 06-02-060, filed 1/3/06, effective 4/1/06. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060.
296-62-3170	Appendix B—General description and discussion of the levels of protection and protective gear. [Statutory Authority: Chapter 49.17 RCW. 95-04-006, § 296-62-3170, filed 1/18/95, effective 3/10/95; 90-20-091 (Order 90-14), § 296-62-3170, filed 10/1/90, effective 11/15/90; 89-21-018, § 296-62-3170, filed 10/10/89, effective 11/24/89; 88-21-002 (Order 88-23), § 296-62-3170, filed 10/6/88, effective 11/7/88.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	296-62-40011	Employee information and training. [Statutory Authority: Chapter 49.17 RCW. 90-17-051 (Order 90-10), § 296-62-40011, filed 8/13/90, effective 9/24/90.] Repealed by 06-02-060, filed 1/3/06, effective 4/1/06. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060.
296-62-3180	Appendix C—Compliance guidelines. [Statutory Authority: RCW 49.17.040, 99-07-097, § 296-62-3180, filed 3/23/99, effective 6/23/99. Statutory Authority: Chapter 49.17 RCW. 90-20-091 (Order 90-14), § 296-62-3180, filed 10/1/90, effective 11/15/90; 89-21-018 (Order 89-10), § 296-62-3180, filed 10/10/89, effective 11/24/89; 88-21-002 (Order 88-23), § 296-62-3180, filed 10/6/88, effective 11/7/88.] Repealed by 05-01-166, filed 12/21/04, effective 4/2/05. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.	296-62-40013	Medical consultation and medical examinations. [Statutory Authority: Chapter 49.17 RCW. 90-17-051 (Order 90-10), § 296-62-40013, filed 8/13/90, effective 9/24/90.] Repealed by 06-02-060, filed 1/3/06, effective 4/1/06. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060.
		296-62-40015	Hazard identification. [Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 01-11-038, § 296-62-40015, filed 5/9/01, effective 9/1/01. Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-62-40015, filed 7/20/94, effective 9/20/94; 90-17-051 (Order 90-10), § 296-62-40015, filed 8/13/90, effective 9/24/90.] Repealed by 06-02-060,

296-62-40017	filed 1/3/06, effective 4/1/06. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060. Use of respirators. [Statutory Authority: Chapter 49.17 RCW. 90-17-051 (Order 90-10), § 296-62-40017, filed 8/13/90, effective 9/24/90.] Repealed by 06-02-060, filed 1/3/06, effective 4/1/06. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060.	
296-62-40019	Recordkeeping. [Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060. 04-10-026, § 296-62-40019, filed 4/27/04, effective 8/1/04. Statutory Authority: Chapter 49.17 RCW. 90-17-051 (Order 90-10), § 296-62-40019, filed 8/13/90, effective 9/24/90.] Repealed by 06-02-060, filed 1/3/06, effective 4/1/06. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060.	296-62-41017
296-62-40021	Start up date. [Statutory Authority: Chapter 49.17 RCW. 90-17-051 (Order 90-10), § 296-62-40021, filed 8/13/90, effective 9/24/90.] Repealed by 06-02-060, filed 1/3/06, effective 4/1/06. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060.	296-62-41019
296-62-40023	Appendices. [Statutory Authority: Chapter 49.17 RCW. 90-17-051 (Order 90-10), § 296-62-40023, filed 8/13/90, effective 9/24/90.] Repealed by 06-02-060, filed 1/3/06, effective 4/1/06. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060.	296-62-41020
296-62-40025	Appendix A—National Research Council recommendations concerning chemical hygiene in laboratories (non-mandatory). [Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 01-17-033, § 296-62-40025, filed 8/8/01, effective 9/1/01. Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-62-40025, filed 7/20/94, effective 9/20/94; 90-17-051 (Order 90-10), § 296-62-40025, filed 8/13/90, effective 9/24/90.] Repealed by 06-02-060, filed 1/3/06, effective 4/1/06. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060.	296-62-41021
296-62-40027	Appendix B—References (nonmandatory). [Statutory Authority: Chapter 49.17 RCW. 90-17-051 (Order 90-10), § 296-62-40027, filed 8/13/90, effective 9/24/90.] Repealed by 06-02-060, filed 1/3/06, effective 4/1/06. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060.	296-62-41023
296-62-410	Emergency response to hazardous substance release. [Statutory Authority: RCW 49.17.040. 99-07-097, § 296-62-410, filed 3/23/99, effective 6/23/99.] Repealed by 02-11-141, filed 5/22/02, effective 10/1/02. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. Later promulgation, see chapter 296-824 WAC.	296-62-41025
296-62-41001	Scope and application. [Statutory Authority: RCW 49.17.040. 99-07-097, § 296-62-41001, filed 3/23/99, effective 6/23/99.] Repealed by 02-11-141, filed 5/22/02, effective 10/1/02. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. Later promulgation, see chapter 296-824 WAC.	296-62-41030
296-62-41003	Definitions. [Statutory Authority: RCW 49.17.040. 99-07-097, § 296-62-41003, filed 3/23/99, effective 6/23/99.] Repealed by 02-11-141, filed 5/22/02, effective 10/1/02. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. Later promulgation, see chapter 296-824 WAC.	296-62-41031
296-62-41010	Emergency response. [Statutory Authority: RCW 49.17.040. 99-07-097, § 296-62-41010, filed 3/23/99, effective 6/23/99.] Repealed by 02-11-141, filed 5/22/02, effective 10/1/02. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. Later promulgation, see chapter 296-824 WAC.	296-62-41033
296-62-41011	Emergency response plan. [Statutory Authority: RCW 49.17.040. 99-07-097, § 296-62-41011, filed 3/23/99, effective 6/23/99.] Repealed by 02-11-141, filed 5/22/02, effective 10/1/02. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. Later promulgation, see chapter 296-824 WAC.	296-62-41035
296-62-41013	Elements of an emergency response plan. [Statutory Authority: RCW 49.17.040. 99-07-097, § 296-62-41013, filed 3/23/99, effective 6/23/99.] Repealed by 02-11-141, filed 5/22/02, effective 10/1/02. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. Later promulgation, see chapter 296-824 WAC.	296-62-41040
296-62-41015	Procedures for handling emergency response. [Statutory Authority: RCW 49.17.040. 99-07-097, § 296-62-41015, filed 3/23/99, effective 6/23/99.] Repealed by 02-11-141, filed 5/22/02, effective 10/1/02. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. Later promulgation, see chapter 296-824 WAC.	296-62-41041
		296-62-41042
		Authority: RCW 49.17.010, [49.17].040, and [49.17].050. Later promulgation, see chapter 296-824 WAC.
		Skilled support personnel. [Statutory Authority: RCW 49.17.040. 99-07-097, § 296-62-41017, filed 3/23/99, effective 6/23/99.] Repealed by 02-11-141, filed 5/22/02, effective 10/1/02. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. Later promulgation, see chapter 296-824 WAC.
		Specialist employees. [Statutory Authority: RCW 49.17.040. 99-07-097, § 296-62-41019, filed 3/23/99, effective 6/23/99.] Repealed by 02-11-141, filed 5/22/02, effective 10/1/02. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. Later promulgation, see chapter 296-824 WAC.
		Training. [Statutory Authority: RCW 49.17.040. 99-07-097, § 296-62-41020, filed 3/23/99, effective 6/23/99.] Repealed by 02-11-141, filed 5/22/02, effective 10/1/02. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. Later promulgation, see chapter 296-824 WAC.
		Training before participation. [Statutory Authority: RCW 49.17.040. 99-07-097, § 296-62-41021, filed 3/23/99, effective 6/23/99.] Repealed by 02-11-141, filed 5/22/02, effective 10/1/02. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. Later promulgation, see chapter 296-824 WAC.
		Trainers. [Statutory Authority: RCW 49.17.040. 99-07-097, § 296-62-41023, filed 3/23/99, effective 6/23/99.] Repealed by 02-11-141, filed 5/22/02, effective 10/1/02. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. Later promulgation, see chapter 296-824 WAC.
		Refresher training. [Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-094, § 296-62-41025, filed 8/17/99, effective 12/1/99. Statutory Authority: RCW 49.17.040. 99-07-097, § 296-62-41025, filed 3/23/99, effective 6/23/99.] Repealed by 02-11-141, filed 5/22/02, effective 10/1/02. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. Later promulgation, see chapter 296-824 WAC.
		Employee personal protective equipment. [Statutory Authority: RCW 49.17.040. 99-07-097, § 296-62-41030, filed 3/23/99, effective 6/23/99.] Repealed by 02-11-141, filed 5/22/02, effective 10/1/02. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. Later promulgation, see chapter 296-824 WAC.
		Personal protective equipment selection. [Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 01-11-038, § 296-62-41031, filed 5/9/01, effective 9/1/01. Statutory Authority: RCW 49.17.040. 99-07-097, § 296-62-41031, filed 3/23/99, effective 6/23/99.] Repealed by 02-11-141, filed 5/22/02, effective 10/1/02. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. Later promulgation, see chapter 296-824 WAC.
		Totally encapsulating chemical protective suits. [Statutory Authority: RCW 49.17.040. 99-07-097, § 296-62-41033, filed 3/23/99, effective 6/23/99.] Repealed by 02-11-141, filed 5/22/02, effective 10/1/02. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. Later promulgation, see chapter 296-824 WAC.
		Personal protective equipment (PPE) program. [Statutory Authority: RCW 49.17.040. 99-07-097, § 296-62-41035, filed 3/23/99, effective 6/23/99.] Repealed by 02-11-141, filed 5/22/02, effective 10/1/02. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. Later promulgation, see chapter 296-824 WAC.
		Medical surveillance and consultation for emergency response. [Statutory Authority: RCW 49.17.040. 99-07-097, § 296-62-41040, filed 3/23/99, effective 6/23/99.] Repealed by 02-11-141, filed 5/22/02, effective 10/1/02. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. Later promulgation, see chapter 296-824 WAC.
		Employees covered. [Statutory Authority: RCW 49.17.040. 99-07-097, § 296-62-41041, filed 3/23/99, effective 6/23/99.] Repealed by 02-11-141, filed 5/22/02, effective 10/1/02. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. Later promulgation, see chapter 296-824 WAC.
		Frequency of medical examinations and consultations. [Statutory Authority: RCW 49.17.040. 99-07-097, §

- 296-62-41042, filed 3/23/99, effective 6/23/99.] Repealed by 02-11-141, filed 5/22/02, effective 10/1/02. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. Later promulgation, see chapter 296-824 WAC.
- 296-62-41043 Content of medical examinations and consultations. [Statutory Authority: RCW 49.17.040. 99-07-097, § 296-62-41043, filed 3/23/99, effective 6/23/99.] Repealed by 02-11-141, filed 5/22/02, effective 10/1/02. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. Later promulgation, see chapter 296-824 WAC.
- 296-62-41044 Examination by a physician and costs. [Statutory Authority: RCW 49.17.040. 99-07-097, § 296-62-41044, filed 3/23/99, effective 6/23/99.] Repealed by 02-11-141, filed 5/22/02, effective 10/1/02. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. Later promulgation, see chapter 296-824 WAC.
- 296-62-41045 Information provided to the physician. [Statutory Authority: RCW 49.17.040. 99-07-097, § 296-62-41045, filed 3/23/99, effective 6/23/99.] Repealed by 02-11-141, filed 5/22/02, effective 10/1/02. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. Later promulgation, see chapter 296-824 WAC.
- 296-62-41046 Physician's written opinion. [Statutory Authority: RCW 49.17.040. 99-07-097, § 296-62-41046, filed 3/23/99, effective 6/23/99.] Repealed by 02-11-141, filed 5/22/02, effective 10/1/02. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. Later promulgation, see chapter 296-824 WAC.
- 296-62-41047 Recordkeeping of medical surveillance activities. [Statutory Authority: RCW 49.17.040. 99-07-097, § 296-62-41047, filed 3/23/99, effective 6/23/99.] Repealed by 02-11-141, filed 5/22/02, effective 10/1/02. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. Later promulgation, see chapter 296-824 WAC.
- 296-62-41060 Post emergency response operations. [Statutory Authority: RCW 49.17.040. 99-07-097, § 296-62-41060, filed 3/23/99, effective 6/23/99.] Repealed by 02-11-141, filed 5/22/02, effective 10/1/02. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. Later promulgation, see chapter 296-824 WAC.
- 296-62-41061 Removal of hazardous substances. [Statutory Authority: RCW 49.17.040. 99-07-097, § 296-62-41061, filed 3/23/99, effective 6/23/99.] Repealed by 02-11-141, filed 5/22/02, effective 10/1/02. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. Later promulgation, see chapter 296-824 WAC.
- 296-62-41063 Employees training and protective equipment. [Statutory Authority: RCW 49.17.040. 99-07-097, § 296-62-41063, filed 3/23/99, effective 6/23/99.] Repealed by 02-11-141, filed 5/22/02, effective 10/1/02. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. Later promulgation, see chapter 296-824 WAC.
- 296-62-41080 Appendices to Part R—Emergency response. [Statutory Authority: RCW 49.17.040. 99-07-097, § 296-62-41080, filed 3/23/99, effective 6/23/99.] Repealed by 02-11-141, filed 5/22/02, effective 10/1/02. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. Later promulgation, see chapter 296-824 WAC.
- 296-62-41081 Appendix A—Personal protective equipment test methods. [Statutory Authority: RCW 49.17.040. 99-07-097, § 296-62-41081, filed 3/23/99, effective 6/23/99.] Repealed by 02-11-141, filed 5/22/02, effective 10/1/02. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. Later promulgation, see chapter 296-824 WAC.
- 296-62-41082 Appendix B—General description and discussion of the levels of protection and protective gear. [Statutory Authority: RCW 49.17.040. 99-07-097, § 296-62-41082, filed 3/23/99, effective 6/23/99.] Repealed by 02-11-141, filed 5/22/02, effective 10/1/02. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. Later promulgation, see chapter 296-824 WAC.
- 296-62-41084 Appendix C—Compliance guidelines. [Statutory Authority: RCW 49.17.040. 99-07-097, § 296-62-41084, filed 3/23/99, effective 6/23/99.] Repealed by 02-11-141, filed 5/22/02, effective 10/1/02. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. Later promulgation, see chapter 296-824 WAC.
- 296-62-41085 Appendix D—References. [Statutory Authority: RCW 49.17.040. 99-07-097, § 296-62-41085, filed 3/23/99, effective 6/23/99.] Repealed by 02-11-141, filed 5/22/02, effective 10/1/02. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. Later promulgation, see chapter 296-824 WAC.
- 296-62-41086 Appendix E—Training curriculum guidelines. [Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 01-11-038, § 296-62-41086, filed 5/9/01, effective 9/1/01. Statutory Authority: RCW 49.17.040. 99-07-097, § 296-62-41086, filed 3/23/99, effective 6/23/99.] Repealed by 02-11-141, filed 5/22/02, effective 10/1/02. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. Later promulgation, see chapter 296-824 WAC.
- 296-62-900 Note on application of appendices A through H. [Order 73-3, Note (codified as WAC 296-62-900), filed 5/7/73.] Repealed by 80-11-010 (Order 80-14), filed 8/8/80. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240.
- 296-62-901 Appendix A. [Order 73-3, Appendix A (codified as WAC 296-62-901), filed 5/7/73.] Repealed by 80-11-010 (Order 80-14), filed 8/8/80. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240.
- 296-62-902 Appendix B. [Order 73-3, Appendix B (codified as WAC 296-62-902), filed 5/7/73.] Repealed by 80-11-010 (Order 80-14), filed 8/8/80. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240.
- 296-62-903 Appendix C—Threshold limit values for mixtures. [Order 73-3, Appendix C (codified as WAC 296-62-903), filed 5/7/73.] Repealed by 80-11-010 (Order 80-14), filed 8/8/80. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240.
- 296-62-904 Appendix D—Permissible excursions for time-weighted average (TWA) limits. [Order 73-3, Appendix D (codified as WAC 296-62-904), filed 5/7/73.] Repealed by 80-11-010 (Order 80-14), filed 8/8/80. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240.
- 296-62-905 Appendix E—Some nuisance particulates (see note q). [Order 73-3, Appendix E (codified as WAC 296-62-905), filed 5/7/73.] Repealed by 80-11-010 (Order 80-14), filed 8/8/80. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240.
- 296-62-906 Appendix F. [Order 73-3, Appendix F (codified as WAC 296-62-906), filed 5/7/73.] Repealed by 80-11-010 (Order 80-14), filed 8/8/80. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240.
- 296-62-907 Appendix G—Notice of intended changes (for 1972). [Order 73-3, Appendix G (codified as WAC 296-62-907), filed 5/7/73.] Repealed by 80-11-010 (Order 80-14), filed 8/8/80. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240.
- 296-62-908 Appendix H—Notice of intent to change the TLV for lasers-1972. [Order 73-3, Appendix H (codified as WAC 296-62-908), filed 5/7/73.] Repealed by 80-11-010 (Order 80-14), filed 8/8/80. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240.

PART A—GENERAL

WAC 296-62-005 Occupational health and environmental control—Foreword. (1) Foreword.

(a) Modern industry is changing at an ever-increasing pace. New inventions, discoveries and developments cause changes in every facet of the industrial process. In keeping with this changing technology is the necessity to provide an adequate guide for the protection of working men and women. This chapter is for the guidance of both labor and management and to call particular attention to the way in which modernization and updating of the standards can be accomplished.

(b) This chapter is intended to cover as fully as is practical the environment in which work is performed. In addition to the suggestions made herein, the services of modern occupational medicine must also be considered. Occupational medicine with its specialized techniques for examination, diagnosis, and treatment adds another protection for the worker as he encounters newly-developed materials and methods.

(c) With the full realization that close cooperation between government and industry, labor and management, and all the health sciences, is essential, this chapter is promulgated for the health of all the workmen coming under the jurisdiction of the department of labor and industries.

(d) This chapter is promulgated in accordance with the applicable requirements as outlined in the Washington State Administrative Procedure Act (chapter 34.04 RCW) and other applicable statutes.

[Order 73-3, § 296-62-005, filed 5/7/73; Order 70-8, § 296-62-005, filed 7/31/70, effective 9/1/70.]

WAC 296-62-010 Purpose and scope. The rules in this chapter are designed to protect the health of employees and help to create a healthy work place by establishing requirements to control health hazards. Requirements for chemical hazard communication programs, workplace lighting levels and exposure records are in chapter 296-800 WAC, the safety and health core rules.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 01-11-038, § 296-62-010, filed 5/9/01, effective 9/1/01; Order 73-3, § 296-62-010, filed 5/7/73; Order 70-8, § 296-62-010, filed 7/31/70, effective 9/1/70; Section I, effective 8/1/63.]

WAC 296-62-020 Definitions applicable to all sections of this chapter. Unless the context indicates otherwise, words used in this chapter shall have the meaning given in this section.

(1) "Adequate" or "effective" means compliance with terms and intent of these standards.

(2) "Appendix" means references or recommendations to be used as guides in applying the provisions of this chapter.

(3) "Approved" means approved by the director of the department of labor and industries or his authorized representative: Provided, however, That should a provision of this chapter state that approval by an agency or organization other than the department of labor and industries is required, such as Underwriters' Laboratories or the Mine Safety and Health Administration and the National Institute for Occupational Safety and Health, the provision of WAC 296-24-006 shall apply.

(4) "Authorized person" means a person approved or assigned by the employer to perform a specific type of duty or duties or to be at a specific location or locations at the job site.

(5) "Coal tar pitch volatiles" as used in WAC 296-62-07515, Table I, include the fused polycyclic hydrocarbons which volatilize from the distillation residues of coal, petroleum, (excluding asphalt), wood, and other organic matter. Asphalt (CAS 8052-42-4, and CAS 64742-93-4) is not covered under the "coal tar pitch volatiles" standard.

(6) "Competent person" means one who is capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has authorization to take prompt corrective action to eliminate them.

(7) "Department" means the department of labor and industries.

(8) "Director" means the director of the department of labor and industries, or his designated representative.

(9) "Employer" means any person, firm, corporation, partnership, business trust, legal representative, or other business entity which engages in any business, industry, profession, or activity in this state and employs one or more employees or who contracts with one or more persons, the essence of which is the personal labor of such person or persons and includes the state, counties, cities, and all municipal corporations, public corporations, political subdivisions of the state[,] and charitable organizations: Provided, That any persons, partnership, or business entity not having employees, and who is covered by the industrial insurance act shall be considered both an employer and an employee.

(10) "Hazard" means that condition, potential or inherent, which can cause injury, death, or occupational disease.

(11) "Occupational disease" means such disease or infection as arises naturally and proximately out of employment.

(12) "Qualified" means one who, by possession of a recognized degree, certificate, or professional standing, or who by extensive knowledge, training, and experience, has successfully demonstrated ability to solve or resolve problems relating to the subject matter, the work, or the project.

(13) "Shall" or "must" means mandatory.

(14) "Should" or "may" means recommended.

(15) "Suitable" means that which fits, or has the qualities or qualifications to meet a given purpose, occasion, condition, function, or circumstance.

(16) "Worker," "personnel," "person," "employee," and other terms of like meaning, unless the context of the provision containing such term indicates otherwise, mean an employee of an employer who is employed in the business of their employer whether by way of manual labor or otherwise and every person in this state who is engaged in the employment of or who is working under an independent contract the essence of which is their personal labor for an employer whether by manual labor or otherwise.

(17) "Work place" means any plant, yard, premises, room, or other place where an employee or employees are employed for the performance of labor or service over which the employer has the right of access or control[,] and includes, but is not limited to, all work places covered by industrial insurance under Title 51 RCW, as now or hereafter amended.

(18) Abbreviations used in this chapter:

(a) "ANSI" means American National Standards Institute.

(b) "ASHRE" means American Society of Heating and Refrigeration Engineers.

(c) "BTU" means British thermal unit.

(d) "BTUH" means British thermal unit per hour.

(e) "CFM" means cubic feet per minute.

(f) "CFR" means Code of Federal Register.

(g) "CGA" means Compressed Gas Association.

(h) "ID" means inside diameter.

(i) "MCA" means Manufacturing Chemist Association or Chemical Manufacturer Association (CMA).

(j) "NEMA" means National Electrical Manufacturing Association.

(k) "NFPA" means National Fire Protection Association.

(l) "OD" means outside diameter.

(m) "WAC" means Washington Administrative Code.

(n) "WISHA" means Washington Industrial Safety and Health Act (chapter 80, Laws of 1973).

[Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-62-020, filed 7/20/94, effective 9/20/94. Statutory Authority: RCW 49.17.040 and 49.17.050. 83-24-013 (Order 83-34), § 296-62-020, filed 11/30/83. Statutory Authority: RCW 49.17.040, 49.17.050, 49.17.240, chapters 43.22 and 42.30 RCW. 80-17-015 (Order 80-21), § 296-62-020, filed 11/13/80; Order 73-3, § 296-62-020, filed 5/7/73; Order 70-8, § 296-62-020, filed 7/31/70, effective 9/1/70; Section II, effective 8/1/63.]

Reviser's note: RCW 34.05.395 requires the use of underlining and deletion marks to indicate amendments to existing rules, and deems ineffectual changes not filed by the agency in this manner. The bracketed material in the above section does not appear to conform to the statutory requirement.

WAC 296-62-040 Unconstitutionality clause. In the event that any section, paragraph, sentence, clause, phrase or work of this chapter is declared unconstitutional or invalid for any reason the remainder of said standard or this chapter shall not be affected thereby.

[Order 73-3, § 296-62-040, filed 5/7/73; Order 70-8, § 296-62-040, filed 7/31/70, effective 9/1/70; Rule 4.010, effective 8/1/63.]

WAC 296-62-050 Application for waiver or variances. See WAC 296-350-700 Variance from WISHA rules.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 01-11-038, § 296-62-050, filed 5/9/01, effective 9/1/01; Order 73-3, § 296-62-050, filed 5/7/73; Order 70-8, § 296-62-050, filed 7/31/70, effective 9/1/70; Rule 5.010, effective 8/1/63.]

WAC 296-62-051 Ergonomics.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 00-12-024, § 296-62-051, filed 5/26/00, effective 7/1/02.]

PART B—ACCESS TO RECORDS

Note: Access to records has been moved to chapter 296-802 WAC.

PART B-1 TRADE SECRETS

WAC 296-62-05301 Definitions. Understand a trade secret.

The following is a reprint of the Restatement of Torts section 757, comment b (1939):

Definition of trade secret. A trade secret may consist of any formula, pattern, device or compilation of information which is used in one's business, and which gives him an opportunity to obtain an advantage over competitors who do not know or use it. It may be a formula for a chemical compound, a process of manufacturing, treating or preserving materials, a pattern for a machine or other device, or a list of customers. It differs from other secret information in a business (see § 759 of the Restatement of Torts which is not included in this Appendix) in that it is not simply information as to single or ephemeral events in the conduct of the business, as, for example, the amount or other terms of a secret bid for a contract or the salary of certain employees, or the security investments made or contemplated, or the date fixed for the announcement of a new policy or for bringing out a new model or the like. A trade secret is a process or device for continuous use in the operations of the business. Generally, it

relates to the production of goods, as, for example, a machine or formula for the production of an article. It may, however, relate to the sale of goods or to other operations in the business, such as a code for determining discounts, rebates or other concessions in a price list or catalogue, or a list of specialized customers, or a method of bookkeeping or other office management.

Director means the director of the department of labor and industries or his/her designee.

Chemical means any element, chemical compound or mixture of elements and/or compounds.

Chemical manufacturer means an employer with a workplace where chemical(s) are produced for use or distribution.

Chemical name means the scientific designation of a chemical in accordance with the nomenclature system developed by the International Union of Pure and Applied Chemistry (IUPAC) or the Chemical Abstracts Service (CAS) rules of nomenclature, or a name which will clearly identify the chemical for the purpose of conducting a hazard evaluation.

Combustible liquid means any liquid having a flashpoint at or above 100°F (37.8°C), but below 200°F (93.3°C), except any mixture having components with flashpoints of 200°F (93.3°C), or higher, the total volume of which make up ninety-nine percent or more of the total volume of the mixture.

Commercial account means an arrangement whereby a retail distributor sells hazardous chemical(s) to an employer, generally in large quantities over time and/or at costs that are below the regular retail price.

Common name means any designation or identification such as code name, code number, trade name, brand name or generic name used to identify a chemical other than by its chemical name.

Compressed gas means:

- A gas or mixture of gases having, in a container, an absolute pressure exceeding 40 psi at 70°F (21.1°C); or
- A gas or mixture of gases having, in a container, an absolute pressure exceeding 104 psi at 130°F (54.4°C) regardless of the pressure at 70°F (21.1°C); or
- A liquid having a vapor pressure exceeding 40 psi at 100°F (37.8°C) as determined by ASTM D-323-72.

Container means any bag, barrel, bottle, box, can, cylinder, drum, reaction vessel, storage tank, or the like that contains a hazardous chemical. For purposes of this part, pipes or piping systems are not considered to be containers.

Designated representative means any individual or organization to whom an employee gives written authorization to exercise such employee's rights under this section. A recognized or certified collective bargaining agent shall be treated automatically as a designated representative without regard to written employee authorization.

Definitions applicable to this rule:

Distributor means a business, other than a chemical manufacturer or importer, which supplies hazardous chemicals to other distributors or to employers.

Employee means an employee of an employer who is employed in the business of his or her employer whether by way of manual labor or otherwise and every person in this state who is engaged in the employment of or who is working under an independent contract the essence of which is per-

sonal labor for an employer under this standard whether by way of manual labor or otherwise. However, for the purposes of this part, employee shall not mean immediate family members of the officers of any corporation, partnership, sole proprietorship, or other business entity or officers of any closely held corporation engaged in agricultural production of crops or livestock. This part applies to employees who may be exposed to hazardous chemicals under normal operating conditions or in foreseeable emergencies.

Employer means any person, firm, corporation, partnership, business trust, legal representative, or other business entity that engages in any business, industry, profession, or activity in this state and employs one or more employees or who contract with one or more persons, the essence of which is the personal labor of such person or persons and includes the state, counties, cities, and all municipal corporations, public corporations, political subdivisions of the state, and charitable organizations. This part applies to employers engaged in a business where chemicals are either used, distributed, or are produced for use or distribution, including a contractor or subcontractor.

Explosive means a chemical that causes a sudden, almost instantaneous release of pressure, gas, and heat when subjected to sudden shock, pressure, or high temperature.

Exposure or exposed means that an employee is/was subjected to a hazardous chemical in the course of employment through any route of entry (inhalation, ingestion, skin contact or absorption, etc.), and includes potential (e.g., accidental or possible) exposure.

Flammable means a chemical that falls into one of the following categories:

- Aerosol flammable means an aerosol that, when tested by the method described in 16 CFR 1500.45 yields a flame projection exceeding eighteen inches at full valve opening, or a flashback (a flame extending back to the valve) at any degree of valve opening;

- Gas, flammable means:

- A gas that, at ambient temperature and pressure, forms a flammable mixture with air at a concentration of thirteen percent by volume or less; or

- A gas that, at ambient temperature and pressure, forms a range of flammable mixtures with air wider than twelve percent by volume, regardless of the lower limit;

- Liquid, flammable means any liquid having a flashpoint below 100°F (37.8°C), except any mixture having components with flashpoints of 100°F (37.8°C) or higher, the total of which make up ninety-nine percent or more of the total volume of the mixture.

- Solid, flammable means a solid, other than a blasting agent or explosive as defined in WAC 296-52-417 or 29 CFR 1910.109(a), that is liable to cause fire through friction, absorption of moisture, spontaneous chemical change, or retained heat from manufacturing or processing, or which can be ignited readily and when ignited burns so vigorously and persistently as to create a serious hazard. A chemical shall be considered to be a flammable solid if, when tested by the method described in 16 CFR 1500.44, it ignites and burns with a self-sustained flame at a rate greater than one-tenth of an inch per second along its major axis.

Flashpoint means the minimum temperature at which a liquid gives off a vapor in sufficient concentration to ignite when tested as follows:

- Tagliabue closed tester: (See American National Standard Method of Test for Flash Point by Tag Closed Tester, Z11.24-1979 (ASTM D 56-79)) for liquids with a viscosity of less than 45 Saybolt Universal Seconds (SUS) at 100°F (37.8°C), that do not contain suspended solids and do not have a tendency to form a surface film under test; or

- Pensky-Martens closed tester: (See American National Standard Method of Test for Flash Point by Pensky-Martens Closed Tester, Z11.7-1979 (ASTM D 93-79)) for liquids with a viscosity equal to or greater than 45 SUS at 100°F (37.8°C), or that contain suspended solids, or that have a tendency to form a surface film under test; or

- Setaflash closed tester: (See American National Standard Method of Test for Flash Point by Setaflash Closed Tester (ASTM D 3278-78)).

Note: Organic peroxides, which undergo autoaccelerating thermal decomposition, are excluded from any of the flashpoint determination methods specified above.

Foreseeable emergency means any potential occurrence such as, but not limited to, equipment failure, rupture of containers, or failure of control equipment which could result in an uncontrolled release of a hazardous chemical into the workplace.

Hazardous chemical means any chemical which is a physical hazard or a health hazard.

Hazard warning means any words, pictures, symbols, or combination thereof appearing on a label or other appropriate form of warning which convey the specific physical and health hazard(s), including target organ effects, of the chemical(s) in the container(s). (See definition for "physical hazard" and "health hazard" to determine the hazards which must be covered.)

Health hazard means a chemical for which there is statistically significant evidence based on at least one study conducted in accordance with established scientific principles that acute or chronic health effects may occur in exposed employees. The term "health hazard" includes chemicals which are carcinogens, toxic or highly toxic agents, reproductive toxins, irritants, corrosives, sensitizers, hepatotoxins, nephrotoxins, neurotoxins, agents which act on the hematopoietic system, and agents which damage the lungs, skin, eyes, or mucous membranes. Appendix A provides further definitions and explanations of the scope of health hazards covered by this part, and Appendix B describes the criteria to be used to determine whether or not a chemical is to be considered hazardous for purposes of this standard.

Identity means any chemical or common name which is indicated on the material safety data sheet (MSDS) for the chemical. The identity used shall permit cross-references to be made among the required list of hazardous chemicals, the label and the MSDS.

Importer means the first business within the Customs Territory of the United States which receives hazardous chemicals produced in other countries, for the purpose of supplying them to distributors or employers within the United States. This definition is the same as Webster's, therefore we did not include it in the definitions.

Material safety data sheet (MSDS) means written or printed material concerning a hazardous chemical which is prepared in accordance with WAC 296-62-05408.

Mixture means any combination of two or more chemicals if the combination is not, in whole or in part, the result of a chemical reaction.

Organic peroxide means an organic compound that contains the bivalent-O-O-structure and which may be considered to be a structural derivative of hydrogen peroxide where one or both of the hydrogen atoms has been replaced by an organic radical.

Oxidizer means a chemical other than a blasting agent or explosive as defined in WAC 296-52-417 or CFR 1910.109(a), that initiates or promotes combustion in other materials, thereby causing fire either of itself or through the release of oxygen or other gases.

Permissible exposure limits (PELs) refer to airborne concentrations of substances without regard to the use of respiratory protection and represent conditions under which it is believed that nearly all workers may be repeatedly exposed day after day without adverse effect. The permissible exposure limits (PELs) shall include the following four categories:

- Permissible exposure limits - Time-weighted average (PEL-TWA) is the time weighted average airborne exposure to any 8-hour work shift of a 40-hour work week which shall not be exceeded.

- Permissible exposure limits - Short-term exposure limit (PEL-STEL) is the employee's 15-minute time weighted average exposure which shall not be exceeded at any time during a work day unless another time limit is specified in a parenthetical notation below the limit. If another time period is specified, the time weighted average exposure over that time period shall not be exceeded at any time during the working day.

- Permissible exposure limits - Ceiling (PEL-C) is the employee's exposure which shall not be exceeded during any part of the work day. If instantaneous monitoring is not feasible, then the ceiling shall be assessed as a 15-minute time weighted average exposure which shall not be exceeded at any time over a working day.

- "Skin" notation is the potential contribution to the overall employee exposure by the cutaneous route including mucous membranes and eye, either by airborne, or more particularly, by direct contact with the substance. These substances are identified as having a "skin" notation in the OSHA and WISHA PEL tables (29 CFR Part 1910 Subpart Z and WAC 296-62-075, respectively).

Physical hazard means a chemical for which there is scientifically valid evidence that it is a combustible liquid, a compressed gas, explosive, flammable, an organic peroxide, an oxidizer, pyrophoric, unstable (reactive) or water-reactive.

Produce means to manufacture, process, formulate, blend, extract, generate, emit, or repackage.

Purchaser means an employer with a workplace who purchases a hazardous chemical for use within that workplace.

Pyrophoric means a chemical that will ignite spontaneously in air at a temperature of 130°F (54.4°C) or below.

Responsible party means someone who can provide additional information on the hazardous chemical and appropriate emergency procedures, if necessary.

Specific chemical identity means the chemical name, Chemical Abstracts Service (CAS) registry number, or any other information that reveals the precise chemical designation of the substance.

Threshold limit values (TLVs) refer to airborne concentrations of substances without regard to the use of respiratory protection and represent conditions under which it is believed that nearly all workers may be repeatedly exposed day after day without adverse effect. The TLV includes the TLV-Time weighted average (TLV-TWA), TLV-Short term exposure limit (TLV-STEL), TLV-Ceiling (TLV-Ceiling) and "skin" notation as stated in the most recent edition of the 'Threshold Limit Values for Chemical Substances and Physical Agents and Biological Exposure Indices' from the American Conference of Governmental Industrial Hygienists (ACGIH).

Trade secret means any confidential formula, pattern, process, device, information or compilation of information that is used in an employer's business, and that gives the employer an opportunity to obtain an advantage over competitors who do not know or use it. WAC 296-62-05427, Appendix D, provides a legal definition of trade secret and WAC 296-62-05417 sets out the criteria to be used in evaluating trade secrets.

Unstable (reactive) means a chemical which in the pure state, or as produced or transported, will vigorously polymerize, decompose, condense, or will become self-reactive under conditions of shocks, pressure or temperature.

Use means to package, handle, react, emit, extract, generate as a by-product, or transfer.

Water-reactive means a chemical that reacts with water to release a gas that is either flammable or presents a health hazard.

Workplace means an establishment, job site, or project, at one geographical location containing one or more work areas.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 01-11-038, § 296-62-05301, filed 5/9/01, effective 9/1/01.]

WAC 296-62-05305 Meet certain conditions if you withhold trade secret information.

Note: The requirements in WAC 296-62-05305 through 296-62-05325 apply only to agriculture. The requirements for all other industries relating to trade secrets have been moved to chapter 296-816 WAC, Protecting trade secrets.

You may withhold the specific chemical identity, including the chemical name and other specific identification of a toxic substance or hazardous chemical, from a disclosable record or a material safety data sheet if you meet each of the following conditions:

You:

- Can support the claim that the information withheld is a trade secret.

- Disclose all other available information about the properties and effects of the toxic substance.

- Disclose the information in the material safety data sheet about the properties and effects of the hazardous chemical.

- Inform the person requesting the information, or the material safety data sheet states that the specific chemical identity is being withheld as a trade secret.

- Make available the specific chemical identity to health professionals, employees, and their designated representatives according to the provisions of this rule.

Nothing in this rule hinders an employer from deleting from records requested by a health professional, employee, or designated representative any trade secret data which discloses manufacturing processes, or discloses the percentage of a chemical substance in a mixture.

You must notify the health professional, employee, or designated representative requesting records that information about the trade has been deleted from the records.

If deleting trade secret information from a record substantially impairs evaluation of the location or the time when exposure to a toxic substance occurred, you must provide alternative information that enables the requesting party to identify where and when the exposure occurred.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060. 04-14-026, § 296-62-05305, filed 6/29/04, effective 9/1/04. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 01-11-038, § 296-62-05305, filed 5/9/01, effective 9/1/01.]

WAC 296-62-05310 Reveal trade secret information when it is needed in order to treat a medical or first-aid emergency. When a physician or nurse treating a patient determines that a medical emergency exists and the specific chemical identity of a toxic substance or hazardous chemical is necessary for emergency or first-aid treatment, you must immediately disclose the specific chemical identity of a trade secret chemical to the treating physician or nurse.

You must do this even if you do not have a written statement of need or a confidentiality agreement from the physician or nurse who is handling the medical emergency.

You may require a written statement of need and confidentiality agreement, in accordance with the provisions of nonemergency situations and confidentiality agreement of this rule (see WAC 296-62-05315), as soon as the circumstances of the medical emergency permit.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 01-11-038, § 296-62-05310, filed 5/9/01, effective 9/1/01.]

WAC 296-62-05315 Reveal trade secret information in nonemergency situations when requested by a health professional, employee, or designated representative.

The request by the health professional, employee, or designated representative must:

- Be in writing.
- Describe with reasonable detail one or more of the reasons the information is needed. The reason(s) must be related to occupational health needs, such as to:
 - Assess the hazards of the chemicals to which employees will be exposed.
 - Conduct or assess sampling of the workplace atmosphere to determine employee exposure levels.
 - Conduct preassignment or periodic medical surveillance of exposed employees.
 - Provide medical treatment to exposed employees.
 - Select or assess appropriate personal protective equipment for exposed employees.
 - Design or assess engineering controls or other protective measures for exposed employees.

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- Conduct studies to determine the health effects of exposure.

- Explain in detail why the disclosure of the specific chemical identity is essential.

- Explain why disclosing the:

- Properties and effects of the chemical.

- Measures for controlling workers' exposure to the chemical.

- Methods of monitoring and analyzing worker exposure to the chemical.

- Methods of diagnosing and treating harmful exposures to the chemical in lieu of trade secret information would prevent the health professional, employee, or designated representative from providing the occupational health services described in the occupational health needs description.

- Describe procedures to be used to maintain the confidentiality of the disclosed information. The health professional, employee, or designated representative and the employer or contractor of the services of the health professional or designated representative agree in a written confidentiality agreement that the health professional, employee, or designated representative:

- Will not use the trade secret information for any purpose other than the health need(s) described; and

- Agree not to release the information under any circumstances other than to WISHA, except as authorized by the terms of the agreement or by the employer.

This confidentiality agreement may:

- Restrict the use of the information to the health purposes indicated in the written statement of need.

- Provide for appropriate legal remedies in the event of a breach of the agreement, including a reasonable preestimate of likely damages.

- Not include requirements for the posting of a penalty bond.

If the health professional, employee, or designated representative receiving the trade secret information decides that there is a need to disclose it to WISHA, he or she must inform the employer who provided the information prior to, or at the same time as disclosing it to WISHA.

Nothing in this section is meant to preclude the parties from pursuing noncontractual remedies to the extent permitted by law.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 01-11-038, § 296-62-05315, filed 5/9/01, effective 9/1/01.]

WAC 296-62-05320 Deny a written request for disclosure of a specific chemical identity in the manner specified in this rule. If you choose to deny a written request for disclosure of information about a specific chemical identity, your denial must:

- Be given to the health professional, employee, or designated representative within thirty days of the request.

- Be in writing.

- Include evidence to support the claim that the specific chemical identity is a trade secret.

- State the specific reasons why the request is being denied.

- Explain in detail how alternative information may satisfy the specific medical or occupational health need without revealing the specific chemical identity.

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- If a request for information is denied under the nonemergency section of this rule, the request may then be referred with the written denial of the request to WISHA for consideration.

- When a denial is referred to WISHA, WISHA must consider the evidence to determine if the:

- Chemical manufacturer, importer or employer has supported the claim that the specific chemical identity is a trade secret.

- Health professional, employee, or designated representative has supported the claim that there is a medical or occupational health need for the information.

- Health professional, employee, or designated representative has demonstrated adequate means to protect the confidentiality of the trade secret information.

Potential outcomes of denying a written request for trade secret information:

- If WISHA determines that the specific chemical identity requested under the nonemergency situations section is not a bona fide trade secret, or that it is a trade secret but the requesting health professional, employee, or designated representative has a legitimate medical or occupational health need for the information, has executed a written confidentiality agreement, and has shown adequate means for complying with the terms of such agreement, the chemical manufacturer, importer or employer will be subject to a citation by WISHA.

- If a chemical manufacturer, importer or employer demonstrates to WISHA that the execution of a confidentiality agreement would not provide sufficient protection against potential harm from the unauthorized disclosure of a trade secret specific chemical identity, the director may issue such orders or impose such additional limitations or conditions upon the disclosure of the requested chemical information as may be appropriate to assure that the occupational health needs are met without an undue risk of harm to the chemical manufacturer, importer or employer.

- In spite of the existence of a trade secret claim, a chemical manufacturer, importer or employer must upon request, disclose to the director or his representative, any information that this section requires the chemical manufacturer, importer or employer to make available. Where there is a trade secret claim, such claim shall be made no later than at the time the information is provided to the director so that suitable determinations of trade secret status can be made and the necessary protections can be implemented.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 01-11-038, § 296-62-05320, filed 5/9/01, effective 9/1/01.]

WAC 296-62-05325 Understand what is a trade secret. The following is a reprint of the *Restatement of Torts* section 757, comment *b* (1939):

b. Definition of trade secret. A trade secret may consist of any formula, pattern, device or compilation of information which is used in one's business, and which gives him an opportunity to obtain an advantage over competitors who do not know or use it. It may be a formula for a chemical compound, a process of manufacturing, treating or preserving materials, a pattern for a machine or other device, or a list of customers. It differs from other secret information in a business (see § 759 of the *Restatement of*

Torts which is not included in this Appendix) in that it is not simply information as to single or ephemeral events in the conduct of the business, as, for example, the amount or other terms of a secret bid for a contract or the salary of certain employees, or the security investments made or contemplated, or the date fixed for the announcement of a new policy or for bringing out a new model or the like. A trade secret is a process or device for continuous use in the operations of the business. Generally it relates to the production of goods, as, for example, a machine or formula for the production of an article. It may, however, relate to the sale of goods or to other operations in the business, such as a code for determining discounts, rebates or other concessions in a price list or catalogue, or a list of specialized customers, or a method of bookkeeping or other office management.

Secrecy. The subject matter of a trade secret must be secret. Matters of public knowledge or of general knowledge in an industry cannot be appropriated by one as his secret. Matters which are completely disclosed by the goods which one markets cannot be his secret. Substantially, a trade secret is known only in the particular business in which it is used. It is not requisite that only the proprietor of the business know it. He may, without losing his protection, communicate it to employees involved in its use. He may likewise communicate it to others pledged to secrecy. Others may also know of it independently, as, for example, when they have discovered the process or formula by independent invention and are keeping it secret. Nevertheless, a substantial element of secrecy must exist, so that, except by the use of improper means, there would be difficulty in acquiring the information. An exact definition of a trade secret is not possible. Some factors to be considered in determining whether given information is one's trade secret are:

- (1) The extent to which the information is known outside of his business;
- (2) The extent to which it is known by employees and others involved in his business;
- (3) The extent of measures taken by him to guard the secrecy of the information;
- (4) The value of the information to him and his competitors;
- (5) The amount of effort or money expended by him in developing the information;
- (6) The ease or difficulty with which the information could be properly acquired or duplicated by others.

Novelty and prior art. A trade secret may be a device or process which is patentable; but it need not be that. It may be a device or process which is clearly anticipated in the prior art or one which is merely a mechanical improvement that a good mechanic can make. Novelty and invention are not requisite for a trade secret as they are for patentability. These requirements are essential to patentability because a patent protects against unlicensed use of the patented device or process even by one who discovers it properly through independent research. The patent monopoly is a reward to the inventor. But such is not the case with a trade secret. Its protection is not based on a policy of rewarding or otherwise encouraging the development of secret processes or devices. The protection is merely against breach of faith and reprehensible

means of learning another's secret. For this limited protection it is not appropriate to require also the kind of novelty and invention which is a requisite of patentability. The nature of the secret is, however, an important factor in determining the kind of relief that is appropriate against one who is subject to liability under the rule stated in this section. Thus, if the secret consists of a device or process which is a novel invention, one who acquires the secret wrongfully is ordinarily enjoined from further use of it and is required to account for the profits derived from his past use. If, on the other hand, the secret consists of mechanical improvements that a good mechanic can make without resort to the secret, the wrongdoer's liability may be limited to damages, and an injunction against future use of the improvements made with the aid of the secret may be inappropriate.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 01-11-038, § 296-62-05325, filed 5/9/01, effective 9/1/01.]

PART C-1 RETAIN DEPARTMENT OF TRANSPORTATION LABELING

WAC 296-62-055 Retain labeling required by the department of transportation.

Your responsibility:

To make sure DOT-required labeling on packages and containers in your workplace is retained to alert employees of potentially hazardous contents.

Note: Terms used in this rule are defined by the USDOT in Title 49 of the Code of Federal Regulations (CFR) Part 171. To access the CFR visit: <http://www.dot.gov>

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060. 03-01-096, § 296-62-055, filed 12/17/02, effective 6/1/03.]

WAC 296-62-05510 Scope. This chapter applies to packages, freight containers, rail freight cars, motor vehicles, and transport vehicles required to be marked, placarded, or labeled by the U.S. Department of Transportation in Title 49 of the CFR, Parts 171-180.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060. 03-01-096, § 296-62-05510, filed 12/17/02, effective 6/1/03.]

WAC 296-62-05520 Retain readily visible DOT labeling.

You must:

- Retain readily visible DOT labeling as specified in Table 1.

Table 1 Specifications for Retaining DOT Labeling	
If you receive	Retain DOT markings, placards and labels UNTIL:
• Packages of hazardous materials	• Hazardous materials are sufficiently removed – Packaging must be ■ cleaned of residue ■ purged of vapors
• Freight containers • Rail freight cars • Motor vehicles • Transport vehicles	• Hazardous materials are sufficiently removed

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• Nonbulk packages that will not be reshipped	• You replace the DOT labeling with labeling that complies with WAC 296-800-170, Employer chemical hazard communication—Introduction (see the <i>Safety and Health Core Rules Book</i>)
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[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060. 03-01-096, § 296-62-05520, filed 12/17/02, effective 6/1/03.]

PART D—CONTROLS AND DEFINITIONS

WAC 296-62-060 Control requirements in addition to those specified.

Note: The requirements in this section apply only to agriculture. The requirements for general industry relating to control requirements have been moved to chapter 296-800 WAC, Safety and health core rules.

(1) In those cases where no acceptable standards have been derived for the control of hazardous conditions, every reasonable precaution shall be taken to safeguard the health of the worker whether provided herein or not.

(2) Preservation of records.

(a) Scope and application. This section applies to each employer who makes, maintains or has access to employee exposure records or employee medical records.

(b) Definitions.

(i) "Employee exposure record" - a record of monitoring or measuring which contains qualitative or quantitative information indicative of employee exposure to toxic materials or harmful physical agents. This includes both individual exposure records and general research or statistical studies based on information collected from exposure records.

(ii) "Employee medical record" - a record which contains information concerning the health status of an employee or employees exposed or potentially exposed to toxic materials or harmful physical agents. These records may include, but are not limited to:

(A) The results of medical examinations and tests;

(B) Any opinions or recommendations of a physician or other health professional concerning the health of an employee or employees; and

(C) Any employee medical complaints relating to workplace exposure. Employee medical records include both individual medical records and general research or statistical studies based on information collected from medical records.

(c) Preservation of records. Each employer who makes, maintains, or has access to employee exposure records or employee medical records shall preserve these records.

(d) Availability of records. The employer shall make available, upon request, to the director, department of labor and industries, or his designee, all employee exposure records and employee medical records for examination and copying.

(e) Effective date. This standard shall become effective thirty days after filing with the code reviser.

(3) Monitoring of employees. The department shall use industrial hygiene sampling methods and techniques including but not limited to personal monitoring devices and equipment approved by the director or his designee for the purpose of establishing compliance with chapter 296-62 WAC.

(a) The employer shall permit the director or his designee to monitor and evaluate any workplace or employee in accordance with all provisions of this subsection.

[Title 296 WAC—p. 1337]

(b) The employer shall not prevent or discourage an employee from cooperating with the department by restricting or inhibiting his/her participation in the use of personal monitoring devices and equipment in accordance with all provisions of this subsection.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-16-047, § 296-62-060, filed 8/1/02, effective 10/1/02. Statutory Authority: RCW 49.17.040, 49.17.050, and 49.17.240. 80-11-010 (Order 80-14), § 296-62-060, filed 8/8/80; Order 73-3, § 296-62-060, filed 5/7/73; Order 70-8, § 296-62-060, filed 7/31/70, effective 9/1/70; Rule 6.010, effective 8/1/63.]

PART E—RESPIRATORY PROTECTION

Note: The respiratory protection rules for general industry have been moved to chapter 296-842 WAC. The respiratory protection rules for the agriculture industry have been moved to chapter 296-307 WAC, part Y-5.

PART F—CARCINOGENS

WAC 296-62-073 Carcinogens—Scope and application. (1) All sections of this chapter which include WAC 296-62-073 in the section number apply to the manufacturing, processing, repackaging, releasing, handling or storing of carcinogens.

(2) This section shall not apply to solid or liquid mixtures containing less than 0.1 percent by weight or volume of the carcinogens listed in WAC 296-62-07302.

[Statutory Authority: Chapter 49.17 RCW. 87-24-051 (Order 87-24), § 296-62-073, filed 11/30/87. Statutory Authority: RCW 49.17.040, 49.17.050, 49.17.240, chapters 42.30 and 43.22 RCW. 80-17-014 (Order 80-20), § 296-62-073, filed 11/13/80; Order 76-6, § 296-62-073, filed 3/1/76; Order 74-35, § 296-62-073, filed 9/20/74.]

WAC 296-62-07302 List of carcinogens. (1) The following substances are deemed to be carcinogens for the purposes of WAC 296-62-073 through 296-62-07316.

(2) Any reference to carcinogens in WAC 296-62-07304 through 296-62-07316 shall mean only those carcinogens listed in WAC 296-62-07302.

(a) 4-Nitrobiphenyl - Chemical Abstracts Service Registry Number 92-93-3.

(b) Alpha-Naphthylamine - Chemical Abstracts Service Registry Number 134-32-7.

(c) 4,4' Methylene bis (2 - chloroaniline) - Chemical Abstracts Service Registry Number 101-14-4.

(d) Methyl chloromethyl ether - Chemical Abstracts Service Registry Number 107-30-2.

(e) 3,3'-Dichlorobenzidine (and its salts) - Chemical Abstracts Service Registry Number 91-94-1.

(f) Bis-Chloromethyl ether - Chemical Abstracts Service Registry Number 542-88-1.

(g) Beta-Naphthylamine - Chemical Abstracts Service Registry Number 91-59-8.

(h) Benzidine - Chemical Abstracts Service Registry Number 92-87-5.

(i) 4-Aminodiphenyl - Chemical Abstracts Service Registry Number 92-67-1.

(j) Ethyleneimine - Chemical Abstracts Service Registry Number 151-56-4.

(k) Beta-Propiolactone - Chemical Abstracts Service Registry Number 57-57-8.

[Title 296 WAC—p. 1338]

(l) 2-Acetylaminofluorene - Chemical Abstracts Service Registry Number 53-96-3.

(m) 4-Dimethylaminoazobenzene - Chemical Abstracts Service Registry Number 60-11-7.

(n) N-Nitrosodimethylamine - Chemical Abstracts Service Registry Number 62-75-9.

[Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050. 02-12-098, § 296-62-07302, filed 6/5/02, effective 8/1/02. Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-62-07302, filed 7/20/94, effective 9/20/94. Statutory Authority: RCW 49.17.040 and 49.17.050. 85-10-004 (Order 85-09), § 296-62-07302, filed 4/19/85; 82-13-045 (Order 82-22), § 296-62-07302, filed 6/11/82; 81-07-048 (Order 81-4), § 296-62-07302, filed 3/17/81. Statutory Authority: RCW 49.17.040, 49.17.050, 49.17.240, chapters 42.30 and 43.22 RCW. 80-17-014 (Order 80-20), § 296-62-07302, filed 11/13/80.]

WAC 296-62-07304 Definitions. The definitions set forth in this section apply throughout WAC 296-62-073 through 296-62-07316.

(1) Absolute filter - is one capable of retaining 99.97 percent of a mono disperse aerosol of 0.3 micron size particles.

(2) Authorized employee - an employee whose duties require him to be in the regulated area and who has been specifically assigned to those duties by the employer.

(3) Clean change room - a room where employees put on clean clothing and/or protective equipment in an environment free of carcinogens listed in WAC 296-62-07302. The clean change room shall be contiguous to and have an entry from a shower room, when the shower room facilities are otherwise required in this section.

(4) Closed system - an operation involving carcinogens listed in WAC 296-62-07302 where containment prevents the release of carcinogens.

(5) Decontamination - the inactivation of a carcinogen listed in WAC 296-62-07302 or its safe disposal.

(6) Disposal - the safe removal of a carcinogen listed in WAC 296-62-07302 from the work environment.

(7) Emergency - an unforeseen circumstance or set of circumstances resulting in the release of a carcinogen which may result in exposure to or contact with any carcinogen listed in WAC 296-62-07302.

(8) External environment - any environment external to regulated and nonregulated areas.

(9) Isolated system - a fully enclosed structure other than the vessel of containment of a listed carcinogen which is impervious to the passage of listed carcinogens and which would prevent the entry of carcinogens into regulated areas, nonregulated areas, or the external environment, should leakage or spillage from the vessel of containment occur.

(10) Laboratory-type hood - a device enclosed on three sides and the top and bottom, designed and maintained so as to draw air inward at an average linear face velocity of 150 feet per minute with a minimum of 125 feet per minute, designed, constructed and maintained such that an operation involving a listed carcinogen within the hood does not require the insertion of any portion of any employees' body other than his hands and arms.

(11) Nonregulated area - any area under the control of the employer where entry and exit is neither restricted nor controlled.

(12) Open-vessel system - an operation involving listed carcinogens in an open vessel, which is not in an isolated sys-

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tem, a laboratory-type hood, nor in any other system affording equivalent protection against the entry of carcinogens into regulated areas, nonregulated areas, or the external environment.

(13) Protective clothing - clothing designed to protect an employee against contact with or exposure to listed carcinogens.

(14) Regulated area - an area where entry and exit is restricted and controlled.

[Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050. 02-12-098, § 296-62-07304, filed 6/5/02, effective 8/1/02. Statutory Authority: Chapter 49.17 RCW. 87-24-051 (Order 87-24), § 296-62-07304, filed 11/30/87. Statutory Authority: RCW 49.17.040 and 49.17.050. 81-07-048 (Order 81-4), § 296-62-07304, filed 3/17/81. Statutory Authority: RCW 49.17.040, 49.17.050, 49.17.240, chapters 42.30 and 43.22 RCW. 80-17-014 (Order 80-20), § 296-62-07304, filed 11/13/80.]

WAC 296-62-07306 Requirements for areas containing carcinogens listed in WAC 296-62-07302. (1) A regulated area shall be established by an employer where listed carcinogens are manufactured, processed, used, repackaged, released, handled or stored.

(2) All such areas shall be controlled in accordance with the requirements for the following category or categories describing the operation involved:

(a) Isolated systems. Employees working with carcinogens within an isolated system such as a "glove box" shall wash their hands and arms upon completion of the assigned task and before engaging in other activities not associated with the isolated system.

(b) Closed system operation. Within regulated areas where carcinogens are stored in sealed containers, or contained in a closed system including piping systems with any sample ports or openings closed while carcinogens are contained within:

(i) Access shall be restricted to authorized employees only;

(ii) Employees shall be required to wash hands, forearms, face and neck upon each exit from the regulated areas, close to the point of exit and before engaging in other activities.

(c) Open vessel system operations. Open vessel system operations as defined in WAC 296-62-07304(12) are prohibited.

(d) Transfer from a closed system. Charging or discharging point operations, or otherwise opening a closed system. In operations involving "laboratory-type hoods," or in locations where a carcinogen is contained in an otherwise "closed system," but is transferred, charged, or discharged into other normally closed containers, the provisions of this section shall apply.

(i) Access shall be restricted to authorized employees only;

(ii) Each operation shall be provided with continuous local exhaust ventilation so that air movement is always from ordinary work areas to the operation. Exhaust air shall not be discharged to regulated areas, nonregulated areas or the external environment unless decontaminated. Clean makeup air shall be introduced in sufficient volume to maintain the correct operation of the local exhaust system.

(iii) Employees shall be provided with, and required to wear, clean, full body protective clothing (smocks, coveralls,

or long-sleeved shirt and pants), shoe covers and gloves prior to entering the regulated area.

(iv) Employees engaged in handling operations involving the following carcinogens must be provided with and required to wear and use a full-face, supplied-air respirator, of the continuous flow or pressure-demand type as required in chapter 296-842 WAC:

- Methyl Chloromethyl Ether;
- bis-Chloromethyl Ether;
- Ethylenimine;
- beta-Propiolactone;
- 4-Amino Diphenyl.

(v) Employees engaged in handling operations involving:

- 4-nitrobiphenyl;
- alpha-naphthylamine;
- 4-4'methylene bis(2-chloroaniline);
- 3-3'dichlorobenzidine (and its salts);
- beta-naphthylamine;
- benzidine;
- 2-acetyl amino fluorene;
- 4-dimethylaminobenzene;
- n-nitrosodimethylamine

must be provided with, and required to wear and use, a half-face, filter-type respirator certified for solid or liquid particulates with minimum efficiency rating of 95% as required in chapter 296-842 WAC. A respirator affording higher levels of protection than this respirator may be substituted.

(vi) Prior to each exit from a regulated area, employees shall be required to remove and leave protective clothing and equipment at the point of exit and at the last exit of the day, to place used clothing and equipment in impervious containers at the point of exit for purposes of decontamination or disposal. The contents of such impervious containers shall be identified, as required under WAC 296-62-07310 (2), (3) and (4).

(vii) Employees shall be required to wash hands, forearms, face and neck on each exit from the regulated area, close to the point of exit, and before engaging in other activities.

(viii) Employees shall be required to shower after the last exit of the day.

(ix) Drinking fountains are prohibited in the regulated area.

(e) Maintenance and decontamination activities. In clean up of leaks or spills, maintenance or repair operations on contaminated systems or equipment, or any operations involving work in an area where direct contact with carcinogens could result, each authorized employee entering the area shall:

(i) Be provided with and required to wear, clean, impervious garments, including gloves, boots and continuous-air supplied hood in accordance with WAC 296-800-160, and respiratory protective equipment required by this chapter 296-842 WAC;

(ii) Be decontaminated before removing the protective garments and hood;

(iii) Be required to shower upon removing the protective garments and hood.

(f) Laboratory activities. The requirements of this subdivision shall apply to research and quality control activities involving the use of carcinogens listed in WAC 296-62-07302.

(i) Mechanical pipetting aids shall be used for all pipetting procedures.

(ii) Experiments, procedures and equipment which could produce aerosols shall be confined to laboratory-type hoods or glove boxes.

(iii) Surfaces on which carcinogens are handled shall be protected from contamination.

(iv) Contaminated wastes and animal carcasses shall be collected in impervious containers which are closed and decontaminated prior to removal from the work area. Such wastes and carcasses shall be incinerated in such a manner that no carcinogenic products are released.

(v) All other forms of listed carcinogens shall be inactivated prior to disposal.

(vi) Laboratory vacuum systems shall be protected with high efficiency scrubbers or with disposable absolute filters.

(vii) Employees engaged in animal support activities shall be:

(A) Provided with, and required to wear, a complete protective clothing change, clean each day, including coveralls or pants and shirt, foot covers, head covers, gloves, and appropriate respiratory protective equipment or devices; and

(B) Prior to each exit from a regulated area, employees shall be required to remove and leave protective clothing and equipment at the point of exit and at the last exit of the day, to place used clothing and equipment in impervious containers at the point of exit for purposes of decontamination or disposal. The contents of such impervious containers shall be identified as required under WAC 296-62-07310 (2), (3) and (4).

(C) Required to wash hands, forearms, face and neck upon each exit from the regulated area close to the point of exit, and before engaging in other activities; and

(D) Required to shower after the last exit of the day.

(viii) Employees, other than those engaged only in animal support activities, each day shall be:

(A) Provided with and required to wear a clean change of appropriate laboratory clothing, such as a solid front gown, surgical scrub suit, or fully buttoned laboratory coat.

(B) Prior to each exit from a regulated area, employees shall be required to remove and leave protective clothing and equipment at the point of exit and at the last exit of the day, to place used clothing and equipment in impervious containers at the point of exit for purposes of decontamination or disposal. The contents of such impervious containers shall be identified as required under WAC 296-62-07310 (2), (3) and (4).

(C) Required to wash hands, forearms, face and neck upon each exit from the regulated area close to the point of exit, and before engaging in other activities.

(ix) Air pressure in laboratory areas and animal rooms where carcinogens are handled and bioassay studies are performed shall be negative in relation to the pressure in surrounding areas. Exhaust air shall not be discharged to regulated areas, nonregulated areas or the external environment unless decontaminated.

(x) There shall be no connection between regulated areas and any other areas through the ventilation system.

(xi) A current inventory of the carcinogens shall be maintained.

(xii) Ventilated apparatus such as laboratory-type hoods, shall be tested at least semi-annually or immediately after ventilation modification or maintenance operations, by personnel fully qualified to certify correct containment and operation.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. 05-03-093, § 296-62-07306, filed 1/18/05, effective 3/1/05. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 01-11-038, § 296-62-07306, filed 5/9/01, effective 9/1/01; 99-10-071, § 296-62-07306, filed 5/4/99, effective 9/1/99. Statutory Authority: Chapter 49.17 RCW. 96-09-030, § 296-62-07306, filed 4/10/96, effective 6/1/96. Statutory Authority: RCW 49.17.040 and 49.17.050. 86-16-009 (Order 86-28), § 296-62-07306, filed 7/25/86; 85-10-004 (Order 85-09), § 296-62-07306, filed 4/19/85. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-16-015 (Order 81-20), § 296-62-07306, filed 7/27/81. Statutory Authority: RCW 49.17.040, 49.17.050, 49.17.240, chapters 42.30 and 43.22 RCW. 80-17-014 (Order 80-20), § 296-62-07306, filed 11/13/80.]

WAC 296-62-07308 General regulated area requirements. (1) Respirator program. The employer must implement a respiratory protection program as required in chapter 296-62 WAC, Part E (except WAC 296-62-07130 (1) and (5) and 296-62-07131).

(2) Emergencies. In an emergency, immediate measures including, but not limited to, the requirements of (a), (b), (c), (d) and (e) of this subsection shall be implemented.

(a) The potentially affected area shall be evacuated as soon as the emergency has been determined.

(b) Hazardous conditions created by the emergency shall be eliminated and the potentially affected area shall be decontaminated prior to the resumption of normal operations.

(c) Special medical surveillance by a physician shall be instituted within twenty-four hours for employees present in the potentially affected area at the time of the emergency. A report of the medical surveillance and any treatment shall be included in the incident report, in accordance with WAC 296-62-07312(2).

(d) Where an employee has a known contact with a listed carcinogen, such employee shall be required to shower as soon as possible, unless contraindicated by physical injuries.

(e) An incident report on the emergency shall be reported as provided in WAC 296-62-07312(2).

(3) Hygiene facilities and practices.

(a) Storage or consumption of food, storage or use of containers of beverages, storage or application of cosmetics, smoking, storage of smoking materials, tobacco products or other products for chewing, or the chewing of such products, are prohibited in regulated areas.

(b) Where employees are required by this section to wash, washing facilities shall be provided in accordance with WAC 296-800-230.

(c) Where employees are required by this section to shower, shower facilities shall be provided.

(i) One shower shall be provided for each ten employees of each sex, or numerical fraction thereof, who are required to shower during the same shift.

(ii) Body soap or other appropriate cleansing agents convenient to the showers shall be provided as specified in WAC 296-800-230, of the safety and health core rules.

(iii) Showers shall be provided with hot and cold water feeding a common discharge line.

(iv) Employees who use showers shall be provided with individual clean towels.

(d) Where employees wear protective clothing and equipment, clean change rooms shall be provided and shall be equipped with storage facilities for street clothes and separate storage facilities for the protective clothing for the number of such employees required to change clothes.

(e) Where toilets are in regulated areas, such toilets shall be in a separate room.

(4) Contamination control.

(a) Regulated areas, except for outdoor systems, shall be maintained under pressure negative with respect to nonregulated areas. Local exhaust ventilation may be used to satisfy this requirement. Clean makeup air in equal volume shall replace air removed.

(b) Any equipment, material, or other item taken into or removed from a regulated area shall be done so in a manner that does not cause contamination in nonregulated areas or the external environment.

(c) Decontamination procedures shall be established and implemented to remove carcinogens from the surfaces of materials, equipment and the decontamination facility.

(d) Dry sweeping and dry mopping are prohibited.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060. 03-18-090, § 296-62-07308, filed 9/2/03, effective 11/1/03. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 01-11-038, § 296-62-07308, filed 5/9/01, effective 9/1/01; 99-10-071, § 296-62-07308, filed 5/4/99, effective 9/1/99. Statutory Authority: RCW 49.17.040 and 49.17.050. 83-24-013 (Order 83-34), § 296-62-07308, filed 11/30/83. Statutory Authority: RCW 49.17.040, 49.17.050, 49.17.240, chapters 42.30 and 43.22 RCW. 80-17-014 (Order 80-20), § 296-62-07308, filed 11/13/80.]

WAC 296-62-07310 Signs, information and training.

(1) Signs.

(a) Entrances to regulated areas shall be posted with signs bearing the legend:

CANCER-SUSPECT AGENT
AUTHORIZED PERSONNEL ONLY

(b) Entrances to regulated areas containing operations covered in WAC 296-62-07306 (2)(e) shall be posted with signs bearing the legend:

CANCER-SUSPECT AGENT EXPOSED IN THIS AREA
IMPERVIOUS SUIT INCLUDING GLOVES,
BOOTS, AND AIR-SUPPLIED HOOD
REQUIRED AT ALL TIMES
AUTHORIZED PERSONNEL ONLY

(c) Appropriate signs and instructions shall be posted at the entrance to, and exit from, regulated areas, informing employees of the procedures that must be followed in entering and leaving a regulated area.

(2) Container contents, identification.

(a) Containers of carcinogens named in WAC 296-62-07302 and containers required in WAC 296-62-07306 (2)(d)(v) and 296-62-07306 (2)(f)(vii)(B) and 296-62-07306 (2)(f)(viii)(B) which are accessible only to, and handled only by authorized employees, or by other employees training in accordance with WAC 296-62-07310(5), may have contents identification limited to a generic or proprietary name, or other proprietary identification of the carcinogen and percent.

(b) Containers of carcinogens and containers required under WAC 296-62-07306 (2)(d)(v) and 296-62-07306 (2)(f)(vii)(B) and 296-62-07306 (2)(f)(viii)(B) which are accessible to, or handled by employees other than authorized employees or employees trained in accordance with WAC 296-62-07310(5) shall have contents identification which includes the full chemical name and Chemical Abstracts Service Registry number as listed in WAC 296-62-07302.

(c) Containers shall have the warning words "CANCER-SUSPECT AGENT" displayed immediately under or adjacent to the contents identification.

(d) Containers which have carcinogenic contents with corrosive or irritating properties shall have label statements warning of such hazards, noting, if appropriate, particularly sensitive or affected portions of the body.

(3) Lettering. Lettering on signs and instructions required by WAC 296-62-07310(1) shall be a minimum letter height of two inches. Labels on containers required under this section shall not be less than one-half the size of the largest lettering on the package, and not less than eight point type in any instance: Provided, that no such required lettering need be more than one inch in height.

(4) Prohibited statements. No statements shall appear on or near any required sign, label, or instruction which contradicts or detracts from the effect of any required warning, information or instruction.

(5) Training and indoctrination.

(a) Each employee prior to being authorized to enter a regulated area, shall receive a training and indoctrination program including, but not necessarily limited to:

(i) The nature of the carcinogenic hazards of listed carcinogens, including local and systemic toxicity;

(ii) The specific nature of the operation involving carcinogens which could result in exposure;

(iii) The purpose for and application of the medical surveillance program, including, as appropriate, methods of self-examination;

(iv) The purpose for and application of decontamination practices and purposes;

(v) The purpose for and significance of emergency practices and procedures;

(vi) The employee's specific role in emergency procedures;

(vii) Specific information to aid the employee in recognition and evaluation of conditions and situations which may result in the release of listed carcinogens;

(viii) The purpose for and application of specific first-aid procedures and practices;

(ix) A review of this section at the employee's first training and indoctrination program and annually thereafter.

(b) Specific emergency procedures shall be prescribed, and posted, and employees, shall be familiarized with their terms, and rehearsed in their application.

(c) All materials relating to the program shall be provided upon request to the director.

[Statutory Authority: Chapter 49.17 RCW. 87-24-051 (Order 87-24), § 296-62-07310, filed 11/30/87. Statutory Authority: RCW 49.17.040 and 49.17.050. 81-07-048 (Order 81-4), § 296-62-07310, filed 3/17/81. Statutory Authority: RCW 49.17.040, 49.17.050, 49.17.240, chapters 42.30 and 43.22 RCW. 80-17-014 (Order 80-20), § 296-62-07310, filed 11/13/80.]

WAC 296-62-07312 Reports. (1) Operations. Not later than October 30, 1974, the information required in WAC 296-62-07312 (1)(a), (b), (c) and (d) of this section must be reported in writing to the Department of Labor and Industries, WISHA Services Division, Policy and Technical Services, P.O. Box 44610, Olympia, WA 98504-4610. Any changes in the information must also be reported in writing within 15 calendar days of the change.

(a) A brief description and in plant location of the area(s) regulated and the address of each regulated area;

(b) The name(s) and other identifying information as to the presence of listed carcinogens in each regulated area;

(c) The number of employees in each regulated area, during normal operations including maintenance activities; and

(d) The manner in which a carcinogen is present in each regulated area; e.g., whether it is manufactured, processed, used, repackaged, released, stored, or otherwise handled.

(2) Incidents. Incidents which result in the release of a listed carcinogen into any area where employees may be potentially exposed shall be reported in accordance with this subsection.

(a) The occurrence of the incident, including any facts obtainable at that time, as well as a report on any medical treatment of affected employees, must be reported within 24 hours to the Department of Labor and Industries, WISHA Services Division, Policy and Technical Services, P.O. Box 44610, Olympia, WA 98504-4610.

(b) A written report must be filed with the Department of Labor and Industries, WISHA Services Division, Policy and Technical Services, P.O. Box 44610, Olympia, WA 98504-4610, within 15 calendar days after the incident occurs, and must include:

(i) A specification of the amount of material released, the amount of time involved, and an explanation of the procedure used in determining this figure;

(ii) A description of the area involved, and the extent of known and possible employee exposure and area contamination;

(iii) A report of any medical treatment of affected employees, and any medical surveillance program implemented; and

(iv) An analysis of the circumstances of the incident, and measures taken or to be taken, with specific completion dates, to avoid further similar releases.

CARCINOGEN STANDARD REPORT

Company: Prepared By:
Plant Address: Title:
Date:

Compound and Other Identifying Information	Description of Implant Location of Regulated Area*	Number of Employees in Each Regulated Area*	Manner** In Which Compound is Present in Each Regulated Area*
		Normally Maintenance	

* See WAC 296-62-07308 for definition of "regulated area."

** Indicated whether manufactured, processed, used, repackaged, released, stored, or if otherwise handled (describe).

[Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050. 02-12-098, § 296-62-07312, filed 6/5/02, effective 8/1/02. Statutory Authority: RCW 49.17.040 and 49.17.050. 81-07-048 (Order 81-4), § 296-62-07312, filed 3/17/81. Statutory Authority: RCW 49.17.040, 49.17.050, 49.17.240, chapters 42.30 and 43.22 RCW. 80-17-014 (Order 80-20), § 296-62-07312, filed 11/13/80.]

WAC 296-62-07314 Medical surveillance. (1) At no cost to the employee, a program of medical surveillance must be established and implemented for employees considered for assignment to enter regulated areas, and for authorized employees.

(2) Examinations.

(a) Before an employee is assigned to enter a regulated area, a preassignment physical examination by a physician must be provided and must include a personal history of the employee and/or his/her family and occupational background, including genetic and environmental factors.

(i) Taking of employees' medical history and background history must be considered to be a routine part of standard medical practice.

(ii) This provision does not require "genetic testing" of any employee.

(iii) This provision does not require the exclusion of otherwise qualified employees from jobs on the basis of genetic factors.

(b) Authorized employees must be provided periodic physical examination, not less often than annually, following the preassignment examination.

(c) In all physical examinations, the examining physician must be requested to consider whether there exist conditions of increased risk, including reduced immunological competence, pregnancy, cigarette smoking, and those undergoing treatment with steroids or cytotoxic agents.

(3) Records.

(a) Employers of employees examined pursuant to this subdivision must maintain complete and accurate records of all such medical examinations. Records must be maintained for the duration of the employee's employment. Upon termination of the employee's employment, including retirement or death, or in the event that the employer ceases business without a successor, records, or notarized true copies thereof, must be forwarded by registered mail to the director.

(b) Records required by this section must be provided upon request to employees, designated representatives, and the director in accordance with chapter 296-802 WAC.

(c) Any employer who requests a physical examination of an employee or prospective employee as required by this section must obtain from the physician a statement of the employee's suitability for employment in the specific exposure.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.-060. 04-10-026, § 296-62-07314, filed 4/27/04, effective 8/1/04. Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050. 02-12-098, § 296-62-07314, filed 6/5/02, effective 8/1/02. Statutory Authority: Chapter 49.17 RCW. 91-03-044 (Order 90-18), § 296-62-07314, filed 1/10/91, effective 2/12/91; 90-03-029 (Order 89-20), § 296-62-07314, filed 1/11/90, effective 2/26/90. Statutory Authority: RCW 49.17.040 and 49.17.050. 83-15-017 (Order 83-19), § 296-62-07314, filed 7/13/83, effective 9/12/83. Statutory Authority: RCW 49.17.040, 49.17.050, 49.17.240, chapters 42.30 and 43.22 RCW. 80-17-014 (Order 80-20), § 296-62-07314, filed 11/13/80.]

WAC 296-62-07316 Premixed solutions. (1) Where 4,4'-Methylene bis (2-chloroaniline) is present only in a single solution at a temperature not exceeding 220°F. the establishment of a regulated area is not required; however,

(a) Only authorized employees shall be permitted to handle such materials.

(b) Each day employees shall be provided with and required to wear a clean change of protective clothing (smocks, coveralls, or long-sleeved shirts and pants), gloves and other protective garments and equipment necessary to prevent contact with the solution in the process used.

(c) Employees shall be required to remove and leave protective clothing and equipment when leaving the work area at the end of the work day, or at any time solution is spilled on such clothing or equipment. Used clothing and equipment shall be placed in impervious containers for purposes of decontamination or disposal. The contents of such impervious containers shall be identified, as required under WAC 296-62-07310 (2), (3) and (4).

(d) Employees shall be required to wash hands and face after removing such clothing and equipment and before engaging in other activities.

(e) Employees assigned to work covered by this section shall be deemed to be working in regulated areas for the purposes of WAC 296-62-07308 (1), (2)(a) and (b), and (3)(c) and (d), 296-62-07310, 296-62-07312 and 296-62-07314.

(f) Work areas where solution may be spilled shall be:

(i) Covered daily or after any spill with a clean covering;

or

(ii) Clean thoroughly, daily and after any spill.

[Statutory Authority: RCW 49.17.040, 49.17.050, 49.17.240, chapters 42.30 and 43.22 RCW. 80-17-014 (Order 80-20), § 296-62-07316, filed 11/13/80.]

PART G—CARCINOGENS (SPECIFIC)

WAC 296-62-07329 Vinyl chloride. (1) Scope and application.

(a) This section includes requirements for the control of employee exposure to vinyl chloride (chloroethene), Chemical Abstracts Service Registry No. 75014.

(b) This section applies to the manufacture, reaction, packaging, repackaging, storage, handling or use of vinyl chloride or polyvinyl chloride, but does not apply to the handling or use of fabricated products made of polyvinyl chloride.

(c) This section applies to the transportation of vinyl chloride or polyvinyl chloride except to the extent that the department of transportation may regulate the hazards covered by this section.

(2) Definitions.

(a) "Action level" means a concentration of vinyl chloride of 0.5 ppm averaged over an 8-hour work day.

(b) "Authorized person" means any person specifically authorized by the employer whose duties require him/her to enter a regulated area or any person entering such an area as a designated representative of employees for the purpose of exercising an opportunity to observe monitoring and measuring procedures.

(c) "Director" means the director of department of labor and industries or his/her designated representative.

(d) "Emergency" means any occurrence such as, but not limited to, equipment failure, or operation of a relief device which is likely to, or does, result in massive release of vinyl chloride.

(e) "Fabricated product" means a product made wholly or partly from polyvinyl chloride, and which does not require further processing at temperatures, and for times, sufficient to cause mass melting of the polyvinyl chloride resulting in the release of vinyl chloride.

(f) "Hazardous operation" means any operation, procedure, or activity where a release of either vinyl chloride liquid or gas might be expected as a consequence of the operation or because of an accident in the operation, which would result in an employee exposure in excess of the permissible exposure limit.

(g) "Polyvinyl chloride" means polyvinyl chloride homopolymer or copolymer before such is converted to a fabricated product.

(h) "Vinyl chloride" means vinyl chloride monomer.

(3) Permissible exposure limit.

(a) No employee may be exposed to vinyl chloride at concentrations greater than 1 ppm averaged over any 8-hour period, and

(b) No employee may be exposed to vinyl chloride at concentrations greater than 5 ppm averaged over any period not exceeding 15 minutes.

(c) No employee may be exposed to vinyl chloride by direct contact with liquid vinyl chloride.

(4) Monitoring.

(a) A program of initial monitoring and measurement shall be undertaken in each establishment to determine if there is any employee exposed, without regard to the use of respirators, in excess of the action level.

(b) Where a determination conducted under subdivision (a) of this subsection shows any employee exposures without regard to the use of respirators, in excess of the action level, a program for determining exposures for each such employee shall be established. Such a program:

(i) Shall be repeated at least monthly where any employee is exposed, without regard to the use of respirators, in excess of the permissible exposure limit.

(ii) Shall be repeated not less than quarterly where any employee is exposed, without regard to the use of respirators, in excess of the action level.

(iii) May be discontinued for any employee only when at least two consecutive monitoring determinations, made not less than 5 working days apart, show exposures for that employee at or below the action level.

(c) Whenever there has been a production, process or control change which may result in an increase in the release of vinyl chloride, or the employer has any other reason to suspect that any employee may be exposed in excess of the action level, a determination of employee exposure under subdivision (a) of this subsection shall be performed.

(d) The method of monitoring and measurement shall have an accuracy (with a confidence level of 95 percent) of not less than plus or minus 50 percent from 0.25 through 0.5 ppm, plus or minus 35 percent from over 0.5 ppm through 1.0 ppm, plus or minus 25 percent over 1.0 ppm, (methods meeting these accuracy requirements are available from the director).

(e) Employees or their designated representatives shall be afforded reasonable opportunity to observe the monitoring and measuring required by this subsection.

(5) Regulated area.

(a) A regulated area shall be established where:

(i) Vinyl chloride or polyvinyl chloride is manufactured, reacted, repackaged, stored, handled or used; and

(ii) Vinyl chloride concentrations are in excess of the permissible exposure limit.

(b) Access to regulated areas shall be limited to authorized persons.

(6) Methods of compliance. Employee exposures to vinyl chloride shall be controlled to at or below the permissible exposure limit provided in subsection (3) of this section by engineering, work practice, and personal protective controls as follows:

(a) Feasible engineering and work practice controls shall immediately be used to reduce exposures to at or below the permissible exposure limit.

(b) Wherever feasible engineering and work practice controls which can be instituted immediately are not sufficient to reduce exposures to at or below the permissible exposure limit, they shall nonetheless be used to reduce exposures to the lowest practicable level, and shall be supplemented by respiratory protection in accordance with subsection (7) of this section. A program shall be established and implemented to reduce exposures to at or below the permissible exposure limit, or to the greatest extent feasible, solely by means of engineering and work practice controls, as soon as feasible.

(c) Written plans for such a program shall be developed and furnished upon request for examination and copying to the director. Such plans shall be updated at least every six months.

(7) Respiratory protection.

(a) General. For employees who use respirators required by this section, the employer must provide respirators that comply with the requirements of this section.

(b) Respirator program. The employer must establish, implement, and maintain a respiratory protection program as required in chapter 296-842 WAC, except WAC 296-842-13005 and 296-842-14005.

(c) Respirator selection. Respirators must be selected from the following table.

Atmospheric concentration of Vinyl Chloride	Apparatus
(i) Not over 10 ppm	Any chemical cartridge respirator with a vinyl chloride cartridge which provides a service life of at least 1 hour for concentrations of vinyl chloride up to 10 ppm.

**Atmospheric
concentration of
Vinyl Chloride**

(ii) Not over 25 ppm

(iii) Not over 100 ppm

(iv) Not over 250 ppm

(v) Not over 3,600 ppm

(vi) Unknown, or above
3,600 ppm

Apparatus

(A) A powered air-purifying respirator with hood, helmet, full or half facepiece, and a canister which provides a service life of at least 4 hours for concentrations of vinyl chloride up to 25 ppm, or

(B) Gas mask, front or back-mounted canister which provides a service life of at least 4 hours for concentrations of vinyl chloride up to 25 ppm. Supplied air respirator demand type, with full facepiece.

Type C, supplied air respirator, continuous flow type, with full or half facepiece, helmet or hood.

Combination Type C supplied air respirator, pressure demand type, with full or half facepiece and auxiliary self-contained air supply.

Open-circuit, self-contained breathing apparatus, pressure demand type, with full facepiece.

(d) Where air-purifying respirators are used:

(i) Air-purifying canisters or cartridges must be replaced prior to the expiration of their service life or the end of the shift in which they are first used, whichever occurs first, and

(ii) A continuous monitoring and alarm system must be provided when concentrations of vinyl chloride could reasonably exceed the allowable concentrations for the devices in use. Such system shall be used to alert employees when vinyl chloride concentrations exceed the allowable concentrations for the devices in use, and

(iii) Respirators specified for higher concentrations may be used for lower concentration.

(8) Hazardous operations.

(a) Employees engaged in hazardous operations, including entry of vessels to clean polyvinyl chloride residue from vessel walls, shall be provided and required to wear and use:

(i) Respiratory protection in accordance with subsections (3) and (7) of this section; and

(ii) Protective garments to prevent skin contact with liquid vinyl chloride or with polyvinyl chloride residue from vessel walls. The protective garments shall be selected for the operation and its possible exposure conditions.

(b) Protective garments shall be provided clean and dry for each use.

(c) Emergency situations. A written operational plan for emergency situations shall be developed for each facility

storing, handling, or otherwise using vinyl chloride as a liquid or compressed gas. Appropriate portions of the plan shall be implemented in the event of an emergency. The plan shall specifically provide that:

(i) Employees engaged in hazardous operations or correcting situations of existing hazardous releases shall be equipped as required in subdivisions (a) and (b) of this subsection;

(ii) Other employees not so equipped shall evacuate the area and not return until conditions are controlled by the methods required in subsection (6) of this section and the emergency is abated.

(9) Training. Each employee engaged in vinyl chloride or polyvinyl chloride operations shall be provided training in a program relating to the hazards of vinyl chloride and precautions for its safe use.

(a) The program shall include:

(i) The nature of the health hazard from chronic exposure to vinyl chloride including specifically the carcinogenic hazard;

(ii) The specific nature of operations which could result in exposure to vinyl chloride in excess of the permissible limit and necessary protective steps;

(iii) The purpose for, proper use, and limitations of respiratory protective devices;

(iv) The fire hazard and acute toxicity of vinyl chloride, and the necessary protective steps;

(v) The purpose for and a description of the monitoring program;

(vi) The purpose for and a description of, the medical surveillance program;

(vii) Emergency procedures:

(A) Specific information to aid the employee in recognition of conditions which may result in the release of vinyl chloride; and

(B) A review of this standard at the employee's first training and indoctrination program, and annually thereafter.

(b) All materials relating to the program shall be provided upon request to the director.

(10) Medical surveillance. A program of medical surveillance shall be instituted for each employee exposed, without regard to the use of respirators, to vinyl chloride in excess of the action level. The program shall provide each such employee with an opportunity for examinations and tests in accordance with this subsection. All medical examinations and procedures shall be performed by or under the supervision of a licensed physician and shall be provided without cost to the employee.

(a) At the time of initial assignment, or upon institution of medical surveillance;

(i) A general physical examination shall be performed with specific attention to detecting enlargement of liver, spleen or kidneys, or dysfunction in these organs, and for abnormalities in skin, connective tissues and the pulmonary system (see Appendix A).

(ii) A medical history shall be taken, including the following topics:

(A) Alcohol intake,

(B) Past history of hepatitis,

(C) Work history and past exposure to potential hepatotoxic agents, including drugs and chemicals,

(D) Past history of blood transfusions, and

(E) Past history of hospitalizations.

(iii) A serum specimen shall be obtained and determinations made of:

(A) Total bilirubin,

(B) Alkaline phosphatase,

(C) Serum glutamic oxalacetic transaminase (SGOT),

(D) Serum glutamic pyruvic transaminase (SGPT), and

(E) Gamma glutamyl transpeptidase.

(b) Examinations provided in accordance with this subdivision shall be performed at least:

(i) Every 6 months for each employee who has been employed in vinyl chloride or polyvinyl chloride manufacturing for 10 years or longer; and

(ii) Annually for all other employees.

(c) Each employee exposed to an emergency shall be afforded appropriate medical surveillance.

(d) A statement of each employee's suitability for continued exposure to vinyl chloride including use of protective equipment and respirators, shall be obtained from the examining physician promptly after any examination. A copy of the physician's statement shall be provided each employee.

(e) If any employee's health would be materially impaired by continued exposure, such employee shall be withdrawn from possible contact with vinyl chloride.

(f) Laboratory analyses for all biological specimens included in medical examinations shall be performed in laboratories licensed under 42 CFR Part 74.

(g) If the examining physician determines that alternative medical examinations to those required by subdivision (a) of this subsection will provide at least equal assurance of detecting medical conditions pertinent to the exposure to vinyl chloride, the employer may accept such alternative examinations as meeting the requirements of subdivision (a) of this subsection, if the employer obtains a statement from the examining physician setting forth the alternative examinations and the rationale for substitution. This statement shall be available upon request for examination and copying to authorized representatives of the director.

(11) Signs and labels.

(a) Entrances to regulated areas shall be posted with legible signs bearing the legend:

CANCER-SUSPECT AGENT AREA AUTHORIZED PERSONNEL
ONLY

(b) Areas containing hazardous operations or where an emergency currently exists shall be posted with legible signs bearing the legend:

CANCER-SUSPECT AGENT IN THIS AREA PROTECTIVE EQUIP-
MENT REQUIRED AUTHORIZED PERSONNEL ONLY

(c) Containers of polyvinyl chloride resin waste from reactors or other waste contaminated with vinyl chloride shall be legibly labeled:

CONTAMINATED WITH VINYL CHLORIDE CANCER-SUSPECT
AGENT

(d) Containers of polyvinyl chloride shall be legibly labeled:

POLYVINYL CHLORIDE (OR TRADE NAME) CONTAINS VINYL CHLORIDE VINYL CHLORIDE IS A CANCER-SUSPECT AGENT

(e) Containers of vinyl chloride shall be legibly labeled either:

VINYL CHLORIDE EXTREMELY FLAMMABLE GAS UNDER PRESSURE CANCER-SUSPECT AGENT

(or)

(f) In accordance with 49 CFR Part 173, Subpart H, with the additional legends:

CANCER-SUSPECT AGENT

Applied near the label or placard.

(g) No statement shall appear on or near any required sign, label or instruction which contradicts or detracts from the effect of any required warning, information or instruction.

(12) Records.

(a) All records maintained in accordance with this section shall include the name and social security number of each employee where relevant.

(b) Records of required monitoring and measuring and medical records shall be provided upon request to employees, designated representatives, and the director in accordance with chapter 296-802 WAC. These records shall be provided upon request to the director. Authorized personnel rosters shall also be provided upon request to the director.

(i) Monitoring and measuring records shall:

(A) State the date of such monitoring and measuring and the concentrations determined and identify the instruments and methods used;

(B) Include any additional information necessary to determine individual employee exposures where such exposures are determined by means other than individual monitoring of employees; and

(C) Be maintained for not less than 30 years.

(ii) Medical records shall be maintained for the duration of the employment of each employee plus 20 years, or 30 years, whichever is longer.

(c) In the event that the employer ceases to do business and there is no successor to receive and retain his/her records for the prescribed period, these records shall be transmitted by registered mail to the director, and each employee individually notified in writing of this transfer. The employer shall also comply with any additional requirements set forth in chapter 296-802 WAC.

(d) Employees or their designated representatives shall be provided access to examine and copy records of required monitoring and measuring.

(e) Former employees shall be provided access to examine and copy required monitoring and measuring records reflecting their own exposures.

(f) Upon written request of any employee, a copy of the medical record of that employee shall be furnished to any physician designated by the employee.

(13) Reports.

(a) Not later than 1 month after the establishment of a regulated area, the following information shall be reported to the director. Any changes to such information shall be reported within 15 days.

(i) The address and location of each establishment which has one or more regulated areas; and

(ii) The number of employees in each regulated area during normal operations, including maintenance.

(b) Emergencies and the facts obtainable at that time, shall be reported within 24 hours to the director. Upon request of the director, the employer shall submit additional information in writing relevant to the nature and extent of employee exposures and measures taken to prevent future emergencies of similar nature.

(c) Within 10 working days following any monitoring and measuring which discloses that any employee has been exposed, without regard to the use of respirators, in excess of the permissible exposure limit, each such employee shall be notified in writing of the results of the exposure measurement and the steps being taken to reduce the exposure to within the permissible exposure limit.

(14) Appendix A supplementary medical information.

When required tests under subsection (10)(a) of this section show abnormalities, the tests should be repeated as soon as practicable, preferably within 3 to 4 weeks. If tests remain abnormal, consideration should be given to withdrawal of the employee from contact with vinyl chloride, while a more comprehensive examination is made.

Additional tests which may be useful:

(A) For kidney dysfunction: Urine examination for albumin, red blood cells, and exfoliative abnormal cells.

(B) Pulmonary system: Forced vital capacity, forced expiratory volume at 1 second, and chest roentgenogram (posterior-anterior, 14 x 17 inches).

(C) Additional serum tests: Lactic acid dehydrogenase, lactic acid dehydrogenase isoenzyme, protein determination, and protein electrophoresis.

(D) For a more comprehensive examination on repeated abnormal serum tests: Hepatitis B antigen, and liver scanning.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060, 05-03-093, § 296-62-07329, filed 1/18/05, effective 3/1/05; 04-10-026, § 296-62-07329, filed 4/27/04, effective 8/1/04. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050, 99-10-071, § 296-62-07329, filed 5/4/99, effective 9/1/99. Statutory Authority: Chapter 49.17 RCW, 94-15-096 (Order 94-07), § 296-62-07329, filed 7/20/94, effective 9/20/94; 91-03-044 (Order 90-18), § 296-62-07329, filed 1/10/91, effective 2/12/91. Statutory Authority: RCW 49.17.040 and 49.17.050, 86-16-009 (Order 86-28), § 296-62-07329, filed 7/25/86; 82-13-045 (Order 82-22), § 296-62-07329, filed 6/11/82. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240, 81-18-029 (Order 81-21), § 296-62-07329, filed 8/27/81; 81-16-015 (Order 81-20), § 296-62-07329, filed 7/27/81; Order 75-41, § 296-62-07329, filed 12/19/75.]

WAC 296-62-07336 Acrylonitrile. (1) Scope and application.

(a) This section applies to all occupational exposure to acrylonitrile (AN), Chemical Abstracts Service Registry No. 000107131, except as provided in (b) and (c) of this subsection.

(b) This section does not apply to exposures which result solely from the processing, use, and handling of the following materials:

(i) ABS resins, SAN resins, nitrile barrier resins, solid nitrile elastomers, and acrylic and modacrylic fibers, when these listed materials are in the form of finished polymers, and products fabricated from such finished polymers;

(ii) Materials made from and/or containing AN for which objective data is reasonably relied upon to demonstrate that the material is not capable of releasing AN in airborne concentrations in excess of 1 ppm as an eight-hour time-weighted average, under the expected conditions of processing, use, and handling which will cause the greatest possible release; and

(iii) Solid materials made from and/or containing AN which will not be heated above 170°F during handling, use, or processing.

(c) An employer relying upon exemption under (1)(b)(ii) shall maintain records of the objective data supporting that exemption, and of the basis of the employer's reliance on the data as provided in subsection (17) of this section.

(2) Definitions, as applicable to this section:

(a) "Acrylonitrile" or "AN" - acrylonitrile monomer, chemical formula $\text{CH}_2=\text{CHCN}$.

(b) "Action level" - a concentration of AN of 1 ppm as an eight-hour time-weighted average.

(c) "Authorized person" - any person specifically authorized by the employer whose duties require the person to enter a regulated area, or any person entering such an area as a designated representative of employees for the purpose of exercising the opportunity to observe monitoring procedures under subsection (18) of this section.

(d) "Decontamination" means treatment of materials and surfaces by water washdown, ventilation, or other means, to assure that the materials will not expose employees to airborne concentrations of AN above 1 ppm as an eight-hour time-weighted average.

(e) "Director" - the director of labor and industries, or his authorized representative.

(f) "Emergency" - any occurrence such as, but not limited to, equipment failure, rupture of containers, or failure of control equipment, which is likely to, or does, result in unexpected exposure to AN in excess of the ceiling limit.

(g) "Liquid AN" means AN monomer in liquid form, and liquid or semiliquid polymer intermediates, including slurries, suspensions, emulsions, and solutions, produced during the polymerization of AN.

(h) "Polyacrylonitrile" or "PAN" - polyacrylonitrile homopolymers or copolymers, except for materials as exempted under subsection (1)(b) of this section.

(3) Permissible exposure limits.

(a) Inhalation.

(i) Time-weighted average limit (TWA). The employer shall assure that no employee is exposed to an airborne concentration of acrylonitrile in excess of two parts acrylonitrile per million parts of air (2 ppm), as an eight-hour time-weighted average.

(ii) Ceiling limit. The employer shall assure that no employee is exposed to an airborne concentration of acrylonitrile in excess of 10 ppm as averaged over any fifteen-minute period during the working day.

(b) Dermal and eye exposure. The employer shall assure that no employee is exposed to skin contact or eye contact with liquid AN or PAN.

(4) Notification of use and emergencies.

(a) Use. Within ten days of the effective date of this standard, or within fifteen days following the introduction of AN into the workplace, every employer shall report, unless he has

done so pursuant to the emergency temporary standard, the following information to the director for each such workplace:

(i) The address and location of each workplace in which AN is present;

(ii) A brief description of each process of operation which may result in employee exposure to AN;

(iii) The number of employees engaged in each process or operation who may be exposed to AN and an estimate of the frequency and degree of exposure that occurs; and

(iv) A brief description of the employer's safety and health program as it relates to limitation of employee exposure to AN. Whenever there has been a significant change in the information required by this subsection, the employer shall promptly amend such information previously provided to the director.

(b) Emergencies and remedial action. Emergencies, and the facts obtainable at that time, shall be reported within 24 hours of the initial occurrence to the director. Upon request of the director, the employer shall submit additional information in writing relevant to the nature and extent of employee exposures and measures taken to prevent future emergencies of a similar nature.

(5) Exposure monitoring.

(a) General.

(i) Determinations of airborne exposure levels shall be made from air samples that are representative of each employee's exposure to AN over an eight-hour period.

(ii) For the purposes of this section, employee exposure is that which would occur if the employee were not using a respirator.

(b) Initial monitoring. Each employer who has a place of employment in which AN is present shall monitor each such workplace and work operation to accurately determine the airborne concentrations of AN to which employees may be exposed. Such monitoring may be done on a representative basis, provided that the employer can demonstrate that the determinations are representative of employee exposures.

(c) Frequency.

(i) If the monitoring required by this section reveals employee exposure to be below the action level, the employer may discontinue monitoring for that employee. The employer shall continue these quarterly measurements until at least two consecutive measurements taken at least seven days apart, are below the action level, and thereafter the employer may discontinue monitoring for that employee.

(ii) If the monitoring required by this section reveals employee exposure to be at or above the action level but below the permissible exposure limits, the employer shall repeat such monitoring for each such employee at least quarterly.

(iii) If the monitoring required by this section reveals employee exposure to be in excess of the permissible exposure limits, the employer shall repeat these determinations for each such employee at least monthly. The employer shall continue these monthly measurements until at least two consecutive measurements, taken at least seven days apart, are below the permissible exposure limits, and thereafter the employer shall monitor at least quarterly.

(d) Additional monitoring. Whenever there has been a production, process, control or personnel change which may

result in new or additional exposure to AN, or whenever the employer has any other reason to suspect a change which may result in new or additional exposures to AN, additional monitoring which complies with this subsection shall be conducted.

(e) Employee notification.

(i) Within five working days after the receipt of monitoring results, the employer shall notify each employee in writing of the results which represent that employee's exposure.

(ii) Whenever the results indicate that the representative employee exposure exceeds the permissible exposure limits, the employer shall include in the written notice a statement that the permissible exposure limits were exceeded and a description of the corrective action being taken to reduce exposure to or below the permissible exposure limits.

(f) Accuracy of measurement. The method of measurement of employee exposures shall be accurate, to a confidence level of 95 percent, to within plus or minus 25 percent for concentrations of AN at or above the permissible exposure limits, and plus or minus 35 percent for concentrations of AN between the action level and the permissible exposure limits.

(g) Weekly survey of operations involving liquid AN. In addition to monitoring of employee exposures to AN as otherwise required by this subsection, the employer shall survey areas of operations involving liquid AN at least weekly to detect points where AN liquid or vapor are being released into the workplace. The survey shall employ an infra-red gas analyzer calibrated for AN, a multipoint gas chromatographic monitor, or comparable system for detection of AN. A listing of levels detected and areas of AN release, as determined from the survey, shall be posted prominently in the workplace, and shall remain posted until the next survey is completed.

(6) Regulated areas.

(a) The employer shall establish regulated areas where AN concentrations are in excess of the permissible exposure limits.

(b) Regulated areas shall be demarcated and segregated from the rest of the workplace, in any manner that minimizes the number of persons who will be exposed to AN.

(c) Access to regulated areas shall be limited to authorized persons or to persons otherwise authorized by the act or regulations issued pursuant thereto.

(d) The employer shall assure that in the regulated area, food or beverages are not present or consumed, smoking products are not present or used, and cosmetics are not applied, (except that these activities may be conducted in the lunchrooms, change rooms and showers required under subsections (13)(a)-(13)(c) of this section.

(7) Methods of compliance.

(a) Engineering and work practice controls.

(i) The employer shall institute engineering or work practice controls to reduce and maintain employee exposures to AN, to or below the permissible exposure limits, except to the extent that the employer establishes that such controls are not feasible.

(ii) Wherever the engineering and work practice controls which can be instituted are not sufficient to reduce employee exposures to or below the permissible exposure limits, the employer shall nonetheless use them to reduce exposures to

the lowest levels achievable by these controls and shall supplement them by the use of respiratory protection which complies with the requirements of subsection (8) of this section.

(b) Compliance program.

(i) The employer shall establish and implement a written program to reduce employee exposures to or below the permissible exposure limits solely by means of engineering and work practice controls, as required by subsection (7)(a) of this section.

(ii) Written plans for these compliance programs shall include at least the following:

(A) A description of each operation or process resulting in employee exposure to AN above the permissible exposure limits;

(B) Engineering plans and other studies used to determine the controls for each process;

(C) A report of the technology considered in meeting the permissible exposure limits;

(D) A detailed schedule for the implementation of engineering or work practice controls; and

(E) Other relevant information.

(iii) The employer shall complete the steps set forth in the compliance program by the dates in the schedule.

(iv) Written plans for such a program shall be submitted upon request to the director, and shall be available at the worksite for examination and copying by the director, or any affected employee or representative.

(v) The plans required by this subsection shall be revised and updated at least every six months to reflect the current status of the program.

(8) Respiratory protection.

(a) General. For employees who use respirators required by this section, the employer must provide respirators that comply with the requirements of this subsection. Respirators must be used during:

(i) Periods necessary to install or implement feasible engineering and work-practice controls;

(ii) Work operations, such as maintenance and repair activities or reactor cleaning, for which the employer establishes that engineering and work-practice controls are not feasible;

(iii) Work operations for which feasible engineering and work-practice controls are not yet sufficient to reduce employee exposure to or below the permissible exposure limits;

(iv) In emergencies.

(b) Respirator program.

The employer must implement a respiratory protection program in accordance with chapter 296-842 WAC, except WAC 296-842-13005 and 296-842-14005.

(c) Respirator selection. The employer must select the appropriate respirator from Table I of this subsection.

TABLE I

RESPIRATORY PROTECTION FOR ACRYLONITRILE (AN)

Concentration of AN or Condition of Use		Respirator Type
(a)	Less than or equal to 25 x permissible exposure limits.	(i) Any Type C supplied air respirator.

TABLE I
RESPIRATORY PROTECTION FOR ACRYLONITRILE (AN)

Concentration of AN or Condition of Use	Respirator Type
(b) Less than or equal to 100 x permissible exposure limits.	(i) Any supplied air respirator with full facepiece; or (ii) Any self-contained breathing apparatus with full facepiece.
(c) Less than or equal to 250 x permissible exposure limits	(i) Supplied air respirator in positive pressure mode with full facepiece, helmet, hood, or suit.
(d) Greater than 250 x permissible exposure limits.	(i) Supplied air respirator with full facepiece and an auxiliary self-contained air supply, operated in pressure demand mode; or (ii) Open circuit self-contained breathing apparatus with full facepiece in positive pressure mode.
(e) Emergency entry into unknown concentration or firefighting	(i) Any self-contained breathing apparatus with full facepiece in positive pressure mode.
(f) Escape.	(i) Any organic vapor gas mask; or (ii) Any self-contained breathing.

(9) Emergency situations.

(a) Written plans.

(i) A written plan for emergency situations shall be developed for each workplace where AN is present. Appropriate portions of the plan shall be implemented in the event of an emergency.

(ii) The plan shall specifically provide that employees engaged in correcting emergency conditions shall be equipped as required in subsection (8) of this section until the emergency is abated.

(b) Alerting employees.

(i) Where there is the possibility of employee exposure to AN in excess of the ceiling limit due to the occurrence of an emergency, a general alarm shall be installed and maintained to promptly alert employees of such occurrences.

(ii) Employees not engaged in correcting the emergency shall be evacuated from the area and shall not be permitted to return until the emergency is abated.

(10) Protective clothing and equipment.

(a) Provision and use. Where eye or skin contact with liquid AN or PAN may occur, the employer shall provide at no cost to the employee, and assure that employees wear, appropriate protective clothing or other equipment in accordance with WAC 296-800-160 to protect any area of the body which may come in contact with liquid AN or PAN.

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dance with WAC 296-800-160 to protect any area of the body which may come in contact with liquid AN or PAN.

(b) Cleaning and replacement.

(i) The employer shall clean, launder, maintain, or replace protective clothing and equipment required by this subsection, as needed to maintain their effectiveness. In addition, the employer shall provide clean protective clothing and equipment at least weekly to each affected employee.

(ii) The employer shall assure that impermeable protective clothing which contacts or is likely to have contacted liquid AN shall be decontaminated before being removed by the employee.

(iii) The employer shall assure that AN- or PAN-contaminated protective clothing and equipment is placed and stored in closable containers which prevent dispersion of the AN or PAN outside the container.

(iv) The employer shall assure that an employee whose nonimpermeable clothing becomes wetted with liquid AN shall immediately remove that clothing and proceed to shower. The clothing shall be decontaminated before it is removed from the regulated area.

(v) The employer shall assure that no employee removes AN- or PAN-contaminated protective equipment or clothing from the change room, except for those employees authorized to do so for the purpose of laundering, maintenance, or disposal.

(vi) The employer shall inform any person who launders or cleans AN- or PAN-contaminated protective clothing or equipment of the potentially harmful effects of exposure to AN.

(vii) The employer shall assure that containers of contaminated protective clothing and equipment which are to be removed from the workplace for any reason are labeled in accordance with subsection (16)(c)(ii) of this section, and that such labels remain affixed when such containers leave the employer's workplace.

(11) Housekeeping.

(a) All surfaces shall be maintained free of accumulations of liquid AN and of PAN.

(b) For operations involving liquid AN, the employer shall institute a program for detecting leaks and spills of liquid AN, including regular visual inspections.

(c) Where spills of liquid AN are detected, the employer shall assure that surfaces contacted by the liquid AN are decontaminated. Employees not engaged in decontamination activities shall leave the area of the spill, and shall not be permitted in the area until decontamination is completed.

(d) Liquids. Where AN is present in a liquid form, or as a resultant vapor, all containers or vessels containing AN shall be enclosed to the maximum extent feasible and tightly covered when not in use, with adequate provision made to avoid any resulting potential explosion hazard.

(e) Surfaces.

(i) Dry sweeping and the use of compressed air for the cleaning of floors and other surfaces where AN and PAN are found is prohibited.

(ii) Where vacuuming methods are selected, either portable units or a permanent system may be used.

(A) If a portable unit is selected, the exhaust shall be attached to the general workplace exhaust ventilation system or collected within the vacuum unit, equipped with high efficiency

ciency filters or other appropriate means of contaminant removal, so that AN is not reintroduced into the workplace air; and

(B) Portable vacuum units used to collect AN may not be used for other cleaning purposes and shall be labeled as prescribed by subsection (16)(c)(ii) of this section.

(iii) Cleaning of floors and other contaminated surfaces may not be performed by washing down with a hose, unless a fine spray has first been laid down.

(12) Waste disposal. AN and PAN waste, scrap, debris, bags, containers or equipment, shall be disposed of in sealed bags or other closed containers which prevent dispersion of AN outside the container, and labeled as prescribed in subsection (16)(c)(ii) of this section.

(13) Hygiene facilities and practices. Where employees are exposed to airborne concentrations of AN above the permissible exposure limits, or where employees are required to wear protective clothing or equipment pursuant to subsection (11) of this section, or where otherwise found to be appropriate, the facilities required by WAC 296-800-230 shall be provided by the employer for the use of those employees, and the employer shall assure that the employees use the facilities provided. In addition, the following facilities or requirements are mandated.

(a) Change rooms. The employer shall provide clean change rooms in accordance with WAC 296-800-230.

(b) Showers.

(i) The employer shall provide shower facilities in accordance with WAC 296-800-230.

(ii) In addition, the employer shall also assure that employees exposed to liquid AN and PAN shower at the end of the work shift.

(iii) The employer shall assure that, in the event of skin or eye exposure to liquid AN, the affected employee shall shower immediately to minimize the danger of skin absorption.

(c) Lunchrooms.

(i) Whenever food or beverages are consumed in the workplace, the employer shall provide lunchroom facilities which have a temperature controlled, positive pressure, filtered air supply, and which are readily accessible to employees exposed to AN above the permissible exposure limits.

(ii) In addition, the employer shall also assure that employees exposed to AN above the permissible exposure limits wash their hands and face prior to eating.

(14) Medical surveillance.

(a) General.

(i) The employer shall institute a program of medical surveillance for each employee who is or will be exposed to AN above the action level. The employer shall provide each such employee with an opportunity for medical examinations and tests in accordance with this subsection.

(ii) The employer shall assure that all medical examinations and procedures are performed by or under the supervision of a licensed physician, and shall be provided without cost to the employee.

(b) Initial examinations. At the time of initial assignment, or upon institution of the medical surveillance program, the employer shall provide each affected employee an opportunity for a medical examination, including at least the following elements:

(i) A work history and medical history with special attention to skin, respiratory, and gastrointestinal systems, and those nonspecific symptoms, such as headache, nausea, vomiting, dizziness, weakness, or other central nervous system dysfunctions that may be associated with acute or chronic exposure to AN.

(ii) A physical examination giving particular attention to central nervous system, gastrointestinal system, respiratory system, skin and thyroid.

(iii) A 14" x 17" posteroanterior chest X ray.

(iv) Further tests of the intestinal tract, including fecal occult blood screening, and proctosigmoidoscopy, for all workers 40 years of age or older, and for any other affected employees for whom, in the opinion of the physician, such testing is appropriate.

(c) Periodic examinations.

(i) The employer shall provide examinations specified in this subsection at least annually for all employees specified in subsection (14)(a) of this section.

(ii) If an employee has not had the examinations prescribed in subsection (14)(b) of this section within six months of termination of employment, the employer shall make such examination available to the employee upon such termination.

(d) Additional examinations. If the employee for any reason develops signs or symptoms commonly associated with exposure to AN, the employer shall provide appropriate examination and emergency medical treatment.

(e) Information provided to the physician. The employer shall provide the following information to the examining physician:

(i) A copy of this standard and its appendices;

(ii) A description of the affected employee's duties as they relate to the employee's exposure;

(iii) The employee's representative exposure level;

(iv) The employee's anticipated or estimated exposure level (for preplacement examinations or in cases of exposure due to an emergency);

(v) A description of any personal protective equipment used or to be used; and

(vi) Information from previous medical examinations of the affected employee, which is not otherwise available to the examining physician.

(f) Physician's written opinion.

(i) The employer shall obtain a written opinion from the examining physician which shall include:

(A) The results of the medical examination and test performed;

(B) The physician's opinion as to whether the employee has any detected medical condition which would place the employee at an increased risk of material impairment of the employee's health from exposure to AN;

(C) Any recommended limitations upon the employee's exposure to AN or upon the use of protective clothing and equipment such as respirators; and

(D) A statement that the employee has been informed by the physician of the results of the medical examination and any medical conditions which require further examination or treatment.

(ii) The employer shall instruct the physician not to reveal in the written opinion specific findings or diagnoses unrelated to occupational exposure to AN.

(iii) The employer shall provide a copy of the written opinion to the affected employee.

(15) Employee information and training.

(a) Training program.

(i) The employer shall institute a training program for all employees where there is occupational exposure to AN and shall assure their participation in the training program.

(ii) The training program shall be provided at the time of initial assignment, or upon institution of the training program, and at least annually thereafter, and the employer shall assure that each employee is informed of the following:

(A) The information contained in Appendices A, B and C;

(B) The quantity, location, manner of use, release or storage of AN and the specific nature of operations which could result in exposure to AN, as well as any necessary protective steps;

(C) The purpose, proper use, and limitations of respirators and protective clothing;

(D) The purpose and a description of the medical surveillance program required by subsection (14) of this section;

(E) The emergency procedures developed, as required by subsection (9) of this section; and

(F) The engineering and work practice controls, their function and the employee's relationship thereto; and

(G) A review of this standard.

(b) Access to training materials.

(i) The employer shall make a copy of this standard and its appendices readily available to all affected employees.

(ii) The employer shall provide, upon request, all materials relating to the employee information and training program to the director.

(16) Signs and labels.

(a) General.

(i) The employer may use labels or signs required by other statutes, regulations, or ordinances in addition to, or in combination with, signs and labels required by this subsection.

(ii) The employer shall assure that no statement appears on or near any sign or label, required by this subsection, which contradicts or detracts from such effects of the required sign or label.

(b) Signs.

(i) The employer shall post signs to clearly indicate all workplaces where AN concentrations exceed the permissible exposure limits. The signs shall bear the following legend:

DANGER
ACRYLONITRILE (AN)
CANCER HAZARD
AUTHORIZED PERSONNEL ONLY
RESPIRATORS REQUIRED

(ii) The employer shall assure that signs required by this subsection are illuminated and cleaned as necessary so that the legend is readily visible.

(c) Labels.

(i) The employer shall assure that precautionary labels are affixed to all containers of AN, and to containers of PAN and products fabricated from PAN, except for those materials for which objective data is provided as to the conditions specified in subsection (1)(b) of this section. The employer shall assure that the labels remain affixed when the AN or PAN are sold, distributed or otherwise leave the employer's workplace.

(ii) The employer shall assure that the precautionary labels required by this subsection are readily visible and legible. The labels shall bear the following legend:

DANGER
CONTAINS ACRYLONITRILE (AN)
CANCER HAZARD

(17) Recordkeeping.

(a) Objective data for exempted operations.

(i) Where the processing, use, and handling of products fabricated from PAN are exempted pursuant to subsection (1)(b) of this section, the employer shall establish and maintain an accurate record of objective data reasonably relied upon in support of the exemption.

(ii) This record shall include the following information:

(A) The relevant condition in subsection (1)(b) upon which exemption is based;

(B) The source of the objective data;

(C) The testing protocol, results of testing, and/or analysis of the material for the release of AN;

(D) A description of the operation exempted and how the data supports the exemption; and

(E) Other data relevant to the operations, materials, and processing covered by the exemption.

(iii) The employer shall maintain this record for the duration of the employer's reliance upon such objective data.

(b) Exposure monitoring.

(i) The employer shall establish and maintain an accurate record of all monitoring required by subsection (5) of this section.

(ii) This record shall include:

(A) The dates, number, duration, and results of each of the samples taken, including a description of the sampling procedure used to determine representative employee exposure;

(B) A description of the sampling and analytical methods used and the data relied upon to establish that the methods used meet the accuracy and precision requirements of subsection (5)(f) of this section;

(C) Type of respiratory protective devices worn, if any; and

(D) Name, social security number and job classification of the employee monitored and of all other employees whose exposure the measurement is intended to represent.

(iii) The employer shall maintain this record for at least 40 years or the duration of employment plus 20 years, whichever is longer.

(c) Medical surveillance.

(i) The employer shall establish and maintain an accurate record for each employee subject to medical surveillance as required by subsection (14) of this section.

(ii) This record shall include:

- (A) A copy of the physicians' written opinions;
- (B) Any employee medical complaints related to exposure to AN;
- (C) A copy of the information provided to the physician as required by subsection (14)(f) of this section; and
- (D) A copy of the employee's medical and work history.
- (iii) The employer shall assure that this record be maintained for at least forty years or for the duration of employment plus twenty years, whichever is longer.
- (d) Availability.
 - (i) The employer shall assure that all records required to be maintained by this section be made available upon request to the director for examination and copying.
 - (ii) Records required by subdivisions (a) through (c) of this subsection shall be provided upon request to employees, designated representatives, and the assistant director in accordance with chapter 296-802 WAC. Records required by subdivision (a) of this section shall be provided in the same manner as exposure monitoring records.
 - (iii) The employer shall assure that employee medical records required to be maintained by this section, be made available, upon request, for examination and copying, to the affected employee or former employee, or to a physician designated by the affected employee, former employee, or designated representative.
 - (e) Transfer of records.
 - (i) Whenever the employer ceases to do business, the successor employer shall receive and retain all records required to be maintained by this section.
 - (ii) Whenever the employer ceases to do business and there is no successor employer to receive and retain the records for the prescribed period, these records shall be transmitted to the director.
 - (iii) At the expiration of the retention period for the records required to be maintained pursuant to this section, the employer shall transmit these records to the director.
 - (iv) The employer shall also comply with any additional requirements involving transfer of records set forth in chapter 296-802 WAC.
- (18) Observation of monitoring.
 - (a) Employee observation. The employer shall provide affected employees, or their designated representatives, an opportunity to observe any monitoring of employee exposure to AN conducted pursuant to subsection (5) of this section.
 - (b) Observation procedures.
 - (i) Whenever observation of the monitoring of employee exposure to AN requires entry into an area where the use of protective clothing or equipment is required, the employer shall provide the observer with personal protective clothing or equipment required to be worn by employees working in the area, assure the use of such clothing and equipment, and require the observer to comply with all other applicable safety and health procedures.
 - (ii) Without interfering with the monitoring, observers shall be entitled:
 - (A) To receive an explanation of the measurement procedures;
 - (B) To observe all steps related to the measurement of airborne concentrations of AN performed at the place of exposure; and
 - (C) To record the results obtained.

(19) Appendices. The information contained in the appendices is not intended, by itself, to create any additional obligation not otherwise imposed, or to detract from any obligation.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. 05-03-093, § 296-62-07336, filed 1/18/05, effective 3/1/05; 04-10-026, § 296-62-07336, filed 4/27/04, effective 8/1/04; 03-18-090, § 296-62-07336, filed 9/2/03, effective 11/1/03. Statutory Authority: RCW 49.17.010, [49.17].-040, and [49.17].050. 01-11-038, § 296-62-07336, filed 5/9/01, effective 9/1/01; 99-10-071, § 296-62-07336, filed 5/4/99, effective 9/1/99. Statutory Authority: Chapter 49.17 RCW. 88-11-021 (Order 88-04), § 296-62-07336, filed 5/11/88.]

WAC 296-62-07337 Appendix A—Substance safety data sheet for acrylonitrile. (1) Substance identification.

- (a) Substance: Acrylonitrile (CH_2CHCN).
- (b) Synonyms: Propenenitrile; vinyl cyanide; cyanoethylene; AN; VCN; acylon; carbacryl; fumigrian; ventox.
- (c) Acrylonitrile can be found as a liquid or vapor, and can also be found in polymer resins, rubbers, plastics, polyols, and other polymers having acrylonitrile as a raw or intermediate material.
- (d) AN is used in the manufacture of acrylic and modiacrylic fibers, acrylic plastics and resins, specialty polymers, nitrile rubbers, and other organic chemicals. It has also been used as a fumigant.
- (e) Appearance and odor: Colorless to pale yellow liquid with a pungent odor which can only be detected at concentrations above the permissible exposure level, in a range of 13-19 parts AN per million parts of air (13-19 ppm).
- (f) Permissible exposure: Exposure may not exceed either:
 - (i) Two parts AN per million parts of air (2 ppm) averaged over the eight-hour workday; or
 - (ii) Ten parts AN per million parts of air (10 ppm) averaged over any fifteen-minute period in the workday.
 - (iii) In addition, skin and eye contact with liquid AN is prohibited.

(2) Health hazard data.

- (a) Acrylonitrile can affect your body if you inhale the vapor (breathing), if it comes in contact with your eyes or skin, or if you swallow it. It may enter your body through your skin.
- (b) Effects of overexposure:
 - (i) Short-term exposure: Acrylonitrile can cause eye irritation, nausea, vomiting, headache, sneezing, weakness, and light-headedness. At high concentrations, the effects of exposure may go on to loss of consciousness and death. When acrylonitrile is held in contact with the skin after being absorbed into shoe leather or clothing, it may produce blisters following several hours of no apparent effect. Unless the shoes or clothing are removed immediately and the area washed, blistering will occur. Usually there is no pain or inflammation associated with blister formation.
 - (ii) Long-term exposure: Acrylonitrile has been shown to cause cancer in laboratory animals and has been associated with higher incidences of cancer in humans. Repeated or prolonged exposure of the skin to acrylonitrile may produce irritation and dermatitis.
 - (iii) Reporting signs and symptoms: You should inform your employer if you develop any signs or symptoms and suspect they are caused by exposure to acrylonitrile.

(3) Emergency first-aid procedures.

(a) Eye exposure: If acrylonitrile gets into your eyes, wash your eyes immediately with large amounts of water, lifting the lower and upper lids occasionally. Get medical attention immediately. Contact lenses should not be worn when working with this chemical.

(b) Skin exposure: If acrylonitrile gets on your skin, immediately wash the contaminated skin with water. If acrylonitrile soaks through your clothing, especially your shoes, remove the clothing immediately and wash the skin with water. If symptoms occur after washing, get medical attention immediately. Thoroughly wash the clothing before reusing. Contaminated leather shoes or other leather articles should be discarded.

(c) Inhalation: If you or any other person breathes in large amounts of acrylonitrile, move the exposed person to fresh air at once. If breathing has stopped, perform artificial respiration. Keep the affected person warm and at rest. Get medical attention as soon as possible.

(d) Swallowing: When acrylonitrile has been swallowed, give the person large quantities of water immediately. After the water has been swallowed, try to get the person to vomit by having him touch the back of his throat with his finger. Do not make an unconscious person vomit. Get medical attention immediately.

(e) Rescue: Move the affected person from the hazardous exposure. If the exposed person has been overcome, notify someone else and put into effect the established emergency procedures. Do not become a casualty yourself. Understand your emergency rescue procedures and know the location of the emergency equipment before the need arises.

(f) Special first-aid procedures: First-aid kits containing an adequate supply (at least two dozen) of amyl nitrite pearls, each containing 0.3 ml, should be maintained at each site where acrylonitrile is used. When a person is suspected of receiving an overexposure to acrylonitrile, immediately remove that person from the contaminated area using established rescue procedures. Contaminated clothing must be removed and the acrylonitrile washed from the skin immediately. Artificial respiration should be started at once if breathing has stopped. If the person is unconscious, amyl nitrite may be used as an antidote by a properly trained individual in accordance with established emergency procedures. Medical aid should be obtained immediately.

(4) Respirators and protective clothing.

(a) Respirators: You may be required to wear a respirator for nonroutine activities, in emergencies, while your employer is in the process of reducing acrylonitrile exposures through engineering controls, and in areas where engineering controls are not feasible. If respirators are worn, they must have a label issued by the National Institute for Occupational Safety and Health under the provisions of 42 CFR part 84 stating that the respirators have been certified for use with organic vapors. For effective protection, respirators must fit your face and head snugly. Respirators should not be loosened or removed in work situations where their use is required.

(b) Supplied-air suits: In some work situations, the wearing of supplied-air suits may be necessary. Your employer must instruct you in their proper use and operation.

(c) Protective clothing:

(i) You must wear impervious clothing, gloves, face shield, or other appropriate protective clothing to prevent skin contact with liquid acrylonitrile. Where protective clothing is required, your employer is required to provide clean garments to you as necessary to assume that the clothing protects you adequately.

(ii) Replace or repair impervious clothing that has developed leaks.

(iii) Acrylonitrile should never be allowed to remain on the skin. Clothing and shoes which are not impervious to acrylonitrile should not be allowed to become contaminated with acrylonitrile, and if they do the clothing and shoes should be promptly removed and decontaminated. The clothing should be laundered or discarded after the AN is removed. Once acrylonitrile penetrates shoes or other leather articles, they should not be worn again.

(d) Eye protection: You must wear splashproof safety goggles in areas where liquid acrylonitrile may contact your eyes. In addition, contact lenses should not be worn in areas where eye contact with acrylonitrile can occur.

(5) Precautions for safe use, handling, and storage.

(a) Acrylonitrile is a flammable liquid, and its vapors can easily form explosive mixtures in air.

(b) Acrylonitrile must be stored in tightly closed containers in a cool, well-ventilated area, away from heat, sparks, flames, strong oxidizers (especially bromine), strong bases, copper, copper alloys, ammonia, and amines.

(c) Sources of ignition such as smoking and open flames are prohibited wherever acrylonitrile is handled, used, or stored in a manner that could create a potential fire or explosion hazard.

(d) You should use nonsparking tools when opening or closing metal containers of acrylonitrile, and containers must be bonded and grounded when pouring or transferring liquid acrylonitrile.

(e) You must immediately remove any nonimpervious clothing that becomes wetted with acrylonitrile, and this clothing must not be reworn until the acrylonitrile is removed from the clothing.

(f) Impervious clothing wet with liquid acrylonitrile can be easily ignited. This clothing must be washed down with water before you remove it.

(g) If your skin becomes wet with liquid acrylonitrile, you must promptly and thoroughly wash or shower with soap or mild detergent to remove any acrylonitrile from your skin.

(h) You must not keep food, beverages, or smoking materials, nor are you permitted to eat or smoke in regulated areas where acrylonitrile concentrations are above the permissible exposure limits.

(i) If you contact liquid acrylonitrile, you must wash your hands thoroughly with soap or mild detergent and water before eating, smoking, or using toilet facilities.

(j) Fire extinguishers and quick drenching facilities must be readily available, and you should know where they are and how to operate them.

(k) Ask your supervisor where acrylonitrile is used in your work area and for any additional plant safety and health rules.

(6) Access to information.

(a) Each year, your employer is required to inform you of the information contained in this Substance Safety Data

Sheet for acrylonitrile. In addition, your employer must instruct you in the proper work practices for using acrylonitrile, emergency procedures, and the correct use of protective equipment.

(b) Your employer is required to determine whether you are being exposed to acrylonitrile. You or your representative has the right to observe employee measurements and to record the results obtained. Your employer is required to inform you of your exposure. If your employer determines that you are being overexposed, he or she is required to inform you of the actions which are being taken to reduce your exposure to within permissible exposure limits.

(c) Your employer is required to keep records of your exposures and medical examinations. These records must be kept by the employer for at least forty years or for the period of your employment plus twenty years, whichever is longer.

(d) Your employer is required to release your exposure and medical records to you or your representative upon your request.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07337, filed 5/4/99, effective 9/1/99. Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-62-07337, filed 7/20/94, effective 9/20/94; 88-11-021 (Order 88-04), § 296-62-07337, filed 5/11/88.]

WAC 296-62-07338 Appendix B—Substance technical guidelines for acrylonitrile. (1) Physical and chemical data.

(a) Substance identification:

(i) Synonyms: AN; VCN; vinyl cyanide; propenenitrile; cyanoethylene; Acrylon; Carbacryl; Fumigrain; Ventox.

(ii) Formula: $\text{CH}_2=\text{CHCN}$.

(iii) Molecular weight: 53.1.

(b) Physical data:

(i) Boiling point (760 mm Hg): 77.3°C (171°F);

(ii) Specific gravity (water = 1): 0.81 (at 20°C or 68°F);

(iii) Vapor density (air = 1 at boiling point of acrylonitrile): 1.83;

(iv) Melting point: -83°C (-117°F);

(v) Vapor pressure (@20°F): 83 mm Hg;

(vi) Solubility in water, percent by weight @20°C (68°F): 7.35;

(vii) Evaporation rate (Butyl Acetate = 1): 4.54; and

(viii) Appearance and odor: Colorless to pale yellow liquid with a pungent odor at concentrations above the permissible exposure level. Any detectable odor of acrylonitrile may indicate overexposure.

(2) Fire, explosion, and reactivity hazard data.

(a) Fire:

(i) Flash point: -1°C (30°F) (closed cup).

(ii) Autoignition temperature: 481°C (898°F).

(iii) Flammable limits air, percent by volume: Lower: 3, Upper: 17.

(iv) Extinguishing media: Alcohol foam, carbon dioxide, and dry chemical.

(v) Special fire-fighting procedures: Do not use a solid stream of water, since the stream will scatter and spread the fire. Use water to cool containers exposed to a fire.

(vi) Unusual fire and explosion hazards: Acrylonitrile is a flammable liquid. Its vapors can easily form explosive mix-

tures with air. All ignition sources must be controlled where acrylonitrile is handled, used, or stored in a manner that could create a potential fire or explosion hazard. Acrylonitrile vapors are heavier than air and may travel along the ground and be ignited by open flames or sparks at locations remote from the site at which acrylonitrile is being handled.

(vii) For purposes of compliance with the requirements of WAC 296-800-300, acrylonitrile is classified as a class IB flammable liquid. For example, 7,500 ppm, approximately one-fourth of the lower flammable limit, would be considered to pose a potential fire and explosion hazard.

(viii) For purposes of compliance with WAC 296-24-59207, acrylonitrile is classified as a Class B fire hazard.

(ix) For purpose of compliance with WAC 296-24-95613, locations classified as hazardous due to the presence of acrylonitrile shall be Class I, Group D.

(b) Reactivity:

(i) Conditions contributing to instability: Acrylonitrile will polymerize when hot, and the additional heat liberated by the polymerization may cause containers to explode. Pure AN may self-polymerize, with a rapid build-up of pressure, resulting in an explosion hazard. Inhibitors are added to the commercial product to prevent self-polymerization.

(ii) Incompatibilities: Contact with strong oxidizers (especially bromine) and strong bases may cause fires and explosions. Contact with copper, copper alloys, ammonia, and amines may start serious decomposition.

(iii) Hazardous decomposition products: Toxic gases and vapors (such as hydrogen cyanide, oxides of nitrogen, and carbon monoxide) may be released in a fire involving acrylonitrile and certain polymers made from acrylonitrile.

(iv) Special precautions: Liquid acrylonitrile will attack some forms of plastics, rubbers, and coatings.

(3) Spill, leak, and disposal procedures.

(a) If acrylonitrile is spilled or leaked, the following steps should be taken:

(i) Remove all ignition sources.

(ii) The area should be evacuated at once and re-entered only after the area has been thoroughly ventilated and washed down with water.

(iii) If liquid acrylonitrile or polymer intermediate, collect for reclamation or absorb in paper, vermiculite, dry sand, earth, or similar material, or wash down with water into process sewer system.

(b) Persons not wearing protective equipment should be restricted from areas of spills or leaks until clean-up has been completed.

(c) Waste disposal methods: Waste materials shall be disposed of in a manner that is not hazardous to employees or to the general population. Spills of acrylonitrile and flushing of such spills shall be channeled for appropriate treatment or collection for disposal. They shall not be channeled directly into the sanitary sewer system. In selecting the method of waste disposal, applicable local, state, and federal regulations should be consulted.

(4) Monitoring and measurement procedures.

(a) Exposure above the permissible exposure limit:

(i) Eight-hour exposure evaluation: Measurements taken for the purpose of determining employee exposure under this section are best taken so that the average eight-hour exposure may be determined from a single eight-hour sample or two

four-hour samples. Air samples should be taken in the employee's breathing zone (air that would most nearly represent that inhaled by the employee).

(ii) Ceiling evaluation: Measurements taken for the purpose of determining employee exposure under this section must be taken during periods of maximum expected airborne concentrations of acrylonitrile in the employee's breathing zone. A minimum of three measurements should be taken on one work shift. The average of all measurements taken is an estimate of the employee's ceiling exposure.

(iii) Monitoring techniques: The sampling and analysis under this section may be performed by collecting the acrylonitrile vapor on charcoal adsorption tubes or other composition adsorption tubes, with subsequent chemical analysis. Sampling and analysis may also be performed by instruments such as real-time continuous monitoring systems, portable direct-reading instruments, or passive dosimeters. Analysis of resultant samples should be by gas chromatograph.

(iv) Appendix D lists methods of sampling and analysis which have been tested by NIOSH and OSHA for use with acrylonitrile. NIOSH and OSHA have validated modifications of NIOSH Method S-156 (see Appendix D) under laboratory conditions for concentrations below 1 ppm. The employer has the obligation of selecting a monitoring method which meets the accuracy and precision requirements of the standard under his/her unique field conditions. The standard requires that methods of monitoring must be accurate, to a 95-percent confidence level, to ± 35 -percent for concentrations of AN at or above 2 ppm, and to ± 50 -percent for concentrations below 2 ppm. In addition to the methods described in Appendix D, there are numerous other methods available for monitoring for AN in the workplace. Details on these other methods have been submitted by various companies to the rulemaking record, and are available at the OSHA Docket Office.

(b) Since many of the duties relating to employee exposure are dependent on the results of monitoring and measuring procedures, employers shall assure that the evaluation of employee exposures is performed by a competent industrial hygienist or other technically qualified person.

(5) Protective clothing.

(a) Employees shall be provided with and required to wear appropriate protective clothing to prevent any possibility of skin contact with liquid AN. Because acrylonitrile is absorbed through the skin, it is important to prevent skin contact with liquid AN. Protective clothing shall include impermeable coveralls or similar full-body work clothing, gloves, head-coverings, as appropriate to protect areas of the body which may come in contact with liquid AN.

(b) Employers should ascertain that the protective garments are impermeable to acrylonitrile. Nonimpermeable clothing and shoes should not be allowed to become contaminated with liquid AN. If permeable clothing does become contaminated, it should be promptly removed, placed in a regulated area for removal of the AN, and not worn again until the AN is removed. If leather footwear or other leather garments become wet from acrylonitrile, they should be replaced and not worn again, due to the ability of leather to absorb acrylonitrile and hold it against the skin. Since there is no pain associated with the blistering which may result from

skin contact with liquid AN, it is essential that the employee be informed of this hazard so that he or she can be protected.

(c) Any protective clothing which has developed leaks or is otherwise found to be defective shall be repaired or replaced. Clean protective clothing shall be provided to the employee as necessary to assure its protectiveness. Whenever impervious clothing becomes wet with liquid AN, it shall be washed down with water before being removed by the employee. Employees are also required to wear splash-proof safety goggles where there is any possibility of acrylonitrile contacting the eyes.

(6) Housekeeping and hygiene facilities. For purposes of complying with WAC 296-24-120, 296-800-220 and 296-800-230, the following items should be emphasized:

(a) The workplace should be kept clean, orderly, and in a sanitary condition. The employer is required to institute a leak and spill detection program for operations involving liquid AN in order to detect sources of fugitive AN emissions.

(b) Dry sweeping and the use of compressed air is unsafe for the cleaning of floors and other surfaces where liquid AN may be found.

(c) Adequate washing facilities with hot and cold water are to be provided, and maintained in a sanitary condition. Suitable cleansing agents are also to be provided to assure the effective removal of acrylonitrile from the skin.

(d) Change or dressing rooms with individual clothes storage facilities must be provided to prevent the contamination of street clothes with acrylonitrile. Because of the hazardous nature of acrylonitrile, contaminated protective clothing should be placed in a regulated area designated by the employer for removal of the AN before the clothing is laundered or disposed of.

(7) Miscellaneous precautions.

(a) Store acrylonitrile in tightly-closed containers in a cool, well-ventilated area and take necessary precautions to avoid any explosion hazard.

(b) High exposures to acrylonitrile can occur when transferring the liquid from one container to another.

(c) Nonsparking tools must be used to open and close metal acrylonitrile containers. These containers must be effectively grounded and bonded prior to pouring.

(d) Never store uninhibited acrylonitrile.

(e) Acrylonitrile vapors are not inhibited.

They may form polymers and clog vents of storage tanks.

(f) Use of supplied-air suits or other impervious coverings may be necessary to prevent skin contact with and provide respiratory protection from acrylonitrile where the concentration of acrylonitrile is unknown or is above the ceiling limit. Supplied-air suits should be selected, used, and maintained under the immediate supervision of persons knowledgeable in the limitations and potential life-endangering characteristics of supplied-air suits.

(g) Employers shall advise employees of all areas and operations where exposure to acrylonitrile could occur.

(8) Common operations. Common operations in which exposure to acrylonitrile is likely to occur include the following: Manufacture of the acrylonitrile monomer; synthesis of acrylic fibers, ABS, SAN, and nitrile barrier plastics and resins, nitrile rubber, surface coatings, specialty chemicals; use as a chemical intermediate; use as a fumigant; and in the cyanoethylation of cotton.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 01-11-038, § 296-62-07338, filed 5/9/01, effective 9/1/01. Statutory Authority: Chapter 49.17 RCW. 88-11-021 (Order 88-04), § 296-62-07338, filed 5/11/88.]

WAC 296-62-07339 Appendix C—Medical surveillance guidelines for acrylonitrile. (1) Route of entry.

- (a) Inhalation;
- (b) Skin absorption;
- (c) Ingestion.
- (2) Toxicology.

(a) Acrylonitrile vapor is an asphyxiant due to inhibitory action on metabolic enzyme systems. Animals exposed to 75 or 100 ppm for seven hours have shown signs of anoxia; in some animals which died at the higher level, cyanomethemoglobin was found in the blood. Two human fatalities from accidental poisoning have been reported; one was caused by inhalation of an unknown concentration of the vapor, and the other was thought to be caused by skin absorption or inhalation. Most cases of intoxication from industrial exposure have been mild, with rapid onset of eye irritation, headache, sneezing, and nausea. Weakness, lightheadedness, and vomiting may also occur. Exposure to high concentrations may produce profound weakness, asphyxia, and death. The vapor is a severe eye irritant. Prolonged skin contact [contact] with the liquid may result in absorption with systemic effects, and in the formation of large blisters after a latent period of several hours. Although there is usually little or no pain or inflammation, the affected skin resembles a second-degree thermal burn. Solutions spilled on exposed skin, or on areas covered only by a light layer of clothing, evaporate rapidly, leaving no irritation, or, at the most, mild transient redness. Repeated spills on exposed skin may result in dermatitis due to solvent effects.

(b) Results after one year of a planned two-year animal study on the effects of exposure to acrylonitrile have indicated that rats ingesting as little as 35 ppm in their drinking water develop tumors of the central nervous system. The interim results of this study have been supported by a similar study being conducted by the same laboratory, involving exposure of rats by inhalation of acrylonitrile vapor, which has shown similar types of tumors in animals exposed to 80 ppm.

(c) In addition, the preliminary results of an epidemiological study being performed by duPont on a cohort of workers in their Camden, S.C. acrylic fiber plant indicate a statistically significant increase in the incidence of colon and lung cancers among employees exposed to acrylonitrile.

(3) Signs and symptoms of acute overexposure. Asphyxia and death can occur from exposure to high concentrations of acrylonitrile. Symptoms of overexposure include eye irritation, headache, sneezing, nausea and vomiting, weakness, and light-headedness. Prolonged skin contact can cause blisters on the skin with appearance of a second-degree burn, but with little or no pain. Repeated skin contact may produce scaling dermatitis.

(4) Treatment of acute overexposure. Remove employee from exposure. Immediately flush eyes with water and wash skin with soap or mild detergent and water. If AN has been swallowed, and person is conscious, induce vomiting. Give artificial respiration if indicated. More severe cases, such as

those associated with loss of consciousness, may be treated by the intravenous administration of sodium nitrite, followed by sodium thiosulfate, although this is not as effective for acrylonitrile poisoning as for inorganic cyanide poisoning.

(5) Surveillance and preventive considerations.

(a) As noted above, exposure to acrylonitrile has been linked to increased incidence of cancers of the colon and lung in employees of the duPont acrylic fiber plant in Camden, S.C. In addition, the animal testing of acrylonitrile has resulted in the development of cancers of the central nervous system in rats exposed by either inhalation or ingestion. The physician should be aware of the findings of these studies in evaluating the health of employees exposed to acrylonitrile.

(b) Most reported acute effects of occupational exposure to acrylonitrile are due to its ability to cause tissue anoxia and asphyxia. The effects are similar to those caused by hydrogen cyanide. Liquid acrylonitrile can be absorbed through the skin upon prolonged contact. The liquid readily penetrates leather, and will produce burns of the feet if footwear contaminated with acrylonitrile is not removed.

(c) It is important for the physician to become familiar with the operating conditions in which exposure to acrylonitrile may occur. Those employees with skin diseases may not tolerate the wearing of whatever protective clothing may be necessary to protect them from exposure. In addition, those with chronic respiratory disease may not tolerate the wearing of negative-pressure respirators.

(d) Surveillance and screening. Medical histories and laboratory examinations are required for each employee subject to exposure to acrylonitrile above the action level. The employer must screen employees for history of certain medical conditions which might place the employee at increased risk from exposure.

(i) Central nervous system dysfunction. Acute effects of exposure to acrylonitrile generally involve the central nervous system. Symptoms of acrylonitrile exposure include headache, nausea, dizziness, and general weakness. The animal studies cited above suggest possible carcinogenic effects of acrylonitrile on the central nervous system, since rats exposed by either inhalation or ingestion have developed similar CNS tumors.

(ii) Respiratory disease. The duPont data indicate an increased risk of lung cancer among employees exposed to acrylonitrile.

(iii) Gastrointestinal disease. The duPont data indicate an increased risk of cancer of the colon among employees exposed to acrylonitrile. In addition, the animal studies show possible tumor production in the stomachs of the rats in the ingestion study.

(iv) Skin disease. Acrylonitrile can cause skin burns when prolonged skin contact with the liquid occurs. In addition, repeated skin contact with the liquid can cause dermatitis.

(e) General. The purpose of the medical procedures outlined in the standard is to establish a baseline for future health monitoring. Persons unusually susceptible to the effects of anoxia or those with anemia would be expected to be at increased risk. In addition to emphasis on the CNS, respiratory and gastro-intestinal systems, the cardiovascular system, liver, and kidney function should also be stressed.

[Statutory Authority: Chapter 49.17 RCW. 88-11-021 (Order 88-04), § 296-62-07339, filed 5/11/88.]

WAC 296-62-07340 Appendix D—Sampling and analytical methods for acrylonitrile. (1) There are many methods available for monitoring employee exposures to acrylonitrile. Most of these involve the use of charcoal tubes and sampling pumps, with analysis by gas chromatograph. The essential differences between the charcoal tube methods include, among others, the use of different desorbing solvents, the use of different lots of charcoal, and the use of different equipment for analysis of the samples.

(2) Besides charcoal, considerable work has been performed on methods using porous polymer sampling tubes and passive dosimeters. In addition, there are several portable gas analyzers and monitoring units available on the open market.

(3) This appendix contains details for the methods which have been tested at OSHA Analytical Laboratory in Salt Lake City, and NIOSH in Cincinnati. Each is a variation on NIOSH Method S-156, which is also included for reference. This does not indicate that these methods are the only ones which will be satisfactory. There also may be workplace situations in which these methods are not adequate, due to such factors as high humidity. Copies of the other methods available to OSHA are available in the rulemaking record, and may be obtained from the OSHA docket office. These include, the Union Carbide, Monsanto, Dow Chemical and Dow Badische methods, as well as NIOSH Method P & CAM 127.

(4) Employers who note problems with sample breakthrough should try larger charcoal tubes. Tubes of larger capacity are available, and are often used for sampling vinyl chloride. In addition, lower flow rates and shorter sampling times should be beneficial in minimizing breakthrough problems.

(5) Whatever method the employer chooses, he must assure himself of the method's accuracy and precision under the unique conditions present in his workplace.

(6) NIOSH Method S-156 (unmodified)

Analyte: Acrylonitrile.

Matrix: Air.

Procedure: Absorption on charcoal, desorption with methanol, GC.

(a) Principle of the method. Reference (k)(i) of this subsection.

(i) A known volume of air is drawn through a charcoal tube to trap the organic vapors present.

(ii) The charcoal in the tube is transferred to a small, stoppered sample container, and the analyte is desorbed with methanol.

(iii) An aliquot of the desorbed sample is injected into a gas chromatograph.

(iv) The area of the resulting peak is determined and compared with areas obtained for standards.

(b) Range and sensitivity.

(i) This method was validated over the range of 17.5-70.0 mg/cu m at an atmospheric temperature and pressure of 22°C and 760 mm Hg, using a twenty-liter sample. Under the conditions of sample size (20 liters) the probable useful range of this method is 4.5-135 mg/cu m. The method is capable of measuring much smaller amounts if the desorption efficiency

is adequate. Desorption efficiency must be determined over the range used.

(ii) The upper limit of the range of the method is dependent on the adsorptive capacity of the charcoal tube. This capacity varies with the concentrations of acrylonitrile and other substances in the air. The first section of the charcoal tube was found to hold at least 3.97 mg of acrylonitrile when a test atmosphere containing 92.0 mg/cu m of acrylonitrile in air was sampled 0.18 liter per minute for 240 minutes; at that time the concentration of acrylonitrile in the effluent was less than 5 percent of that in the influent. (The charcoal tube consists of two sections of activated charcoal separated by a section of urethane foam. See (f)(ii) of this subsection. If a particular atmosphere is suspected of containing a large amount of contaminant, a smaller sampling volume should be taken.

(c) Interference.

(i) When the amount of water in the air is so great that condensation actually occurs in the tube, organic vapors will not be trapped efficiently. Preliminary experiments using toluene indicate that high humidity severely decreases the breakthrough volume.

(ii) When interfering compounds are known or suspected to be present in the air, such information, including their suspected identities, should be transmitted with the sample.

(iii) It must be emphasized that any compound which has the same retention time as the analyte at the operating conditions described in this method is an interference. Retention time data on a single column cannot be considered proof of chemical identity.

(iv) If the possibility of interference exists, separation conditions (column packing, temperature, etc.) must be changed to circumvent the problem.

(d) Precision and accuracy.

(i) The coefficient of variation (CV_t) for the total analytical and sampling method in the range of 17.5-70.0 mg/cu m was 0.073. This value corresponds to a 3.3 mg/cu m standard deviation at the (previous) OSHA standard level (20 ppm). Statistical information and details of the validation and experimental test procedures can be found in (k)(ii) of this subsection.

(ii) On the average the concentrations obtained at the 20 ppm level using the overall sampling and analytical method were 6.0 percent lower than the "true" concentrations for a limited number of laboratory experiments. Any difference between the "found" and "true" concentrations may not represent a bias in the sampling and analytical method, but rather a random variation from the experimentally determined "true" concentration. Therefore, no recovery correction should be applied to the final result in (j)(v) of this subsection.

(e) Advantages and disadvantages of the method.

(i) The sampling device is small, portable, and involves no liquids. Interferences are minimal, and most of those which do occur can be eliminated by altering chromatographic conditions. The tubes are analyzed by means of a quick, instrumental method.

(ii) The method can also be used for the simultaneous analysis of two or more substances suspected to be present in the same sample by simply changing gas chromatographic conditions.

(iii) One disadvantage of the method is that the amount of sample which can be taken is limited by the number of milligrams that the tube will hold before overloading. When the sample value obtained for the backup section of the charcoal tube exceeds 25 percent of that found on the front section, the possibility of sample loss exists.

(iv) Furthermore, the precision of the method is limited by the reproducibility of the pressure drop across the tubes. This drop will affect the flow rate and cause the volume to be imprecise, because the pump is usually calibrated for one tube only.

(f) Apparatus.

(i) A calibrated personal sampling pump whose flow can be determined within ± 5 percent at the recommended flow rate. Reference (k)(iii) of this subsection.

(ii) Charcoal tubes: Glass tubes with both ends flame sealed, 7 cm long with a 6 mm O.D. and a 4 mm I.D., containing 2 sections of 20/40 mesh activated charcoal separated by a 2 mm portion of urethane foam. The activated charcoal is prepared from coconut shells and is fired at 600°C prior to packing. The adsorbing section contains 100 mg of charcoal, the backup section 50 mg. A 3 mm portion of urethane foam is placed between the outlet end of the tube and the backup section. A plug of silicated glass wool is placed in front of the adsorbing section. The pressure drop across the tube must be less than 1 inch of mercury at a flow rate of 1 liter per minute.

(iii) Gas chromatograph equipped with a flame ionization detector.

(iv) Column (4 ft \times 1/4 in stainless steel) packed with 50/80 mesh Poropak, type Q.

(v) An electronic integrator or some other suitable method for measuring peak areas.

(vi) Two-milliliter sample containers with glass stoppers or Teflon-lined caps. If an automatic sample injector is used, the associated vials may be used.

(vii) Microliter syringes: Ten-microliter and other convenient sizes for making standards.

(viii) Pipets: 1.0 ml delivery pipets.

(ix) Volumetric flask: 10 ml or convenient sizes for making standard solutions.

(g) Reagents.

(i) Chromatographic quality methanol.

(ii) Acrylonitrile, reagent grade.

(iii) Hexane, reagent grade.

(iv) Purified nitrogen.

(v) Prepurified hydrogen.

(vi) Filtered compressed air.

(h) Procedure.

(i) Cleaning of equipment. All glassware used for the laboratory analysis should be detergent washed and thoroughly rinsed with tap water and distilled water.

(ii) Calibration of personal pumps. Each personal pump must be calibrated with a representative charcoal tube in the line. This will minimize errors associated with uncertainties in the sample volume collected.

(iii) Collection and shipping of samples.

(A) Immediately before sampling, break the ends of the tube to provide an opening at least one-half the internal diameter of the tube (2mm).

(B) The smaller section of charcoal is used as a backup and should be positioned nearest the sampling pump.

(C) The charcoal tube should be placed in a vertical direction during sampling to minimize channeling through the charcoal.

(D) Air being sampled should not be passed through any hose or tubing before entering the charcoal tube.

(E) A maximum sample size of 20 liters is recommended. Sample at a flow of 0.20 liter per minute or less. The flow rate should be known with an accuracy of at least ± 5 percent.

(F) The temperature and pressure of the atmosphere being sampled should be recorded. If pressure reading is not available, record the elevation.

(G) The charcoal tubes should be capped with the supplied plastic caps immediately after sampling. Under no circumstances should rubber caps be used.

(H) With each batch of ten samples submit one tube from the same lot of tubes which was used for sample collection and which is subjected to exactly the same handling as the samples except that no air is drawn through it. Label this as a blank.

(I) Capped tubes should be packed tightly and padded before they are shipped to minimize tube breakage during shipping.

(J) A sample of the bulk material should be submitted to the laboratory in a glass container with a Teflon-lined cap. This sample should not be transported in the same container as the charcoal tubes.

(iv) Analysis of samples.

(A) Preparation of samples. In preparation for analysis, each charcoal tube is scored with a file in front of the first section of charcoal and broken open. The glass wool is removed and discarded. The charcoal in the first (larger) section is transferred to a 2 ml stoppered sample container. The separating section of foam is removed and discarded; the second section is transferred to another stoppered container. These two sections are analyzed separately.

(B) Desorption of samples. Prior to analysis, 1.0 ml of methanol is pipetted into each sample container. Desorption should be done for 30 minutes. Tests indicate that this is adequate if the sample is agitated occasionally during this period. If an automatic sample injector is used, the sample vials should be capped as soon as the solvent is added to minimize volatilization.

(C) GC conditions. The typical operating conditions for the gas chromatograph are:

(I) 50 ml/min (60 psig) nitrogen carrier gas flow.

(II) 65 ml/min (24 psig) hydrogen gas flow to detector.

(III) 500 ml/min (50 psig) air flow to detector.

(IV) 235°C injector temperature.

(V) 255°C manifold temperature (detector).

(VI) 155°C column temperature.

(D) Injection. The first step in the analysis is the injection of the sample into the gas chromatograph. To eliminate difficulties arising from blowback or distillation within the syringe needle, one should employ the solvent flush injection technique. The 10-microliter syringe is first flushed with solvent several times to wet the barrel and plunger. Three microliters of solvent are drawn into the syringe to increase the

accuracy and reproducibility of the injected sample volume. The needle is removed from the solvent, and the plunger is pulled back about 0.2 microliter to separate the solvent flush from the sample with a pocket of air to be used as a marker. The needle is then immersed in the sample, and a five microliter aliquot is withdrawn, taking into consideration the volume of the needle, since the sample in the needle will be completely injected. After the needle is removed from the sample and prior to injection, the plunger is pulled back 1.2 microliters to minimize evaporation of the sample from the tip of the needle. Observe that the sample occupies 4.9-5.0 microliters in the barrel of the syringe. Duplicate injections of each sample and standard should be made. No more than a 3 percent difference in area is to be expected. An automatic sample injector can be used if it is shown to give reproducibility at least as good as the solvent flush method.

(E) Measurement of area. The area of the sample peak is measured by an electronic integrator or some other suitable form of area measurement, and preliminary results are read from a standard curve prepared as discussed below.

(v) Determination of desorption efficiency.

(A) Importance of determination. The desorption efficiency of a particular compound can vary from one laboratory to another and also from one batch of charcoal to another. Thus, it is necessary to determine at least once the percentage of the specific compound that is removed in the desorption process, provided the same batch of charcoal is used.

(B) Procedure for determining desorption efficiency.

(I) Activated charcoal equivalent to the amount in the first section of the sampling tube (100 mg) is measured into a 2.5 in., 4 mm I.D. glass tube, flame sealed at one end. This charcoal must be from the same batch as that used in obtaining the samples and can be obtained from unused charcoal tubes. The open end is capped with Parafilm. A known amount of hexane solution of acrylonitrile containing 0.239 g/ml is injected directly into the activated charcoal with a microliter syringe, and tube is capped with more Parafilm. When using an automatic sample injector, the sample injector vials, capped with Teflon-faced septa, may be used in place of the glass tube.

(II) The amount injected is equivalent to that present in a twenty-liter air sample at the selected level.

(III) Six tubes at each of three levels (0.5X, 1X, and 2X of the standard) are prepared in this manner and allowed to stand for at least overnight to assure complete adsorption of the analyte onto the charcoal. These tubes are referred to as the sample. A parallel blank tube should be treated in the same manner except that no sample is added to it. The sample and blank tubes are desorbed and analyzed in exactly the same manner as the sampling tube described in (h)(iv) of this subsection

(IV) Two or three standards are prepared by injecting the same volume of compound into 1.0 ml of methanol with the same syringe used in the preparation of the samples. These are analyzed with the samples.

(V) The desorption efficiency (D.E.) equals the average weight in mg recovered from the tube divided by the weight in mg added to the tube, or

$$D.E. = \frac{\text{Average weight recovered (mg)}}{\text{weight added (mg)}}$$

(VI) The desorption efficiency is dependent on the amount of analyte collected on the charcoal. Plot the desorption efficiency versus weight of analyte found. This curve is used in (j)(iv) of this subsection to correct for adsorption losses.

(i) Calibration and standards. It is convenient to express concentration of standards in terms of mg/1.0 ml methanol, because samples are desorbed in this amount of methanol. The density of the analyte is used to convert mg into microliters for easy measurement with a microliter syringe. A series of standards, varying in concentration over the range of interest, is prepared and analyzed under the same GC conditions and during the same time period as the unknown samples. Curves are established by plotting concentration in mg/1.0 ml versus peak area.

Note: Since no internal standard is used in the method, standard solutions must be analyzed at the same time that the sample analysis is done. This will minimize the effect of known day-to-day variations and variations during the same day of the FID response.

(j) Calculations.

(i) Read the weight, in mg, corresponding to each peak area from the standard curve. No volume corrections are needed, because the standard curve is based on mg/1.0 ml methanol and the volume of sample injected is identical to the volume of the standards injected.

(ii) Corrections for the blank must be made for each sample.

$$\text{mg} = \text{mg sample} - \text{mg blank}$$

Where:

mg sample = mg found in front section of sample tube.

mg sample = mg found in front section of blank tube.

Note: A similar procedure is followed for the backup sections.

(iii) Add the weights found in the front and backup sections to get the total weight in the sample.

(iv) Read the desorption efficiency from the curve (reference (h)(v)(B) of this subsection) for the amount found in the front section. Divide the total weight by this desorption efficiency to obtain the corrected mg/sample.

$$\text{Corrected mg/sample} = \frac{\text{Total weight}}{D.E.}$$

(v) The concentration of the analyte in the air sampled can be expressed in mg/cu m.

$$\text{mg/cu m} = \text{Corrected mg (see (j)(iv))} \times \frac{1,000 \text{ (liter/cu m)}}{\text{air volume sampled (liter)}}$$

(vi) Another method of expressing concentration is ppm.

$$\text{ppm} = \text{mg/cu m} \times 24.45/M.W. \times 760/P \times T + 273/298$$

Where:

P = Pressure (mm Hg) of air sampled.

T = Temperature (°C) of air sampled.

24.45 = Molar volume (liter/mole) at 25°C and 760 mm Hg.

M.W. = Molecular weight (g/mole) of analyte.

760 = Standard pressure (mm Hg).

298 = Standard temperature (°K).

(k) References.

(i) White, L. D. et al., "A Convenient Optimized Method for the Analysis of Selected Solvent Vapors in the Industrial Atmosphere," Amer. Ind. Hyg. Assoc. J., 31:225 (1970).

(ii) Documentation of NIOSH Validation Tests, NIOSH Contract No. CDC-99-74-45.

(iii) Final Report, NIOSH Contract HSM-99-71-31, "Personal Sampler Pump for Charcoal Tubes," September 15, 1972.

(7) NIOSH Modification of NIOSH Method S-156. The NIOSH recommended method for low levels for acrylonitrile is a modification of method S-156. It differs in the following respects:

(a) Samples are desorbed using 1 ml of 1 percent acetone in CS₂ rather than methanol.

(b) The analytical column and conditions are:

(i) Column: 20 percent SP-1000 on 80/100 Supelcoport 10 feet × 1/8 inch S.S.

(ii) Conditions:

Injector temperature: 200°C.

Detector temperature: 100°C.

Column temperature: 85°C.

Helium flow: 25 ml/min.

Air flow: 450 ml/min.

Hydrogen flow: 55 ml/min.

(c) A 2 µl injection of the desorbed analyte is used.

(d) A sampling rate of 100 ml/min is recommended.

(8) OSHA Laboratory Modification of NIOSH Method S-156.

(a) Analyte: Acrylonitrile.

(b) Matrix: Air.

(c) Procedure: Adsorption on charcoal, desorption with methanol, GC.

(d) Principle of the method (subsection (1)(a) of this section).

(i) A known volume of air is drawn through a charcoal tube to trap the organic vapors present.

(ii) The charcoal in the tube is transferred to a small, stoppered sample vial, and the analyte is desorbed with methanol.

(iii) An aliquot of the desorbed sample is injected into a gas chromatograph.

(iv) The area of the resulting peak is determined and compared with areas obtained for standards.

(e) Advantages and disadvantages of the method.

(i) The sampling device is small, portable, and involves no liquids. Interferences are minimal, and most of those which do occur can be eliminated by altering chromatographic conditions. The tubes are analyzed by means of a quick, instrumental method.

(ii) This method may not be adequate for the simultaneous analysis of two or more substances.

(iii) The amount of sample which can be taken is limited by the number of milligrams that the tube will hold before

overloading. When the sample value obtained for the backup section of the charcoal tube exceeds 25 percent of that found on the front section, the possibility of sample loss exists.

(iv) The precision of the method is limited by the reproducibility of the pressure drop across the tubes. This drop will affect the flow rate and cause the volume to be imprecise, because the pump is usually calibrated for one tube only.

(f) Apparatus.

(i) A calibrated personal sampling pump whose flow can be determined within ±5 percent at the recommended flow rate.

(ii) Charcoal tubes: Glass tube with both ends flame sealed, 7 cm long with a 6 mm O.D. and a 4 mm I.D., containing 2 sections of 20/40 mesh activated charcoal separated by a 2 mm portion of urethane foam. The activated charcoal is prepared from coconut shells and is fired at 600°C prior to packing. The absorbing section contains 100 mg of charcoal, the back-up section 50 mg. A 3 mm portion of urethane foam is placed between the outlet end of the tube and the back-up section. A plug of silicated glass wool is placed in front of the adsorbing section. The pressure drop across the tube must be less than one inch of mercury at a flow rate of 1 liter per minute.

(iii) Gas chromatograph equipped with a nitrogen phosphorus detector.

(iv) Column (10 ft × 1/8 in stainless steel) packed with 100/120 Supelcoport coated with 10 percent SP 1000.

(v) An electronic integrator or some other suitable method for measuring peak area.

(vi) Two-milliliter sample vials with Teflon-lined caps.

(vii) Microliter syringes: 10 microliter, and other convenient sizes for making standards.

(viii) Pipets: 1.0 ml delivery pipets.

(ix) Volumetric flasks: Convenient sizes for making standard solutions.

(g) Reagents.

(i) Chromatographic quality methanol.

(ii) Acrylonitrile, reagent grade.

(iii) Filtered compressed air.

(iv) Purified hydrogen.

(v) Purified helium.

(h) Procedure.

(i) Cleaning of equipment. All glassware used for the laboratory analysis should be properly cleaned and free of organics which could interfere in the analysis.

(ii) Calibration of personal pumps. Each pump must be calibrated with a representative charcoal tube in the line.

(iii) Collection and shipping of samples.

(A) Immediately before sampling, break the ends of the tube to provide an opening at least one-half the internal diameter of the tube (2 mm).

(B) The smaller section of the charcoal is used as the backup and should be placed nearest the sampling pump.

(C) The charcoal should be placed in a vertical position during sampling to minimize channeling through the charcoal.

(D) Air being sampled should not be passed through any hose or tubing before entering the charcoal tube.

(E) A sample size of 20 liters is recommended. Sample at a flow rate of approximately 0.2 liters per minute. The flow rate should be known with an accuracy of at least ± 5 percent.

(F) The temperature and pressure of the atmosphere being sampled should be recorded.

(G) The charcoal tubes should be capped with the supplied plastic caps immediately after sampling. Rubber caps should not be used.

(H) Submit at least one blank tube (a charcoal tube subjected to the same handling procedures, without having any air drawn through it) with each set of samples.

(I) Take necessary shipping and packing precautions to minimize breakage of samples.

(iv) Analysis of samples.

(A) Preparation of samples. In preparation for analysis, each charcoal tube is scored with a file in front of the first section of charcoal and broken open. The glass wool is removed and discarded. The charcoal in the first (larger) section is transferred to a 2 ml vial. The separating section of foam is removed and discarded; the section is transferred to another capped vial. These two sections are analyzed separately.

(B) Desorption of samples. Prior to analysis, 1.0 ml of methanol is pipetted into each sample container. Desorption should be done for 30 minutes in an ultrasonic bath. The sample vials are recapped as soon as the solvent is added.

(C) GC conditions. The typical operating conditions for the gas chromatograph are:

(I) 30 ml/min (60 psig) helium carrier gas flow.

(II) 3.0 ml/min (30 psig) hydrogen gas flow to detector.

(III) 50 ml/min (60 psig) air flow to detector.

(IV) 200°C injector temperature.

(V) 200°C detector temperature.

(VI) 100°C column temperature.

(D) Injection. Solvent flush technique or equivalent.

(E) Measurement of area. The area of the sample peak is measured by an electronic integrator or some other suitable form of area measurement, and preliminary results are read from a standard curve prepared as discussed below.

(v) Determination of desorption efficiency.

(A) Importance of determination. The desorption efficiency of a particular compound can vary from one laboratory to another and also from one batch of charcoal to another. Thus, it is necessary to determine, at least once, the percentage of the specific compound that is removed in the desorption process, provided the same batch of charcoal is used.

(B) Procedure for determining desorption efficiency. The reference portion of the charcoal tube is removed. To the remaining portion, amounts representing 0.5X, 1X, and 2X (X represents TLV) based on a 20 l air sample are injected onto several tubes at each level. Dilutions of acrylonitrile with methanol are made to allow injection of measurable quantities. These tubes are then allowed to equilibrate at least overnight. Following equilibration they are analyzed following the same procedure as the samples. A curve of the desorption efficiency (amt recovered/amt added) is plotted versus amount of analyte found. This curve is used to correct for adsorption losses.

(2007 Ed.)

(i) Calibration and standards. A series of standards, varying in concentration over the range of interest, is prepared and analyzed under the same GC conditions and during the same time period as the unknown samples. Curves are prepared by plotting concentration versus peak area.

Note: Since no internal standard is used in the method, standard solutions must be analyzed at the same time that the sample analysis is done. This will minimize the effect of known day-to-day variations and variations during the same day of the NPD response. Multiple injections are necessary.

(j) Calculations. Read the weight, corresponding to each peak area from the standard curve, correct for the blank, correct for the desorption efficiency, and make necessary air volume corrections.

(k) Reference. NIOSH Method S-156.

[Statutory Authority: Chapter 49.17 RCW. 88-11-021 (Order 88-04), § 296-62-07340, filed 5/11/88.]

WAC 296-62-07342 1,2-Dibromo-3-chloropropane.

(1) Scope and application.

(a) This section applies to occupational exposure to 1,2-dibromo-3-chloropropane (DBCP).

(b) This section does not apply to:

(i) Exposure to DBCP which results solely from the application and use of DBCP as a pesticide; or

(ii) The storage, transportation, distribution or sale of DBCP in intact containers sealed in such a manner as to prevent exposure to DBCP vapors or liquids, except for the requirements of subsections (11), (16) and (17) of this section.

(2) Definitions applicable to this section:

(a) "Authorized person" - any person specifically authorized by the employer and whose duties require the person to be present in areas where DBCP is present; and any person entering this area as a designated representative of employees exercising an opportunity to observe employee exposure monitoring.

(b) "DBCP" - 1,2-dibromo-3-chloropropane, Chemical Abstracts Service Registry Number 96-12-8, and includes all forms of DBCP.

(c) "Director" - the director of labor and industries, or his authorized representative.

(d) "Emergency" - any occurrence such as, but not limited to equipment failure, rupture of containers, or failure of control equipment which may, or does, result in unexpected release of DBCP.

(3) Permissible exposure limits.

(a) Inhalation.

(i) Time-weighted average limit (TWA). The employer shall assure that no employee is exposed to an airborne concentration in excess of 1 part DBCP per billion part of air (ppb) as an eight-hour time-weighted average.

(ii) Ceiling limit. The employer shall assure that no employee is exposed to an airborne concentration in excess of 5 parts DBCP per billion parts of air (ppb) as averaged over any 15 minutes during the working day.

(b) Dermal and eye exposure. The employer shall assure that no employee is exposed to eye or skin contact with DBCP.

(4) Notification of use. Within ten days of the effective date of this section or within ten days following the introduc-

tion of DBCP into the workplace, every employer who has a workplace where DBCP is present shall report the following information to the director for each such workplace:

(a) The address and location of each workplace in which DBCP is present;

(b) A brief description of each process or operation which may result in employee exposure to DBCP;

(c) The number of employees engaged in each process or operation who may be exposed to DBCP and an estimate of the frequency and degree of exposure that occurs;

(d) A brief description of the employer's safety and health program as it relates to limitation of employee exposure to DBCP.

(5) Regulated areas. The employer shall establish, within each place of employment, regulated areas wherever DBCP concentrations are in excess of the permissible exposure limit.

(a) The employer shall limit access to regulated areas to authorized persons.

(b) All employees entering or working in a regulated area shall wear respiratory protection in accordance with Table I.

(6) Exposure monitoring.

(a) General. Determinations of airborne exposure levels shall be made from air samples that are representative of each employee's exposure to DBCP over an eight-hour period. (For the purposes of this section, employee exposure is that exposure which would occur if the employee were not using a respirator.)

(b) Initial. Each employer who has a place of employment in which DBCP is present shall monitor each workplace and work operation to accurately determine the airborne concentrations of DBCP to which employees may be exposed.

(c) Frequency.

(i) If the monitoring required by this section reveals employee exposures to be below the permissible exposure limits, the employer shall repeat these determinations at least quarterly.

(ii) If the monitoring required by this section reveals employee exposure to be in excess of the permissible exposure limits, the employer shall repeat these determinations for each such employee at least monthly. The employer shall continue these monthly determinations until at least two consecutive measurements, taken at least seven days apart, are below the permissible exposure limit, thereafter the employer shall monitor at least quarterly.

(d) Additional. Whenever there has been a production process, control or personnel change which may result in any new or additional exposure to DBCP, or whenever the employer has any other reason to suspect a change which may result in new or additional exposure to DBCP, additional monitoring which complies with subsection (6) shall be conducted.

(e) Employee notification.

(i) Within five working days after the receipt of monitoring results, the employer shall notify each employee in writing of results which represent the employee's exposure.

(ii) Whenever the results indicate that employee exposure exceeds the permissible exposure limit, the employer shall include in the written notice a statement that the permissible exposure limit was exceeded and a description of the

corrective action being taken to reduce exposure to or below the permissible exposure limits.

(f) Accuracy of measurement. The method of measurement shall be accurate, to a confidence level of 95 percent, to within plus or minus 25 percent for concentrations of DBCP at or above the permissible exposure limits.

(7) Methods of compliance.

(a) Priority of compliance methods. The employer shall institute engineering and work practice controls to reduce and maintain employee exposures to DBCP at or below the permissible exposure limit, except to the extent that the employer establishes that such controls are not feasible. Where feasible engineering and work practice controls are not sufficient to reduce employee exposures to within the permissible exposure limit, the employer shall nonetheless use them to reduce exposures to the lowest level achievable by these controls, and shall supplement them by use of respiratory protection.

(b) Compliance program.

(i) The employer shall establish and implement a written program to reduce employee exposure to DBCP to or below the permissible exposure limit solely by means of engineering and work practice controls as required by this section.

(ii) The written program shall include a detailed schedule for development and implementation of the engineering and work practice controls. These plans shall be revised at least every six months to reflect the current status of the program.

(iii) Written plans for these compliance programs shall be submitted upon request to the director, and shall be available at the worksite for examination and copying by the director, and any affected employee or designated representative of employees.

(iv) The employer shall institute and maintain at least the controls described in his most recent written compliance program.

(8) Respiratory protection.

(a) General. For employees who are required to use respirators under this section, the employer must provide respirators that comply with the requirements of this subsection. Respirators must be used during:

(i) Period necessary to install or implement feasible engineering and work-practice controls;

(ii) Maintenance and repair activities for which engineering and work-practice controls are not feasible;

(iii) Work operations for which feasible engineering and work-practice controls are not yet sufficient to reduce employee exposure to or below the permissible exposure limit;

(iv) Emergencies.

(b) The employer must establish, implement, and maintain a respiratory protection program as required by chapter 296-842 WAC, except WAC 296-842-13005 and 296-842-14005.

(c) Respirator selection. The employer must select the appropriate respirator from Table I of this subsection.

TABLE I

RESPIRATORY PROTECTION FOR DBCP

Concentration Not Greater Than	Respirator Type	
(a) 10 ppb:	(i)	Any supplied-air respirator.
	(ii)	Any self-contained breathing apparatus.
(b) 50 ppb:	(i)	Any supplied-air respirator with full facepiece, helmet or hood.
	(ii)	Any self-contained breathing apparatus with full facepiece.
(c) 250 ppb:	(i)	A Type C supplied-air respirator operated in pressure-demand or other positive pressure or continuous flow mode.
(d) 500 ppb:	(i)	A Type C supplied-air respirator with full facepiece operated in pressure-demand mode with full facepiece.
(e) Greater than 500 ppb or entry into unknown concentrations:	(i)	A combination respirator which includes a Type C supplied-air respirator with full facepiece operated in pressure-demand mode and an auxiliary self-contained breathing apparatus.
	(ii)	A self-contained breathing apparatus with full facepiece operated in pressure-demand mode.
(f) Fire fighting:	(i)	A self-contained breathing apparatus with full facepiece operated in pressure-demand mode.

(9) Reserved.

(10) Emergency situations.

(a) Written plans.

(i) A written plan for emergency situations shall be developed for each workplace in which DBCP is present.

(ii) Appropriate portions of the plan shall be implemented in the event of an emergency.

(b) Employees engaged in correcting conditions shall be equipped as required in subsection (11) of this section until the emergency is abated.

(c) Evacuation. Employees not engaged in correcting the emergency shall be removed and restricted from the area and normal operations in the affected area shall not be resumed until the emergency is abated.

(d) Alerting employees. Where there is a possibility of employee exposure to DBCP due to the occurrence of an emergency, a general alarm shall be installed and maintained to promptly alert employees of such occurrences.

(e) Medical surveillance. For any employee exposed to DBCP in an emergency situation, the employer shall provide

medical surveillance in accordance with subsection (14) of this section.

(f) Exposure monitoring.

(i) Following an emergency, the employer shall conduct monitoring which complies with subsection (6) of this section.

(ii) In workplaces not normally subject to periodic monitoring, the employer may terminate monitoring when two consecutive measurements indicate exposures below the permissible exposure limit.

(11) Protective clothing and equipment.

(a) Provision and use. Where eye or skin contact with liquid or solid DBCP may occur, employers shall provide at no cost to the employee, and assure that employees wear impermeable protective clothing and equipment in accordance with WAC 296-800-160 to protect the area of the body which may come in contact with DBCP.

(b) Cleaning and replacement.

(i) The employer shall clean, launder, maintain, or replace protective clothing and equipment required by this subsection to maintain their effectiveness. In addition, the employer shall provide clean protective clothing and equipment at least daily to each affected employee.

(ii) Removal and storage.

(A) The employer shall assure that employees remove DBCP contaminated work clothing only in change rooms provided in accordance with subsection (13) of this section.

(B) The employer shall assure that employees promptly remove any protective clothing and equipment which becomes contaminated with DBCP-containing liquids and solids. This clothing shall not be reworn until the DBCP has been removed from the clothing or equipment.

(C) The employer shall assure that no employee takes DBCP contaminated protective devices and work clothing out of the change room, except those employees authorized to do so for the purpose of laundering, maintenance, or disposal.

(iii) The employer shall assure that DBCP-contaminated protective work clothing and equipment is placed and stored in closed containers which prevent dispersion of DBCP outside the container.

(iv) The employer shall inform any person who launders or cleans DBCP-contaminated protective clothing or equipment of the potentially harmful effects of exposure to DBCP.

(v) The employer shall assure that the containers of contaminated protective clothing and equipment which are to be removed from the workplace for any reason are labeled in accordance with subsection (16)(c) of this section.

(vi) The employer shall prohibit the removal of DBCP from protective clothing and equipment by blowing or shaking.

(12) Housekeeping.

(a) Surfaces.

(i) All surfaces shall be maintained free of accumulations of DBCP.

(ii) Dry sweeping and the use of air for the cleaning of floors and other surfaces where DBCP dust or liquids are found is prohibited.

(iii) Where vacuuming methods are selected, either portable units or a permanent system may be used.

(A) If a portable unit is selected, the exhaust shall be attached to the general workplace exhaust ventilation system

or collected within the vacuum unit, equipped with high efficiency filters or other appropriate means of contaminant removal, so that DBCP is not reintroduced into the workplace air; and

(B) Portable vacuum units used to collect DBCP may not be used for other cleaning purposes and shall be labeled as prescribed by subsection (16)(c) of this section.

(iv) Cleaning of floors and other contaminated surfaces may not be performed by washing down with a hose, unless a fine spray has first been laid down.

(b) Liquids. Where DBCP is present in a liquid form, or as a resultant vapor, all containers or vessels containing DBCP shall be enclosed to the maximum extent feasible and tightly covered when not in use.

(c) Waste disposal. DBCP waste, scrap, debris, bags, containers or equipment, shall be disposed in sealed bags or other closed containers which prevent dispersion of DBCP outside the container.

(13) Hygiene facilities and practices.

(a) Change rooms. The employer shall provide clean change rooms equipped with storage facilities for street clothes and separate storage facilities for protective clothing and equipment whenever employees are required to wear protective clothing and equipment in accordance with subsections (8), (9) and (11) of this section.

(b) Showers.

(i) The employer shall assure that employees working in the regulated area shower at the end of the work shift.

(ii) The employer shall assure that employees whose skin becomes contaminated with DBCP-containing liquids or solids immediately wash or shower to remove any DBCP from the skin.

(iii) The employer shall provide shower facilities in accordance with WAC 296-800-230.

(c) Lunchrooms. The employer shall provide lunchroom facilities which have a temperature controlled, positive pressure, filtered air supply, and which are readily accessible to employees working in regulated areas.

(d) Lavatories.

(i) The employer shall assure that employees working in the regulated area remove protective clothing and wash their hands and face prior to eating.

(ii) The employer shall provide a sufficient number of lavatory facilities which comply with WAC 296-800-230.

(e) Prohibition of activities in regulated areas. The employer shall assure that, in regulated areas, food or beverages are not present or consumed, smoking products and implements are not present or used, and cosmetics are not present or applied.

(14) Medical surveillance.

(a) General. The employer shall institute a program of medical surveillance for each employee who is or will be exposed, without regard to the use of respirators, to DBCP. The employer shall provide each such employee with an opportunity for medical examinations and tests in accordance with this subsection. All medical examinations and procedures shall be performed by or under the supervision of a licensed physician, and shall be provided without cost to the employee.

(b) Frequency and content. At the time of initial assignment, annually thereafter, and whenever exposure to DBCP

occurs, the employer shall provide a medical examination for employees who work in regulated areas, which includes at least the following:

(i) A complete medical and occupational history with emphasis on reproductive history.

(ii) A complete physical examination with emphasis on the genito-urinary tract, testicle size, and body habitus including the following tests:

(A) Sperm count;

(B) Complete urinalysis (U/A);

(C) Complete blood count; and

(D) Thyroid profile.

(iii) A serum specimen shall be obtained and the following determinations made by radioimmunoassay techniques utilizing National Institutes of Health (NIH) specific antigen or one of equivalent sensitivity:

(A) Serum multiphasic analysis (SMA 12);

(B) Serum follicle stimulating hormone (FSH);

(C) Serum luteinizing hormone (LH); and

(D) Serum estrogen (females).

(iv) Any other tests deemed appropriate by the examining physician.

(c) Additional examinations. If the employee for any reason develops signs or symptoms commonly associated with exposure to DBCP, the employer shall provide the employee with a medical examination which shall include those elements considered appropriate by the examining physician.

(d) Information provided to the physician. The employer shall provide the following information to the examining physician:

(i) A copy of this standard and its appendices;

(ii) A description of the affected employee's duties as they relate to the employee's exposure;

(iii) The level of DBCP to which the employee is exposed; and

(iv) A description of any personal protective equipment used or to be used.

(e) Physician's written opinion.

(i) For each examination under this section, the employer shall obtain and provide the employee with a written opinion from the examining physician which shall include:

(A) The results of the medical tests performed;

(B) The physician's opinion as to whether the employee has any detected medical condition which would place the employee at an increased risk of material impairment of health from exposure to DBCP;

(C) Any recommended limitations upon the employee's exposure to DBCP or upon the use of protective clothing and equipment such as respirators; and

(D) A statement that the employee was informed by the physician of the results of the medical examination, and any medical conditions which require further examination or treatment.

(ii) The employer shall instruct the physician not to reveal in the written opinion specific findings or diagnoses unrelated to occupational exposure to DBCP.

(iii) The employer shall provide a copy of the written opinion to the affected employee.

(f) Emergency situations. If the employee is exposed to DBCP in an emergency situation, the employer shall provide the employee with a sperm count test as soon as practicable,

or, if the employee is unable to produce a semen specimen, the hormone tests contained in subsection (14)(b) of this section. The employer shall provide these same tests three months later.

(15) Employee information and training.

(a) Training program.

(i) Within thirty days of the effective date of this standard, the employer shall institute a training program for all employees who may be exposed to DBCP and shall assure their participation in such training program.

(ii) The employer shall assure that each employee is informed of the following:

(A) The information contained in Appendices A, B and C;

(B) The quantity, location, manner of use, release or storage of DBCP and the specific nature of operations which could result in exposure to DBCP as well as any necessary protective steps;

(C) The purpose, proper use, limitations, and other training requirements covering respiratory protection as required in chapter 296-62 WAC, Part E;

(D) The purpose and description of the medical surveillance program required by subsection (14) of this section; and

(E) A review of this standard.

(b) Access to training materials.

(i) The employer shall make a copy of this standard and its appendices readily available to all affected employees.

(ii) The employer shall provide, upon request, all materials relating to the employee information and training program to the director.

(16) Signs and labels.

(a) General.

(i) The employer may use labels or signs required by other statutes, regulations, or ordinances in addition to or in combination with, signs and labels required by this subsection.

(ii) The employer shall assure that no statement appears on or near any sign or label required by this subsection which contradicts or detracts from the required sign or label.

(b) Signs.

(i) The employer shall post signs to clearly indicate all work areas where DBCP may be present. These signs shall bear the legend:

DANGER

1,2-Dibromo-3-chloropropane

(Insert appropriate trade or common names)

CANCER HAZARD

AUTHORIZED PERSONNEL ONLY

(ii) Where airborne concentrations of DBCP exceed the permissible exposure limits, the signs shall bear the additional legend:

RESPIRATOR REQUIRED

(c) Labels.

(i) The employer shall assure that precautionary labels are affixed to all containers of DBCP and of products containing DBCP, and that the labels remain affixed when the DBCP or products containing DBCP are sold, distributed, or

otherwise leave the employer's workplace. Where DBCP or products containing DBCP are sold, distributed or otherwise leave the employer's workplace bearing appropriate labels required by EPA under the regulations in 40 CFR Part 162, the labels required by this subsection need not be affixed.

(ii) The employer shall assure that the precautionary labels required by this subsection are readily visible and legible. The labels shall bear the following legend:

DANGER

1,2-Dibromo-3-chloropropane

CANCER HAZARD

(17) Recordkeeping.

(a) Exposure monitoring.

(i) The employer shall establish and maintain an accurate record of all monitoring required by subsection (6) of this section.

(ii) This record shall include:

(A) The dates, number, duration and results of each of the samples taken, including a description of the sampling procedure used to determine representative employee exposure;

(B) A description of the sampling and analytical methods used;

(C) Type of respiratory worn, if any; and

(D) Name, Social Security number, and job classification of the employee monitored and of all other employees whose exposure the measurement is intended to represent.

(iii) The employer shall maintain this record for at least forty years or the duration of employment plus twenty years, whichever is longer.

(b) Medical surveillance.

(i) The employer shall establish and maintain an accurate record for each employee subject to medical surveillance required by subsection (14) of this section.

(ii) This record shall include:

(A) The name and Social Security number of the employee;

(B) A copy of the physician's written opinion;

(C) Any employee medical complaints related to exposure to DBCP;

(D) A copy of the information provided the physician as required by subsection (14)(c) of this section; and

(E) A copy of the employee's medical and work history.

(iii) The employer shall maintain this record for at least forty years or the duration of employment plus twenty years, whichever is longer.

(c) Availability.

(i) The employer shall assure that all records required to be maintained by this section be made available upon request to the director for examination and copying.

(ii) Employee exposure monitoring records and employee medical records required by this subsection shall be provided upon request to employees' designated representatives and the assistant director in accordance with chapter 296-802 WAC.

(d) Transfer of records.

(i) If the employer ceases to do business, the successor employer shall receive and retain all records required to be maintained by this section for the prescribed period.

(ii) If the employer ceases to do business and there is no successor employer to receive and retain the records for the prescribed period, the employer shall transmit these records by mail to the director.

(iii) At the expiration of the retention period for the records required to be maintained under this section, the employer shall transmit these records by mail to the director.

(iv) The employer shall also comply with any additional requirements involving transfer of records set forth in chapter 296-802 WAC.

(18) Observation of monitoring.

(a) Employee observation. The employer shall provide affected employees, or their designated representatives, an opportunity to observe any monitoring of employee exposure to DBCP conducted under subsection (6) of this section.

(b) Observation procedures.

(i) Whenever observation of the measuring or monitoring of employee exposure to DBCP requires entry into an area where the use of protective clothing or equipment is required, the employer shall provide the observer with personal protective clothing or equipment required to be worn by employees working in the area, assure the use of such clothing and equipment, and require the observer to comply with all other applicable safety and health procedures.

(ii) Without interfering with the monitoring or measurement, observers shall be entitled to:

(A) Receive an explanation of the measurement procedures;

(B) Observe all steps related to the measurement of airborne concentrations of DBCP performed at the place of exposure; and

(C) Record the results obtained.

(19) Appendices. The information contained in the appendices is not intended, by itself, to create any additional obligations not otherwise imposed or to detract from any existing obligation.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060, 05-03-093, § 296-62-07342, filed 1/18/05, effective 3/1/05; 04-10-026, § 296-62-07342, filed 4/27/04, effective 8/1/04; 03-18-090, § 296-62-07342, filed 9/2/03, effective 11/1/03. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050, 01-11-038, § 296-62-07342, filed 5/9/01, effective 9/1/01; 99-10-071, § 296-62-07342, filed 5/4/99, effective 9/1/99. Statutory Authority: Chapter 49.17 RCW, 96-09-030, § 296-62-07342, filed 4/10/96, effective 6/1/96; 88-11-021 (Order 88-04), § 296-62-07342, filed 5/11/88.]

WAC 296-62-07343 Appendix A—Substance safety data sheet for DBCP. (1) Substance identification.

(a) Synonyms and trade names: DBCP; Dibromochloropropane; Fumazone (Dow Chemical Company TM); Nemaflume; Nemagon (Shell Chemical Co. TM); Nemaset; BBC 12; and OS 1879.

(b) Permissible exposure:

(i) Airborne. 1 part DBCP vapor per billion parts of air (1 ppb); time-weighted average (TWA) for an eight-hour workday.

(ii) Dermal. Eye contact and skin contact with DBCP are prohibited.

(c) Appearance and odor: Technical grade DBCP is a dense yellow or amber liquid with a pungent odor. It may also appear in granular form, or blended in varying concentrations with other liquids.

(d) Uses: DBCP is used to control nematodes, very small worm-like plant parasites, on crops including cotton, soybeans, fruits, nuts, vegetables and ornamentals.

(2) Health hazard data.

(a) Routes of entry: Employees may be exposed:

(i) Through inhalation (breathing);

(ii) Through ingestion (swallowing);

(iii) Skin contact; and

(iv) Eye contact.

(b) Effects of exposure:

(i) Acute exposure. DBCP may cause drowsiness, irritation of the eyes, nose, throat and skin, nausea and vomiting. In addition, overexposure may cause damage to the lungs, liver or kidneys.

(ii) Chronic exposure. Prolonged or repeated exposure to DBCP has been shown to cause sterility in humans. It also has been shown to produce cancer and sterility in laboratory animals and has been determined to constitute an increased risk of cancer in people.

(iii) Reporting signs and symptoms. If you develop any of the above signs or symptoms that you think are caused by exposure to DBCP, you should inform your employer.

(3) Emergency first-aid procedures.

(a) Eye exposure. If DBCP liquid or dust containing DBCP gets into your eyes, wash your eyes immediately with large amounts of water, lifting the lower and upper lids occasionally. Get medical attention immediately. Contact lenses should not be worn when working with DBCP.

(b) Skin exposure. If DBCP liquids or dusts containing DBCP get on your skin, immediately wash using soap or mild detergent and water. If DBCP liquids or dusts containing DBCP penetrate through your clothing, remove the clothing immediately and wash. If irritation is present after washing get medical attention.

(c) Breathing. If you or any person breathe in large amounts of DBCP, move the exposed person to fresh air at once. If breathing has stopped, perform artificial respiration. Do not use mouth-to-mouth. Keep the affected person warm and at rest. Get medical attention as soon as possible.

(d) Swallowing. When DBCP has been swallowed and the person is conscious, give the person large amounts of water immediately. After the water has been swallowed, try to get the person to vomit by having him touch the back of his throat with his finger. Do not make an unconscious person vomit. Get medical attention immediately.

(e) Rescue. Notify someone. Put into effect the established emergency rescue procedures. Know the locations of the emergency rescue equipment before the need arises.

(4) Respirators and protective clothing.

(a) Respirators. You may be required to wear a respirator in emergencies and while your employer is in the process of reducing DBCP exposures through engineering controls. If respirators are worn, they must have a label issued by the National Institute for Occupational Safety and Health (NIOSH) under the provisions of 42 CFR part 84 stating that the respirators have been certified for use with organic vapors. For effective protection, a respirator must fit your face and head snugly. The respirator should not be loosened or removed in work situations where its use is required. Respirators must not be loosened or removed in work situations where their use is required.

(b) Protective clothing. When working with DBCP you must wear for your protection impermeable work clothing provided by your employer. (Standard rubber and neoprene protective clothing do not offer adequate protection). DBCP must never be allowed to remain on the skin. Clothing and shoes must not be allowed to become contaminated with DBCP, and if they do, they must be promptly removed and not worn again until completely free of DBCP. Turn in impermeable clothing that has developed leaks for repair or replacement.

(c) Eye protection. You must wear splashproof safety goggles where there is any possibility of DBCP liquid or dust contacting your eyes.

(5) Precautions for safe use, handling, and storage.

(a) DBCP must be stored in tightly closed containers in a cool, well-ventilated area.

(b) If your work clothing may have become contaminated with DBCP, or liquids or dusts containing DBCP, you must change into uncontaminated clothing before leaving the work premises.

(c) You must promptly remove any protective clothing that becomes contaminated with DBCP. This clothing must not be reworn until the DBCP is removed from the clothing.

(d) If your skin becomes contaminated with DBCP, you must immediately and thoroughly wash or shower with soap or mild detergent and water to remove any DBCP from your skin.

(e) You must not keep food, beverages, cosmetics, or smoking materials, nor eat or smoke, in regulated areas.

(f) If you work in a regulated area, you must wash your hands thoroughly with soap or mild detergent and water, before eating, smoking or using toilet facilities.

(g) If you work in a regulated area, you must remove any protective equipment or clothing before leaving the regulated area.

(h) Ask your supervisor where DBCP is used in your work area and for any additional safety and health rules.

(6) Access to information.

(a) Each year, your employer is required to inform you of the information contained in this substance safety data sheet for DBCP. In addition, your employer must instruct you in the safe use of DBCP, emergency procedures, and the correct use of protective equipment.

(b) Your employer is required to determine whether you are being exposed to DBCP. You or your representative have the right to observe employee exposure measurements and to record the result obtained. Your employer is required to inform you of your exposure. If your employer determines that you are being overexposed, they are required to inform you of the actions which are being taken to reduce your exposure.

(c) Your employer is required to keep records of your exposure and medical examinations. Your employer is required to keep exposure and medical data for at least forty years or the duration of your employment plus twenty years, whichever is longer.

(d) Your employer is required to release exposure and medical records to you, your physician, or other individual designated by you upon your written request.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07343, filed 5/4/99, effective 9/1/99. Statutory Authority:

(2007 Ed.)

Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-62-07343, filed 7/20/94, effective 9/20/94; 88-11-021 (Order 88-04), § 296-62-07343, filed 5/11/88.]

WAC 296-62-07344 Appendix B—Substance technical guidelines for DBCP. (1) Physical and chemical data.

(a) Substance identification.

(i) Synonyms: 1,2-dibromo-3-chloropropane; DBCP, Fumazone; Nemaform; Nemagon; Nemaset; BBC 12; OS 1879. DBCP is also included in agricultural pesticides and fumigants which include the phrase "Nema____", in their name.

(ii) Formula: C₃H₅Br₂Cl.

(iii) Molecular weight: 236.

(b) Physical data:

(i) Boiling point (760 mm HG): 195C (383F)

(ii) Specific gravity (water = 1): 2.093.

(iii) Vapor density (air = 1 at boiling point of DBCP): Data not available.

(iv) Melting point: 6C (43F).

(v) Vapor pressure at 20C (68F): 0.8 mm HG

(vi) Solubility in water: 1000 ppm.

(vii) Evaporation rate (Butyl Acetate = 1): Very much less than 1.

(c) Appearance and odor: Dense yellow or amber liquid with a pungent odor at high concentrations. Any detectable odor of DBCP indicates overexposure.

(2) Fire explosion and reactivity hazard data.

(a) Fire.

(i) Flash point: 170F (77C)

(ii) Autoignition temperature: Data not available.

(iii) Flammable limits in air, percent by volume: Data not available.

(iv) Extinguishing media: Carbon dioxide, dry chemical.

(v) Special fire-fighting procedures: Do not use a solid stream of water since a stream will scatter and spread the fire. Use water spray to cool containers exposed to a fire.

(vi) Unusual fire and explosion hazards: None known.

(vii) For purposes of complying with the requirements of WAC 296-24-330, liquid DBCP is classified as a Class III A combustible liquid.

(viii) For the purpose of complying with chapter 296-24 WAC Part L, the classification of hazardous locations as described in article 500 of the National Electrical Code for DBCP shall be Class I, Group D.

(ix) For the purpose of compliance with WAC 296-24-592, DBCP is classified as a Class B fire hazard.

(x) For the purpose of compliance with WAC 296-24-230, locations classified as hazardous locations due to the presence of DBCP shall be Class I, Group D.

(xi) Sources of ignition are prohibited where DBCP presents a fire or explosion hazard.

(b) Reactivity.

(i) Conditions contributing to instability: None known.

(ii) Incompatibilities: Reacts with chemically active metals, such as aluminum, magnesium and tin alloys.

(iii) Hazardous decomposition products: Toxic gases and vapors (such as HBr, HCl and carbon monoxide) may be released in a fire involving DBCP.

(iv) Special precautions: DBCP will attack some rubber materials and coatings.

(3) Spill, leak and disposal procedures.

(a) If DBCP is spilled or leaked, the following steps should be taken:

(i) The area should be evacuated at once and re-entered only after thorough ventilation.

(ii) Ventilate area of spill or leak.

(iii) If in liquid form, collect for reclamation or absorb in paper, vermiculite, dry sand, earth or similar material.

(iv) If in solid form, collect spilled material in the most convenient and safe manner for reclamation or for disposal.

(b) Persons not wearing protective equipment must be restricted from areas of spills or leaks until cleanup has been completed.

(c) Waste disposal methods:

(i) For small quantities of liquid DBCP, absorb on paper towels, remove to a safe place (such as a fume hood) and burn the paper. Large quantities can be reclaimed or collected and atomized in a suitable combustion chamber equipped with an appropriate effluent gas cleaning device. If liquid DBCP is absorbed in vermiculite, dry sand, earth or similar material and placed in sealed containers it may be disposed of in a state-approved sanitary landfill.

(ii) If in solid form, for small quantities, place on paper towels, remove to a safe place (such as a fume hood) and burn. Large quantities may be reclaimed. However, if this is not practical, dissolve in a flammable solvent (such as alcohol) and atomize in a suitable combustion chamber equipped with an appropriate effluent gas cleaning device. DBCP in solid form may also be disposed in a state-approved sanitary landfill.

(4) Monitoring and measurement procedures.

(a) Exposure above the permissible exposure limit.

(i) Eight hour exposure evaluation: Measurements taken for the purpose of determining employee exposure under this section are best taken so that the average eight-hour exposure may be determined from a single eight-hour sample or two four-hour samples. Air samples should be taken in the employee's breathing zone (air that would most nearly represent that inhaled by the employee).

(ii) Monitoring techniques: The sampling and analysis under this section may be performed by collecting the DBCP vapor on petroleum based charcoal absorption tubes with subsequent chemical analyses. The method of measurement chosen should determine the concentration of airborne DBCP at the permissible exposure limit to an accuracy of plus or minus twenty-five percent. If charcoal tubes are used, a total volume of ten liters should be collected at a flow rate of 50 cc per minute for each tube. Analyze the resultant samples as you would samples of halogenated solvent.

(b) Since many of the duties relating to employee protection are dependent on the results of monitoring and measuring procedures, employers should assure that the evaluation of employee exposures is performed by a competent industrial hygienist or other technically qualified person.

(5) Protective clothing. Employees should be required to wear appropriate protective clothing to prevent any possibility of skin contact with DBCP. Because DBCP is absorbed through the skin, it is important to prevent skin contact with both liquid and solid forms of DBCP. Protective clothing

should include impermeable coveralls or similar fullbody work clothing, gloves, headcoverings, and workshoes or shoe coverings. Standard rubber and neoprene gloves do not offer adequate protection and should not be relied upon to keep DBCP off the skin. DBCP should never be allowed to remain on the skin. Clothing and shoes should not be allowed to become contaminated with the material; and if they do, they should be promptly removed and not worn again until completely free of the material. Any protective clothing which has developed leaks or is otherwise found to be defective should be repaired or replaced. Employees should also be required to wear splashproof safety goggles where there is any possibility of DBCP contacting the eyes.

(6) Housekeeping and hygiene facilities.

(a) The workplace must be kept clean, orderly and in a sanitary condition.

(b) Dry sweeping and the use of compressed air is unsafe for the cleaning of floors and other surfaces where DBCP dust or liquids are found. To minimize the contamination of air with dust, vacuuming with either portable or permanent systems must be used. If a portable unit is selected, the exhaust must be attached to the general workplace exhaust ventilation system, or collected within the vacuum unit equipped with high efficiency filters or other appropriate means of contamination removal and not used for other purposes. Units used to collect DBCP must be labeled.

(c) Adequate washing facilities with hot and cold water must be provided, and maintained in a sanitary condition. Suitable cleansing agents should also be provided to assure the effective removal of DBCP from the skin.

(d) Change or dressing rooms with individual clothes storage facilities must be provided to prevent the contamination of street clothes with DBCP. Because of the hazardous nature of DBCP, contaminated protective clothing must be stored in closed containers for cleaning or disposal.

(7) Miscellaneous precautions.

(a) Store DBCP in tightly closed containers in a cool, well ventilated area.

(b) Use of supplied-air suits or other impervious clothing (such as acid suits) may be necessary to prevent skin contact with DBCP. Supplied-air suits should be selected, used, and maintained under the supervision of persons knowledgeable in the limitations and potential life-endangering characteristics of supplied-air suits.

(c) The use of air-conditioned suits may be necessary in warmer climates.

(d) Advise employees of all areas and operations where exposure to DBCP could occur.

(8) Common operations. Common operations in which exposure to DBCP is likely to occur are: During its production; and during its formulation into pesticides and fumigants.

[Statutory Authority: Chapter 49.17 RCW. 91-24-017 (Order 91-07), § 296-62-07344, filed 11/22/91, effective 12/24/91; 88-11-021 (Order 88-04), § 296-62-07344, filed 5/11/88.]

WAC 296-62-07346 Appendix C—Medical surveillance guidelines for DBCP. (1) Route of entry.

(a) Inhalation;

(b) Skin absorption.

(2) Toxicology. Recent data collected on workers involved in the manufacture and formulation of DBCP has shown that DBCP can cause sterility at very low levels of exposure. This finding is supported by studies showing that DBCP causes sterility in animals. Chronic exposure to DBCP resulted in pronounced necrotic action on the parenchymatous organs (i.e., liver, kidney, spleen) and on the testicles of rats at concentrations as low as 5 ppm. Rats that were chronically exposed to DBCP also showed changes in the composition of the blood, showing low RBC, hemoglobin, and WBC, and high reticulocyte levels as well as functional hepatic disturbance, manifesting itself in a long prothrombin time. Reznik et al., noted a single dose of 100 mg produced profound depression of the nervous system of rats. Their condition gradually improved. Acute exposure also resulted in the destruction of the sex gland activity of male rats as well as causing changes in the estrous cycle in female rats. Animal studies have also associated DBCP with an increased incidence of carcinoma. Olson, et al., orally administered DBCP to rats and mice five times per week at experimentally predetermined maximally tolerated doses and at half those doses. As early as ten weeks after initiation of treatment, DBCP induced a high incidence of squamous cell carcinomas of the stomach with metastases in both species. DBCP also induced mammary adenocarcinomas in the female rats at both dose levels.

(3) Signs and symptoms.

(a) Inhalation: Nausea, eye irritation, conjunctivitis, respiratory irritation, pulmonary congestion or edema, CNS depression with apathy, sluggishness, and ataxia.

(b) Dermal: Erythema or inflammation and dermatitis on repeated exposure.

(4) Special tests.

(a) Semen analysis: The following information excerpted from the document "Evaluation of Testicular Function," submitted by the Corporate Medical Department of the Shell Oil Company (exhibit 39-3), may be useful to physicians conducting the medical surveillance program. In performing semen analyses certain minimal but specific criteria should be met:

(i) It is recommended that a minimum of three valid semen analyses be obtained in order to make a determination of an individual's average sperm count.

(ii) A period of sexual abstinence is necessary prior to the collection of each masturbatory sample. It is recommended that intercourse or masturbation be performed 48 hours before the actual specimen collection. A period of 48 hours of abstinence would follow; then the masturbatory sample would be collected.

(iii) Each semen specimen should be collected in a clean, widemouthed, glass jar (not necessarily pre-sterilized) in a manner designated by the examining physician. Any part of the seminal fluid exam should be initialed *only after liquifaction* is complete, i.e., 30 to 45 minutes after collection.

(iv) Semen volume should be measured to the nearest 1/10 of a cubic centimeter.

(v) Sperm density should be determined using routine techniques involving the use of a white cell pipette and a hemocytometer chamber. The immobilizing fluid most effective and most easily obtained for this process is distilled water.

(vi) Thin, dry smears of the semen should be made for a morphologic classification of the sperm forms and should be stained with either hematoxylin or the more difficult, yet more precise, Papanicolaou technique. Also of importance to record is obvious sperm agglutination, pyospermia, delayed liquifaction (greater than 30 minutes), and hyperviscosity. In addition, pH, using nitrazine paper, should be determined.

(vii) A total morphology evaluation should include percentages of the following:

(A) Normal (oval) forms,

(B) Tapered forms,

(C) Amorphous forms (include large and small sperm shapes),

(D) Duplicated (either heads or tails) forms, and

(E) Immature forms.

(viii) Each sample should be evaluated for sperm *viability* (percent viable sperm moving at the time of examination) as well as sperm *motility* (subjective characterization of "purposeful forward sperm progression" of the majority of those viable sperm analyzed) within two hours after collection, ideally by the same or equally qualified examiner.

(b) Serum determinations: The following serum determinations should be performed by radiomuno-assay techniques using National Institutes of Health (NIH) specific antigen or antigen preparations of equivalent sensitivity:

(i) Serum follicle stimulating hormone (FSH),

(ii) Serum luteinizing hormone (LH), and

(iii) Serum total estrogen (females only).

(5) Treatment. Remove from exposure immediately, give oxygen or artificial resuscitation if indicated. Contaminated clothing and shoes should be removed immediately. Flush eyes and wash contaminated skin. If swallowed and the person is conscious, induce vomiting. Recovery from mild exposures is usually rapid and complete.

(6) Surveillance and preventive considerations.

(a) Other considerations. DBCP can cause both acute and chronic effects. It is important that the physician become familiar with the operating conditions in which exposure to DBCP occurs. Those with respiratory disorders may not tolerate the wearing of negative pressure respirators.

(b) Surveillance and screening. Medical histories and laboratory examinations are required for each employee subject to exposure to DBCP. The employer should screen employees for history of certain medical conditions (listed below) which might place the employee at increased risk from exposure:

(i) Liver disease. The primary site of biotransformation and detoxification of DBCP is the liver. Liver dysfunctions likely to inhibit the conjugation reactions will tend to promote the toxic actions of DBCP. These precautions should be considered before exposing persons with impaired liver function to DBCP.

(ii) Renal disease. Because DBCP has been associated with injury to the kidney it is important that special consideration be given to those with possible impairment of renal function.

(iii) Skin disease. DBCP can penetrate the skin and can cause erythema on prolonged exposure. Persons with pre-existing skin disorders may be more susceptible to the effects of DBCP.

(iv) Blood dyscrasias. DBCP has been shown to decrease the content of erythrocytes, hemoglobin, and leukocytes in the blood, as well as increase the prothrombin time. Persons with existing blood disorders may be more susceptible to the effects of DBCP.

(v) Reproductive disorders. Animal studies have associated DBCP with various effects on the reproductive organs. Among these effects are atrophy of the testicles and changes in the estrous cycle. Persons with preexisting reproductive disorders may be at increased risk to these effects of DBCP.

(7) References.

(a) Reznik, Ya. B. and Sprinchan, G. K.: Experimental Data on the Gonadotoxic effect of Nemagon, *Gig. Sanit.*, (6), 1975, pp. 101-102, (translated from Russian).

(b) Faydysh, E. V., Rakhmatullaev, N. N. and Varshavskii, V. A.: The Cytotoxic Action of Nemagon in a Subacute Experiment, *Med. Zh. Uzbekistana*, (No. 1), 1970, pp. 64-65, (translated from Russian).

(c) Rakhmatullaev, N. N.: Hygienic Characteristics of the Nematocide Nemagon in Relation to Water Pollution Control, *Hyg. Sanit.*, 36(3), 1971, pp. 344-348, (translated from Russian).

(d) Olson, W. A. *et al.*: Induction of Stomach Cancer in Rats and Mice by Halogenated Aliphatic Fumigants, *Journal of the National Cancer Institute*, (51), 1973, pp. 1993-1995.

(e) Torkelson, T. R. *et al.*: Toxicologic Investigations of 1,2-Dibromo-3-chloropropane, *Toxicology and Applied Pharmacology*, 3, 1961 pp. 545-559.

[Statutory Authority: Chapter 49.17 RCW. 88-11-021 (Order 88-04), § 296-62-07346, filed 5/11/88.]

WAC 296-62-07354 Appendices—Inorganic arsenic.

The information in Appendices A, B, and C is not intended, by itself, to create any additional obligations not otherwise imposed by WAC 296-62-07347 nor detract from existing obligation.

(1) Appendix A—Inorganic arsenic substance information sheet.

(a) Substance identification.

(i) Substance. Inorganic arsenic.

(ii) Definition. Copper acetoarsenite, arsenic and all inorganic compounds containing arsenic except arsine, measured as arsenic (As).

(iii) Permissible exposure limit. Ten micrograms per cubic meter of air as determined as an average over an 8-hour period. No employee may be exposed to any skin or eye contact with arsenic trichloride or to skin or eye contact likely to cause skin or eye irritation.

(iv) Regulated areas. Only employees authorized by your employer should enter a regulated area.

(b) Health hazard data.

(i) Comments. The health hazard of inorganic arsenic is high.

(ii) Ways in which the chemical affects your body. Exposure to airborne concentrations of inorganic arsenic may cause lung cancer, and can be a skin irritant. Inorganic arsenic may also affect your body if swallowed. One compound in particular, arsenic trichloride, is especially dangerous because it can be absorbed readily through the skin. Because inorganic arsenic is a poison, you should wash your hands thoroughly prior to eating or smoking.

(c) Personal protective equipment and clothing.

(i) Respirators. Respirators will be provided by the employer at no cost to employees for routine use if the employer is in the process of implementing engineering and work practice controls or where engineering and work practice controls are not feasible or insufficient. Respirators must be worn for nonroutine activities or in emergency situations where there is likely to be exposure to levels of inorganic arsenic in excess of the permissible exposure limit. Since how well the respirator fits is very important, the employer is required to conduct fit tests to make sure the respirator seals properly when worn. These tests are simple and rapid and will be explained during training sessions.

(ii) Protective clothing. If work is in a regulated area, the employer is required to provide at no cost to employees, and it must be worn, appropriate, clean, protective clothing and equipment. The purpose of this equipment is to prevent the employee from taking home arsenic-contaminated dust and to protect the body from repeated skin contact with inorganic arsenic likely to cause skin irritation. This clothing shall include such items as coveralls or similar full-body clothing, gloves, shoes or coverlets, and aprons. Protective equipment should include face shields or vented goggles, where eye irritation may occur.

(d) Hygiene facilities and practices.

(i) The employer shall ensure that employees do not eat, drink, smoke, chew gum or tobacco, or apply cosmetics in the regulated area, except that drinking water is permitted. If work is in a regulated area, the employer is required to provide lunchrooms or other areas for these purposes.

(ii) If work is in a regulated area, the employer is required to provide showers, washing facilities, and change rooms. The employer shall ensure that employees wash faces and hands before eating and shower at the end of the work shift. Do not take used protective clothing out of change rooms without the employer's permission. The employer is required to provide for laundering or cleaning of the protective clothing.

(e) Signs and labels. The employer is required to post warning signs and labels for employee protection. Signs must be posted in regulated areas. The signs must warn that a cancer hazard is present, that only authorized employees may enter the area, and that no smoking or eating is allowed, and that respirators must be worn.

(f) Medical examinations. If exposure to arsenic is over the action level ($5 \mu\text{g}/\text{m}^3$) (including all persons working in regulated areas) at least 30 days per year, or employees have been exposed to arsenic for more than 10 years over the action level, the employer is required to provide employees with a medical examination. The examination shall be every 6 months for employees over 45 years old or with more than 10 years exposure over the action level and annually for other covered employees. The medical examination must include a medical history; a chest X ray (annual requirement only); skin examination; and nasal examination. The examining physician will provide a written opinion to the employer containing the results of the medical exams. Employees should also receive a copy of this opinion. The physician must not tell the employer any conditions he detects unrelated to occupational exposure to arsenic but must tell employees those conditions.

(g) Observation of monitoring. The employer is required to monitor employee exposure to arsenic and employees or their representatives are entitled to observe the monitoring procedure. Employees are entitled to receive an explanation of the measurement procedure, and to record the results obtained. When the monitoring procedure is taking place in an area where respirators or personal protective clothing and equipment are required to be worn, employees must also be provided with and must wear the protective clothing and equipment.

(h) Access to records. Employees or their representatives are entitled to records of employee exposure to inorganic arsenic upon request to the employer. Employee medical examination records can be furnished to employees' physician if employees request the employer to provide them.

(i) Training and notification. Additional information on all of these items plus training as to hazards of exposure to inorganic arsenic and the engineering and work practice controls associated with employees' jobs will also be provided by the employer. If employees are exposed over the permissible exposure limit, the employer must inform employees of that fact and the actions to be taken to reduce employee exposure.

(2) Appendix B—Substance technical guidelines. Arsenic, arsenic trioxide, arsenic trichloride (3 examples)

(a) Physical and chemical properties

(i) Arsenic (metal)

(A) Formula: As

(B) Appearance: Gray metal

(C) Melting point: Sublimes without melting at 613C

(D) Specific gravity: ($H_2O = 1$):5.73.

(E) Solubility in water: Insoluble

(ii) Arsenic trioxide

(A) Formula: As_2O_3 , (As_4O_6).

(B) Appearance: White powder

(C) Melting point: 315C

(D) Specific gravity: ($H_2O = 1$):3.74

(E) Solubility in water: 3.7 grams in 100cc of water at 20C

(iii) Arsenic trichloride (liquid)(Trichloride)

(A) Formula: $AsCl_3$

(B) Appearance: Colorless or pale yellow liquid

(C) Melting point: -8.5C

(D) Boiling point: 130.2C

(E) Specific gravity ($H_2O = 1$):2.16 at 20C

(F) Vapor Pressure: 10mm Hg at 23.5C.

(G) Solubility in water: Decomposes in water.

(b) Fire, explosion, and reactivity data.

(i) Fire: Arsenic trioxide and arsenic trichloride are non-flammable.

(ii) Reactivity:

(A) Conditions contributing to instability: Heat.

(B) Incompatibility: Hydrogen gas can react with inorganic arsenic to form the highly toxic gas arsine.

(c) Monitoring and measurement procedures.

(i) Samples collected should be full shift (at least 7 hours) samples. Sampling should be done using a personal sampling pump at a flow rate of 2 liters per minute. Samples should be collected on 0.8 micrometer pore size membrane filter (37 mm diameter). Volatile arsenicals such as arsenic

trichloride can be most easily collected in a midget bubbler filled with 15 ml. of 0.1 N NaOH.

(ii) The method of sampling and analysis should have an accuracy of not less than ± 25 percent (with a confidence limit of 95 percent) for 10 micrograms per cubic meter of air ($10 \mu g/m^3$) and ± 35 percent (with a confidence limit of 95 percent) for concentrations of inorganic arsenic between 5 and $10 \mu g/m^3$.

(3) Appendix C—Medical surveillance guidelines.

(a) General.

(i) Medical examinations are to be provided for all employees exposed to levels of inorganic arsenic above the action level ($5 \mu g/m^3$) for at least 30 days per year (which would include among others, all employees, who work in regulated areas). Examinations are also to be provided to all employees who have had 10 years or more exposure above the action level for more than 30 days per year while working for the present or predecessor employer though they may no longer be exposed above the level.

(ii) An initial medical examination is to be provided to all such employees by December 1, 1978. In addition, an initial medical examination is to be provided to all employees who are first assigned to areas in which worker exposure will probably exceed $5 \mu g/m^3$ (after the effective date of this standard) at the time of initial assignment. In addition to its immediate diagnostic usefulness the initial examination will provide a baseline for comparing future test results. The initial examination must include as a minimum the following elements:

(A) A work and medical history, including a smoking history, and presence and degree of respiratory symptoms such as breathlessness, cough, sputum production, and wheezing;

(B) A 14-inch by 17-inch posterior-anterior chest X ray and an International Labor Office UICC/Cincinnati (ILO U/C) rating;

(C) A nasal and skin examination; and

(D) Other examinations which the physician believes appropriate because of the employee's exposure to inorganic arsenic or because of required respirator use.

(iii) Periodic examinations are also to be provided to the employees listed above. The periodic examinations shall be given annually for those covered employees 45 years of age or less with fewer than 10 years employment in areas where employee exposure exceeds the action level ($5 \mu g/m^3$). Periodic examinations need not include sputum cytology and only an updated medical history is required.

(iv) Periodic examinations for other covered employees, shall be provided every 6 months. These examinations shall include all tests required in the initial examination, except that the medical history need only be updated.

(v) The examination contents are minimum requirements. Additional tests such as lateral and oblique X rays or pulmonary function tests may be useful. For workers exposed to 3 arsenicals, copper acetoarsenite, potassium arsenite, or sodium arsenite, which are associated with lymphatic cancer, the examination should also include palpation of superficial lymph nodes and complete blood count.

(b) Noncarcinogenic effects.

(i) The WISHA standard is based on minimizing risk of exposed workers dying of lung cancer from exposure to inorganic arsenic. It will also minimize skin cancer from such exposures.

(ii) The following three sections quoted from "Occupational Diseases: A Guide to Their Recognition," Revised Edition, June 1977, National Institute for Occupational Safety and Health is included to provide information on the nonneoplastic effects of exposure to inorganic arsenic. Such effects should not occur if the WISHA standards are followed.

(A) Local—Trivalent arsenic compounds are corrosive to the skin. Brief contact has no effect but prolonged contact results in a local hyperemia and later vesicular or pustular eruption. The moist mucous membranes are most sensitive to the irritant action. Conjunctiva, moist and macerated areas of skin, the eyelids, the angles of the ears, nose, mouth, and respiratory mucosa are also vulnerable to the irritant effects. The wrists are common sites of dermatitis, as are the genitalia if personal hygiene is poor. Perforations of the nasal septum may occur. Arsenic trioxide and pentoxide are capable of producing skin sensitization and contact dermatitis. Arsenic is also capable of producing keratoses, especially of the palms and soles.

(B) Systemic.

(I) The acute toxic effects of arsenic are generally seen following ingestion of inorganic arsenical compounds. This rarely occurs in an industrial setting. Symptoms develop within 1/2 to 4 hours following ingestion and are usually characterized by constriction of the throat followed by dysphagia, epigastric pain, vomiting, and watery diarrhea. Blood may appear in vomitus and stools. If the amount ingested is sufficiently high, shock may develop due to severe fluid loss, and death may ensue in 24 hours. If the acute effects are survived, exfoliative dermatitis and peripheral neuritis may develop.

(II) Cases of acute arsenical poisoning due to inhalation are exceedingly rare in industry. When it does occur, respiratory tract symptoms - cough, chest pain, dyspnea - giddiness, headache, and extreme general weakness precede gastrointestinal symptoms. The acute toxic symptoms of trivalent arsenical poisoning are due to severe inflammation of the mucous membranes and greatly increased permeability of the blood capillaries.

(III) Chronic arsenical poisoning due to ingestion is rare and generally confined to patients taking prescribed medications. However, it can be a concomitant of inhaled inorganic arsenic from swallowed sputum and improper eating habits. Symptoms are weight loss, nausea and diarrhea alternating with constipation, pigmentation and eruption of the skin, loss of hair, and peripheral neuritis. Chronic hepatitis and cirrhosis have been described. Polyneuritis may be the salient feature, but more frequently there are numbness and paresthesias of "glove and stocking" distribution. The skin lesions are usually melanotic and keratotic and may occasionally take the form of an intradermal cancer of the squamous cell type, but without infiltrative properties. Horizontal white lines (striations) on the fingernails and toenails are commonly seen in chronic arsenical poisoning and are considered to be a diagnostic accompaniment of arsenical polyneuritis.

(IV) Inhalation of inorganic arsenic compounds is the most common cause of chronic poisoning in the industrial situation. This condition is divided into three phases based on signs and symptoms.

(V) First phase: The worker complains of weakness, loss of appetite, some nausea, occasional vomiting, a sense of heaviness in the stomach, and some diarrhea.

(VI) Second phase: The worker complains of conjunctivitis, a catarrhal state of the mucous membranes of the nose, larynx, and respiratory passage. Coryza, hoarseness, and mild tracheobronchitis may occur. Perforation of the nasal septum is common, and is probably the most typical lesion of the upper respiratory tract in occupational exposure to arsenical dust. Skin lesions, eczematoid and allergic in type, are common.

(VII) Third phase: The worker complains of symptoms of peripheral neuritis, initially of hands and feet, which is essentially sensory. In more severe cases, motor paralysis occurs; the first muscles affected are usually the toe extensors and the peronei. In only the most severe cases will paralysis of flexor muscles of the feet or of the extensor muscles of hands occur.

(VIII) Liver damage from chronic arsenical poisoning is still debated, and as yet the question is unanswered. In cases of chronic and acute arsenical poisoning, toxic effects to the myocardium have been reported based on EKG changes. These findings, however, are now largely discounted and the EKG changes are ascribed to electrolyte disturbances concomitant with arsenicalism. Inhalation of arsenic trioxide and other inorganic arsenical dusts does not give rise to radiological evidence or pneumoconiosis. Arsenic does have a depressant effect upon the bone marrow, with disturbances of both erythropoiesis and myelopoiesis.

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[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-094, § 296-62-07354, filed 8/17/99, effective 12/1/99; 98-02-030, § 296-62-07354, filed 12/31/97, effective 1/31/98. Statutory Authority: Chapter 49.17 RCW. 90-20-091 (Order 90-14), § 296-62-07354, filed 10/1/90, effective 11/15/90.]

WAC 296-62-07355 Ethylene oxide. Scope and application.

Note: The requirements in WAC 296-62-07355 through 296-62-07386 apply only to agriculture. The requirements for all other industries relating to ethylene oxide have been moved to chapter 296-855 WAC, Ethylene oxide.

(1) WAC 296-62-07355 through 296-62-07389 applies to all occupational exposures to ethylene oxide (EtO), Chemical Abstracts Service Registry No. 75-21-8, except as provided in subsection (2) of this section.

(2) WAC 296-62-07355 through 296-62-07389 does not apply to the processing, use, or handling of products containing EtO where objective data are reasonably relied upon that demonstrate that the product is not capable of releasing EtO in airborne concentrations at or above the action level, and may not reasonably be foreseen to release EtO in excess of the excursion limit, under the expected conditions of processing, use, or handling that will cause the greatest possible release.

(3) Where products containing EtO are exempted under subsection (2) of this section, the employer shall maintain records of the objective data supporting that exemption and the basis for the employer's reliance on the data, as provided in WAC 296-62-07375(1).

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060, 05-17-168, § 296-62-07355, filed 8/23/05, effective 1/1/06. Statutory Authority: Chapter 49.17 RCW. 91-24-017 (Order 91-07), § 296-62-07355, filed 11/22/91, effective 12/24/91; 88-23-054 (Order 88-25), § 296-62-07355, filed 11/14/88; 87-24-051 (Order 87-24), § 296-62-07355, filed 11/30/87.]

WAC 296-62-07357 Definitions. For the purpose of WAC 296-62-07355 through 296-62-07389, the following definitions shall apply:

(1) "Action level" means a concentration of airborne EtO of 0.5 ppm calculated as an eight-hour time-weighted average.

(2) "Authorized person" means any person specifically authorized by the employer whose duties require the person to enter a regulated area, or any person entering such an area as a designated representative of employees for the purpose of exercising the right to observe monitoring and measuring procedures under WAC 296-62-07377, or any other person authorized by chapter 49.17 RCW or regulations issued under chapter 49.17 RCW.

(3) "Director" means the director of the department of labor and industries, or designee.

(4) "Emergency" means any occurrence such as, but not limited to, equipment failure, rupture of containers, or failure of control equipment that is likely to or does result in an unexpected significant release of EtO.

(5) "Employee exposure" means exposure to airborne EtO which would occur if the employee were not using respiratory protective equipment.

(6) "Ethylene oxide" or "EtO" means the three-membered ring organic compound with chemical formula C_2H_4O .

[Statutory Authority: Chapter 49.17 RCW. 87-24-051 (Order 87-24), § 296-62-07357, filed 11/30/87.]

WAC 296-62-07359 Permissible exposure limits (PEL). (1) Eight-hour time-weighted average (TWA). The employer shall ensure that no employee is exposed to an air-

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borne concentration of EtO in excess of one part EtO per million parts of air (1 ppm) as an eight-hour time-weighted average. (Eight-hour TWA.)

(2) Excursion limit. The employer shall ensure that no employee is exposed to an airborne concentration of EtO in excess of five parts of EtO per million parts of air (5 ppm) as averaged over a sampling period of fifteen minutes.

[Statutory Authority: Chapter 49.17 RCW. 88-23-054 (Order 88-25), § 296-62-07359, filed 11/14/88; 87-24-051 (Order 87-24), § 296-62-07359, filed 11/30/87.]

WAC 296-62-07361 Exposure monitoring. (1) General.

(a) Determinations of employee exposure shall be made from breathing zone air samples that are representative of the eight-hour TWA and fifteen-minute short-term exposures of each employee.

(b) Representative eight-hour TWA employee exposure shall be determined on the basis of one or more samples representing full-shift exposure for each shift for each job classification in each work area. Representative fifteen-minute short-term employee exposures shall be determined on the basis of one or more samples representing fifteen-minute exposures associated with operations that are most likely to produce exposures above the excursion limit for each shift for each job classification in each work area.

(c) Where the employer can document that exposure levels are equivalent for similar operations in different work shifts, the employer need only determine representative employee exposure for that operation during one shift.

(2) Initial monitoring.

(a) Each employer who has a workplace or work operation covered by WAC 296-62-07355 through 296-62-07389, except as provided in WAC 296-62-07355 (2) or (b) of this subsection, shall perform initial monitoring to determine accurately the airborne concentrations of EtO to which employees may be exposed.

(b) Where the employer has monitored after June 15, 1983, and the monitoring satisfies all other requirements of WAC 296-62-07355 through 296-62-07389, the employer may rely on such earlier monitoring results to satisfy the requirements of (a) of this subsection.

(c) Where the employer has previously monitored for the excursion limit and the monitoring satisfies all other requirements of this section, the employer may rely on such earlier monitoring results to satisfy the requirements of (a) of this subsection.

(3) Monitoring frequency (periodic monitoring).

(a) If the monitoring required by subsection (2) of this section reveals employee exposure at or above the action level but at or below the eight-hour TWA, the employer shall repeat such monitoring for each such employee at least every six months.

(b) If the monitoring required by subsection (2)(a) of this section reveals employee exposure above the eight-hour TWA, the employer shall repeat such monitoring for each such employee at least every three months.

(c) The employer may alter the monitoring schedule from quarterly to semiannually for any employee for whom two consecutive measurements taken at least seven days

apart indicate that the employee's exposure has decreased to or below the eight-hour TWA.

(d) If the monitoring required by subsection (2)(a) of this section reveals employee exposure above the fifteen-minute excursion limit, the employer shall repeat such monitoring for each such employee at least every three months, and more often as necessary to evaluate the employee's short-term exposures.

(4) Termination of monitoring.

(a) If the initial monitoring required by subsection (2)(a) of this section reveals employee exposure to be below the action level, the employer may discontinue TWA monitoring for those employees whose exposures are represented by the initial monitoring.

(b) If the periodic monitoring required by subsection (3) of this section reveals that employee exposures, as indicated by at least two consecutive measurements taken at least seven days apart, are below the action level, the employer may discontinue TWA monitoring for those employees whose exposures are represented by such monitoring.

(c) If the initial monitoring required by subsection (2)(a) of this section reveals the employee exposure to be at or below the excursion limit, the employer may discontinue excursion limit monitoring for those employees whose exposures are represented by the initial monitoring.

(d) If the periodic monitoring required by subsection (3) of this section reveals that employee exposures, as indicated by at least two consecutive measurements taken at least seven days apart, are at or below the excursion limit, the employer may discontinue excursion limit monitoring for those employees whose exposures are represented by such monitoring.

(5) Additional monitoring. Notwithstanding the provisions of subsection (4) of this section, the employer shall institute the exposure monitoring required under subsections (2)(a) and (3) of this section whenever there has been a change in the production, process, control equipment, personnel or work practices that may result in new or additional exposures to EtO or when the employer has any reason to suspect that a change may result in new or additional exposures.

(6) Accuracy of monitoring.

(a) Monitoring shall be accurate, to a confidence level of ninety-five percent, to within plus or minus twenty-five percent for airborne concentrations of EtO at the 1 ppm TWA and to within plus or minus thirty-five percent for airborne concentrations of EtO at the action level of 0.5 ppm.

(b) Monitoring shall be accurate, to a confidence level of ninety-five percent, to within plus or minus thirty-five percent for airborne concentrations of EtO at the excursion limit.

(7) Employee notification of monitoring results.

(a) The employer shall, within fifteen working days after the receipt of the results of any monitoring performed under WAC 296-62-07355 through 296-62-07389, notify the affected employee of these results in writing either individually or by posting of results in an appropriate location that is accessible to affected employees.

(b) The written notification required by (a) of this subsection shall contain the corrective action being taken by the employer to reduce employee exposure to or below the TWA

and/or excursion limit, wherever monitoring results indicated that the TWA and/or excursion limit has been exceeded.

[Statutory Authority: Chapter 49.17 RCW. 88-23-054 (Order 88-25), § 296-62-07361, filed 11/14/88; 87-24-051 (Order 87-24), § 296-62-07361, filed 11/30/87.]

WAC 296-62-07363 Regulated areas. (1) The employer shall establish a regulated area wherever occupational exposures to airborne concentrations of EtO may exceed the TWA or wherever the EtO concentration exceeds or can reasonably be expected to exceed the excursion limit.

(2) Access to regulated areas shall be limited to authorized persons.

(3) Regulated areas shall be demarcated in any manner that minimizes the number of employees within the regulated area.

[Statutory Authority: Chapter 49.17 RCW. 88-23-054 (Order 88-25), § 296-62-07363, filed 11/14/88; 87-24-051 (Order 87-24), § 296-62-07363, filed 11/30/87.]

WAC 296-62-07365 Methods of compliance. (1) Engineering controls and work practices.

(a) The employer shall institute engineering controls and work practices to reduce and maintain employee exposure to or below the TWA and to or below the excursion limit, except to the extent that such controls are not feasible.

(b) Wherever the feasible engineering controls and work practices that can be instituted are not sufficient to reduce employee exposure to or below the TWA and to or below the excursion limit, the employer shall use them to reduce employee exposure to the lowest levels achievable by these controls and shall supplement them by the use of respiratory protection that complies with the requirements of WAC 296-62-07367.

(c) Engineering controls are generally infeasible for the following operations: Collection of quality assurance sampling from sterilized materials removal of biological indicators from sterilized materials: Loading and unloading of tank cars; changing of ethylene oxide tanks on sterilizers; and vessel cleaning. For these operations, engineering controls are required only where the director demonstrates that such controls are feasible.

(2) Compliance program.

(a) Where the TWA or excursion limit is exceeded, the employer shall establish and implement a written program to reduce employee exposure to or below the TWA and to or below the excursion limit by means of engineering and work practice controls, as required by subsection (1) of this section, and by the use of respiratory protection where required or permitted under WAC 296-62-07355 through 296-62-07389.

(b) The compliance program shall include a schedule for periodic leak detection surveys and a written plan for emergency situations, as specified in WAC 296-62-07369 (1)(a).

(c) Written plans for a program required in this subsection shall be developed and furnished upon request for examination and copying to the director, affected employees and designated employee representatives. Such plans shall be reviewed at least every twelve months, and shall be updated as necessary to reflect significant changes in the status of the employer's compliance program.

(d) The employer shall not implement a schedule of employee rotation as a means of compliance with the TWA or excursion limit.

[Statutory Authority: Chapter 49.17 RCW. 88-23-054 (Order 88-25), § 296-62-07365, filed 11/14/88; 87-24-051 (Order 87-24), § 296-62-07365, filed 11/30/87.]

WAC 296-62-07367 Respiratory protection and personal protective equipment. (1) General. For employees who use respirators required by this section, the employer must provide respirators that comply with the requirements of WAC 296-62-07355 through 296-62-07389. Respirators must be used during:

(a) Periods necessary to install or implement feasible engineering and work-practice controls;

(b) Work operations, such as maintenance and repair activities, vessel cleaning, or other activities, for which engineering and work-practice controls are not feasible;

(c) Work operations for which feasible engineering and work-practice controls are not yet sufficient to reduce employee exposure to or below the TWA or excursion limit;

(d) Emergencies.

(2) Respirator program. The employer must establish, implement, and maintain a respiratory protection program as required in chapter 296-842 WAC, except WAC 296-842-13005 and 296-842-14005.

(3) Respirator selection. The employer must select the appropriate respirator from Table 1 of this section.

Table 1.—Minimum Requirements for Respiratory Protection for Airborne EtO

Condition of use or concentration of airborne EtO (ppm)	Minimum required respirator
Equal to or less than 50	(a) Full facepiece respirator with EtO approved canister, front- or back-mounted.
Equal to or less than 2,000	(a) Positive-pressure supplied air respirator, equipped with full facepiece, hood or helmet, or (b) Continuous-flow supplied air respirator (positive pressure) equipped with hood, helmet or suit.
Concentration above 2,000 or unknown concentration (such as in emergencies)	(a) Positive-pressure self-contained breathing apparatus (SCBA), equipped with full facepiece, or (b) Positive-pressure full facepiece supplied air respirator equipped with an auxiliary positive-pressure self-contained breathing apparatus.
Fire fighting	(a) Positive pressure self-contained breathing apparatus equipped with full facepiece.
Escape	(a) Any respirator described above.

Note: Respirators approved for use in higher concentrations are permitted to be used in lower concentrations.

(4) Protective clothing and equipment. Where employees could have eye or skin contact with EtO or EtO solutions,

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the employer must select and provide, at no cost to the employee, appropriate protective clothing or other equipment in accordance with WAC 296-800-160, and to protect any area of the body that may come in contact with liquid EtO or EtO in solution, and must ensure that the employee wears the protective clothing and equipment provided.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. 05-03-093, § 296-62-07367, filed 1/18/05, effective 3/1/05. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 01-11-038, § 296-62-07367, filed 5/9/01, effective 9/1/01; 99-10-071, § 296-62-07367, filed 5/4/99, effective 9/1/99. Statutory Authority: Chapter 49.17 RCW. 94-20-057 (Order 94-16), § 296-62-07367, filed 9/30/94, effective 11/20/94; 88-23-054 (Order 88-25), § 296-62-07367, filed 11/14/88; 87-24-051 (Order 87-24), § 296-62-07367, filed 11/30/87.]

WAC 296-62-07369 Emergency situations. (1) Written plan.

(a) A written plan for emergency situations shall be developed for each workplace where there is a possibility of an emergency. Appropriate portions of the plan shall be implemented in the event of an emergency.

(b) The plan shall specifically provide that employees engaged in correcting emergency conditions shall be equipped with respiratory protection as required by WAC 296-62-07367 until the emergency is abated.

(c) The plan shall include the elements prescribed in WAC 296-24-567, "Employee emergency plans and fire prevention plans."

(2) Alerting employees. Where there is the possibility of employee exposure to EtO due to an emergency, means shall be developed to alert potentially affected employees of such occurrences promptly. Affected employees shall be immediately evacuated from the area in the event that an emergency occurs.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07369, filed 5/4/99, effective 9/1/99. Statutory Authority: Chapter 49.17 RCW. 87-24-051 (Order 87-24), § 296-62-07369, filed 11/30/87.]

WAC 296-62-07371 Medical surveillance. (1) General.

(a) Employees covered.

(i) The employer shall institute a medical surveillance program for all employees who are or may be exposed to EtO at or above the action level, without regard to the use of respirators, for at least thirty days a year.

(ii) The employer shall make available medical examinations and consultations to all employees who have been exposed to EtO in an emergency situation.

(b) Examination by a physician. The employer shall ensure that all medical examinations and procedures are performed by or under the supervision of a licensed physician, and are provided without cost to the employee, without loss of pay, and at a reasonable time and place.

(2) Medical examinations and consultations.

(a) Frequency. The employer shall make available medical examinations and consultations to each employee covered under subsection (1)(a) of this section on the following schedules:

(i) Prior to assignment of the employee to an area where exposure may be at or above the action level for at least thirty days a year.

(ii) At least annually each employee exposed at or above the action level for at least thirty days in the past year.

(iii) At termination of employment or reassignment to an area where exposure to EtO is not at or above the action level for at least thirty days a year.

(iv) As medically appropriate for any employee exposed during an emergency.

(v) As soon as possible, upon notification by an employee either (A) that the employee has developed signs or symptoms indicating possible overexposure to EtO, or (B) that the employee desires medical advice concerning the effects of current or past exposure to EtO on the employee's ability to produce a healthy child.

(vi) If the examining physician determines that any of the examinations should be provided more frequently than specified, the employer shall provide such examinations to affected employees at the frequencies recommended by the physician.

(b) Content.

(i) Medical examinations made available pursuant to (a)(i) through (iv) of this subsection shall include:

(A) A medical and work history with special emphasis directed to symptoms related to the pulmonary, hematologic, neurologic, and reproductive systems and to the eyes and skin.

(B) A physical examination with particular emphasis given to the pulmonary, hematologic, neurologic, and reproductive systems and to the eyes and skin.

(C) A complete blood count to include at least a white cell count (including differential cell count), red cell count, hematocrit, and hemoglobin.

(D) Any laboratory or other test which the examining physician deems necessary by sound medical practice.

(ii) The content of medical examinations or consultation made available pursuant to (a)(i)(v) of this subsection shall be determined by the examining physician, and shall include pregnancy testing or laboratory evaluation of fertility, if requested by the employee and deemed appropriate by the physician.

(3) Information provided to the physician. The employer shall provide the following information to the examining physician:

(a) A copy of WAC 296-62-07355 through 296-62-07389.

(b) A description of the affected employee's duties as they relate to the employee's exposure.

(c) The employee's representative exposure level or anticipated exposure level.

(d) A description of any personal protective and respiratory equipment used or to be used.

(e) Information from previous medical examinations of the affected employee that is not otherwise available to the examining physician.

(4) Physician's written opinion.

(a) The employer shall obtain a written opinion from the examining physician. This written opinion shall contain the results of the medical examination and shall include:

(i) The physician's opinion as to whether the employee has any detected medical conditions that would place the employee at an increased risk of material health impairment from exposure to EtO;

(ii) Any recommended limitations on the employee or upon the use of personal protective equipment such as clothing or respirators; and

(iii) A statement that the employee has been informed by the physician of the results of the medical examination and of any medical conditions resulting from EtO exposure that require further explanation or treatment.

(b) The employer shall instruct the physician not to reveal in the written opinion given to the employer specific findings or diagnoses unrelated to occupational exposure to EtO.

(c) The employer shall provide a copy of the physician's written opinion to the affected employee within fifteen days from its receipt.

[Statutory Authority: Chapter 49.17 RCW. 87-24-051 (Order 87-24), § 296-62-07371, filed 11/30/87.]

WAC 296-62-07373 Communication of EtO hazards to employees. (1) Signs and labels.

(a) The employer shall post and maintain legible signs demarcating regulated areas and entrances or accessways to regulated areas that bear the following legend:

DANGER
ETHYLENE OXIDE
CANCER HAZARD AND REPRODUCTIVE HAZARD
AUTHORIZED PERSONNEL ONLY
RESPIRATORS AND PROTECTIVE CLOTHING MAY BE REQUIRED
TO BE WORN IN THIS AREA

(b) The employer shall ensure that precautionary labels are affixed to all containers of EtO whose contents are capable of causing employee exposure at or above the action level or whose contents may reasonably be foreseen to cause employee exposure above the excursion limit, and that the labels remain affixed when the containers of EtO leave the workplace. For the purpose of this subsection, reaction vessels, storage tanks, and pipes or piping systems are not considered to be containers. The labels shall comply with the requirements of WAC 296-800-170 of WISHA's chemical hazard communication standard, and shall include the following legend:

(i)

DANGER
CONTAINS ETHYLENE OXIDE
CANCER HAZARD AND REPRODUCTIVE HAZARD; and

(ii) A warning statement against breathing airborne concentrations of EtO.

(c) The labeling requirements under WAC 296-62-07355 through 296-62-07389 do not apply where EtO is used as a pesticide, as such term is defined in the Federal Insecticide, Fungicide, and Rodenticide Act (7 U.S.C. 136 et seq.), when it is labeled pursuant to that act and regulations issued under that act by the Environmental Protection Agency.

(2) Material safety data sheets. Employers who are manufacturers or importers of EtO shall comply with the requirements regarding development of material safety data sheets as specified in WAC 296-62-05413 of the hazard communication standard.

(3) Information and training.

(a) The employer shall provide employees who are potentially exposed to EtO at or above the action level or above the excursion limit with information and training on EtO at the time of initial assignment and at least annually thereafter.

(b) Employees shall be informed of the following:

(i) The requirements of WAC 296-62-07353 through 296-62-07389 with an explanation of its contents, including Appendices A and B;

(ii) Any operations in their work area where EtO is present;

(iii) The location and availability of the written EtO final rule; and

(iv) The medical surveillance program required by WAC 296-62-07371 with an explanation of the information in Appendix C.

(c) Employee training shall include at least:

(i) Methods and observations that may be used to detect the presence or release of EtO in the work area (such as monitoring conducted by the employer, continuous monitoring devices, etc.);

(ii) The physical and health hazards of EtO;

(iii) The measures employees can take to protect themselves from hazards associated with EtO exposure, including specific procedures the employer has implemented to protect employees from exposure to EtO, such as work practices, emergency procedures, and personal protective equipment to be used; and

(iv) The details of the hazard communication program developed by the employer, including an explanation of the labeling system and how employees can obtain and use the appropriate hazard information.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 01-11-038, § 296-62-07373, filed 5/9/01, effective 9/1/01. Statutory Authority: Chapter 49.17 RCW. 88-23-054 (Order 88-25), § 296-62-07373, filed 11/14/88; 87-24-051 (Order 87-24), § 296-62-07373, filed 11/30/87.]

WAC 296-62-07375 Recordkeeping. (1) Objective data for exempted operations.

(a) Where the processing, use, or handling of products made from or containing EtO are exempted from other requirements of WAC 296-62-07355 through 296-62-07389 under WAC 296-62-07355, or where objective data have been relied on in lieu of initial monitoring under WAC 296-62-07361 (2)(b), the employer shall establish and maintain an accurate record of objective data reasonably relied upon in support of the exemption.

(b) This record shall include at least the following information:

(i) The product qualifying for exemption;

(ii) The source of the objective data;

(iii) The testing protocol, results of testing, and/or analysis of the material for the release of EtO;

(iv) A description of the operation exempted and how the data support the exemption; and

(v) Other data relevant to the operations, materials, processing, or employee exposures covered by the exemption.

(c) The employer shall maintain this record for the duration of the employer's reliance upon such objective data.

(2) Exposure measurements.

(a) The employer shall keep an accurate record of all measurements taken to monitor employee exposure to EtO as prescribed in WAC 296-62-07361.

(b) This record shall include at least the following information:

(i) The date of measurement;

(ii) The operation involving exposure to EtO which is being monitored;

(iii) Sampling and analytical methods used and evidence of their accuracy;

(iv) Number, duration, and results of samples taken;

(v) Type of protective devices worn, if any; and

(vi) Name, Social Security number and exposure of the employees whose exposures are represented.

(c) The employer shall maintain this record for at least thirty years, in accordance with chapter 296-802 WAC.

(3) Medical surveillance.

(a) The employer shall establish and maintain an accurate record for each employee subject to medical surveillance by WAC 296-62-07371 (1)(a), in accordance with chapter 296-802 WAC.

(b) The record shall include at least the following information:

(i) The name and Social Security number of the employee;

(ii) Physicians' written opinions;

(iii) Any employee medical complaints related to exposure to EtO; and

(iv) A copy of the information provided to the physician as required by WAC 296-62-07371(3).

(c) The employer shall ensure that this record is maintained for the duration of employment plus thirty years, in accordance with chapter 296-802 WAC.

(4) Availability.

(a) The employer, upon written request, shall make all records required to be maintained by WAC 296-62-07355 through 296-62-07389 available to the director for examination and copying.

(b) The employer, upon request, shall make any exemption and exposure records required by WAC 296-62-07377 (1) and (2) available for examination and copying to affected employees, former employees, designated representatives and the director, in accordance with chapter 296-802 WAC.

(c) The employer, upon request, shall make employee medical records required by subsection (3) of this section available for examination and copying to the subject employee, anyone having the specific written consent of the subject employee, and the director, in accordance with chapter 296-802 WAC.

(5) Transfer of records.

(a) The employer shall comply with the requirements concerning transfer of records set forth in chapter 296-802 WAC.

(b) Whenever the employer ceases to do business and there is no successor employer to receive and retain the records for the prescribed period, the employer shall notify the director at least ninety days prior to disposal and transmit them to the director.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.-060. 04-10-026, § 296-62-07375, filed 4/27/04, effective 8/1/04. Statutory

Authority: Chapter 49.17 RCW. 87-24-051 (Order 87-24), § 296-62-07375, filed 11/30/87.]

WAC 296-62-07377 Observation of monitoring. (1)

Employee observation. The employer shall provide affected employees or their designated representatives an opportunity to observe any monitoring of employee exposure to EtO conducted in accordance with WAC 296-62-07361.

(2) Observation procedures. When observation of the monitoring of employee exposure to EtO requires entry into an area where the use of protective clothing or equipment is required, the observer shall be provided with and be required to use such clothing and equipment and shall comply with all other applicable safety and health procedures.

[Statutory Authority: Chapter 49.17 RCW. 87-24-051 (Order 87-24), § 296-62-07377, filed 11/30/87.]

WAC 296-62-07381 Appendices. The information contained in the appendices is not intended by itself to create any additional obligations not otherwise imposed or to detract from any existing obligation.

[Statutory Authority: Chapter 49.17 RCW. 87-24-051 (Order 87-24), § 296-62-07381, filed 11/30/87.]

WAC 296-62-07383 Appendix A—Substance safety data sheet for ethylene oxide (nonmandatory). (1) **Substance identification**

(a) Substance: Ethylene oxide (C₂H₄O).

(b) Synonyms: Dihydrooxirene, dimethylene oxide, EO, 1,2-epoxyethane, EtO, ETO, oxacyclopropane, oxane, oxidoethane, alpha/beta-oxidoethane, oxiran, oxirane.

(c) Ethylene oxide can be found as a liquid or vapor.

(d) EtO is used in the manufacture of ethylene glycol, surfactants, ethanolamines, glycol ethers, and other organic chemicals. EtO is also used as a sterilant and fumigant.

(e) Appearance and odor: Colorless liquid below 10.7°C (51.3°F) or colorless gas with ether-like odor detected at approximately 700 parts EtO per million parts of air (700 ppm).

(f) Permissible exposure: Exposure may not exceed 1 part EtO per million parts of air averaged over the 8-hour work day.

(2) Health hazard data

(a) Ethylene oxide can cause bodily harm if you inhale the vapor, if it comes into contact with your eyes or skin, or if you swallow it.

(b) Effects of overexposure:

(i) Ethylene oxide in liquid form can cause eye irritation and injury to the cornea, frostbite, and severe irritation and blistering of the skin upon prolonged or confined contact. Ingestion of EtO can cause gastric irritation and liver injury. Acute effects from inhalation of EtO vapors include respiratory irritation and lung injury, headache, nausea, vomiting, diarrhea, shortness of breath, and cyanosis (blue or purple coloring of skin). Exposure has also been associated with the occurrence of cancer, reproductive effects, mutagenic changes, neurotoxicity, and sensitization.

(ii) EtO has been shown to cause cancer in laboratory animals and has been associated with higher incidences of cancer in humans. Adverse reproductive effects and chromosome damage may also occur from EtO exposure.

(c) Reporting signs and symptoms: You should inform your employer if you develop any signs or symptoms and suspect that they are caused by exposure to EtO.

(3) Emergency first-aid procedures

(a) Eye exposure: If EtO gets into your eyes, wash your eyes immediately with large amounts of water, lifting the lower and upper eyelids. Get medical attention immediately. Contact lenses should not be worn when working with this chemical.

(b) Skin exposure: If EtO gets on your skin, immediately wash the contaminated skin with water. If EtO soaks through your clothing, especially your shoes, remove the clothing immediately and wash the skin with water using an emergency deluge shower. Get medical attention immediately. Thoroughly wash contaminated clothing before reusing. Contaminated leather shoes or other leather articles should not be reused and should be discarded.

(c) Inhalation: If large amounts of EtO are inhaled, the exposed person must be moved to fresh air at once. If breathing has stopped, perform cardiopulmonary resuscitation. Keep the affected person warm and at rest. Get medical attention immediately.

(d) Swallowing: When EtO has been swallowed, give the person large quantities of water immediately. After the water has been swallowed, try to get the person to vomit by having him or her touch the back of the throat with his or her finger. Do not make an unconscious person vomit. Get medical attention immediately.

(e) Rescue: Move the affected person from the hazardous exposure. If the exposed person has been overcome, attempt rescue only after notifying at least one other person of the emergency and putting into effect established emergency procedures. Do not become a casualty yourself. Understand your emergency rescue procedures and know the location of the emergency equipment before the need arises.

(4) Respirators and protective clothing

(a) Respirators:

(i) You may be required to wear a respirator for nonroutine activities, in emergencies, while your employer is in the process of reducing EtO exposure through engineering controls, and in areas where engineering controls are not feasible. Only air supplied positive-pressure, full-facepiece respirators are approved for protection against EtO. If air-purifying respirators are worn in the future, they must have a label issued by the National Institute for Occupational Safety and Health (NIOSH) under the provisions of 42 CFR part 84 stating that the respirators have been certified for use with ethylene oxide. For effective protection, respirators must fit your face and head snugly. Respirators must not be loosened or removed in work situations where their use is required.

(ii) EtO does not have a detectable odor except at levels well above the permissible exposure limits. If you can smell EtO while wearing a respirator, proceed immediately to fresh air. If you experience difficulty breathing while wearing a respirator, tell your employer.

(b) Protective clothing:

(i) You may be required to wear impermeable clothing, gloves, a face shield, or other appropriate protective clothing to prevent skin contact with liquid EtO or EtO-containing solutions. Where protective clothing is required, your

employer must provide clean garments to you as necessary to assure that the clothing protects you adequately.

(ii) Replace or repair protective clothing that has become torn or otherwise damaged.

(iii) EtO must never be allowed to remain on the skin. Clothing and shoes which are not impermeable to EtO should not be allowed to become contaminated with EtO, and if they do, the clothing should be promptly removed and decontaminated. Contaminated leather shoes should be discarded. Once EtO penetrates shoes or other leather articles, they should not be worn again.

(c) Eye protection: You must wear splashproof safety goggles in areas where liquid EtO or EtO-containing solutions may contact your eyes. In addition, contact lenses should not be worn in areas where eye contact with EtO can occur.

(5) Precautions for safe use, handling, and storage

(a) EtO is a flammable liquid, and its vapors can easily form explosive mixtures in air.

(b) EtO must be stored in tightly closed containers in a cool, well-ventilated area, away from heat, sparks, flames, strong oxidizers, alkalines, and acids, strong bases, acetylide forming metals such as copper, silver, mercury and their alloys.

(c) Sources of ignition such as smoking material, open flames and some electrical devices are prohibited wherever EtO is handled, used, or stored in a manner that could create a potential fire or explosion hazard.

(d) You should use nonsparking tools when opening or closing metal containers of EtO, and containers must be bonded and grounded in the rare instances in which liquid EtO is poured or transferred.

(e) Impermeable clothing wet with liquid EtO or EtO-containing solutions may be easily ignited. If you are wearing impermeable clothing and are splashed with liquid EtO or EtO-containing solution, you should immediately remove the clothing while under an emergency deluge shower.

(f) If your skin comes into contact with liquid EtO or EtO-containing solutions, you should immediately remove the EtO using an emergency deluge shower.

(g) You should not keep food, beverages, or smoking materials in regulated areas where employee exposures are above the permissible exposure limits.

(h) Fire extinguishers and emergency deluge showers for quick drenching should be readily available, and you should know where they are and how to operate them.

(i) Ask your supervisor where EtO is used in your work area and for any additional plant safety and health rules.

(6) Access to information

(a) Each year, your employer is required to inform you of the information contained in this standard and appendices for EtO. In addition, your employer must instruct you in the proper work practices for using EtO emergency procedures, and the correct use of protective equipment.

(b) Your employer is required to determine whether you are being exposed to EtO. You or your representative has the right to observe employee measurements and to record the results obtained. Your employer is required to inform you of your exposure. If your employer determines that you are being overexposed, he or she is required to inform you of the

actions which are being taken to reduce your exposure to within permissible exposure limits.

(c) Your employer is required to keep records of your exposures and medical examinations. These exposure records must be kept by the employer for at least thirty years. Medical records must be kept for the period of your employment plus thirty years.

(d) Your employer is required to release your exposure and medical records to your physician or designated representative upon your written request.

(7) Sterilant use of EtO in hospitals and health care facilities.

(a) This section of Appendix A, for informational purposes, sets forth EPA's recommendations for modifications in workplace design and practice in hospitals and health care facilities for which the Environmental Protection Agency has registered EtO for uses as a sterilant or fumigant under the Federal Insecticide, Fungicide, and Rodenticide Act, 7 U.S.C. 136 *et seq.* These new recommendations, published in the **Federal Register** by EPA at 49 FR 15268, as modified in today's **Register**, are intended to help reduce the exposure of hospital and health care workers to EtO to 1 ppm. EPA's recommended workplace design and workplace practice are as follows:

(i) Workplace design

(A) Installation of gas line hand valves. Hand valves must be installed on the gas supply line at the connection to the supply cylinders to minimize leakage during cylinder change.

(B) Installation of capture boxes. Sterilizer operations result in a gas/water discharge at the completion of the process. This discharge is routinely piped to a floor drain which is generally located in an equipment or an adjacent room. When the floor drain is not in the same room as the sterilizer and workers are not normally present, all that is necessary is that the room be well ventilated.

(C) The installation of a "capture box" will be required for those work place layouts where the floor drain is located in the same room as the sterilizer or in a room where workers are normally present. A "capture box" is a piece of equipment that totally encloses the floor drain where the discharge from the sterilizer is pumped. The "capture box" is to be vented directly to a nonrecirculating or dedicated ventilation system. Sufficient air intake should be allowed at the bottom of the box to handle the volume of air that is ventilated from the top of the box. The "capture box" can be made of metal, plastic, wood or other equivalent material. The box is intended to reduce levels of EtO discharged into the work room atmosphere. The use of a "capture box" is not required if: (I) The vacuum pump discharge floor drain is located in a well ventilated equipment or other room where workers are not normally present or (II) the water sealed vacuum pump discharges directly to a closed sealed sewer line (check local plumbing codes).

(D) If it is impractical to install a vented "capture box" and a well ventilated equipment or other room is not feasible, a box that can be sealed over the floor drain may be used if: (I) The floor drain is located in a room where workers are not normally present and EtO cannot leak into an occupied area, and (II) the sterilizer in use is less than 12 cubic feet in capacity (check local plumbing codes).

(ii) Ventilation of aeration units.

(A) Existing aeration units. Existing units must be vented to a nonrecirculating or dedicated system or vented to an equipment or other room where workers are not normally present and which is well ventilated. Aerator units must be positioned as close as possible to the sterilizer to minimize the exposure from the off-gassing of sterilized items.

(B) Installation of new aerator units (where none exist). New aerator units must be vented as described above for existing aerators. Aerators must be in place by July 1, 1986.

(iii) Ventilation during cylinder change. Workers may be exposed to short but relatively high levels of EtO during the change of gas cylinders. To reduce exposure from this route, users must select one of three alternatives designed to draw off gas that may be released when the line from the sterilizer to the cylinder is disconnected:

(A) Location of cylinders in a well ventilated equipment room or other room where workers are not normally present.

(B) Installation of a flexible hose (at least four inches in diameter) to a nonrecirculating or dedicated ventilation system and located in the area of cylinder change in such a way that the hose can be positioned at the point where the sterilizer gas line is disconnected from the cylinder.

(C) Installation of a hood that is part of a nonrecirculating or dedicated system and positioned no more than one foot above the point where the change of cylinders takes place.

(iv) Ventilation of sterilizer door area. One of the major sources of exposure to EtO occurs when the sterilizer door is opened following the completion of the sterilization process. In order to reduce this avenue of exposure, a hood or metal canopy closed on each end must be installed over the sterilizer door. The hood or metal canopy must be connected to a nonrecirculating or dedicated ventilation system or one that exhausts gases to a well ventilated equipment or other room where workers are not normally present. A hood or canopy over the sterilizer door is required for use even with those sterilizers that have a purge cycle and must be in place by July 1, 1986.

(v) Ventilation of sterilizer relief valve. Sterilizers are typically equipped with a safety relief device to release gas in case of increased pressure in the sterilizer. Generally, such relief devices are used on pressure vessels. Although these pressure relief devices are rarely opened for hospital and health care sterilizers, it is suggested that they be designed to exhaust vapor from the sterilizer by one of the following methods:

(A) Through a pipe connected to the outlet of the relief valve ventilated directly outdoors at a point high enough to be away from passers by, and not near any windows that open, or near any air conditioning or ventilation air intakes.

(B) Through a connection to an existing or new nonrecirculating or dedicated ventilation system.

(C) Through a connection to a well ventilated equipment or other room where workers are not normally present.

(vi) Ventilation systems. Each hospital and health care facility affected by this notice that uses EtO for the sterilization of equipment and supplies must have a ventilation system which enables compliance with the requirements of (a)(i)(B) through (v) of this subsection in the manner described in these sections and within the time frames

allowed. Thus, each affected hospital and health care facility must have or install a nonrecirculating or dedicated ventilation equipment or other room where workers are not normally present in which to vent EtO.

(vii) Installation of alarm systems. An audible and visual indicator alarm system must be installed to alert personnel of ventilation system failures, i.e., when the ventilation fan motor is not working.

(b) Workplace practices

(i) All the workplace practices discussed in this unit must be permanently posted near the door of each sterilizer prior to use by any operator.

(ii) Changing of supply line filters.

Filters in the sterilizer liquid line must be changed when necessary, by the following procedure:

(A) Close the cylinder valve and the hose valve.

(B) Disconnect the cylinder hose (piping) from the cylinder.

(C) Open the hose valve and bleed slowly into a proper ventilating system at or near the in-use supply cylinders.

(D) Vacate the area until the line is empty.

(E) Change the filter.

(F) Reconnect the lines and reverse the valve position.

(G) Check hoses, filters, and valves for leaks with a fluorocarbon leak detector (for those sterilizers using the eighty-eight percent chlorofluorocarbon, twelve percent ethylene oxide mixture (12/88)).

(iii) Restricted access area.

(A) Areas involving use of EtO must be designated as restricted access areas. They must be identified with signs or floor marks near the sterilizer door, aerator, vacuum pump floor drain discharge, and in-use cylinder storage.

(B) All personnel must be excluded from the restricted area when certain operations are in progress, such as discharging a vacuum pump, emptying a sterilizer liquid line, or venting a nonpurge sterilizer with the door ajar or other operations where EtO might be released directly into the face of workers.

(iv) Door opening procedures.

(A) Sterilizers with purge cycles. A load treated in a sterilizer equipped with a purge cycle should be removed immediately upon completion of the cycle (provided no time is lost opening the door after cycle is completed). If this is not done, the purge cycle should be repeated before opening door.

(B) Sterilizers without purge cycles. For a load treated in a sterilizer not equipped with a purge cycle, the sterilizer door must be ajar six inches for fifteen minutes, and then fully opened for at least another fifteen minutes before removing the treated load. The length of time of the second period should be established by peak monitoring for one hour after the two fifteen-minute periods suggested. If the level is above 10 ppm time-weighted average for eight hours, more time should be added to the second waiting period (door wide open). However, in no case may the second period be shortened to less than fifteen minutes.

(v) Chamber unloading procedures.

(A) Procedures for unloading the chamber must include the use of baskets or rolling carts, or baskets and rolling tables to transfer treated loads quickly, thus avoiding excessive contact with treated articles, and reducing the duration of exposures.

(B) If rolling carts are used, they should be pulled not pushed by the sterilizer operators to avoid offgassing exposure.

(vi) Maintenance. A written log should be instituted and maintained documenting the date of each leak detection and any maintenance procedures undertaken. This is a suggested use practice and is not required.

(vii) Leak detection. Sterilizer door gaskets, cylinder and vacuum piping, hoses, filters, and valves must be checked for leaks under full pressure with a Fluorocarbon leak detector (for 12/88 systems only) every two weeks by maintenance personnel. Also, the cylinder piping connections must be checked after changing cylinders. Particular attention in leak detection should be given to the automatic solenoid valves that control the flow of EtO to the sterilizer. Specifically, a check should be made at the EtO gasline entrance port to the sterilizer, while the sterilizer door is open and the solenoid valves are in a closed position.

(viii) Maintenance procedures. Sterilizer/aerator door gaskets, valves, and fittings must be replaced when necessary as determined by maintenance personnel in their biweekly checks; in addition, visual inspection of the door gaskets for cracks, debris, and other foreign substances should be conducted daily by the operator.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07383, filed 5/4/99, effective 9/1/99. Statutory Authority: Chapter 49.17 RCW. 88-14-108 (Order 88-11), § 296-62-07383, filed 7/6/88; 87-24-051 (Order 87-24), § 296-62-07383, filed 11/30/87.]

WAC 296-62-07385 Appendix B—Substance technical guidelines for ethylene oxide (nonmandatory). (1) Physical and chemical data:

(a) Substance identification:

(i) Synonyms: Dihydrooxirene, dimethylene oxide, EO, 1,2-epoxyethane, EtO, ETO, oxacyclopropane, oxane, oxidoethane, alpha/beta-oxidoethane, oxiran, oxirane.

(ii) Formula: (C₂H₄O).

(iii) Molecular weight: 44.06.

(b) Physical data:

(i) Boiling point (760 mm Hg): 10.70°C (51.3°F);

(ii) Specific gravity (water = 1): 0.87 (at 20°C or 68°F);

(iii) Vapor density (air = 1): 1.49;

(iv) Vapor pressure (at 20°C): 1,095 mm Hg;

(v) Solubility in water: Complete;

(vi) Appearance and odor: Colorless liquid; gas at temperature above 10.7°F or 51.3°C with ether-like odor above 700 ppm.

(2) Fire, explosion, and reactivity hazard data:

(a) Fire:

(i) Flash point: Less than 0°F (open cup);

(ii) Stability: Decomposes violently at temperatures above 800°F;

(iii) Flammable limits in air, percent by volume: Lower: 3, Upper: 100;

(iv) Extinguishing media: Carbon dioxide for small fires, polymer or alcohol foams for large fires;

(v) Special fire fighting procedures: Dilution of ethylene oxide with 23 volumes of water renders it nonflammable;

(vi) Unusual fire and explosion hazards: Vapors of EtO will burn without the presence of air or other oxidizers. EtO

vapors are heavier than air and may travel along the ground and be ignited by open flames or sparks at locations remote from the site at which EtO is being used.

(vii) For purposes of compliance with the requirements of WAC 296-24-330, EtO is classified as a flammable gas. For example, 7,500 ppm, approximately one-fourth of the lower flammable limit, would be considered to pose a potential fire and explosion hazard.

(viii) For purposes of compliance with WAC 296-24-585, EtO is classified as a Class B fire hazard.

(ix) For purpose of compliance with chapter 296-24 WAC Part L, and WAC 296-800-280, locations classified as hazardous due to the presence of EtO shall be Class I.

(b) Reactivity:

(i) Conditions contributing to instability: EtO will polymerize violently if contaminated with aqueous alkalis, amines, mineral acids, metal chlorides, or metal oxides. Violent decomposition will also occur at temperatures above 800°F;

(ii) Incompatibilities: Alkalines and acids;

(iii) Hazardous decomposition products: Carbon monoxide and carbon dioxide.

(3) Spill, leak, and disposal procedures:

(a) If EtO is spilled or leaked, the following steps should be taken:

(i) Remove all ignition sources.

(ii) The area should be evacuated at once and re-entered only after the area has been thoroughly ventilated and washed down with water.

(b) Persons not wearing appropriate protective equipment should be restricted from areas of spills or leaks until cleanup has been completed.

(c) Waste disposal method: Waste material should be disposed of in a manner that is not hazardous to employees or to the general population. In selecting the method of waste disposal, applicable local, state, and federal regulations should be consulted.

(4) Monitoring and measurement procedures:

(a) Exposure above the permissible exposure limit:

(i) Eight-hour exposure evaluation: Measurements taken for the purpose of determining employee exposure under this section are best taken with consecutive samples covering the full shift. Air samples should be taken in the employee's breathing zone (air that would most nearly represent that inhaled by the employee.)

(ii) Monitoring techniques: The sampling and analysis under this section may be performed by collection of the EtO vapor on charcoal adsorption tubes or other composition adsorption tubes, with subsequent chemical analysis. Sampling and analysis may also be performed by instruments such as real time continuous monitoring systems, portable direct reading instruments, or passive dosimeters as long as measurements taken using these methods accurately evaluate the concentration of EtO in employees' breathing zones.

(iii) Appendix D describes the validated method of sampling and analysis which has been tested by OSHA for use with EtO. Other available methods are also described in Appendix D. The employer has the obligation of selecting a monitoring method which meets the accuracy and precision requirements of the standard under his/her unique field conditions. The standard requires that the method of monitoring

should be accurate, to a 95 percent confidence level, to plus or minus 25 percent for concentrations of EtO at 1 ppm, and to plus or minus 35 percent for concentrations at 0.5 ppm. In addition to the method described in Appendix D, there are numerous other methods available for monitoring for EtO in the workplace. Details on these other methods have been submitted by various companies to the rulemaking record, and are available at the OSHA Docket Office.

(b) Since many of the duties relating to employee exposure are dependent on the results of measurement procedures, employers should assure that the evaluation of employee exposures is performed by a technically qualified person.

(5) Protective clothing and equipment:

(a) Employees should be provided with and be required to wear appropriate protective clothing wherever there is significant potential for skin contact with liquid EtO or EtO-containing solutions. Protective clothing shall include impermeable coveralls or similar full-body work clothing, gloves, and head coverings, as appropriate to protect areas of the body which may come in contact with liquid EtO or EtO-containing solutions.

(b) Employers should ascertain that the protective garments are impermeable to EtO. Permeable clothing, including items made of rubber, and leather shoes should not be allowed to become contaminated with liquid EtO. If permeable clothing does become contaminated, it should be immediately removed, while the employer is under an emergency deluge shower. If leather footwear or other leather garments become wet from EtO they should be discarded and not be worn again, because leather absorbs EtO and holds it against the skin.

(c) Any protective clothing that has been damaged or is otherwise found to be defective should be repaired or replaced. Clean protective clothing should be provided to the employee as necessary to assure employee protection. Whenever impermeable clothing becomes wet with liquid EtO, it should be washed down with water before being removed by the employee. Employees are also required to wear splash-proof safety goggles where there is any possibility of EtO contacting the eyes.

(6) Miscellaneous precautions:

(a) Store EtO in tightly closed containers in a cool, well-ventilated area and take all necessary precautions to avoid any explosion hazard.

(b) Nonsparking tools must be used to open and close metal containers. These containers must be effectively grounded and bonded.

(c) Do not incinerate EtO cartridges, tanks or other containers.

(d) Employers should advise employees of all areas and operations where exposure to EtO occurs.

(7) Common operations:

Common operations in which exposure to EtO is likely to occur include the following: (a) Manufacture of EtO, (b) surfactants, (c) ethanolamines, (d) glycol ethers, (e) specialty chemicals, and (f) use as a sterilant in the hospital, health product and spice industries.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 01-11-038, § 296-62-07385, filed 5/9/01, effective 9/1/01. Statutory Authority: Chapter 49.17 RCW. 91-24-017 (Order 91-07), § 296-62-07385, filed

11/22/91, effective 12/24/91; 88-14-108 (Order 88-11), § 296-62-07385, filed 7/6/88; 87-24-051 (Order 87-24), § 296-62-07385, filed 11/30/87.]

WAC 296-62-07387 Appendix C—Medical surveillance guidelines for ethylene oxide (nonmandatory). (1)

Route of entry: Inhalation.

(2) Toxicology:

(a) Clinical evidence of adverse effects associated with the exposure to EtO is present in the form of increased incidence of cancer in laboratory animals (leukemia, stomach, brain), mutation in offspring in animals, and resorptions and spontaneous abortions in animals and human populations respectively. Findings in humans and experimental animals exposed to airborne concentrations of EtO also indicate damage to the genetic material (DNA). These include hemoglobin alkylation, unscheduled DNA synthesis, sister chromatid exchange chromosomal aberration, and functional sperm abnormalities.

(b) Ethylene oxide in liquid form can cause eye irritation and injury to the cornea, frostbite, severe irritation, and blistering of the skin upon prolonged or confined contact. Ingestion of EtO can cause gastric irritation and liver injury. Other effects from inhalation of EtO vapors include respiratory irritation and lung injury, headache, nausea, vomiting, diarrhea, dyspnea and cyanosis.

(3) Signs and symptoms of acute overexposure:

(a) The early effects of acute overexposure to EtO are nausea and vomiting, headache, and irritation of the eyes and respiratory passages. The patient may notice a "peculiar taste" in the mouth. Delayed effects can include pulmonary edema, drowsiness, weakness, and incoordination. Studies suggest that blood cell changes, an increase in chromosomal aberrations, and spontaneous abortion may also be casually related to acute overexposure to EtO.

(b) Skin contact with liquid or gaseous EtO causes characteristic burns and possible even an allergic-type sensitization. The edema and erythema occurring from skin contact with EtO progress to vesiculation with a tendency to coalesce into blebs with desquamation. Healing occurs within three weeks, but there may be a residual brown pigmentation. A 40-80% solution is extremely dangerous, causing extensive blistering after only brief contact. Pure liquid EtO causes frostbite because of rapid evaporation. In contrast, the eye is relatively insensitive to EtO, but there may be some irritation of the cornea.

(c) Most reported acute effects of occupational exposure to EtO are due to contact with EtO in liquid phase. The liquid readily penetrates rubber and leather, and will produce blistering if clothing or footwear contaminated with EtO are not removed.

(4) Surveillance and preventive considerations:

(a) As noted above, exposure to EtO has been linked to an increased risk of cancer and reproductive effects including decreased male fertility, fetotoxicity, and spontaneous abortion. EtO workers are more likely to have chromosomal damage than similar groups not exposed to EtO. At the present, limited studies of chronic effects in humans resulting from exposure to EtO suggest a causal association with leukemia. Animal studies indicate leukemia and cancers at other sites (brain, stomach) as well. The physician should be aware of

the findings of these studies in evaluating the health of employees exposed to EtO.

(b) Adequate screening tests to determine an employee's potential for developing serious chronic diseases, such as cancer, from exposure to EtO do not presently exist. Laboratory tests may, however, give evidence to suggest that an employee is potentially overexposed to EtO. It is important for the physician to become familiar with the operating conditions in which exposure to EtO is likely to occur. The physician also must become familiar with the signs and symptoms that indicate a worker is receiving otherwise unrecognized and unacceptable exposure to EtO. These elements are especially important in evaluating the medical and work histories and in conducting the physical exam. When an unacceptable exposure in an active employee is identified by the physician, measures taken by the employer to lower exposure should also lower the risk of serious long-term consequences.

(c) The employer is required to institute a medical surveillance program for all employees who are or will be exposed to EtO at or above the action level (0.5 ppm) for at least 30 days per year, without regard to respirator use. All examinations and procedures must be performed by or under the supervision of a licensed physician at a reasonable time and place for the employee and at no cost to the employee.

(d) Although broad latitude in prescribing specific tests to be included in the medical surveillance program is extended to the examining physician, WISHA requires inclusion of the following elements in the routine examination:

(i) Medical and work histories with special emphasis directed to symptoms related to the pulmonary, hematologic, neurologic, and reproductive systems and to the eyes and skin.

(ii) Physical examination with particular emphasis given to the pulmonary, hematologic, neurologic, and reproductive systems and to the eyes and skin.

(iii) Complete blood count to include at least a white cell count (including differential cell count), red cell count, hematocrit, and hemoglobin.

(iv) Any laboratory or other test which the examining physician deems necessary by sound medical practice.

(e) If requested by the employee, the medical examinations shall include pregnancy testing or laboratory evaluation of fertility as deemed appropriate by the physician.

(f) In certain cases, to provide sound medical advice to the employer and the employee, the physician must evaluate situations not directly related to EtO. For example, employees with skin diseases may be unable to tolerate wearing protective clothing. In addition those with chronic respiratory diseases may not tolerate the wearing of negative pressure (air purifying) respirators. Additional tests and procedures that will help the physician determine which employees are medically unable to wear such respirators should include: An evaluation of cardiovascular function, a baseline chest X ray to be repeated at five year intervals, and a pulmonary function test to be repeated every three years. The pulmonary function test should include measurement of the employee's forced vital capacity (FVC), forced expiratory volume at one second (FEV1), as well as calculation of the ratios of FEV1 to FVC, and measured FVC and measured FEV1 to expected values corrected for variation due to age, sex, race, and height.

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(g) The employer is required to make the prescribed tests available at least annually to employees who are or will be exposed at or above the action level, for 30 or more days per year; more often than specified if recommended by the examining physician; and upon the employee's termination of employment or reassignment to another work area. While little is known about the long-term consequences of high short-term exposures, it appears prudent to monitor such affected employees closely in light of existing health data. The employer shall provide physician recommended examinations to any employee exposed to EtO in emergency conditions. Likewise, the employer shall make available medical consultations including physician recommended exams to employees who believe they are suffering signs or symptoms of exposure to EtO.

(h) The employer is required to provide the physician with the following information: A copy of this standard and its appendices; a description of the affected employee's duties as they relate to the employee exposure level; and information from the employee's previous medical examinations which is not readily available to the examining physician. Making this information available to the physician will aid in the evaluation of the employee's health in relation to assigned duties and fitness to wear personal protective equipment, when required.

(i) The employer is required to obtain a written opinion from the examining physician containing the results of the medical examinations; the physician's opinion as to whether the employee has any detected medical conditions which would place the employee at increased risk of material impairment of his or her health from exposure to EtO; any recommended restrictions upon the employee's exposure to EtO, or upon the use of protective clothing or equipment such as respirators; and a statement that the employee has been informed by the physician of the results of the medical examination and of any medical conditions which require further explanation or treatment. This written opinion must not reveal specific findings or diagnoses unrelated to occupational exposure to EtO, and a copy of the opinion must be provided to the affected employee.

(j) The purpose in requiring the examining physician to supply the employer with a written opinion is to provide the employer with a medical basis to aid in the determination of initial placement of employees and to assess the employee's ability to use protective clothing and equipment.

[Statutory Authority: Chapter 49.17 RCW. 88-14-108 (Order 88-11), § 296-62-07387, filed 7/6/88; 87-24-051 (Order 87-24), § 296-62-07387, filed 11/30/87.]

WAC 296-62-07389 Appendix D—Sampling and analytical methods for ethylene oxide (nonmandatory).

(1) A number of methods are available for monitoring employee exposures to EtO. Most of these involve the use of charcoal tubes and sampling pumps, followed by analysis of the samples by gas chromatograph. The essential differences between the charcoal tube methods include, among others, the use of different desorbing solvents, the use of different lots of charcoal, and the use of different equipment for analysis of the samples. Besides charcoal, methods using passive dosimeters, gas sampling bags, impingers, and detector tubes have been utilized for determination of EtO exposure. In

addition, there are several commercially available portable gas analyzers and monitoring units. This appendix contains details for the method which has been tested at the OSHA Analytical Laboratory in Salt Lake City. Inclusion of this method in the appendix does not mean that this method is the only one which will be satisfactory. Copies of descriptions of other methods available are available in the rulemaking record, and may be obtained from the OSHA Docket Office. These include the Union Carbide, Dow Chemical, 3M, and DuPont methods, as well as NIOSH Method S-286. These methods are briefly described at the end of this appendix.

(2) Employers who note problems with sample breakthrough using the OSHA or other charcoal methods should try larger charcoal tubes. Tubes of larger capacity are available. In addition, lower flow rates and shorter sampling times should be beneficial in minimizing breakthrough problems. Whatever method the employer chooses, he/she must assure himself/herself of the method's accuracy and precision under the unique conditions present in his workplace.

(3) Ethylene oxide:

(a) Method No.: 30.

(b) Matrix: Air.

(i) Target concentration: 1.0 ppm (1.8 mg/m³)

(ii) Procedure: Samples are collected on two charcoal tubes in series and desorbed with 1% CS₂ in benzene. The samples are derivatized with HBr and treated with sodium carbonate. Analysis is done by gas chromatography with an electron capture detector.

(iii) Recommended air volume and sampling rate: 1 liter and 0.05 Lpm.

(iv) Detection limit of the overall procedure: 13.3 ppb (0.024 mg/m³) (based on 1.0 liter air sample).

(v) Reliable quantitation limit: 52.2 ppb (0.094 mg/m³) (based on 1.0 liter air sample).

(vi) Standard error of estimate: 6.59% (see backup section 4.6).

(vii) Special requirements: Samples must be analyzed within 15 days of sampling date.

(viii) Status of method: The sampling and analytical method has been subject to the established evaluation procedures of the Organic Method Evaluations Branch.

(c) Date: August 1981.

(d) Chemist: Wayne D. Potter

(e) Organic Solvents Branch, OSHA Analytical Laboratory, Salt Lake City, Utah

(f) General discussion:

(i) Background.

(A) History of procedure.

(I) Ethylene oxide samples analyzed at the OSHA laboratory have normally been collected on activated charcoal and desorbed with carbon disulfide. The analysis is performed with a gas chromatograph equipped with a FID (flame ionization detector) as described in NIOSH Method S286 (Ref. (3)(j)(i)). This method is based on a PEL of 50 ppm and has a detection limit of about 1 ppm.

(II) Recent studies have prompted the need for a method to analyze and detect ethylene oxide at very low concentrations.

(III) Several attempts were made to form an ultraviolet (UV) sensitive derivative with ethylene oxide for analysis with HPLC. Among those tested that gave no detectable

product were: p-anisidine, methylimidazole, aniline, and 2,3,6-trichlorobenzoic acid. Each was tested with catalysts such as triethylamine, aluminum chloride, methylene chloride and sulfuric acid but no detectable derivative was produced.

(IV) The next derivatization attempt was to react ethylene oxide with HBr to form 2-bromoethanol. This reaction was successful. An ECD (electron capture detector) gave a very good response for 2-bromoethanol due to the presence of bromine. The use of carbon disulfide as the desorbing solvent gave too large a response and masked the 2-bromoethanol. Several other solvents were tested for both their response on the ECD and their ability to desorb ethylene oxide from the charcoal. Among those tested were toluene, xylene, ethyl benzene, hexane, cyclohexane and benzene. Benzene was the only solvent tested that gave a suitable response on the ECD and a high desorption. It was found that the desorption efficiency was improved by using 1% CS₂ with the benzene. The carbon disulfide did not significantly improve the recovery with the other solvents. SKC Lot 120 was used in all tests done with activated charcoal.

(B) Physical properties (Ref. (3)(j)(ii) - (iv)):

(I) Synonyms: Oxirane; dimethylene oxide; 1,2-epoxyethane; oxane; C₂H₄O; ETO;

(II) Molecular weight: 44.06;

(III) Boiling point: 10.7°C (51.3°);

(IV) Melting point: -111°C;

(V) Description: Colorless, flammable gas;

(VI) Vapor pressure: 1095 mm. at 20°C;

(VII) Odor: Ether-like odor;

(VIII) Lower explosive limits: 3.0% (by volume);

(IX) Flash point (TOC): Below 0°F;

(X) Molecular structure: CH₂—CH₂;

(ii) Limit defining parameters:

(A) Detection limit of the analytical procedure. The detection limit of the analytical procedure is 12.0 picograms of ethylene oxide per injection. This is the amount of analyte which will give a peak whose height is five times the height of the baseline noise. (See backup data section (3)(i)(i).)

(B) Detection limit of the overall procedure.

(I) The detection limit of the overall procedure is 24.0 ng of ethylene oxide per sample.

(II) This is the amount of analyte spiked on the sampling device which allows recovery of an amount of analyte equivalent to the detection limit of the analytical procedure. (See backup data section (3)(i)(ii).)

(C) Reliable quantitation limit.

(I) The reliable quantitation limit is 94.0 nanograms of ethylene oxide per sample. This is the smallest amount of analyte which can be quantitated within the requirements of 75% recovery and 95% confidence limits. (See backup data section (3)(i)(ii).)

(II) It must be recognized that the reliable quantitation limit and detection limits reported in the method are based upon optimization of the instrument for the smallest possible amount of analyte. When the target concentration of an analyte is exceptionally higher than these limits, they may not be attainable at the routine operating parameters. In this case, the limits reported on analysis reports will be based on the operating parameters used during the analysis of the samples.

(D) Sensitivity.

(I) The sensitivity of the analytical procedure over a concentration range representing 0.5 to 2 times the target concentration based on the recommended air volume is 34105 area units per ug/mL. The sensitivity is determined by the slope of the calibration curve (see backup data section (3)(i)(iii)).

(II) The sensitivity will vary somewhat with the particular instrument used in the analysis.

(E) Recovery. The recovery of analyte from the collection medium must be 75% or greater. The average recovery from spiked samples over the range of 0.5 to 2 times the target concentration is 88.0% (see backup section (3)(i)(iv)). At lower concentrations the recovery appears to be nonlinear.

(F) Precision (analytical method only). The pooled coefficient of variation obtained from replicate determination of analytical standards at 0.5X, 1X and 2X the target concentration is 0.036 (see backup data section (3)(i)(v)).

(G) Precision (overall procedure).

(I) The overall procedure must provide results at the target concentration that are 25% or better at the 95% confidence level. The precision at the 95% confidence level for the 15 day storage test is plus or minus 12.9% (see backup data section (3)(i)(vi)).

(II) This includes an additional plus or minus 5% for sampling error.

(iii) Advantages.

(A) The sampling procedure is convenient.

(B) The analytical procedure is very sensitive and reproducible.

(C) Reanalysis of samples is possible.

(D) Samples are stable for at least 15 days at room temperature.

(E) Interferences are reduced by the longer GC retention time of the new derivative.

(iv) Disadvantages.

(A) Two tubes in series must be used because of possible breakthrough and migration.

(B) The precision of the sampling rate may be limited by the reproducibility of the pressure drop across the tubes. The pumps are usually calibrated for one tube only.

(C) The use of benzene as the desorption solvent increases the hazards of analysis because of the potential carcinogenic effects of benzene.

(D) After repeated injections there can be a buildup of residue formed on the electron capture detector which decreases sensitivity.

(E) Recovery from the charcoal tubes appears to be nonlinear at low concentrations.

(g) Sampling procedure.

(i) Apparatus.

(A) A calibrated personal sampling pump whose flow can be determined within plus or minus 5% of the recommended flow.

(B) SKC Lot 120 Charcoal tubes: Glass tube with both ends flame sealed, 7 cm long with a 6 mm O.D. and a 4-mm I.D., containing 2 sections of coconut shell charcoal separated by a 2-mm portion of urethane foam. The adsorbing section contains 100 mg of charcoal, the backup section 50 mg. A 3-mm portion of urethane foam is placed between the outlet end of the tube and the backup section. A plug of silylated glass wool is placed in front of the adsorbing section.

(ii) Reagents.

None required.

(iii) Sampling technique.

(A) Immediately before sampling, break the ends of the charcoal tubes. All tubes must be from the same lot.

(B) Connect two tubes in series to the sampling pump with a short section of flexible tubing. A minimum amount of tubing is used to connect the two sampling tubes together. The tube closer to the pump is used as a backup. This tube should be identified as the backup tube.

(C) The tubes should be placed in a vertical position during sampling to minimize channeling.

(D) Air being sampled should not pass through any hose or tubing before entering the charcoal tubes.

(E) Seal the charcoal tubes with plastic caps immediately after sampling. Also, seal each sample with OSHA seals lengthwise.

(F) With each batch of samples, submit at least one blank tube from the same lot used for samples. This tube should be subjected to exactly the same handling as the samples (break, seal, transport) except that no air is drawn through it.

(G) Transport the samples (and corresponding paperwork) to the lab for analysis.

(H) If bulk samples are submitted for analysis, they should be transported in glass containers with Teflon-lined caps. These samples must be mailed separately from the container used for the charcoal tubes.

(iv) Breakthrough.

The breakthrough (5% breakthrough) volume for a 3.0 mg/m³ ethylene oxide sample stream at approximately 85% relative humidity, 22°C and 633 mm is 2.6 liters sampled at 0.05 liters per minute. This is equivalent to 7.8 µg of ethylene oxide. Upon saturation of the tube it appeared that the water may be displacing ethylene oxide during sampling.

(v) Desorption efficiency.

(A) The desorption efficiency, from liquid injection onto charcoal tubes, averaged 88.0% from 0.5 to 2.0 x the target concentration for a 1.0 liter air sample. At lower ranges it appears that the desorption efficiency is nonlinear (see backup data section (3)(i)(ii)).

(B) The desorption efficiency may vary from one laboratory to another and also from one lot of charcoal to another. Thus, it is necessary to determine the desorption efficiency for a particular lot of charcoal.

(vi) Recommended air volume and sampling rate.

(A) The recommended air volume is 1.0 liter.

(B) The recommended maximum sampling rate is 0.05 Lpm.

(vii) Interferences.

(A) Ethylene glycol and Freon 12 at target concentration levels did not interfere with the collection of ethylene oxide.

(B) Suspected interferences should be listed on the sample data sheets.

(C) The relative humidity may affect the sampling procedure.

(viii) Safety precautions.

(A) Attach the sampling equipment to the employee so that it does not interfere with work performance.

(B) Wear safety glasses when breaking the ends of the sampling tubes.

(C) If possible, place the sampling tubes in a holder so the sharp end is not exposed while sampling.

(h) Analytical method.

(i) Apparatus.

(A) Gas chromatograph equipped with a linearized electron capture detector.

(B) GC column capable of separating the derivative of ethylene oxide (2-bromoethanol) from any interferences and the 1% CS₂ in benzene solvent. The column used for validation studies was: 10 ft x 1/8 inch stainless steel 20% SP-2100, 1% Carbowax 1500 on 100/120 Supelcoport.

(C) An electronic integrator or some other suitable method of measuring peak areas.

(D) Two milliliter vials with Teflon-lined caps.

(E) Gas tight syringe—500 µL or other convenient sizes for preparing standards.

(F) Microliter syringes—10 µL or other convenient sizes for diluting standards and 1 µL for sample injections.

(G) Pipets for dispensing the 1% CS₂ in benzene solvent. The Glenco 1 mL dispenser is adequate and convenient.

(H) Volumetric flasks—5 mL and other convenient sizes for preparing standards.

(I) Disposable Pasteur pipets.

(ii) Reagents.

(A) Benzene, reagent grade.

(B) Carbon disulfide, reagent grade.

(C) Ethylene oxide, 99.7% pure.

(D) Hydrobromic acid, 48% reagent grade.

(E) Sodium carbonate, anhydrous, reagent grade.

(F) Desorbing reagent, 99% Benzene/1% CS₂.

(iii) Sample preparation.

(A) The front and back sections of each sample are transferred to separate 2-mL vials.

(B) Each sample is desorbed with 1.0 mL of desorbing reagent.

(C) The vials are sealed immediately and allowed to desorb for one hour with occasional shaking.

(D) Desorbing reagent is drawn off the charcoal with a disposable pipet and put into clean 2-mL vials.

(E) One drop of HBr is added to each vial. Vials are resealed and HBr is mixed well with the desorbing reagent.

(F) About 0.15 gram of sodium carbonate is carefully added to each vial. Vials are again resealed and mixed well.

(iv) Standard preparation.

(A) Standards are prepared by injecting the pure ethylene oxide gas into the desorbing reagent.

(B) A range of standards are prepared to make a calibration curve. A concentration of 1.0 µL of ethylene oxide gas per 1 mL desorbing reagent is equivalent to 1.0 ppm air concentration (all gas volumes at 25°C and 760 mm) for the recommended 1 liter air sample. This amount is uncorrected for desorption efficiency (see backup data section (3)(i)(ii), for desorption efficiency corrections).

(C) One drop of HBr per mL of standard is added and mixed well.

(D) About 0.15 grams of sodium carbonate is carefully added for each drop of HBr (a small reaction will occur).

(v) Analysis.

(A) GC conditions.

Nitrogen flow rate—10mL/min.

Injector temperature—250°C

Detector temperature—300°C

Column temperature—100°C

Injection size—0.8 µL

Elution time—3.9 minutes

(B) Peak areas are measured by an integrator or other suitable means.

(C) The integrator results are in area units and a calibration curve is set up with concentration vs. area units.

(vi) Interferences.

(A) Any compound having the same retention time of 2-bromoethanol is a potential interference. Possible interferences should be listed on the sample data sheets.

(B) GC parameters may be changed to circumvent interferences.

(C) There are usually trace contaminants in benzene.

These contaminants, however, posed no problem of interference.

(D) Retention time data on a single column is not considered proof of chemical identity. Samples over the 1.0 ppm target level should be confirmed by GC/Mass Spec or other suitable means.

(vii) Calculations.

(A) The concentration in µg/mL for a sample is determined by comparing the area of a particular sample to the calibration curve, which has been prepared from analytical standards.

(B) The amount of analyte in each sample is corrected for desorption efficiency by use of a desorption curve.

(C) Analytical results, A, from the two tubes that compose a particular air sample are added together.

(D) The concentration for a sample is calculated by the following equation:

$$\text{ETO, mg/m}^3 = \frac{A \times B}{C}$$

where:

A = µg/mL

B = desorption volume in milliliters

C = air volume in liters.

(E) To convert mg/m³ to parts per million (ppm) the following relationship is used:

$$\text{ETO, ppm} = \frac{\text{mg/m}^3 \times 24.45}{44.05}$$

where:

mg/m³ = results from 3.7.4

24.45 = molar volume at 25°C and 760 mm Hg

44.05 = air volume in liters.

(viii) Safety precaution

(A) Ethylene oxide and benzene are potential carcinogens and care must be exercised when working with these compounds.

(B) All work done with the solvents (preparation of standards, desorption of samples, etc.) should be done in a hood.

(C) Avoid any skin contact with all of the solvents.

(D) Wear safety glasses at all times.

(E) Avoid skin contact with HBr because it is highly toxic and a strong irritant to eyes and skin.

(i) Backup data.

(i) Detection limit data.

The detection limit was determined by injecting 0.8 µL of a 0.015 µg/mL standard of ethylene oxide into 1% CS₂ in benzene. The detection limit of the analytical procedure is taken to be 1.20×10^{-5} µg per injection. This is equivalent to 8.3 ppb (0.015 mg/m³) for the recommended air volume.

(ii) Desorption efficiency. Ethylene oxide was spiked into charcoal tubes and the following recovery data was obtained:

Amount spiked (µg)	Amount recovered (µg)	Percent recovery
4.5	4.32	96.0
3.0	2.61	87.0
2.25	2.025	90.0
1.5	1.365	91.0
1.5	1.38	92.0
.75	.6525	87.0
.375	.315	84.0
.375	.312	83.2
.1875	.151	80.5
.094	.070	74.5

Note: At lower amounts the recovery appears to be nonlinear.

(iii) Sensitivity data. The following data was used to determine the calibration curve:

Injection	0.5 x .75 µg/mL	1 x 1.5 µg/mL	2 x 3.0 µg/mL
1.	30904	59567	111778
2.	30987	62914	106016
3.	32555	58578	106122
4.	32242	57173	109716
X.	31672	59558	108408

Slope = 34.105.

(iv) Recovery. The recovery was determined by spiking ethylene oxide onto lot 120 charcoal tubes and desorbing with 1% CS₂ in Benzene. Recoveries were done at 0.5, 1.0, and 2.0 X the target concentration (1 ppm) for the recommended air volume.

Percent Recovery

Sample	0.5x	1.0x	2.0x
1.	88.7	95.0	91.7
2.	83.8	95.0	87.3
3.	84.2	91.0	86.0
4.	88.0	91.0	83.0
5.	88.0	86.0	85.0
X.	86.5	90.5	87.0

Weighted average = 88.2

(v) Precision of the analytical procedure. The following data was used to determine the precision of the analytical method:

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Concentration	0.5 x .75 µg/mL	1 x 1.5 µg/mL	2 x 3.0 µg/mL
Injection	.7421 .7441 .7831 .7753 .7612	1.4899 1.5826 1.4628 1.4244 1.4899	3.1184 3.0447 2.9149 2.9185 2.9991
Average Standard Deviation	.0211	.0674	.0998
CV. ....	.0277	.0452	.0333

$$CV = \frac{3(.0277)^2 + 3(.0452)^2 + 3(.0333)^2}{3 + 3 + 3}$$

$$CV = 0.036$$

(vi) Storage data. Samples were generated at 1.5 mg/m³ ethylene oxide at 85% relative humidity, 22°C and 633 mm. All samples were taken for 20 minutes at 0.05 Lpm. Six samples were analyzed as soon as possible and fifteen samples were stored at refrigerated temperature (5°C) and fifteen samples were stored at ambient temperature (23°C). These stored samples were analyzed over a period of nineteen days.

Percent Recovery

Day analyzed	Refrigerated	Ambient
1.	87.0	87.0
1.	93.0	93.0
1.	94.0	94.0
1.	92.0	92.0
4.	92.0	91.0
4.	93.0	88.0
4.	91.0	89.0
6.	92.0	
6.	92.0	
8.		92.0
8.		86.0
10.	91.7	
10.	95.5	
10.	95.7	
11.		90.0
11.		82.0
13.	78.0	
13.	81.4	
13.	82.4	
14.		78.5
14.		72.1
18.	66.0	
18.	68.0	
19.		64.0
19.		77.0

(vii) Breakthrough data.

(A) Breakthrough studies were done at 2 ppm (3.6 mg/m³) at approximately 85% relative humidity at 22°C (ambient temperature). Two charcoal tubes were used in series. The backup tube was changed every 10 minutes and analyzed for breakthrough. The flow rate was 0.050 Lpm.

Tube No.	Time (Minutes)	Percent break- through
1.	10	(¹)
2.	20	(¹)
3.	30	(¹)
4.	40	1.23
5.	50	3.46
6.	60	18.71
7.	70	39.2
8.	80	53.3
9.	90	72.0
10.	100	96.0
11.	110	113.0
12.	120	133.9

¹ None.

(B) The 5% breakthrough volume was reached when 2.6 liters of test atmosphere were drawn through the charcoal tubes.

(j) References.

(i) "NIOSH Manual of Analytical Methods," 2nd ed. NIOSH: Cincinnati, 1977; Method S 286.

(ii) "IARC Monographs on the Evaluation of Carcinogenic Risk of Chemicals to Man." International Agency for Research on Cancer: Lyon, 1976; Vol. II, p. 157.

(iii) Sax., N.I. "Dangerous Properties of Industrial Materials," 4th ed.; Van Nostrand Reinhold Company, New York, 1975; p. 741.

(iv) "The Condensed Chemical Dictionary," 9th ed.; Hawley, G.G., ed.; Van Nostrand Reinhold Company, New York, 1977; p. 361.

(4) Summary of other sampling procedures. OSHA believes that several other types of monitoring equipment and techniques exist for monitoring time-weighted averages. Considerable research and method development is currently being performed, which will lead to improvements and a wider variety of monitoring techniques. A combination of monitoring procedures can be used. There probably is no one best method for monitoring personal exposure to ethylene oxide in all cases. There are advantages, disadvantages, and limitations to each method. The method of choice will depend on the need and requirements. Some commonly used methods include the use of charcoal tubes, passive dosimeters, Tedlar gas sampling bags, detector tubes, photoionization detection units, infrared detection units and gas chromatographs. A number of these methods are described below.

(a) Charcoal tube sampling procedures.

(i) Qazi-Ketcham method (Ex-11-133)—This method consists of collecting EtO on Columbia JXC activated carbon, desorbing the EtO with carbon disulfide and analyzing by gas chromatography with flame ionization detection. Union Carbide has recently updated and revalidated this monitoring procedure. This method is capable of determining both eight-hour time-weighted average exposures and short-term exposures. The method was validated to 0.5 ppm. Like other charcoal collecting procedures, the method requires considerable analytical expertise.

(ii) *ASTM-proposed method*—The Ethylene Oxide Industry Council (EOIC) has contracted with Clayton Environmental Consultants, Inc. to conduct a collaborative study

for the proposed method. The ASTM-Proposed method is similar to the method published by Qazi and Ketcham in the November 1977 American Industrial Hygiene Association Journal, and to the method of Pilney and Coyne, presented at the 1979 American Industrial Hygiene Conference. After the air to be sampled is drawn through an activated charcoal tube, the ethylene oxide is desorbed from the tube using carbon disulfide and is quantitated by gas chromatography utilizing a flame ionization detector. The ASTM-proposed method specifies a large two-section charcoal tube, shipment in dry ice, storage at less than -5°C, and analysis within three weeks to prevent migration and sample loss. Two types of charcoal tubes are being tested—Pittsburgh Coconut-Based (PCB) and Columbia JXC charcoal. This collaborative study will give an indication of the inter- and intralaboratory precision and accuracy of the ASTM/proposed method. Several laboratories have considerable expertise using the Qazi-Ketcham and Dow methods.

(b) Passive monitors—Ethylene oxide diffuses into the monitor and is collected in the sampling media. The DuPont Pro-Tek badge collects EtO in an absorbing solution, which is analyzed colorimetrically to determine the amount of EtO present. The 3M 350 badge collects the EtO on chemically treated charcoal. Other passive monitors are currently being developed and tested. Both 3M and DuPont have submitted data indicating their dosimeters meet the precision and accuracy requirements of the proposed ethylene oxide standard. Both presented laboratory validation data to 0.2 ppm (Exs. 11-65, 4-20, 108, 109, 130).

(c) Tedlar gas sampling bags—samples are collected by drawing a known volume of air into a Tedlar gas sampling bag. The ethylene oxide concentration is often determined on-site using a portable gas chromatograph or portable infrared spectrometer.

(d) Detector tubes—A known volume of air is drawn through a detector tube using a small hand pump. The concentration of EtO is related to the length of stain developed in the tube. Detector tubes are economical, easy to use, and give an immediate readout. Unfortunately, partly because they are nonspecific, their accuracy is often questionable. Since the sample is taken over a short period of time, they may be useful for determining the source of leaks.

(e) Direct reading instruments:

(i) There are numerous types of direct reading instruments, each having its own strengths and weaknesses (Exs. 135B, 135C, 107, 11-78, 11-153). Many are relatively new, offering greater sensitivity and specificity. Popular ethylene oxide direct reading instruments include infrared detection units, photoionization detection units, and gas chromatographs.

(ii) Portable infrared analyzers provide an immediate, continuous indication of a concentration value; making them particularly useful for locating high concentration pockets, in leak detection and in ambient air monitoring. In infrared detection units, the amount of infrared light absorbed by the gas being analyzed at selected infrared wavelengths is related to the concentration of a particular component. Various models have either fixed or variable infrared filters, differing cell pathlengths, and microcomputer controls for greater sensitivity, automation, and interference elimination.

(iii) A fairly recent detection system is photoionization detection. The molecules are ionized by high energy ultraviolet light. The resulting current is measured. Since different substances have different ionization potentials, other organic compounds may be ionized. The lower the lamp energy, the better the selectivity. As a continuous monitor, photoionization detection can be useful for locating high concentration pockets, in leak detection, and continuous ambient air monitoring. Both portable and stationary gas chromatographs are available with various types of detectors, including photoionization detectors. A gas chromatograph with a photoionization detector retains the photoionization sensitivity, but minimizes or eliminates interferences. For several GC/PID units, the sensitivity is in the 0.1-0.2 ppm EtO range. The GC/PID with microprocessors can sample up to 20 sample points sequentially, calculate and record data, and activate alarms or ventilation systems. Many are quite flexible and can be configured to meet the specific analysis needs for the workplace.

(iv) **DuPont presented their laboratory validation data of the accuracy of the Qazi-Ketcham charcoal tube, the PCB charcoal tube, Miran 103 IR analyzer, 3M #3550 monitor and the DuPont C-70 badge. Quoting Elbert V. Kring:**

(v) We also believe that OSHA's proposed accuracy in this standard is appropriate. At plus or minus 25 percent at one part per million, and plus or minus 35 percent below that. And, our data indicates there's only one monitoring method, right now, that we've tested thoroughly, that meets that accuracy requirements. That is the DuPont Pro-Tek badge***. We also believe that this kind of data should be confirmed by another independent laboratory, using the same type dynamic chamber testing (Tr. 1470).

Additional data by an independent laboratory following their exact protocol was not submitted. However, information was submitted on comparisons and precision and accuracy of those monitoring procedures which indicate far better precision and accuracy of those monitoring procedures than that obtained by DuPont (Ex. 4-20, 130, 11-68, 11-133, 130, 135A)

(vi) The accuracy of any method depends to a large degree upon the skills and experience of those who not only collect the samples but also those who analyze the samples. Even for methods that are collaboratively tested, some laboratories are closer to the true values than others. Some laboratories may meet the precision and accuracy requirements of the method; others may consistently far exceed them for the same method.

[Statutory Authority: Chapter 49.17 RCW. 88-14-108 (Order 88-11), § 296-62-07389, filed 7/6/88; 87-24-051 (Order 87-24), § 296-62-07389, filed 11/30/87.]

WAC 296-62-074 Cadmium.

[Statutory Authority: Chapter 49.17 RCW. 93-07-044 (Order 93-01), § 296-62-074, filed 3/13/93, effective 4/27/93.]

WAC 296-62-07401 Scope. This standard applies to all occupational exposures to cadmium and cadmium compounds, in all forms, and in all industries covered by the Washington Industrial Safety and Health Act, except the construction-related industries, which are covered under WAC 296-155-174.

(2007 Ed.)

[Statutory Authority: Chapter 49.17 RCW. 93-07-044 (Order 93-01), § 296-62-07401, filed 3/13/93, effective 4/27/93.]

WAC 296-62-07403 Definitions. (1) Action level (AL) is defined as an airborne concentration of cadmium of 2.5 micrograms per cubic meter of air ($2.5 \mu\text{g}/\text{m}^3$), calculated as an 8-hour time-weighted average (TWA).

(2) Authorized person means any person authorized by the employer and required by work duties to be present in regulated areas or any person authorized by the WISH Act or regulations issued under it to be in regulated areas.

(3) Director means the director of the department of labor and industries, or authorized representatives.

(4) Employee exposure and similar language referring to the air cadmium level to which an employee is exposed means the exposure to airborne cadmium that would occur if the employee were not using respiratory protective equipment.

(5) Final medical determination is the written medical opinion of the employee's health status by the examining physician under WAC 296-62-07423 (3) through (12) or, if multiple physician review under WAC 296-62-07423(13) or the alternative physician determination under WAC 296-62-07423(14) is invoked, it is the final, written medical finding, recommendation or determination that emerges from that process.

(6) High-efficiency particulate air (HEPA) filter means a filter capable of trapping and retaining at least 99.97 percent of mono-dispersed particles of 0.3 micrometers in diameter.

(7) Regulated area means an area demarcated by the employer where an employee's exposure to airborne concentrations of cadmium exceeds, or can reasonably be expected to exceed the permissible exposure limit (PEL).

[Statutory Authority: Chapter 49.17 RCW. 93-21-075 (Order 93-06), § 296-62-07403, filed 10/20/93, effective 12/1/93; 93-07-044 (Order 93-01), § 296-62-07403, filed 3/13/93, effective 4/27/93.]

WAC 296-62-07405 Permissible exposure limit (PEL). The employer shall assure that no employee is exposed to an airborne concentration of cadmium in excess of five micrograms per cubic meter of air ($5 \mu\text{g}/\text{m}^3$), calculated as an 8-hour time-weighted average exposure (TWA).

[Statutory Authority: Chapter 49.17 RCW. 93-07-044 (Order 93-01), § 296-62-07405, filed 3/13/93, effective 4/27/93.]

WAC 296-62-07407 Exposure monitoring. (1) General.

(a) Each employer who has a workplace or work operation covered by this section shall determine if any employee may be exposed to cadmium at or above the action level.

(b) Determinations of employee exposure shall be made from breathing zone air samples that reflect the monitored employee's regular, daily 8-hour TWA exposure to cadmium.

(c) 8-hour TWA exposures shall be determined for each employee on the basis of one or more personal breathing zone air samples reflecting full shift exposure on each shift, for each job classification, in each work area. Where several employees perform the same job tasks, in the same job classification, on the same shift, in the same work area, and the length, duration, and level of cadmium exposures are similar, an employer may sample a representative fraction of the

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employees instead of all employees in order to meet this requirement. In representative sampling, the employer shall sample the employee(s) expected to have the highest cadmium exposures.

(2) Specific.

(a) Initial monitoring. Except as provided for in (b) and (c) of this subsection, the employer shall monitor employee exposures and shall base initial determinations on the monitoring results.

(b) Where the employer has monitored after September 14, 1991, under conditions that in all important aspects closely resemble those currently prevailing and where that monitoring satisfies all other requirements of this section, including the accuracy and confidence levels of subsection (6) of this section, the employer may rely on such earlier monitoring results to satisfy the requirements of WAC 296-62-07427 (2)(a).

(c) Where the employer has objective data, as defined in WAC 296-62-07427(2), demonstrating that employee exposure to cadmium will not exceed the action level under the expected conditions of processing, use, or handling, the employer may rely upon such data instead of implementing initial monitoring.

(3) Monitoring frequency (periodic monitoring).

(a) If the initial monitoring or periodic monitoring reveals employee exposures to be at or above the action level, the employer shall monitor at a frequency and pattern needed to represent the levels of exposure of employees and where exposures are above the PEL to assure the adequacy of respiratory selection and the effectiveness of engineering and work practice controls. However, such exposure monitoring shall be performed at least every six months. The employer, at a minimum, shall continue these semiannual measurements unless and until the conditions set out in (b) of this subsection are met.

(b) If the initial monitoring or the periodic monitoring indicates that employee exposures are below the action level and that result is confirmed by the results of another monitoring taken at least seven days later, the employer may discontinue the monitoring for those employees whose exposures are represented by such monitoring.

(4) Additional monitoring. The employer also shall institute the exposure monitoring required under (2)(a) and (3) of this section whenever there has been a change in the raw materials, equipment, personnel, work practices, or finished products that may result in additional employees being exposed to cadmium at or above the action level or in employees already exposed to cadmium at or above the action level being exposed above the PEL, or whenever the employer has any reason to suspect that any other change might result in such further exposure.

(5) Employee notification of monitoring results.

(a) Within fifteen working days after the receipt of the results of any monitoring performed under this section, the employer shall notify each affected employee individually in writing of the results. In addition, within the same time period the employer shall post the results of the exposure monitoring in an appropriate location that is accessible to all affected employees.

(b) Wherever monitoring results indicate that employee exposure exceeds the PEL, the employer shall include in the

written notice a statement that the PEL has been exceeded and a description of the corrective action being taken by the employer to reduce employee exposure to or below the PEL.

(6) Accuracy of measurement. The employer shall use a method of monitoring and analysis that has an accuracy of not less than plus or minus twenty-five percent, with a confidence level of ninety-five percent, for airborne concentrations of cadmium at or above the action level, the permissible exposure limit (PEL), and the separate engineering control air limit (SECAL).

[Statutory Authority: Chapter 49.17 RCW. 93-07-044 (Order 93-01), § 296-62-07407, filed 3/13/93, effective 4/27/93.]

WAC 296-62-07409 Regulated areas. (1) Establishment. The employer shall establish a regulated area wherever an employee's exposure to airborne concentrations of cadmium is, or can reasonably be expected to be in excess of the permissible exposure limit (PEL).

(2) Demarcation. Regulated areas shall be demarcated from the rest of the workplace in any manner that adequately establishes and alerts employees of the boundaries of the regulated area.

(3) Access. Access to regulated areas shall be limited to authorized persons.

(4) Provision of respirators. Each person entering a regulated area shall be supplied with and required to use a respirator, selected in accordance with WAC 296-62-07413(2).

(5) Prohibited activities. The employer shall assure that employees do not eat, drink, smoke, chew tobacco or gum, or apply cosmetics in regulated areas, carry the products associated with these activities into regulated areas, or store such products in those areas.

[Statutory Authority: Chapter 49.17 RCW. 93-07-044 (Order 93-01), § 296-62-07409, filed 3/13/93, effective 4/27/93.]

WAC 296-62-07411 Methods of compliance. (1) Compliance hierarchy.

(a) Except as specified in (b), (c), and (d) of this subsection, the employer shall implement engineering and work practice controls to reduce and maintain employee exposure to cadmium at or below the PEL, except to the extent that the employer can demonstrate that such controls are not feasible.

(b) Except as specified in (c) and (d) of this subsection, in industries where a separate engineering control air limit (SECAL) has been specified for particular processes (Table 1 of this subsection), the employer shall implement engineering and work practice controls to reduce and maintain employee exposure at or below the SECAL, except to the extent that the employer can demonstrate that such controls are not feasible.

Table I.—Separate Engineering Control Airborne Limits (SECALs) for Processes in Selected Industries

Industry	Process	SECAL (µg/m ³)
Nickel cadmium battery	Plate making, plate preparation	50
	All other processes	15
Zinc/Cadmium refining*	Cadmium refining, casting, melting, oxide production, sinter plant	50

Table I.—Separate Engineering Control Airborne Limits (SECALs) for Processes in Selected Industries

Industry	Process	SECAL ($\mu\text{g}/\text{m}^3$)
Pigment manufacture	Calcine, crushing, milling, blending	50
	All other processes	15
Stabilizers*	Cadmium oxide charging, crushing, drying, blending	50
Lead smelting*	Sinter plant, blast furnace, bag-house, yard area	50
Plating*	Mechanical plating	15

* Processes in these industries that are not specified in this table must achieve the PEL using engineering controls and work practices as required in (a) of this subsection.

(c) The requirement to implement engineering and work practice controls to achieve the PEL or, where applicable, the SECAL does not apply where the employer demonstrates the following:

- (i) The employee is only intermittently exposed; and
- (ii) The employee is not exposed above the PEL on thirty or more days per year (twelve consecutive months).

(d) Wherever engineering and work practice controls are required and are not sufficient to reduce employee exposure to or below the PEL or, where applicable, the SECAL, the employer nonetheless shall implement such controls to reduce exposures to the lowest levels achievable. The employer shall supplement such controls with respiratory protection that complies with the requirements of WAC 296-62-07413 and the PEL.

(e) The employer shall not use employee rotation as a method of compliance.

(2) Compliance program.

(a) Where the PEL is exceeded, the employer shall establish and implement a written compliance program to reduce employee exposure to or below the PEL by means of engineering and work practice controls, as required by subsection (1) of this section. To the extent that engineering and work practice controls cannot reduce exposures to or below the PEL, the employer shall include in the written compliance program the use of appropriate respiratory protection to achieve compliance with the PEL.

(b) Written compliance programs shall include at least the following:

(i) A description of each operation in which cadmium is emitted; e.g., machinery used, material processed, controls in place, crew size, employee job responsibilities, operating procedures, and maintenance practices;

(ii) A description of the specific means that will be employed to achieve compliance, including engineering plans and studies used to determine methods selected for controlling exposure to cadmium, as well as, where necessary, the use of appropriate respiratory protection to achieve the PEL;

(iii) A report of the technology considered in meeting the PEL;

(iv) Air monitoring data that document the sources of cadmium emissions;

(v) A detailed schedule for implementation of the program, including documentation such as copies of purchase orders for equipment, construction contracts, etc.;

(vi) A work practice program that includes items required under WAC 296-62-07415, 296-62-07417, and 296-62-07419;

(vii) A written plan for emergency situations, as specified in WAC 296-62-07415; and

(viii) Other relevant information.

(c) The written compliance programs shall be reviewed and updated at least annually, or more often if necessary, to reflect significant changes in the employer's compliance status.

(d) Written compliance programs shall be provided upon request for examination and copying to affected employees, designated employee representatives, and the director.

(3) Mechanical ventilation.

(a) When ventilation is used to control exposure, measurements that demonstrate the effectiveness of the system in controlling exposure, such as capture velocity, duct velocity, or static pressure shall be made as necessary to maintain its effectiveness.

(b) Measurements of the system's effectiveness in controlling exposure shall be made as necessary within five working days of any change in production, process, or control that might result in a significant increase in employee exposure to cadmium.

(c) Recirculation of air. If air from exhaust ventilation is recirculated into the workplace, the system shall have a high efficiency filter and be monitored to assure effectiveness.

(d) Procedures shall be developed and implemented to minimize employee exposure to cadmium when maintenance of ventilation systems and changing of filters is being conducted.

[Statutory Authority: Chapter 49.17 RCW. 93-21-075 (Order 93-06), § 296-62-07411, filed 10/20/93, effective 12/1/93; 93-07-044 (Order 93-01), § 296-62-07411, filed 3/13/93, effective 4/27/93.]

WAC 296-62-07413 Respirator protection. (1) General. For employees who use respirators required by this section, the employer must provide respirators that comply with the requirements of this subsection. Respirators must be used during:

(a) Periods necessary to install or implement feasible engineering and work-practice controls when employee exposure levels exceed the PEL;

(b) Maintenance and repair activities, and brief or intermittent operations, where employee exposures exceed the PEL and engineering and work-practice controls are not feasible or are not required;

(c) Activities in regulated areas as specified in WAC 296-62-07409;

(d) Work operations for which the employer has implemented all feasible engineering and work-practice controls and such controls are not sufficient to reduce employee exposures to or below the PEL;

(e) Work operations for which an employee who is exposed to cadmium at or above the action level, and the employee requests a respirator;

(f) Work operations for which an employee is exposed above the PEL and engineering controls are not required by WAC 296-62-07411 (1)(b); and

(g) Emergencies.

(2) Respirator program.

(a) The employer must implement a respiratory protection program as required by chapter 296-842 WAC, except WAC 296-842-13005 and 296-842-14005.

(b) No employees must use a respirator if, based on their recent medical examination, the examining physician determines that they will be unable to continue to function normally while using a respirator. If the physician determines that the employee must be limited in, or removed from, their current job because of their inability to use a respirator, the limitation or removal must be in accordance with WAC 296-62-07423 (11) and (12).

(c) If an employee has breathing difficulty during fit testing or respirator use, the employer must provide the employee with a medical examination as required by WAC 296-62-07423 (6)(b) to determine if the employee can use a respirator while performing the required duties.

(3) Respirator selection.

(a) The employer must select the appropriate respirator from Table 2 of this section.

Table 2.—Respiratory Protection for Cadmium

Airborne concentration or condition of use ^a	Required respirator type ^b
10 x or less	A half mask, air-purifying respirator equipped with a HEPA ^c filter ^d .
25 x or less	A powered air-purifying respirator ("PAPR") with a loose-fitting hood or helmet equipped with a HEPA filter, or a supplied-air respirator with a loose-fitting hood or helmet facepiece operated in the continuous flow mode.
50 x or less	A full facepiece air-purifying respirator equipped with a HEPA filter, or a powered air-purifying respirator with a tight-fitting half mask equipped with a HEPA filter, or a supplied-air respirator with a tight-fitting half mask operated in the continuous flow mode.
250 x or less	A powered air-purifying respirator with a tight-fitting full facepiece equipped with a HEPA filter, or a supplied-air respirator with a tight-fitting full facepiece operated in the continuous flow mode.
1000 x or less	A supplied-air respirator with half mask or full facepiece operated in the pressure demand or other positive pressure mode.

Table 2.—Respiratory Protection for Cadmium

Airborne concentration or condition of use ^a	Required respirator type ^b
>1000 x or unknown concentrations	A self-contained breathing apparatus with a full facepiece operated in the pressure demand or other positive pressure mode, or a supplied-air respirator with a full facepiece operated in the pressure demand or other positive pressure mode and equipped with an auxiliary escape type self-contained breathing apparatus operated in the pressure demand mode.
Fire fighting	A self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode.

^a Concentrations expressed as multiple of the PEL.

^b Respirators assigned for higher environmental concentrations may be used at lower exposure levels. Quantitative fit testing is required for all tight-fitting air purifying respirators where airborne concentration of cadmium exceeds 10 times the TWA PEL ($10 \times 5 \mu\text{g}/\text{m}^3 = 50 \mu\text{g}/\text{m}^3$). A full facepiece respirator is required when eye irritation is experienced.

^c HEPA means High Efficiency Particulate Air.

^d Fit testing, qualitative or quantitative, is required.

SOURCE: Respiratory Decision Logic, NIOSH, 1987

(b) The employer must provide an employee with a powered, air-purifying respirator (PAPR) instead of a negative-pressure respirator when an employee who is entitled to a respirator chooses to use this type of respirator and such a respirator provides adequate protection to the employee.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060, 05-03-093, § 296-62-07413, filed 1/18/05, effective 3/1/05. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050, 99-10-071, § 296-62-07413, filed 5/4/99, effective 9/1/99. Statutory Authority: Chapter 49.17 RCW, 93-21-075 (Order 93-06), § 296-62-07413, filed 10/20/93, effective 12/1/93; 93-07-044 (Order 93-01), § 296-62-07413, filed 3/13/93, effective 4/27/93.]

WAC 296-62-07415 Emergency situations. The employer shall develop and implement a written plan for dealing with emergency situations involving substantial releases of airborne cadmium. The plan shall include provisions for the use of appropriate respirators and personal protective equipment. In addition, employees not essential to correcting the emergency situation shall be restricted from the area and normal operations halted in that area until the emergency is abated.

[Statutory Authority: Chapter 49.17 RCW, 93-07-044 (Order 93-01), § 296-62-07415, filed 3/13/93, effective 4/27/93.]

WAC 296-62-07417 Protective work clothing and equipment. (1) Provision and use. If an employee is exposed to airborne cadmium above the PEL or where skin or eye irritation is associated with cadmium exposure at any level, the employer shall provide at no cost to the employee, and assure that the employee uses, appropriate protective work clothing

and equipment that prevents contamination of the employee and the employee's garments. Protective work clothing and equipment includes, but is not limited to:

- (a) Coveralls or similar full-body work clothing;
- (b) Gloves, head coverings, and boots or foot coverings;

and

- (c) Face shields, vented goggles, or other appropriate protective equipment that complies with WAC 296-800-160.

- (2) Removal and storage.

- (a) The employer shall assure that employees remove all protective clothing and equipment contaminated with cadmium at the completion of the work shift and do so only in change rooms provided in accordance with WAC 296-62-07419(1).

- (b) The employer shall assure that no employee takes cadmium-contaminated protective clothing or equipment from the workplace, except for employees authorized to do so for purposes of laundering, cleaning, maintaining, or disposing of cadmium contaminated protective clothing and equipment at an appropriate location or facility away from the workplace.

- (c) The employer shall assure that contaminated protective clothing and equipment, when removed for laundering, cleaning, maintenance, or disposal, is placed and stored in sealed, impermeable bags or other closed, impermeable containers that are designed to prevent dispersion of cadmium dust.

- (d) The employer shall assure that bags or containers of contaminated protective clothing and equipment that are to be taken out of the change rooms or the workplace for laundering, cleaning, maintenance, or disposal shall bear labels in accordance with WAC 296-62-07425(3).

- (3) Cleaning, replacement, and disposal.

- (a) The employer shall provide the protective clothing and equipment required by subsection (1) of this section in a clean and dry condition as often as necessary to maintain its effectiveness, but in any event at least weekly. The employer is responsible for cleaning and laundering the protective clothing and equipment required by this paragraph to maintain its effectiveness and is also responsible for disposing of such clothing and equipment.

- (b) The employer also is responsible for repairing or replacing required protective clothing and equipment as needed to maintain its effectiveness. When rips or tears are detected while an employee is working they shall be immediately mended, or the worksuit shall be immediately replaced.

- (c) The employer shall prohibit the removal of cadmium from protective clothing and equipment by blowing, shaking, or any other means that disperses cadmium into the air.

- (d) The employer shall assure that any laundering of contaminated clothing or cleaning of contaminated equipment in the workplace is done in a manner that prevents the release of airborne cadmium in excess of the permissible exposure limit prescribed in WAC 296-62-07405.

- (e) The employer shall inform any person who launders or cleans protective clothing or equipment contaminated with cadmium of the potentially harmful effects of exposure to cadmium and that the clothing and equipment should be laundered or cleaned in a manner to effectively prevent the release of airborne cadmium in excess of the PEL.

(2007 Ed.)

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 01-11-038, § 296-62-07417, filed 5/9/01, effective 9/1/01. Statutory Authority: Chapter 49.17 RCW. 94-20-057 (Order 94-16), § 296-62-07417, filed 9/30/94, effective 11/20/94; 93-21-075 (Order 93-06), § 296-62-07417, filed 10/20/93, effective 12/1/93; 93-07-044 (Order 93-01), § 296-62-07417, filed 3/13/93, effective 4/27/93.]

WAC 296-62-07419 Hygiene areas and practices. (1)

General. For employees whose airborne exposure to cadmium is above the PEL, the employer shall provide clean change rooms, handwashing facilities, showers, and lunchroom facilities that comply with WAC 296-800-230.

- (2) Change rooms. The employer shall assure that change rooms are equipped with separate storage facilities for street clothes and for protective clothing and equipment, which are designed to prevent dispersion of cadmium and contamination of the employee's street clothes.

- (3) Showers and handwashing facilities.

- (a) The employer shall assure that employees who are exposed to cadmium above the PEL shower during the end of the work shift.

- (b) The employer shall assure that employees whose airborne exposure to cadmium is above the PEL wash their hands and faces prior to eating, drinking, smoking, chewing tobacco or gum, or applying cosmetics.

- (4) Lunchroom facilities.

- (a) The employer shall assure that the lunchroom facilities are readily accessible to employees, that tables for eating are maintained free of cadmium, and that no employee in a lunchroom facility is exposed at any time to cadmium at or above a concentration of 2.5 µg/m³.

- (b) The employer shall assure that employees do not enter lunchroom facilities with protective work clothing or equipment unless surface cadmium has been removed from the clothing and equipment by HEPA vacuuming or some other method that removes cadmium dust without dispersing it.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.-060. 03-18-090, § 296-62-07419, filed 9/2/03, effective 11/1/03. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 01-11-038, § 296-62-07419, filed 5/9/01, effective 9/1/01. Statutory Authority: Chapter 49.17 RCW. 93-07-044 (Order 93-01), § 296-62-07419, filed 3/13/93, effective 4/27/93.]

WAC 296-62-07421 Housekeeping. (1) All surfaces shall be maintained as free as practicable of accumulations of cadmium.

- (2) All spills and sudden releases of material containing cadmium shall be cleaned up as soon as possible.

- (3) Surfaces contaminated with cadmium shall, wherever possible, be cleaned by vacuuming or other methods that minimize the likelihood of cadmium becoming airborne.

- (4) HEPA-filtered vacuuming equipment or equally effective filtration methods shall be used for vacuuming. The equipment shall be used and emptied in a manner that minimizes the reentry of cadmium into the workplace.

- (5) Shoveling, dry or wet sweeping, and brushing may be used only where vacuuming or other methods that minimize the likelihood of cadmium becoming airborne have been tried and found not to be effective.

- (6) Compressed air shall not be used to remove cadmium from any surface unless the compressed air is used in con-

junction with a ventilation system designed to capture the dust cloud created by the compressed air.

(7) Waste, scrap, debris, bags, containers, personal protective equipment, and clothing contaminated with cadmium and consigned for disposal must be collected and disposed of in sealed impermeable bags or other closed, impermeable containers. These bags and containers must be labeled in accordance with WAC 296-62-07425(3).

[Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050. 02-12-098, § 296-62-07421, filed 6/5/02, effective 8/1/02. Statutory Authority: Chapter 49.17 RCW. 93-07-044 (Order 93-01), § 296-62-07421, filed 3/13/93, effective 4/27/93.]

WAC 296-62-07423 Medical surveillance. (1) General.

(a) Scope.

(i) Currently exposed. The employer shall institute a medical surveillance program for all employees who are or may be exposed to cadmium at or above the action level unless the employer demonstrates that the employee is not, and will not be, exposed at or above the action level on thirty or more days per year (twelve consecutive months); and

(ii) Previously exposed. The employer shall also institute a medical surveillance program for all employees who prior to the effective date of this section might previously have been exposed to cadmium at or above the action level by the employer, unless the employer demonstrates that the employee did not prior to the effective date of this section work for the employer in jobs with exposure to cadmium for an aggregated total of more than sixty months.

(b) To determine an employee's fitness for using a respirator, the employer shall provide the limited medical examination specified in subsection (6) of this section.

(c) The employer shall assure that all medical examinations and procedures required by this standard are performed by or under the supervision of a licensed physician, who has read and is familiar with the health effects WAC 296-62-07441, Appendix A, the regulatory text of this section, the protocol for sample handling and laboratory selection in WAC 296-62-07451, Appendix F and the questionnaire of WAC 296-62-07447, Appendix D. These examinations and procedures shall be provided without cost to the employee and at a time and place that is reasonable and convenient to employees.

(d) The employer shall assure that the collecting and handling of biological samples of cadmium in urine (CdU), cadmium in blood (CdB), and beta-2 microglobulin in urine (β_2 -M) taken from employees under this section is done in a manner that assures their reliability and that analysis of biological samples of cadmium in urine (CdU), cadmium in blood (CdB), and beta-2 microglobulin in urine (β_2 -M) taken from employees under this section is performed in laboratories with demonstrated proficiency for that particular analyte. (See WAC 296-62-07451, Appendix F.)

(2) Initial examination.

(a) The employer shall provide an initial (preplacement) examination to all employees covered by the medical surveillance program required in subsection (1)(a) of this section. The examination shall be provided to those employees within thirty days after initial assignment to a job with exposure to

cadmium or no later than ninety days after the effective date of this section, whichever date is later.

(b) The initial (preplacement) medical examination shall include:

(i) A detailed medical and work history, with emphasis on: Past, present, and anticipated future exposure to cadmium; any history of renal, cardiovascular, respiratory, hematopoietic, reproductive, and/or musculo-skeletal system dysfunction; current usage of medication with potential nephrotoxic side-effects; and smoking history and current status; and

(ii) Biological monitoring that includes the following tests:

(A) Cadmium in urine (CdU), standardized to grams of creatinine (g/Cr);

(B) Beta-2 microglobulin in urine (β_2 -M), standardized to grams of creatinine (g/Cr), with pH specified, as described in WAC 296-62-07451, Appendix F; and

(C) Cadmium in blood (CdB), standardized to liters of whole blood (lwb).

(c) Recent examination: An initial examination is not required to be provided if adequate records show that the employee has been examined in accordance with the requirements of (b) of this subsection within the past twelve months. In that case, such records shall be maintained as part of the employee's medical record and the prior exam shall be treated as if it were an initial examination for the purposes of subsections (3) and (4) of this section.

(3) Actions triggered by initial biological monitoring:

(a) If the results of the initial biological monitoring tests show the employee's CdU level to be at or below 3 $\mu\text{g/g}$ Cr, β_2 -M level to be at or below 300 $\mu\text{g/g}$ Cr and CdB level to be at or below 5 $\mu\text{g/lwb}$, then:

(i) For currently exposed employees, who are subject to medical surveillance under subsection (1)(a)(i) of this section, the employer shall provide the minimum level of periodic medical surveillance in accordance with the requirements in subsection (4)(a) of this section; and

(ii) For previously exposed employees, who are subject to medical surveillance under subsection (1)(a)(ii) of this section, the employer shall provide biological monitoring for CdU, β_2 -M, and CdB one year after the initial biological monitoring and then the employer shall comply with the requirements of subsection (4)(e) of this section.

(b) For all employees who are subject to medical surveillance under subsection (1)(a) of this section, if the results of the initial biological monitoring tests show the level of CdU to exceed 3 $\mu\text{g/g}$ Cr, the level of β_2 -M to exceed 300 $\mu\text{g/g}$ Cr, or the level of CdB to exceed 5 $\mu\text{g/lwb}$, the employer shall:

(i) Within two weeks after receipt of biological monitoring results, reassess the employee's occupational exposure to cadmium as follows:

(A) Reassess the employee's work practices and personal hygiene;

(B) Reevaluate the employee's respirator use, if any, and the respirator program;

(C) Review the hygiene facilities;

(D) Reevaluate the maintenance and effectiveness of the relevant engineering controls;

(E) Assess the employee's smoking history and status;

(ii) Within thirty days after the exposure reassessment, specified in (b)(i) of this subsection, take reasonable steps to correct any deficiencies found in the reassessment that may be responsible for the employee's excess exposure to cadmium; and,

(iii) Within ninety days after receipt of biological monitoring results, provide a full medical examination to the employee in accordance with the requirements of WAC 296-62-07423 (4)(b). After completing the medical examination, the examining physician shall determine in a written medical opinion whether to medically remove the employee. If the physician determines that medical removal is not necessary, then until the employee's CdU level falls to or below 3 µg/g Cr, β_2 -M level falls to or below 300 µg/g Cr and CdB level falls to or below 5 µg/lwb, the employer shall:

(A) Provide biological monitoring in accordance with subsection (2)(b)(ii) of this section on a semiannual basis; and

(B) Provide annual medical examinations in accordance with subsection (4)(b) of this section.

(c) For all employees who are subject to medical surveillance under subsection (1)(a) of this section, if the results of the initial biological monitoring tests show the level of CdU to be in excess of 15 µg/g Cr, or the level of CdB to be in excess of 15 µg/lwb, or the level of β_2 -M to be in excess of 1,500 µg/g Cr, the employer shall comply with the requirements of (b)(i) and (ii) of this subsection. Within ninety days after receipt of biological monitoring results, the employer shall provide a full medical examination to the employee in accordance with the requirements of subsection (4)(b) of this section. After completing the medical examination, the examining physician shall determine in a written medical opinion whether to medically remove the employee. However, if the initial biological monitoring results and the biological monitoring results obtained during the medical examination both show that: CdU exceeds 15 µg/g Cr; or CdB exceeds 15 µg/lwb; or β_2 -M exceeds 1500 µg/g Cr, and in addition CdU exceeds 3 µg/g Cr or CdB exceeds 5 µg/liter of whole blood, then the physician shall medically remove the employee from exposure to cadmium at or above the action level. If the second set of biological monitoring results obtained during the medical examination does not show that a mandatory removal trigger level has been exceeded, then the employee is not required to be removed by the mandatory provisions of this section. If the employee is not required to be removed by the mandatory provisions of this section or by the physician's determination, then until the employee's CdU level falls to or below 3 µg/g Cr, β_2 -M level falls to or below 300 µg/g Cr and CdB level falls to or below 5 µg/lwb, the employer shall:

(i) Periodically reassess the employee's occupational exposure to cadmium;

(ii) Provide biological monitoring in accordance with subsection (2)(b)(ii) of this section on a quarterly basis; and

(iii) Provide semiannual medical examinations in accordance with subsection (4)(b) of this section.

(d) For all employees to whom medical surveillance is provided, beginning on January 1, 1999, and in lieu of (a) through (c) of this subsection:

(i) If the results of the initial biological monitoring tests show the employee's CdU level to be at or below 3 µg/g Cr, β_2 -M level to be at or below 300 µg/g Cr and CdB level to be at or below 5 µg/lwb, then for currently exposed employees, the employer shall comply with the requirements of (a)(i) of this subsection and for previously exposed employees, the employer shall comply with the requirements of (a)(ii) of this subsection;

(ii) If the results of the initial biological monitoring tests show the level of CdU to exceed 3 µg/g Cr, the level of β_2 -M to exceed 300 µg/g Cr, or the level of CdB to exceed 5 µg/lwb, the employer shall comply with the requirements of (b)(i) through (iii) of this subsection; and

(iii) If the results of the initial biological monitoring tests show the level of CdU to be in excess of 7 µg/g Cr, or the level of CdB to be in excess of 10 µg/lwb, or the level of β_2 -M to be in excess of 750 µg/g Cr, the employer shall: Comply with the requirements of (b)(i) through (ii) of this subsection; and, within ninety days after receipt of biological monitoring results, provide a full medical examination to the employee in accordance with the requirements of subsection (4)(b) of this section. After completing the medical examination, the examining physician shall determine in a written medical opinion whether to medically remove the employee. However, if the initial biological monitoring results and the biological monitoring results obtained during the medical examination both show that: CdU exceeds 7 µg/g Cr; or CdB exceeds 10 µg/lwb; or β_2 -M exceeds 750 µg/g Cr, and in addition CdU exceeds 3 µg/g Cr or CdB exceeds 5 µg/liter of whole blood, then the physician shall medically remove the employee from exposure to cadmium at or above the action level. If the second set of biological monitoring results obtained during the medical examination does not show that a mandatory removal trigger level has been exceeded, then the employee is not required to be removed by the mandatory provisions of this section. If the employee is not required to be removed by the mandatory provisions of this section or by the physician's determination, then until the employee's CdU level falls to or below 3 µg/g Cr, β_2 -M level falls to or below 300 µg/g Cr and CdB level falls to or below 5 µg/lwb, the employer shall: periodically reassess the employee's occupational exposure to cadmium; provide biological monitoring in accordance with subsection (2)(b)(ii) of this section on a quarterly basis; and provide semiannual medical examinations in accordance with subsection (4)(b) of this section.

(4) Periodic medical surveillance.

(a) For each employee who is covered under subsection (1)(a)(i) of this section, the employer shall provide at least the minimum level of periodic medical surveillance, which consists of periodic medical examinations and periodic biological monitoring. A periodic medical examination shall be provided within one year after the initial examination required by subsection (2) of this section and thereafter at least biennially. Biological sampling shall be provided at least annually, either as part of a periodic medical examination or separately as periodic biological monitoring.

(b) The periodic medical examination shall include:

(i) A detailed medical and work history, or update thereof, with emphasis on: Past, present and anticipated

future exposure to cadmium; smoking history and current status; reproductive history; current use of medications with potential nephrotoxic side-effects; any history of renal, cardiovascular, respiratory, hematopoietic, and/or musculoskeletal system dysfunction; and as part of the medical and work history, for employees who wear respirators, questions 3-11 and 25-32 in WAC 296-62-07447, Appendix D;

(ii) A complete physical examination with emphasis on: Blood pressure, the respiratory system, and the urinary system;

(iii) A 14 inch by 17 inch, or a reasonably standard sized posterior-anterior chest X ray (after the initial X ray, the frequency of chest X rays is to be determined by the examining physician);

(iv) Pulmonary function tests, including forced vital capacity (FVC) and forced expiratory volume at 1 second (FEV1);

(v) Biological monitoring, as required in subsection (2)(b)(ii) of this section;

(vi) Blood analysis, in addition to the analysis required under this section, including blood urea nitrogen, complete blood count, and serum creatinine;

(vii) Urinalysis, in addition to the analysis required under subsection (2)(b)(ii) of this section, including the determination of albumin, glucose, and total and low molecular weight proteins;

(viii) For males over forty years old, prostate palpation, or other at least as effective diagnostic test(s); and

(ix) Any additional tests deemed appropriate by the examining physician.

(c) Periodic biological monitoring shall be provided in accordance with subsection (2)(b)(ii) of this section.

(d) If the results of periodic biological monitoring or the results of biological monitoring performed as part of the periodic medical examination show the level of the employee's CdU, β_2 -M, or CdB to be in excess of the levels specified in subsection (3)(b) or (c) of this section; or, beginning on January 1, 1999, in excess of the levels specified in subsection (3)(b) or (d) of this section, the employer shall take the appropriate actions specified in subsection (3)(b) through (d) of this section.

(e) For previously exposed employees under subsection (1)(a)(ii) of this section:

(i) If the employee's levels of CdU did not exceed 3 μ g/g Cr, CdB did not exceed 5 μ g/lwb, and β_2 -M did not exceed 300 μ g/g Cr in the initial biological monitoring tests, and if the results of the followup biological monitoring required by subsection (3)(a)(ii) of this section one year after the initial examination confirm the previous results, the employer may discontinue all periodic medical surveillance for that employee.

(ii) If the initial biological monitoring results for CdU, CdB, or β_2 -M were in excess of the levels specified in subsection (3)(a) of this section, but subsequent biological monitoring results required by subsection (3)(b) through (e) of this section show that the employee's CdU levels no longer exceed 3 μ g/g Cr, CdB levels no longer exceed 5 μ g/lwb, and β_2 -M levels no longer exceed 300 μ g/g Cr, the employer shall provide biological monitoring for CdU, CdB, and β_2 -M one

year after these most recent biological monitoring results. If the results of the followup biological monitoring, specified in this section, confirm the previous results, the employer may discontinue all periodic medical surveillance for that employee.

(iii) However, if the results of the follow-up tests specified in (e)(i) or (ii) of this subsection indicate that the level of the employee's CdU, β_2 -M, or CdB exceeds these same levels, the employer is required to provide annual medical examinations in accordance with the provisions of (b) of this subsection until the results of biological monitoring are consistently below these levels or the examining physician determines in a written medical opinion that further medical surveillance is not required to protect the employee's health.

(f) A routine, biennial medical examination is not required to be provided in accordance with subsections (3)(a) and (4) of this section if adequate medical records show that the employee has been examined in accordance with the requirements of (b) of this subsection within the past twelve months. In that case, such records shall be maintained by the employer as part of the employee's medical record, and the next routine, periodic medical examination shall be made available to the employee within two years of the previous examination.

(5) Actions triggered by medical examinations.

If the results of a medical examination carried out in accordance with this section indicate any laboratory or clinical finding consistent with cadmium toxicity that does not require employer action under subsections (2), (3), or (4) of this section, the employer, within thirty days, shall reassess the employee's occupational exposure to cadmium and take the following corrective action until the physician determines they are no longer necessary:

(a) Periodically reassess: The employee's work practices and personal hygiene; the employee's respirator use, if any; the employee's smoking history and status; the respiratory protection program; the hygiene facilities; and the maintenance and effectiveness of the relevant engineering controls;

(b) Within thirty days after the reassessment, take all reasonable steps to correct the deficiencies found in the reassessment that may be responsible for the employee's excess exposure to cadmium;

(c) Provide semiannual medical reexaminations to evaluate the abnormal clinical sign(s) of cadmium toxicity until the results are normal or the employee is medically removed; and

(d) Where the results of tests for total proteins in urine are abnormal, provide a more detailed medical evaluation of the toxic effects of cadmium on the employee's renal system.

(6) Examination for respirator use.

(a) To determine an employee's fitness for respirator use, the employer shall provide a medical examination that includes the elements specified in (a)(i) through (iv) of this subsection. This examination shall be provided prior to the employee's being assigned to a job that requires the use of a respirator or no later than ninety days after this section goes into effect, whichever date is later, to any employee without a medical examination within the preceding twelve months that satisfies the requirements of this paragraph.

(i) A detailed medical and work history, or update thereof, with emphasis on: Past exposure to cadmium; smoking history and current status; any history of renal, cardiovascular, respiratory, hematopoietic, and/or musculoskeletal system dysfunction; a description of the job for which the respirator is required; and questions 3 through 11 and 25 through 32 in WAC 296-62-07447, Appendix D;

(ii) A blood pressure test;

(iii) Biological monitoring of the employee's levels of CdU, CdB and β_2 -M in accordance with the requirements of subsection (2)(b)(ii) of this section, unless such results already have been obtained within the previous twelve months; and

(iv) Any other test or procedure that the examining physician deems appropriate.

(b) After reviewing all the information obtained from the medical examination required in (a) of this subsection, the physician shall determine whether the employee is fit to wear a respirator.

(c) Whenever an employee has exhibited difficulty in breathing during a respirator fit test or during use of a respirator, the employer, as soon as possible, shall provide the employee with a periodic medical examination in accordance with subsection (4)(b) of this section to determine the employee's fitness to wear a respirator.

(d) Where the results of the examination required under (a), (b), or (c) of this subsection are abnormal, medical limitation or prohibition of respirator use shall be considered. If the employee is allowed to wear a respirator, the employee's ability to continue to do so shall be periodically evaluated by a physician.

(7) Emergency examinations.

(a) In addition to the medical surveillance required in subsections (2) through (6) of this section, the employer shall provide a medical examination as soon as possible to any employee who may have been acutely exposed to cadmium because of an emergency.

(b) The examination shall include the requirements of subsection (4)(b) of this section, with emphasis on the respiratory system, other organ systems considered appropriate by the examining physician, and symptoms of acute overexposure, as identified in WAC 296-62-07441 (2)(b)(i) through (ii) and (4), Appendix A.

(8) Termination of employment examination.

(a) At termination of employment, the employer shall provide a medical examination in accordance with subsection (4)(b) of this section, including a chest X ray, to any employee to whom at any prior time the employer was required to provide medical surveillance under subsection (1)(a) or (7) of this section. However, if the last examination satisfied the requirements of subsection (4)(b) of this section and was less than six months prior to the date of termination, no further examination is required unless otherwise specified in subsection (3) or (5) of this section;

(b) However, for employees covered by subsection (1)(a)(ii) of this section, if the employer has discontinued all periodic medical surveillance under subsection (4)(e) of this section, no termination of employment medical examination is required.

(9) Information provided to the physician. The employer shall provide the following information to the examining physician:

(a) A copy of this standard and appendices;

(b) A description of the affected employee's former, current, and anticipated duties as they relate to the employee's occupational exposure to cadmium;

(c) The employee's former, current, and anticipated future levels of occupational exposure to cadmium;

(d) A description of any personal protective equipment, including respirators, used or to be used by the employee, including when and for how long the employee has used that equipment; and

(e) Relevant results of previous biological monitoring and medical examinations.

(10) Physician's written medical opinion.

(a) The employer shall promptly obtain a written, signed medical opinion from the examining physician for each medical examination performed on each employee. This written opinion shall contain:

(i) The physician's diagnosis for the employee;

(ii) The physician's opinion as to whether the employee has any detected medical condition(s) that would place the employee at increased risk of material impairment to health from further exposure to cadmium, including any indications of potential cadmium toxicity;

(iii) The results of any biological or other testing or related evaluations that directly assess the employee's absorption of cadmium;

(iv) Any recommended removal from, or limitation on the activities or duties of the employee or on the employee's use of personal protective equipment, such as respirators;

(v) A statement that the physician has clearly and carefully explained to the employee the results of the medical examination, including all biological monitoring results and any medical conditions related to cadmium exposure that require further evaluation or treatment, and any limitation on the employee's diet or use of medications.

(b) The employer promptly shall obtain a copy of the results of any biological monitoring provided by an employer to an employee independently of a medical examination under subsections (2) and (4) of this section, and, in lieu of a written medical opinion, an explanation sheet explaining those results.

(c) The employer shall instruct the physician not to reveal orally or in the written medical opinion given to the employer specific findings or diagnoses unrelated to occupational exposure to cadmium.

(11) Medical removal protection (MRP).

(a) General.

(i) The employer shall temporarily remove an employee from work where there is excess exposure to cadmium on each occasion that medical removal is required under subsection (3), (4), or (6) of this section and on each occasion that a physician determines in a written medical opinion that the employee should be removed from such exposure. The physician's determination may be based on biological monitoring results, inability to wear a respirator, evidence of illness, other signs or symptoms of cadmium-related dysfunction or disease, or any other reason deemed medically sufficient by the physician.

(ii) The employer shall medically remove an employee in accordance with this subsection regardless of whether at the time of removal a job is available into which the removed employee may be transferred.

(iii) Whenever an employee is medically removed under this subsection, the employer shall transfer the removed employee to a job where the exposure to cadmium is within the permissible levels specified in that subsection as soon as one becomes available.

(iv) For any employee who is medically removed under the provisions of (a) of this subsection, the employer shall provide follow-up biological monitoring in accordance with subsection (2)(b)(ii) of this section at least every three months and follow-up medical examinations semiannually at least every six months until in a written medical opinion the examining physician determines that either the employee may be returned to his/her former job status as specified under (d) through (e) of this subsection or the employee must be permanently removed from excess cadmium exposure.

(v) The employer may not return an employee who has been medically removed for any reason to his/her former job status until a physician determines in a written medical opinion that continued medical removal is no longer necessary to protect the employee's health.

(b) Where an employee is found unfit to wear a respirator under subsection (6)(b) of this section, the employer shall remove the employee from work where exposure to cadmium is above the PEL.

(c) Where removal is based on any reason other than the employee's inability to wear a respirator, the employer shall remove the employee from work where exposure to cadmium is at or above the action level.

(d) Except as specified in (e) of this subsection, no employee who was removed because his/her level of CdU, CdB and/or β_2 -M exceeded the medical removal trigger levels in subsection (3) or (4) of this section may be returned to work with exposure to cadmium at or above the action level until the employee's levels of CdU fall to or below 3 $\mu\text{g/g}$ Cr, CdB falls to or below 5 $\mu\text{g/lwb}$, and β_2 -M falls to or below 300 $\mu\text{g/g}$ Cr.

(e) However, when in the examining physician's opinion continued exposure to cadmium will not pose an increased risk to the employee's health and there are special circumstances that make continued medical removal an inappropriate remedy, the physician shall fully discuss these matters with the employee, and then in a written determination may return a worker to his/her former job status despite what would otherwise be unacceptably high biological monitoring results. Thereafter, the returned employee shall continue to be provided with medical surveillance as if he/she were still on medical removal until the employee's levels of CdU fall to or below 3 $\mu\text{g/g}$ Cr, CdB falls to or below 5 $\mu\text{g/lwb}$, and β_2 -M falls to or below 300 $\mu\text{g/g}$ Cr.

(f) Where an employer, although not required by (a) through (c) of this subsection to do so, removes an employee from exposure to cadmium or otherwise places limitations on an employee due to the effects of cadmium exposure on the employee's medical condition, the employer shall provide the same medical removal protection benefits to that employee under subsection (12) of this section as would have been pro-

vided had the removal been required under (a) through (c) of this subsection.

(12) Medical removal protection benefits (MRPB).

(a) The employer shall provide MRPB for up to a maximum of eighteen months to an employee each time and while the employee is temporarily medically removed under subsection (11) of this section.

(b) For purposes of this section, the requirement that the employer provide MRPB means that the employer shall maintain the total normal earnings, seniority, and all other employee rights and benefits of the removed employee, including the employee's right to his/her former job status, as if the employee had not been removed from the employee's job or otherwise medically limited.

(c) Where, after eighteen months on medical removal because of elevated biological monitoring results, the employee's monitoring results have not declined to a low enough level to permit the employee to be returned to his/her former job status:

(i) The employer shall make available to the employee a medical examination pursuant in order to obtain a final medical determination as to whether the employee may be returned to his/her former job status or must be permanently removed from excess cadmium exposure; and

(ii) The employer shall assure that the final medical determination indicates whether the employee may be returned to his/her former job status and what steps, if any, should be taken to protect the employee's health.

(d) The employer may condition the provision of MRPB upon the employee's participation in medical surveillance provided in accordance with this section.

(13) Multiple physician review.

(a) If the employer selects the initial physician to conduct any medical examination or consultation provided to an employee under this section, the employee may designate a second physician to:

(i) Review any findings, determinations, or recommendations of the initial physician; and

(ii) Conduct such examinations, consultations, and laboratory tests as the second physician deems necessary to facilitate this review.

(b) The employer shall promptly notify an employee of the right to seek a second medical opinion after each occasion that an initial physician provided by the employer conducts a medical examination or consultation pursuant to this section. The employer may condition its participation in, and payment for, multiple physician review upon the employee doing the following within fifteen days after receipt of this notice, or receipt of the initial physician's written opinion, whichever is later:

(i) Informing the employer that he or she intends to seek a medical opinion; and

(ii) Initiating steps to make an appointment with a second physician.

(c) If the findings, determinations, or recommendations of the second physician differ from those of the initial physician, then the employer and the employee shall assure that efforts are made for the two physicians to resolve any disagreement.

(d) If the two physicians have been unable to quickly resolve their disagreement, then the employer and the

employee, through their respective physicians, shall designate a third physician to:

(i) Review any findings, determinations, or recommendations of the other two physicians; and

(ii) Conduct such examinations, consultations, laboratory tests, and discussions with the other two physicians as the third physician deems necessary to resolve the disagreement among them.

(e) The employer shall act consistently with the findings, determinations, and recommendations of the third physician, unless the employer and the employee reach an agreement that is consistent with the recommendations of at least one of the other two physicians.

(14) Alternate physician determination. The employer and an employee or designated employee representative may agree upon the use of any alternate form of physician determination in lieu of the multiple physician review provided by subsection (13) of this section, so long as the alternative is expeditious and at least as protective of the employee.

(15) Information the employer must provide the employee.

(a) The employer shall provide a copy of the physician's written medical opinion to the examined employee within two weeks after receipt thereof.

(b) The employer shall provide the employee with a copy of the employee's biological monitoring results and an explanation sheet explaining the results within two weeks after receipt thereof.

(c) Within thirty days after a request by an employee, the employer shall provide the employee with the information the employer is required to provide the examining physician under subsection (9) of this section.

(16) Reporting. In addition to other medical events that are required to be reported on the OSHA Form No. 200, the employer shall report any abnormal condition or disorder caused by occupational exposure to cadmium associated with employment as specified in WAC 296-27-060.

[Statutory Authority: Chapter 49.17 RCW. 93-21-075 (Order 93-06), § 296-62-07423, filed 10/20/93, effective 12/1/93; 93-07-044 (Order 93-01), § 296-62-07423, filed 3/13/93, effective 4/27/93.]

WAC 296-62-07425 Communication of cadmium hazards to employees. (1) General. In communications concerning cadmium hazards, employers shall comply with the requirements of WISHA's Chemical Hazard Communication Standard, WAC 296-800-170, including but not limited to the requirements concerning warning signs and labels, material safety data sheets (MSDS), and employee information and training. In addition, employers shall comply with the following requirements:

(2) Warning signs.

(a) Warning signs shall be provided and displayed in regulated areas. In addition, warning signs shall be posted at all approaches to regulated areas so that an employee may read the signs and take necessary protective steps before entering the area.

(b) Warning signs required by (a) of this subsection shall bear the following information:

DANGER CADMIUM CANCER HAZARD CAN CAUSE LUNG
AND KIDNEY DISEASE AUTHORIZED PERSONNEL ONLY
RESPIRATORS REQUIRED IN THIS AREA

(c) The employer shall assure that signs required by this subsection are illuminated, cleaned, and maintained as necessary so that the legend is readily visible.

(3) Warning labels.

(a) Shipping and storage containers containing cadmium, cadmium compounds, or cadmium contaminated clothing, equipment, waste, scrap, or debris shall bear appropriate warning labels, as specified in (b) of this subsection.

(b) The warning labels shall include at least the following information:

DANGER CONTAINS CADMIUM CANCER HAZARD AVOID
CREATING DUST CAN CAUSE LUNG AND KIDNEY DISEASE

(c) Where feasible, installed cadmium products shall have a visible label or other indication that cadmium is present.

(4) Employee information and training.

(a) The employer shall institute a training program for all employees who are potentially exposed to cadmium, assure employee participation in the program, and maintain a record of the contents of such program.

(b) Training shall be provided prior to or at the time of initial assignment to a job involving potential exposure to cadmium and at least annually thereafter.

(c) The employer shall make the training program understandable to the employee and shall assure that each employee is informed of the following:

(i) The health hazards associated with cadmium exposure, with special attention to the information incorporated in WAC 296-62-07441, Appendix A;

(ii) The quantity, location, manner of use, release, and storage of cadmium in the workplace and the specific nature of operations that could result in exposure to cadmium, especially exposures above the PEL;

(iii) The engineering controls and work practices associated with the employee's job assignment;

(iv) The measures employees can take to protect themselves from exposure to cadmium, including modification of such habits as smoking and personal hygiene, and specific procedures the employer has implemented to protect employees from exposure to cadmium such as appropriate work practices, emergency procedures, and the provision of personal protective equipment;

(v) The purpose, proper selection, fitting, proper use, and limitations of protective clothing;

(vi) The purpose and a description of the medical surveillance program required by WAC 296-62-07423;

(vii) The contents of this section and its appendices;

(viii) The employee's rights of access to records under WAC 296-62-05213 and 296-800-170; and

(ix) The purpose, proper use, limitations, and other training requirements for respiratory protection as required in chapter 296-62 WAC, Part E.

(d) Additional access to information and training program and materials.

(i) The employer shall make a copy of this section and its appendices readily available without cost to all affected employees and shall provide a copy if requested.

(ii) The employer shall provide to the director, upon request, all materials relating to the employee information and the training program.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 01-11-038, § 296-62-07425, filed 5/9/01, effective 9/1/01; 99-10-071, § 296-62-07425, filed 5/4/99, effective 9/1/99. Statutory Authority: Chapter 49.17 RCW. 93-21-075 (Order 93-06), § 296-62-07425, filed 10/20/93, effective 12/1/93; 93-07-044 (Order 93-01), § 296-62-07425, filed 3/13/93, effective 4/27/93.]

WAC 296-62-07427 Recordkeeping. (1) Exposure monitoring.

(a) The employer shall establish and keep an accurate record of all air monitoring for cadmium in the workplace.

(b) This record shall include at least the following information:

(i) The monitoring date, duration, and results in terms of an 8-hour TWA of each sample taken;

(ii) The name, Social Security number, and job classification of the employees monitored and of all other employees whose exposures the monitoring is intended to represent;

(iii) A description of the sampling and analytical methods used and evidence of their accuracy;

(iv) The type of respiratory protective device, if any, worn by the monitored employee;

(v) A notation of any other conditions that might have affected the monitoring results.

(c) The employer shall maintain this record for at least thirty years, in accordance with chapter 296-802 WAC.

(2) Objective data for exemption from requirement for initial monitoring.

(a) For purposes of this section, objective data are information demonstrating that a particular product or material containing cadmium or a specific process, operation, or activity involving cadmium cannot release dust or fumes in concentrations at or above the action level even under the worst-case release conditions. Objective data can be obtained from an industry-wide study or from laboratory product test results from manufacturers of cadmium-containing products or materials. The data the employer uses from an industry-wide survey must be obtained under workplace conditions closely resembling the processes, types of material, control methods, work practices and environmental conditions in the employer's current operations.

(b) The employer shall establish and maintain a record of the objective data for at least thirty years.

(3) Medical surveillance.

(a) The employer shall establish and maintain an accurate record for each employee covered by medical surveillance under WAC 296-62-07423 (1)(a).

(b) The record shall include at least the following information about the employee:

(i) Name, Social Security number, and description of the duties;

(ii) A copy of the physician's written opinions and an explanation sheet for biological monitoring results;

(iii) A copy of the medical history, and the results of any physical examination and all test results that are required to

be provided by this section, including biological tests, X-rays, pulmonary function tests, etc., or that have been obtained to further evaluate any condition that might be related to cadmium exposure;

(iv) The employee's medical symptoms that might be related to exposure to cadmium; and

(v) A copy of the information provided to the physician as required by WAC 296-62-07423 (9)(b) through (e).

(c) The employer shall assure that this record is maintained for the duration of employment plus thirty years, in accordance with chapter 296-802 WAC.

(4) Training. The employer shall certify that employees have been trained by preparing a certification record which includes the identity of the person trained, the signature of the employer or the person who conducted the training, and the date the training was completed. The certification records shall be prepared at the completion of training and shall be maintained on file for one year beyond the date of training of that employee.

(5) Availability.

(a) Except as otherwise provided for in this section, access to all records required to be maintained by subsections (1) through (4) of this section shall be in accordance with the provisions of chapter 296-802 WAC.

(b) Within fifteen days after a request, the employer shall make an employee's medical records required to be kept by subsection (3) of this section available for examination and copying to the subject employee, to designated representatives, to anyone having the specific written consent of the subject employee, and after the employee's death or incapacitation, to the employee's family members.

(6) Transfer of records. Whenever an employer ceases to do business and there is no successor employer to receive and retain records for the prescribed period or the employer intends to dispose of any records required to be preserved for at least thirty years, the employer shall comply with the requirements concerning transfer of records set forth in chapter 296-802 WAC.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060. 04-10-026, § 296-62-07427, filed 4/27/04, effective 8/1/04. Statutory Authority: Chapter 49.17 RCW. 93-07-044 (Order 93-01), § 296-62-07427, filed 3/13/93, effective 4/27/93.]

WAC 296-62-07429 Observation of monitoring. (1) Employee observation. The employer shall provide affected employees or their designated representatives an opportunity to observe any monitoring of employee exposure to cadmium.

(2) Observation procedures. When observation of monitoring requires entry into an area where the use of protective clothing or equipment is required, the employer shall provide the observer with that clothing and equipment and shall assure that the observer uses such clothing and equipment and complies with all other applicable safety and health procedures.

[Statutory Authority: Chapter 49.17 RCW. 93-07-044 (Order 93-01), § 296-62-07429, filed 3/13/93, effective 4/27/93.]

WAC 296-62-07433 Appendices. WAC 296-62-07441, Appendix A; WAC 296-62-07443, Appendix B; WAC 296-62-07447, Appendix D; WAC 296-62-07449,

Appendix E; and WAC 296-62-07451, Appendix F are non-mandatory appendices and are not intended to create any additional obligations.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-094, § 296-62-07433, filed 8/17/99, effective 12/1/99. Statutory Authority: Chapter 49.17 RCW. 93-07-044 (Order 93-01), § 296-62-07433, filed 3/13/93, effective 4/27/93.]

WAC 296-62-07441 Appendix A, substance safety data sheet—Cadmium. (1) Substance identification.

(a) Substance: Cadmium.

(b) 8-Hour, time-weighted-average, permissible exposure limit (TWA PEL):

(c) TWA PEL: Five micrograms of cadmium per cubic meter of air 5 µg/m³, time-weighted average (TWA) for an 8-hour workday.

(d) Appearance: Cadmium metal—soft, blue-white, malleable, lustrous metal or grayish-white powder. Some cadmium compounds may also appear as a brown, yellow, or red powdery substance.

(2) Health hazard data.

(a) Routes of exposure. Cadmium can cause local skin or eye irritation. Cadmium can affect your health if you inhale it or if you swallow it.

(b) Effects of overexposure.

(i) Short-term (acute) exposure: Cadmium is much more dangerous by inhalation than by ingestion. High exposures to cadmium that may be immediately dangerous to life or health occur in jobs where workers handle large quantities of cadmium dust or fume; heat cadmium-containing compounds or cadmium-coated surfaces; weld with cadmium solders or cut cadmium-containing materials such as bolts.

(ii) Severe exposure may occur before symptoms appear. Early symptoms may include mild irritation of the upper respiratory tract, a sensation of constriction of the throat, a metallic taste and/or a cough. A period of one to ten hours may precede the onset of rapidly progressing shortness of breath, chest pain, and flu-like symptoms with weakness, fever, headache, chills, sweating, and muscular pain. Acute pulmonary edema usually develops within twenty-four hours and reaches a maximum by three days. If death from asphyxia does not occur, symptoms may resolve within a week.

(iii) Long-term (chronic) exposure. Repeated or long-term exposure to cadmium, even at relatively low concentrations, may result in kidney damage and an increased risk of cancer of the lung and of the prostate.

(c) Emergency first-aid procedures.

(i) Eye exposure: Direct contact may cause redness or pain. Wash eyes immediately with large amounts of water, lifting the upper and lower eyelids. Get medical attention immediately.

(ii) Skin exposure: Direct contact may result in irritation. Remove contaminated clothing and shoes immediately. Wash affected area with soap or mild detergent and large amounts of water. Get medical attention immediately.

(iii) Ingestion: Ingestion may result in vomiting, abdominal pain, nausea, diarrhea, headache, and sore throat. Treatment for symptoms must be administered by medical personnel. Under no circumstances should the employer allow any person whom he/she retains, employs, supervises, or controls

to engage in therapeutic chelation. Such treatment is likely to translocate cadmium from pulmonary or other tissue to renal tissue. Get medical attention immediately.

(iv) Inhalation: If large amounts of cadmium are inhaled, the exposed person must be moved to fresh air at once. If breathing has stopped, perform cardiopulmonary resuscitation. Administer oxygen if available. Keep the affected person warm and at rest. Get medical attention immediately.

(v) Rescue: Move the affected person from the hazardous exposure. If the exposed person has been overcome, attempt rescue only after notifying at least one other person of the emergency and putting into effect established emergency procedures. Do not become a casualty yourself. Understand your emergency rescue procedures and know the location of the emergency equipment before the need arises.

(3) Employee information.

(a) Protective clothing and equipment.

(i) Respirators: You may be required to wear a respirator for nonroutine activities; in emergencies; while your employer is in the process of reducing cadmium exposures through engineering controls; and where engineering controls are not feasible. If air-purifying respirators are worn, they must have a label issued by the National Institute for Occupational Safety and Health (NIOSH) under the provisions of 42 CFR part 84 stating that the respirators have been certified for use with cadmium. Cadmium does not have a detectable odor except at levels well above the permissible exposure limits. If you can smell cadmium while wearing a respirator, proceed immediately to fresh air. If you experience difficulty breathing while wearing a respirator, tell your employer.

(ii) Protective clothing: You may be required to wear impermeable clothing, gloves, foot gear, a face shield, or other appropriate protective clothing to prevent skin contact with cadmium. Where protective clothing is required, your employer must provide clean garments to you as necessary to assure that the clothing protects you adequately. The employer must replace or repair protective clothing that has become torn or otherwise damaged.

(iii) Eye protection: You may be required to wear splash-proof or dust resistant goggles to prevent eye contact with cadmium.

(b) Employer requirements.

(i) Medical: If you are exposed to cadmium at or above the action level, your employer is required to provide a medical examination, laboratory tests and a medical history according to the medical surveillance provisions under WAC 296-62-07423. (See summary chart and tables in this section, appendix A.) These tests shall be provided without cost to you. In addition, if you are accidentally exposed to cadmium under conditions known or suspected to constitute toxic exposure to cadmium, your employer is required to make special tests available to you.

(ii) Access to records: All medical records are kept strictly confidential. You or your representative are entitled to see the records of measurements of your exposure to cadmium. Your medical examination records can be furnished to your personal physician or designated representative upon request by you to your employer.

(iii) Observation of monitoring: Your employer is required to perform measurements that are representative of your exposure to cadmium and you or your designated representative are entitled to observe the monitoring procedure. You are entitled to observe the steps taken in the measurement procedure, and to record the results obtained. When the monitoring procedure is taking place in an area where respirators or personal protective clothing and equipment are required to be worn, you or your representative must also be provided with, and must wear the protective clothing and equipment.

(c) Employee requirements. You will not be able to smoke, eat, drink, chew gum or tobacco, or apply cosmetics while working with cadmium in regulated areas. You will also not be able to carry or store tobacco products, gum, food, drinks, or cosmetics in regulated areas because these products easily become contaminated with cadmium from the workplace and can therefore create another source of unnecessary cadmium exposure. Some workers will have to change out of work clothes and shower at the end of the day, as part of their workday, in order to wash cadmium from skin and hair. Handwashing and cadmium-free eating facilities shall be provided by the employer and proper hygiene should always be performed before eating. It is also recommended that you do not smoke or use tobacco products, because among other things, they naturally contain cadmium. For further information, read the labeling on such products.

(4) Physician information.

(a) Introduction. The medical surveillance provisions of WAC 296-62-07423 generally are aimed at accomplishing three main interrelated purposes: First, identifying employees at higher risk of adverse health effects from excess, chronic exposure to cadmium; second, preventing cadmium-induced disease; and third, detecting and minimizing existing cadmium-induced disease. The core of medical surveillance in this standard is the early and periodic monitoring of the employee's biological indicators of:

(i) Recent exposure to cadmium;

(ii) Cadmium body burden; and

(iii) Potential and actual kidney damage associated with exposure to cadmium. The main adverse health effects associated with cadmium overexposure are lung cancer and kidney dysfunction. It is not yet known how to adequately biologically monitor human beings to specifically prevent cadmium-induced lung cancer. By contrast, the kidney can be monitored to provide prevention and early detection of cadmium-induced kidney damage. Since, for noncarcinogenic effects, the kidney is considered the primary target organ of chronic exposure to cadmium, the medical surveillance provisions of this standard effectively focus on cadmium-induced kidney disease. Within that focus, the aim, where possible, is to prevent the onset of such disease and, where necessary, to minimize such disease as may already exist. The by-products of successful prevention of kidney disease are anticipated to be the reduction and prevention of other cadmium-induced diseases.

(b) Health effects. The major health effects associated with cadmium overexposure are described below.

(i) Kidney: The most prevalent nonmalignant disease observed among workers chronically exposed to cadmium is kidney dysfunction. Initially, such dysfunction is manifested

as proteinuria. The proteinuria associated with cadmium exposure is most commonly characterized by excretion of low-molecular weight proteins (15,000 to 40,000 MW) accompanied by loss of electrolytes, uric acid, calcium, amino acids, and phosphate. The compounds commonly excreted include: Beta-2-microglobulin (β_2 -M), retinol binding protein (RBP), immunoglobulin light chains, and lysozyme. Excretion of low molecular weight proteins are characteristic of damage to the proximal tubules of the kidney (Iwao et al., 1980). It has also been observed that exposure to cadmium may lead to urinary excretion of high-molecular weight proteins such as albumin, immunoglobulin G, and glycoproteins (Ex. 29). Excretion of high-molecular weight proteins is typically indicative of damage to the glomeruli of the kidney. Bernard et al., (1979) suggest that damage to the glomeruli and damage to the proximal tubules of the kidney may both be linked to cadmium exposure but they may occur independently of each other. Several studies indicate that the onset of low-molecular weight proteinuria is a sign of irreversible kidney damage (Friberg et al., 1974; Roels et al., 1982; Piscator 1984; Elinder et al., 1985; Smith et al., 1986). Above specific levels of β_2 -M associated with cadmium exposure it is unlikely that β_2 -M levels return to normal even when cadmium exposure is eliminated by removal of the individual from the cadmium work environment (Friberg, Ex. 29, 1990). Some studies indicate that such proteinuria may be progressive; levels of β_2 -M observed in the urine increase with time even after cadmium exposure has ceased. See, for example, Elinder et al., 1985. Such observations, however, are not universal, and it has been suggested that studies in which proteinuria has not been observed to progress may not have tracked patients for a sufficiently long time interval (Jarup, Ex. 8-661). When cadmium exposure continues after the onset of proteinuria, chronic nephrotoxicity may occur (Friberg, Ex. 29). Uremia results from the inability of the glomerulus to adequately filter blood. This leads to severe disturbance of electrolyte concentrations and may lead to various clinical complications including kidney stones (L-140-50). After prolonged exposure to cadmium, glomerular proteinuria, glucosuria, aminoaciduria, phosphaturia, and hypercalciuria may develop (Exs. 8-86, 4-28, 14-18). Phosphate, calcium, glucose, and amino acids are essential to life, and under normal conditions, their excretion should be regulated by the kidney. Once low molecular weight proteinuria has developed, these elements dissipate from the human body. Loss of glomerular function may also occur, manifested by decreased glomerular filtration rate and increased serum creatinine. Severe cadmium-induced renal damage may eventually develop into chronic renal failure and uremia (Ex. 55). Studies in which animals are chronically exposed to cadmium confirm the renal effects observed in humans (Friberg et al., 1986). Animal studies also confirm problems with calcium metabolism and related skeletal effects which have been observed among humans exposed to cadmium in addition to the renal effects. Other effects commonly reported in chronic animal studies include anemia, changes in liver morphology, immunosuppression and hypertension. Some of these effects may be associated with co-factors. Hypertension, for example, appears to be associated with diet as well as cadmium exposure. Animals injected

with cadmium have also shown testicular necrosis (Ex. 8-86B).

(ii) Biological markers. It is universally recognized that the best measures of cadmium exposures and its effects are measurements of cadmium in biological fluids, especially urine and blood. Of the two, CdU is conventionally used to determine body burden of cadmium in workers without kidney disease. CdB is conventionally used to monitor for recent exposure to cadmium. In addition, levels of CdU and CdB historically have been used to predict the percent of the population likely to develop kidney disease (Thun et al., Ex. L-140-50; WHO, Ex. 8-674; ACGIH, Exs. 8-667, 140-50). The third biological parameter upon which WISHA relies for medical surveillance is beta-2-microglobulin in urine (β_2 -M), a low molecular weight protein. Excess β_2 -M has been widely accepted by physicians and scientists as a reliable indicator of functional damage to the proximal tubule of the kidney (Exs. 8-447, 144-3-C, 4-47, L-140-45, 19-43-A). Excess β_2 -M is found when the proximal tubules can no longer reabsorb this protein in a normal manner. This failure of the proximal tubules is an early stage of a kind of kidney disease that commonly occurs among workers with excessive cadmium exposure. Used in conjunction with biological test results indicating abnormal levels of CdU and CdB, the finding of excess β_2 -M can establish for an examining physician that any existing kidney disease is probably cadmium-related (Trs. 6/6/90, pp. 82-86, 122, 134). The upper limits of normal levels for cadmium in urine and cadmium in blood are 3 μg Cd/gram creatinine in urine and 5 μgCd /liter whole blood, respectively. These levels were derived from broad-based population studies. Three issues confront the physicians in the use of β_2 -M as a marker of kidney dysfunction and material impairment. First, there are a few other causes of elevated levels of β_2 -M not related to cadmium exposures, some of which may be rather common diseases and some of which are serious diseases (e.g., myeloma or transient flu, Exs. 29 and 8-086). These can be medically evaluated as alternative causes (Friberg, Ex. 29). Also, there are other factors that can cause β_2 -M to degrade so that low levels would result in workers with tubular dysfunction. For example, regarding the degradation of β_2 -M, workers with acidic urine ($\text{pH} < 6$) might have β_2 -M levels that are within the "normal" range when in fact kidney dysfunction has occurred (Ex. L-140-1) and the low molecular weight proteins are degraded in acid urine. Thus, it is very important that the pH of urine be measured, that urine samples be buffered as necessary (See WAC 296-62-07451, appendix F.), and that urine samples be handled correctly, i.e., measure the pH of freshly voided urine samples, then if necessary, buffer to $\text{pH} > 6$ (or above for shipping purposes), measure pH again and then, perhaps, freeze the sample for storage and shipping. (See also WAC 296-62-07451, appendix F.) Second, there is debate over the pathological significance of proteinuria, however, most world experts believe that β_2 -M levels greater than 300 $\mu\text{g/g}$ Cr are abnormal (Elinder, Ex. 55, Friberg, Ex. 29). Such levels signify kidney dysfunction that constitutes material impairment of health. Finally, detection of β_2 -M at low levels has often been considered difficult, however, many laboratories have the capability of detecting excess β_2 -M using simple kits, such as the

Phadebas Delphia test, that are accurate to levels of 100 μg β_2 -M/g Cr U (Ex. L-140-1). Specific recommendations for ways to measure β_2 -M and proper handling of urine samples to prevent degradation of β_2 -M have been addressed by WISHA in WAC 296-62-07451, appendix F, in the section on laboratory standardization. All biological samples must be analyzed in a laboratory that is proficient in the analysis of that particular analyte, under WAC 296-62-07423 (1)(d). (See WAC 296-62-07451, appendix F). Specifically, under WAC 296-62-07423 (1)(d), the employer is to assure that the collecting and handling of biological samples of cadmium in urine (CdU), cadmium in blood (CdB), and beta-2 microglobulin in urine (β_2 -M) taken from employees is collected in a manner that assures reliability. The employer must also assure that analysis of biological samples of cadmium in urine (CdU), cadmium in blood (CdB), and beta-2 microglobulin in urine (β_2 -M) taken from employees is performed in laboratories with demonstrated proficiency for that particular analyte. (See WAC 296-62-07451, appendix F).

(iii) Lung and prostate cancer. The primary sites for cadmium-associated cancer appear to be the lung and the prostate (L-140-50). Evidence for an association between cancer and cadmium exposure derives from both epidemiological studies and animal experiments. Mortality from prostate cancer associated with cadmium is slightly elevated in several industrial cohorts, but the number of cases is small and there is not clear dose-response relationship. More substantive evidence exists for lung cancer. The major epidemiological study of lung cancer was conducted by Thun et al., (Ex. 4-68). Adequate data on cadmium exposures were available to allow evaluation of dose-response relationships between cadmium exposure and lung cancer. A statistically significant excess of lung cancer attributed to cadmium exposure was observed in this study even when confounding variables such as co-exposure to arsenic and smoking habits were taken into consideration (Ex. L-140-50). The primary evidence for quantifying a link between lung cancer and cadmium exposure from animal studies derives from two rat bioassay studies; one by Takenaka et al., (1983), which is a study of cadmium chloride and a second study by Oldiges and Glaser (1990) of four cadmium compounds. Based on the above cited studies, the U.S. Environmental Protection Agency (EPA) classified cadmium as "B1," a probable human carcinogen, in 1985 (Ex. 4-4). The International Agency for Research on Cancer (IARC) in 1987 also recommended that cadmium be listed as "2A," a probable human carcinogen (Ex. 4-15). The American Conference of Governmental Industrial Hygienists (ACGIH) has recently recommended that cadmium be labeled as a carcinogen. Since 1984, NIOSH has concluded that cadmium is possibly a human carcinogen and has recommended that exposures be controlled to the lowest level feasible.

(iv) Noncarcinogenic effects. Acute pneumonitis occurs 10 to 24 hours after initial acute inhalation of high levels of cadmium fumes with symptoms such as fever and chest pain (Exs. 30, 8-86B). In extreme exposure cases pulmonary edema may develop and cause death several days after exposure. Little actual exposure measurement data is available on the level of airborne cadmium exposure that causes such immediate adverse lung effects, nonetheless, it is reasonable

to believe a cadmium concentration of approximately 1 mg/m³ over an eight hour period is "immediately dangerous" (55 FR 4052, ANSI; Ex. 8-86B). In addition to acute lung effects and chronic renal effects, long term exposure to cadmium may cause other severe effects on the respiratory system. Reduced pulmonary function and chronic lung disease indicative of emphysema have been observed in workers who have had prolonged exposure to cadmium dust or fumes (Exs. 4-29, 4-22, 4-42, 4-50, 4-63). In a study of workers conducted by Kazantzis et al., a statistically significant excess of worker deaths due to chronic bronchitis was found, which in his opinion was directly related to high cadmium exposures of 1 mg/m³ or more (Tr. 6/8/90, pp. 156-157). Cadmium need not be respirable to constitute a hazard. Inspirable cadmium particles that are too large to be respirable but small enough to enter the tracheobronchial region of the lung can lead to bronchoconstriction, chronic pulmonary disease, and cancer of that portion of the lung. All of these diseases have been associated with occupational exposure to cadmium (Ex. 8-86B). Particles that are constrained by their size to the extra-thoracic regions of the respiratory system such as the nose and maxillary sinuses can be swallowed through mucociliary clearance and be absorbed into the body (ACGIH, Ex. 8-692). The impaction of these particles in the upper airways can lead to anosmia, or loss of sense of smell, which is an early indication of overexposure among workers exposed to heavy metals. This condition is commonly reported among cadmium-exposed workers (Ex. 8-86-B).

(c) Medical surveillance. In general, the main provisions of the medical surveillance section of the standard, under WAC 296-62-07423 (1) through (16), are as follows:

(i) Workers exposed above the action level are covered;
 (ii) Workers with intermittent exposures are not covered;
 (iii) Past workers who are covered receive biological monitoring for at least one year;

(iv) Initial examinations include a medical questionnaire and biological monitoring of cadmium in blood (CdB), cadmium in urine (CdU), and Beta-2-microglobulin in urine (β_2 -M);

(v) Biological monitoring of these three analytes is performed at least annually; full medical examinations are performed biennially;

(vi) Until five years from the effective date of the standard, medical removal is required when CdU is greater than 15 μ g/gram creatinine (g Cr), or CdB is greater than 15 μ g/liter whole blood (lwb), or β_2 -M is greater than 1500 μ g/g Cr, and CdB is greater than 5 μ g/lwb or CdU is greater than 3 μ g/g Cr;

(vii) Beginning five years after the standard is in effect, medical removal triggers will be reduced;

(viii) Medical removal protection benefits are to be provided for up to eighteen months;

(ix) Limited initial medical examinations are required for respirator usage;

(x) Major provisions are fully described under WAC 296-62-07423; they are outlined here as follows:

(A) Eligibility.

(B) Biological monitoring.

(C) Actions triggered by levels of CdU, CdB, and β_2 -M (See Summary Charts and Tables in WAC 296-62-07441(5).)

(D) Periodic medical surveillance.

(E) Actions triggered by periodic medical surveillance (See appendix A Summary Chart and Tables in WAC 296-62-07441(5).)

(F) Respirator usage.

(G) Emergency medical examinations.

(H) Termination examination.

(I) Information to physician.

(J) Physician's medical opinion.

(K) Medical removal protection.

(L) Medical removal protection benefits.

(M) Multiple physician review.

(N) Alternate physician review.

(O) Information employer gives to employee.

(P) Recordkeeping.

(Q) Reporting on OSHA form 200.

(xi) The above mentioned summary of the medical surveillance provisions, the summary chart, and tables for the actions triggered at different levels of CdU, CdB and β_2 -M (in subsection (5) of this section, Attachment 1) are included only for the purpose of facilitating understanding of the provisions of WAC 296-62-07423(3) of the final cadmium standard. The summary of the provisions, the summary chart, and the tables do not add to or reduce the requirements in WAC 296-62-07423(3).

(d) Recommendations to physicians.

(i) It is strongly recommended that patients with tubular proteinuria are counseled on: The hazards of smoking; avoidance of nephrotoxins and certain prescriptions and over-the-counter medications that may exacerbate kidney symptoms; how to control diabetes and/or blood pressure; proper hydration, diet, and exercise (Ex. 19-2). A list of prominent or common nephrotoxins is attached. (See subsection (6) of this section, Attachment 2.)

(ii) DO NOT CHELATE; KNOW WHICH DRUGS ARE NEPHROTOXINS OR ARE ASSOCIATED WITH NEPHRITIS.

(iii) The gravity of cadmium-induced renal damage is compounded by the fact there is no medical treatment to prevent or reduce the accumulation of cadmium in the kidney (Ex. 8-619). Dr. Friberg, a leading world expert on cadmium toxicity, indicated in 1992, that there is no form of chelating agent that could be used without substantial risk. He stated that tubular proteinuria has to be treated in the same way as other kidney disorders (Ex. 29).

(iv) After the results of a workers' biological monitoring or medical examination are received the employer is required to provide an information sheet to the patient, briefly explaining the significance of the results. (See subsection (7) of this section.)

(v) For additional information the physician is referred to the following additional resources:

(A) The physician can always obtain a copy of the OSHA final rule preamble, with its full discussion of the health effects, from OSHA's Computerized Information System (OCIS).

(B) The OSHA Docket Officer maintains a record of the OSHA rulemaking. The Cadmium Docket (H-057A), is located at 200 Constitution Ave. NW., Room N-2625, Washington, DC 20210; telephone: (202) 219-7894.

(C) The following articles and exhibits in particular from that docket (H-057A):

Exhibit number	Author and paper title
8-447	Lauwerys et. al., Guide for physicians, "Health Maintenance of Workers Exposed to Cadmium," published by the Cadmium Council.
4-67	Takenaka, S., H. Oldiges, H. Konig, D. Hochrainer, G. Oberdorster. "Carcinogenicity of Cadmium Chloride Aerosols in Wistar Rats." JNCI 70:367-373, 1983. (32)
4-68	Thun, M.J., T.M. Schnoor, A.B. Smith, W.E. Halperin, R.A. Lemen. "Mortality Among a Cohort of U.S. Cadmium Production Workers—An Update." JNCI 74(2):325-33, 1985. (8)
4-25	Elinder, C.G., Kjellstrom, T., Hogstedt, C., et al., "Cancer Mortality of Cadmium Workers." Brit. J. Ind. Med. 42:651-655, 1985. (14)
4-26	Ellis, K.J. et al., "Critical Concentrations of Cadmium in Human Renal Cortex: Dose Effect Studies to Cadmium Smelter Workers." J. Toxicol. Environ. Health 7:691-703, 1981. (76)
4-27	Ellis, K.J., S.H. Cohn and T.J. Smith. "Cadmium Inhalation Exposure Estimates: Their Significance with Respect to Kidney and Liver Cadmium Burden." J. Toxicol. Environ. Health 15:173-187, 1985.
4-28	Falck, F.Y., Jr., Fine, L.J., Smith, R.G., McClatchey, K.D., Annesley, T., England, B., and Schork, A.M. "Occupational Cadmium Exposure and Renal Status." Am. J. Ind. Med. 4:541, 1983. (64)
8-86A	Friberg, L., C.G. Elinder, et al., "Cadmium and Health a Toxicological and Epidemiological Appraisal, Volume I, Exposure, Dose, and Metabolism." CRC Press, Inc., Boca Raton, FL, 1986. (Available from the OSHA Technical Data Center)
8-86B	Friberg, L., C.G. Elinder, et al., "Cadmium and Health: A Toxicological and Epidemiological Appraisal, Volume II, Effects and Response." CRC Press, Inc., Boca Raton, FL, 1986. (Available from the OSHA Technical Data Center)
L-140-45	Elinder, C.G., "Cancer Mortality of Cadmium Workers," Brit. J. Ind. Med., 42, 651-655, 1985.
L-140-50	Thun, M., Elinder, C.G., Friberg, L., "Scientific Basis for an Occupational Standard for Cadmium, Am. J. Ind. Med., 20; 629-642, 1991.

(5) Information sheet. The information sheet (subsection (8) of this section, Attachment 3) or an equally explanatory one should be provided to you after any biological monitoring results are reviewed by the physician, or where applicable, after any medical examination.

(6) Attachment 1—Appendix A, summary chart and Tables A and B of actions triggered by biological monitoring.

(a) Summary chart: WAC 296-62-07423(3) Medical surveillance—Categorizing biological monitoring results.

(i) Biological monitoring results categories are set forth in Table A for the periods ending December 31, 1998, and for the period beginning January 1, 1999.

(ii) The results of the biological monitoring for the initial medical exam and the subsequent exams shall determine an employee's biological monitoring result category.

(b) Actions triggered by biological monitoring.

(i) The actions triggered by biological monitoring for an employee are set forth in Table B.

(ii) The biological monitoring results for each employee under WAC 296-62-07423(3) shall determine the actions required for that employee. That is, for any employee in biological monitoring category C, the employer will perform all of the actions for which there is an X in column C of Table B.

(iii) An employee is assigned the alphabetical category ("A" being the lowest) depending upon the test results of the three biological markers.

(iv) An employee is assigned category A if monitoring results for all three biological markers fall at or below the levels indicated in the table listed for category A.

(v) An employee is assigned category B if any monitoring result for any of the three biological markers fall within the range of levels indicated in the table listed for category B, providing no result exceeds the levels listed for category B.

(vi) An employee is assigned category C if any monitoring result for any of the three biological markers are above the levels listed for category C.

(c) The user of Tables A and B should know that these tables are provided only to facilitate understanding of the relevant provisions of WAC 296-62-07423. Tables A and B are not meant to add to or subtract from the requirements of those provisions.

Table A
Categorization of Biological Monitoring Results
Applicable Through 1998 Only

Biological marker	Monitoring result categories		
	A	B	C
Cadmium in urine (CdU) (µg/g creatinine)	≤3	>3 and ≤15	>15
β ₂ -microglobulin (β ₂ -M) (µg/g creatinine)	≤300	>300 and ≤1500	>1500*
Cadmium in blood (CdB) (µg/liter whole blood)	≤5	>5 and ≤15	>15

* If an employee's β₂-M levels are above 1,500 µg/g creatinine, in order for mandatory medical removal to be required (See WAC 296-62-07441, Appendix A Table B.), either the employee's CdU level must also be >3 µg/g creatinine or CdB level must also be >5 µg/liter whole blood.

Applicable Beginning January 1, 1999

Biological marker	Monitoring result categories		
	A	B	C
Cadmium in urine (CdU) (µg/g creatinine)	≤3	>3 and ≤7	>7
β ₂ -microglobulin (β ₂ -M) (µg/g creatinine)	≤300	>300 and ≤750	>750*
Cadmium in blood (CdB) (µg/liter whole blood)	≤5	>5 and ≤10	>10

* If an employee's β_2 -M levels are above 750 $\mu\text{g/g}$ creatinine, in order for mandatory medical removal to be required (See WAC 296-62-07441, Appendix A Table B.), either the employee's CdU level must also be $>3 \mu\text{g/g}$ creatinine or CdB level must also be $>5 \mu\text{g/liter}$ whole blood.

Table B—Actions determined by biological monitoring.

This table presents the actions required based on the monitoring result in Table A. Each item is a separate requirement in citing noncompliance. For example, a medical examination within ninety days for an employee in category B is separate from the requirement to administer a periodic medical examination for category B employees on an annual basis.

Table B			
Monitoring result category			
Required actions	A ¹	B ¹	C ¹
(1) Biological monitoring:			
(a) Annual.	X		
(b) Semiannual		X	
(c) Quarterly			X
(2) Medical examination:			
(a) Biennial	X		
(b) Annual.		X	
(c) Semiannual.			X
(d) Within 90 days		X	X
(3) Assess within two weeks:			
(a) Excess cadmium exposure		X	X
(b) Work practices		X	X
(c) Personal hygiene		X	X
(d) Respirator usage		X	X
(e) Smoking history		X	X
(f) Hygiene facilities		X	X
(g) Engineering controls		X	X
(h) Correct within 30 days		X	X
(i) Periodically assess exposures			X
(4) Discretionary medical removal		X	X
(5) Mandatory medical removal			X ²

¹ For all employees covered by medical surveillance exclusively because of exposures prior to the effective date of this standard, if they are in Category A, the employer shall follow the requirements of WAC 296-62-07423 (3)(a)(ii) and (4)(e)(i). If they are in Category B or C, the employer shall follow the requirements of WAC 296-62-07423 (4)(e)(ii) and (iii).

² See footnote in Table A.

(7) Attachment 2, list of medications.

(a) A list of the more common medications that a physician, and the employee, may wish to review is likely to include some of the following:

(i) Anticonvulsants: Paramethadione, phenytoin, trimethadone;

(ii) Antihypertensive drugs: Captopril, methyldopa;

(iii) Antimicrobials: Aminoglycosides, amphotericin B, cephalosporins, ethambutol;

(iv) Antineoplastic agents: Cisplatin, methotrexate, mitomycin-C, nitrosoureas, radiation;

(v) Sulfonamide diuretics: Acetazolamide, chlorthalidone, furosemide, thiazides;

(vi) Halogenated alkanes, hydrocarbons, and solvents that may occur in some settings: Carbon tetrachloride, ethyl-

ene glycol, toluene; iodinated radiographic contrast media; nonsteroidal anti-inflammatory drugs; and

(vii) Other miscellaneous compounds: Acetaminophen, allopurinol, amphetamines, azathioprine, cimetidine, cyclosporine, lithium, methoxyflurane, methysergide, D-penicillamine, phenacetin, phenendione.

(b) A list of drugs associated with acute interstitial nephritis includes:

(i) Antimicrobial drugs: Cephalosporins, chloramphenicol, colistin, erythromycin, ethambutol, isoniazid, para-aminosalicylic acid, penicillins, polymyxin B, rifampin, sulfonamides, tetracyclines, and vancomycin;

(ii) Other miscellaneous drugs: Allopurinol, antipyrine, azathioprine, captopril, cimetidine, clofibrate, methyldopa, phenindione, phenylpropanolamine, phenytoin, probenecid, sulfipyrazone, sulfonamide diuretics, triamterene; and

(iii) Metals: Bismuth, gold. This list has been derived from commonly available medical textbooks (e.g., Ex. 14-18). The list has been included merely to facilitate the physician's, employer's, and employee's understanding. The list does not represent an official OSHA opinion or policy regarding the use of these medications for particular employees. The use of such medications should be under physician discretion.

(8) Attachment 3—Biological monitoring and medical examination results.

Employee

Testing

Date

Cadmium in Urine ____ $\mu\text{g/g}$ Cr—Normal Levels:

$\leq 3 \mu\text{g/g}$ Cr.

Cadmium in Blood ____ $\mu\text{g/lwb}$ —Normal Levels:

$\leq 5 \mu\text{g/lwb}$.

Beta-2-microglobulin in Urine ____ $\mu\text{g/g}$ Cr—Normal Levels: $\leq 300 \mu\text{g/g}$ Cr.

Physical Examination Results: N/A ____ Satisfactory ____

Unsatisfactory ____ (see physician again).

Physician's Review of Pulmonary Function Test:

N/A ____ Normal ____

Abnormal ____.

Next biological monitoring or medical examination scheduled for _____

(a) The biological monitoring program has been designed for three main purposes:

(i) To identify employees at risk of adverse health effects from excess, chronic exposure to cadmium;

(ii) To prevent cadmium-induced disease(s); and

(iii) To detect and minimize existing cadmium-induced disease(s).

(b) The levels of cadmium in the urine and blood provide an estimate of the total amount of cadmium in the body. The amount of a specific protein in the urine (beta-2-microglobulin) indicates changes in kidney function. All three tests must be evaluated together. A single mildly elevated result may not be important if testing at a later time indicates that the results are normal and the workplace has been evaluated to decrease possible sources of cadmium exposure. The levels of cadmium or beta-2-microglobulin may change over a

period of days to months and the time needed for those changes to occur is different for each worker.

(c) If the results for biological monitoring are above specific "high levels" (cadmium urine greater than 10 micrograms per gram of creatinine $\mu\text{g/g Cr}$), cadmium blood greater than 10 micrograms per liter of whole blood ($\mu\text{g/lwb}$), or beta-2-microglobulin greater than 1000 micrograms per gram of creatinine ($\mu\text{g/g Cr}$), the worker has a much greater chance of developing other kidney diseases.

(d) One way to measure for kidney function is by measuring beta-2-microglobulin in the urine. Beta-2-microglobulin is a protein which is normally found in the blood as it is being filtered in the kidney, and the kidney reabsorbs or returns almost all of the beta-2-microglobulin to the blood. A very small amount (less than 300 $\mu\text{g/g Cr}$ in the urine) of beta-2-microglobulin is not reabsorbed into the blood, but is released in the urine. If cadmium damages the kidney, the amount of beta-2-microglobulin in the urine increases because the kidney cells are unable to reabsorb the beta-2-microglobulin normally. An increase in the amount of beta-2-microglobulin in the urine is a very early sign of kidney dysfunction. A small increase in beta-2-microglobulin in the urine will serve as an early warning sign that the worker may be absorbing cadmium from the air, cigarettes contaminated in the workplace, or eating in areas that are cadmium contaminated.

(e) Even if cadmium causes permanent changes in the kidney's ability to reabsorb beta-2-microglobulin, and the beta-2-microglobulin is above the "high levels," the loss of kidney function may not lead to any serious health problems. Also, renal function naturally declines as people age. The risk for changes in kidney function for workers who have biological monitoring results between the "normal values" and the "high levels" is not well known. Some people are more cadmium-tolerant, while others are more cadmium-susceptible.

(f) For anyone with even a slight increase of beta-2-microglobulin, cadmium in the urine, or cadmium in the blood, it is very important to protect the kidney from further damage. Kidney damage can come from other sources than excess cadmium-exposure so it is also recommended that if a worker's levels are "high" he/she should receive counseling about drinking more water; avoiding cadmium-tainted tobacco and certain medications (nephrotoxins, acetaminophen); controlling diet, vitamin intake, blood pressure and diabetes; etc.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07441, filed 5/4/99, effective 9/1/99. Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-62-07441, filed 7/20/94, effective 9/20/94; 93-21-075 (Order 93-06), § 296-62-07441, filed 10/20/93, effective 12/1/93; 93-07-044 (Order 93-01), § 296-62-07441, filed 3/13/93, effective 4/27/93.]

WAC 296-62-07443 Appendix B—Substance technical guidelines for cadmium. (1) Cadmium metal.

(a) Physical and chemical data.

(i) Substance identification.

Chemical name: Cadmium.

Formula: Cd.

Molecular Weight: 112.4.

Chemical Abstracts Service (CAS) Registry No.: 7740-43-9.

(2007 Ed.)

Other identifiers: RETCS EU9800000; EPA D006; DOT 2570 53.

Synonyms: Colloidal Cadmium: Kadmium (German): CI 77180.

(ii) Physical data.

Boiling point: (760 mm Hg): 765 degrees C.

Melting point: 321 degrees C.

Specific gravity: ($\text{H}_2\text{O}@ 20^\circ\text{C}$): 8.64.

Solubility: Insoluble in water; soluble in dilute nitric acid and in sulfuric acid.

Appearance: Soft, blue-white, malleable, lustrous metal or grayish-white powder.

(b) Fire, explosion, and reactivity data.

(i) Fire.

Fire and explosion hazards: The finely divided metal is pyrophoric, that is the dust is a severe fire hazard and moderate explosion hazard when exposed to heat or flame. Burning material reacts violently with extinguishing agents such as water, foam, carbon dioxide, and halons.

Flash point: Flammable (dust).

Extinguishing media: Dry sand, dry dolomite, dry graphite, or sodium chloride.

(ii) Reactivity.

Conditions contributing to instability: Stable when kept in sealed containers under normal temperatures and pressure, but dust may ignite upon contact with air. Metal tarnishes in moist air.

(iii) Incompatibilities: Ammonium nitrate, fused: Reacts violently or explosively with cadmium dust below 20°C . Hydrozoic acid: Violent explosion occurs after thirty minutes. Acids: Reacts violently, forms hydrogen gas. Oxidizing agents or metals: Strong reaction with cadmium dust. Nitryl fluoride at slightly elevated temperature: Glowing or white incandescence occurs. Selenium: Reacts exothermically. Ammonia: Corrosive reaction. Sulfur dioxide: Corrosive reaction. Fire extinguishing agents (water, foam, carbon dioxide, and halons): Reacts violently. Tellurium: Incandescent reaction in hydrogen atmosphere.

(iv) Hazardous decomposition products: The heated metal rapidly forms highly toxic, brownish fumes of oxides of cadmium.

(c) Spill, leak, and disposal procedures.

(i) Steps to be taken if the materials is released or spilled. Do not touch spilled material. Stop leak if you can do it without risk. Do not get water inside container. For large spills, dike spill for later disposal. Keep unnecessary people away. Isolate hazard area and deny entry.

(ii) The Superfund Amendments and Reauthorization Act of 1986 Section 304 requires that a release equal to or greater than the reportable quantity for this substance (one pound) must be immediately reported to the local emergency planning committee, the state emergency response commission, and the National Response Center (800) 424-8802; in Washington, DC metropolitan area (202) 426-2675.

(2) Cadmium oxide.

(a) Physical and chemical data.

(i) Substance identification.

Chemical name: Cadmium oxide.

Formula: CdO.

Molecular Weight: 128.4.

CAS No.: 1306-19-0.

Other identifiers: RTECS EV1929500.

Synonyms: Kadmu tlenek (Polish).

(ii) Physical data.

Boiling point (760 mm Hg): 950 degrees C decomposes.

Melting point: 1500°C.

Specific gravity: ($H_2O=1@20^{\circ}C$): 7.0.

Solubility: Insoluble in water; soluble in acids and alkalines.

Appearance: Red or brown crystals.

(b) Fire, explosion, and reactivity data.

(i) Fire.

Fire and explosion hazards: Negligible fire hazard when exposed to heat or flame.

Flash point: Nonflammable.

Extinguishing media: Dry chemical, carbon dioxide, water spray or foam.

(ii) Reactivity.

Conditions contributing to instability: Stable under normal temperatures and pressures.

(iii) Incompatibilities: Magnesium may reduce CdO_2 explosively on heating.

(iv) Hazardous decomposition products: Toxic fumes of cadmium.

(c) Spill, leak, and disposal procedures.

(i) Steps to be taken if the material is released or spilled. Do not touch spilled material. Stop leak if you can do it without risk. For small spills, take up with sand or other absorbent material and place into containers for later disposal. For small dry spills, use a clean shovel to place material into clean, dry container and then cover. Move containers from spill area. For larger spills, dike far ahead of spill for later disposal. Keep unnecessary people away. Isolate hazard area and deny entry.

(ii) The Superfund Amendments and Reauthorization Act of 1986 Section 304 requires that a release equal to or greater than the reportable quantity for this substance (one pound) must be immediately reported to the local emergency planning committee, the state emergency response commission, and the National Response Center (800) 424-8802; in Washington, DC metropolitan area (202) 426-2675.

(3) Cadmium sulfide.

(a) Physical and chemical data.

(i) Substance identification.

Chemical name: Cadmium sulfide.

Formula: CdS .

Molecular weight: 144.5.

CAS No. 1306-23-6.

Other identifiers: RTECS EV3150000.

Synonyms: Aurora yellow; Cadmium Golden 366; Cadmium Lemon Yellow 527; Cadmium Orange; Cadmium Primrose 819; Cadmium Sulphide; Cadmium Yellow; Cadmium Yellow 000; Cadmium Yellow Conc. Deep; Cadmium Yellow Conc. Golden; Cadmium Yellow Conc. Lemon; Cadmium Yellow Conc. Primrose; Cadmium Yellow Oz. Dark; Cadmium Yellow Primrose 47-1400; Cadmium Yellow 10G Conc.; Cadmium Yellow 892; Cadmopur Golden Yellow N; Cadmopur Yellow: Capsebon; C.I. 77199; C.I. Pigment Orange 20; CI Pigment Yellow 37; Ferro Lemon Yellow; Ferro Orange Yellow; Ferro Yellow; Greenockite; NCI-C02711.

(ii) Physical data.

Boiling point (760 mm. Hg): sublimes in N_2 at $980^{\circ}C$.

Melting point: 1750 degrees C (100 atm).

Specific gravity: ($H_2O=1@20^{\circ}C$): 4.82.

Solubility: Slightly soluble in water; soluble in acid.

Appearance: Light yellow or yellow-orange crystals.

(b) Fire, explosion, and reactivity data.

(i) Fire.

Fire and explosion hazards: Negligible fire hazard when exposed to heat or flame.

Flash point: Nonflammable.

Extinguishing media: Dry chemical, carbon dioxide, water spray or foam.

(ii) Reactivity. Conditions contributing to instability: Generally nonreactive under normal conditions. Reacts with acids to form toxic hydrogen sulfide gas.

(iii) Incompatibilities: Reacts vigorously with iodine-monochloride.

(iv) Hazardous decomposition products: Toxic fumes of cadmium and sulfur oxides.

(c) Spill, leak, and disposal procedures.

(i) Steps to be taken if the material is released or spilled. Do not touch spilled material. Stop leak if you can do it without risk. For small, dry spills, with a clean shovel place material into clean, dry container and cover. Move containers from spill area.

(ii) For larger spills, dike far ahead of spill for later disposal. Keep unnecessary people away. Isolate hazard and deny entry.

(4) Cadmium chloride.

(a) Physical and chemical data.

(i) Substance identification.

Chemical name: Cadmium chloride.

Formula: $CdCl_2$.

Molecular weight: 183.3.

CAS No. 10108-64-2.

Other identifiers: RTECS EY0175000.

Synonyms: Caddy; Cadmium dichloride; NA 2570 (DOT); UI-CAD; dichlorocadmium.

(ii) Physical data.

Boiling point (760 mm Hg): 960 degrees C.

Melting point: 568 degrees C.

Specific gravity: ($H_2O = 1 @ 20^{\circ}C$): 4.05.

Solubility: Soluble in water (140 g/100 cc); soluble in acetone.

Appearance: Small, white crystals.

(b) Fire, explosion, and reactivity data.

(i) Fire.

Fire and explosion hazards: Negligible fire and negligible explosion hazard in dust form when exposed to heat or flame.

Flash point: Nonflammable.

Extinguishing media: Dry chemical, carbon dioxide, water spray, or foam.

(ii) Reactivity. Conditions contributing to instability: Generally stable under normal temperatures and pressures.

(iii) Incompatibilities: Bromine trifluoride [trifluoride] rapidly attacks cadmium chloride. A mixture of potassium and cadmium chloride may produce a strong explosion on impact.

(iv) Hazardous decomposition products: Thermal decomposition may release toxic fumes of hydrogen chloride, chloride, chlorine or oxides of cadmium.

(c) Spill, leak, and disposal procedures.

(i) Steps to be taken if the materials is released or spilled. Do not touch spilled material. Stop leak if you can do it without risk. For small, dry spills, with a clean shovel place material into clean, dry container and cover. Move containers from spill area. For larger spills, dike far ahead of spill for later disposal. Keep unnecessary people away. Isolate hazard and deny entry.

(ii) The Superfund Amendments and Reauthorization Act of 1986 Section 304 requires that a release equal to or greater than the reportable quantity for this substance (one hundred pounds) must be immediately reported to the local emergency planning committee, the state emergency response commission, and the National Response Center (800) 424-8802; in Washington, DC Metropolitan area (202) 426-2675.

[Statutory Authority: Chapter 49.17 RCW. 93-07-044 (Order 93-01), § 296-62-07443, filed 3/13/93, effective 4/27/93.]

WAC 296-62-07447 Appendix D—Occupational health history interview with reference to cadmium exposure directions.

(To be read by employee and signed prior to the interview.)

Please answer the questions you will be asked as completely and carefully as you can. These questions are asked of everyone who works with cadmium. You will also be asked to give blood and urine samples. The doctor will give your employer a written opinion on whether you are physically capable of working with cadmium. Legally, the doctor cannot share personal information you may tell him/her with your employer. The following information is considered strictly confidential. The results of the tests will go to you, your doctor and your employer. You will also receive an information sheet explaining the results of any biological monitoring or physical examinations performed. If you are just being hired, the results of this interview and examination will be used to:

(1) Establish your health status and see if working with cadmium might be expected to cause unusual problems;

(2) Determine your health status today and see if there are changes over time;

(3) See if you can wear a respirator safely. If you are not a new hire: WISHA says that everyone who works with cadmium can have periodic medical examinations performed by a doctor. The reasons for this are:

(a) If there are changes in your health, either because of cadmium or some other reason, to find them early;

(b) To prevent kidney damage.

Please sign below.

I have read these directions and understand them:

Employee signature	_____
Date	_____
Thank you for answering these questions. (Suggested Format)	
Name	_____
Age	_____
Social Security #	_____
Company	_____
Job	_____

(2007 Ed.)

Type of Preplacement Exam: ☐ Periodic ☐ Termination ☐ Initial

☐ Other

Blood Pressure _____

Pulse Rate _____

1. How long have you worked at the job listed above?

☐ Not yet hired ☐ Number of months ☐ Number of years

2. Job Duties etc. _____

3. Have you ever been told by a doctor that you had bronchitis?

☐ Yes ☐ No

If yes, how long ago? ☐ Number of months ☐ Number of years

4. Have you ever been told by a doctor that you had emphysema?

☐ Yes ☐ No

If yes, how long ago? ☐ Number of years ☐ Number of months

5. Have you ever been told by a doctor that you had other lung problems?

☐ Yes ☐ No

If yes, please describe type of lung problems and when you had these problems _____

6. In the past year, have you had a cough? ☐ Yes ☐ No

If yes, did you cough up sputum? ☐ Yes ☐ No

If yes, how long did the cough with sputum production last?

☐ Less than 3 months ☐ 3 months or longer

If yes, for how many years have you had episodes of cough with sputum production lasting this long?

☐ Less than one ☐ 1 ☐ 2 ☐ Longer than 2

7. Have you ever smoked cigarettes? ☐ Yes ☐ No

8. Do you now smoke cigarettes? ☐ Yes ☐ No

9. If you smoke or have smoked cigarettes, for how many years have you smoked, or did you smoke?

☐ Less than 1 year ☐ Number of years

What is or was the greatest number of packs per day that you have smoked?

☐ Number of packs

If you quit smoking cigarettes, how many years ago did you quit?

☐ Less than 1 year ☐ Number of years

How many packs a day do you now smoke? ☐ Number of packs per day

10. Have you ever been told by a doctor that you had a kidney or urinary tract disease or disorder? ☐ Yes ☐ No

11. Have you ever had any of these disorders?

Kidney stones ☐ Yes ☐ No

Protein in urine ☐ Yes ☐ No

Blood in urine ☐ Yes ☐ No

Difficulty urinating ☐ Yes ☐ No

Other kidney/Urinary disorders ☐ Yes ☐ No

Please describe problems, age, treatment, and follow up for any kidney or urinary problems you have had: _____

12. Have you ever been told by a doctor or other health care provider who took your blood pressure that your blood pressure was high?

☐ Yes ☐ No

13. Have you ever been advised to take any blood pressure medication?

☐ Yes ☐ No

14. Are you presently taking any blood pressure medication?

☐ Yes ☐ No

15. Are you presently taking any other medication? ☐ Yes ☐ No

16. Please list any blood pressure or other medications and describe how long you have been taking each one:

Medicine: _____

How Long Taken _____

17. Have you ever been told by a doctor that you have diabetes? (sugar in your blood or urine) ☐ Yes ☐ No

If yes, do you presently see a doctor about your diabetes? ☐ Yes ☐ No

If yes, how do you control your blood sugar? ☐ Diet alone

☐ Diet plus oral medicine ☐ Diet plus insulin (injection)

18. Have you ever been told by a doctor that you had:

Anemia ☐ Yes ☐ No A low blood count? ☐ Yes ☐ No

19. Do you presently feel that you tire or run out of energy sooner than normal or sooner than other people your age? ☐ Yes ☐ No
If yes, for how long have you felt that you tire easily?

☐ Less than 1 year ☐ Number of years

20. Have you given blood within the last year? ☐ Yes ☐ No

If yes, how many times? ☐ Number of times

How long ago was the last time you gave blood?

☐ Less than 1 month ☐ Number of months

21. Within the last year have you had any injuries with heavy bleeding?

☐ Yes ☐ No

If yes, how long ago? ☐ Less than 1 month ☐ Number of months describe:

.....
.....
.....

22. Have you recently had any surgery? ☐ Yes ☐ No If yes, please describe:

.....
.....
.....

23. Have you seen any blood lately in your stool or after a bowel movement?

☐ Yes ☐ No

24. Have you ever had a test for blood in your stool? ☐ Yes ☐ No

If yes, did the test show any blood in the stool? ☐ Yes ☐ No

What further evaluation and treatment were done?

.....
.....

The following questions pertain to the ability to wear a respirator. Additional information for the physician can be found in The Respiratory Protective Devices Manual.

25. Have you ever been told by a doctor that you have asthma?

☐ Yes ☐ No

If yes, are you presently taking any medication for asthma?

Mark all that apply. ☐ Shots ☐ Pills ☐ Inhaler

26. Have you ever had a heart attack? ☐ Yes ☐ No

If yes, how long ago? ☐ Number of years ☐ Number of months

27. Have you ever had pains in your chest? ☐ Yes ☐ No

If yes, when did it usually happen? ☐ While resting ☐ While working

☐ While exercising ☐ Activity didn't matter

28. Have you ever had a thyroid problem? ☐ Yes ☐ No

29. Have you ever had a seizure or fits? ☐ Yes ☐ No

30. Have you ever had a stroke (cerebrovascular accident)? ☐ Yes ☐ No

31. Have you ever had a ruptured eardrum or a serious hearing problem?

☐ Yes ☐ No

32. Do you now have a claustrophobia, meaning fear of crowded or closed in spaces or any psychological problems that would make it hard for you to wear a respirator? ☐ Yes ☐ No

The following questions pertain to reproductive history.

33. Have you or your partner had a problem conceiving a child?

☐ Yes ☐ No

If yes, specify: ☐ Self ☐ Present mate ☐ Previous mate

34. Have you or your partner consulted a physician for a fertility or other reproductive problem? ☐ Yes ☐ No

If yes, specify who consulted the physician: ☐ Self ☐ Spouse/partner

☐ Self and partner

If yes, specify diagnosis made:

.....
.....

35. Have you or your partner ever conceived a child resulting in a miscarriage, still birth or deformed offspring?

☐ Yes ☐ No

If yes, specify: ☐ Miscarriage ☐ Still birth ☐ Deformed offspring

If outcome was a deformed offspring, please specify type:

.....
.....

36. Was this outcome a result of a pregnancy of: ☐ Yours with present partner ☐ Yours with a previous partner

37. Did the timing of any abnormal pregnancy outcome coincide with present employment? ☐ Yes ☐ No

List dates of occurrences:

38. What is the occupation of your spouse or partner?

.....
.....

For Women Only

39. Do you have menstrual periods? ☐ Yes ☐ No

Have you had menstrual irregularities? ☐ Yes ☐ No

If yes, specify type:

.....
.....

If yes, what was the approximated date this problem began?

Approximate date problem stopped?

For Men Only

40. Have you ever been diagnosed by a physician as having prostate gland problem(s)? ☐ Yes ☐ No

If yes, please describe type of problem(s) and what was done to evaluate and treat the problem(s):

.....

.....

[Statutory Authority: Chapter 49.17 RCW. 93-21-075 (Order 93-06), § 296-62-07447, filed 10/20/93, effective 12/1/93; 93-07-044 (Order 93-01), § 296-62-07447, filed 3/13/93, effective 4/27/93.]

WAC 296-62-07449 Appendix E—Cadmium in workplace atmospheres.

Method number: ID-189 (OSHA); (ICP/MS) 0009 (WISHA)

Matrix: Air

WISHA permissible exposure limits: 5 µg/m³ (TWA), 2.5 µg/m³ (action level TWA)

Collection procedure: A known volume of air is drawn through a 37-mm diameter filter cassette containing a 0.8 µm mixed cellulose ester membrane filter (MCEF).

Recommended air volume: 960 L

Recommended sampling rate: 2.0 L/min

Analytical procedure: Air filter samples are digested with nitric acid. After digestion, a small amount of hydrochloric acid is added. The samples are then diluted to volume with deionized water and analyzed by either flame atomic absorption spectroscopy (AAS) or flameless atomic absorption spectroscopy using a heated graphite furnace atomizer (AAS-HGA).

Detection limits:

Qualitative: 0.2 µg/m³ for a 200 L sample by Flame AAS, 0.007 µg/m³ for a 60 L sample by AAS-HGA

Quantitative: 0.70 µg/m³ for a 200 L sample by Flame AAS, 0.025 µg/m³ for a 60 L sample by AAS-HGA

Precision and accuracy: (Flame AAS Analysis and AAS-HGA Analysis):

Validation level: 2.5 to 10 µg/m³ for a 400 L air vol, 1.25 to 5.0 µg/m³ for a 60 L air vol CV1 (pooled): 0.010, 0.043

Analytical bias: +4.0%, -5.8%

Overall analytical error: ±6.0%, ±14.2%

Method classification: Validated Date: June, 1992

Inorganic Service Branch II, OSHA Salt Lake Technical Center, Salt Lake City, Utah Commercial manufacturers and products mentioned in this method are for descriptive use only and do not constitute endorsements by USDOL-OSHA. Similar products from other sources can be substituted.

(1) Introduction.

(a) Scope.

This method describes the collection of airborne elemental cadmium and cadmium compounds on 0.8 µm mixed cellulose ester membrane filters and their subsequent analysis by either flame atomic absorption spectroscopy (AAS) or flameless atomic absorption spectroscopy using a heated graphite furnace atomizer (AAS-HGA). It is applicable for both TWA and action level TWA permissible exposure level (PEL) measurements. The two atomic absorption analytical techniques included in the method do not differentiate

between cadmium fume and cadmium dust samples. They also do not differentiate between elemental cadmium and its compounds.

(b) Principle.

Airborne elemental cadmium and cadmium compounds are collected on a 0.8 μm mixed cellulose ester membrane filter (MCEF). The air filter samples are digested with concentrated nitric acid to destroy the organic matrix and dissolve the cadmium analytes. After digestion, a small amount of concentrated hydrochloric acid is added to help dissolve other metals which may be present. The samples are diluted to volume with deionized water and then aspirated into the oxidizing air/acetylene flame of an atomic absorption spectrophotometer for analysis of elemental cadmium. If the concentration of cadmium in a sample solution is too low for quantitation by this flame AAS analytical technique, and the sample is to be averaged with other samples for TWA calculations, aliquots of the sample and a matrix modifier are later injected onto a L'vov platform in a pyrolytically-coated graphite tube of a Zeeman atomic absorption spectrophotometer/graphite furnace assembly for analysis of elemental cadmium. The matrix modifier is added to stabilize the cadmium metal and minimize sodium chloride as an interference during the high temperature charring step of the analysis subsection (5)(a) and (b) of this section.

(c) History.

Previously, two OSHA sampling and analytical methods for cadmium were used concurrently WAC 296-62-07449 (5)(c) and (d). Both of these methods also required 0.8 μm mixed cellulose ester membrane filters for the collection of air samples. These cadmium air filter samples were analyzed by either flame atomic absorption spectroscopy (subsection (5)(c) of this section) or inductively coupled plasma/atomic emission spectroscopy (ICP-AES) (subsection (5)(d) of this section). Neither of these two analytical methods have adequate sensitivity for measuring workplace exposure to airborne cadmium at the new lower TWA and action level TWA PEL levels when consecutive samples are taken on one employee and the sample results need to be averaged with other samples to determine a single TWA. The inclusion of two atomic absorption analytical techniques in the new sampling and analysis method for airborne cadmium permits quantitation of sample results over a broad range of exposure levels and sampling periods. The flame AAS analytical technique included in this method is similar to the previous procedure given in the General Metals Method ID-121 (subsection (5)(c) of this section) with some modifications. The sensitivity of the AAS-HGA analytical technique included in this method is adequate to measure exposure levels at 1/10 the action level TWA, or lower, when less than full-shift samples need to be averaged together.

(d) Properties (subsection (5)(e) of this section).

Elemental cadmium is a silver-white, blue-tinged, lustrous metal which is easily cut with a knife. It is slowly oxidized by moist air to form cadmium oxide. It is insoluble in water, but reacts readily with dilute nitric acid. Some of the physical properties and other descriptive information of elemental cadmium are given below:

CAS No 7440-43-9
Atomic Number 48

Atomic Symbol Cd
Atomic Weight 112.41
Melting Point 321°C
Boiling Point 765°C
Density 8.65 g/mL (25°C)

The properties of specific cadmium compounds are described in reference subsection (5)(e) of this section.

(e) Method performance.

A synopsis of method performance is presented below. Further information can be found in subsection (4) of this section.

(i) The qualitative and quantitative detection limits for the flame AAS analytical technique are 0.04 μg (0.004 $\mu\text{g/mL}$) and 0.14 μg (0.014 $\mu\text{g/mL}$) cadmium, respectively, for a 10 mL solution volume. These correspond, respectively, to 0.2 $\mu\text{g/m}^3$ and 0.70 $\mu\text{g/m}^3$ for a 200 L air volume.

(ii) The qualitative and quantitative detection limits for the AAS-HGA analytical technique are 0.44 ng (0.044 ng/mL) and 1.5 ng (0.15 ng/mL) cadmium, respectively, for a 10 mL solution volume. These correspond, respectively, to 0.007 $\mu\text{g/m}^3$ and 0.025 $\mu\text{g/m}^3$ for a 60 L air volume.

(iii) The average recovery by the flame AAS analytical technique of 17 spiked MCEF samples containing cadmium in the range of 0.5 to 2.0 times the TWA target concentration of 5 $\mu\text{g/m}^3$ (assuming a 400 L air volume) was 104.0% with a pooled coefficient of variation (CV^1) of 0.010. The flame analytical technique exhibited a positive bias of +4.0% for the validated concentration range. The overall analytical error (OAE) for the flame AAS analytical technique was $\pm 6.0\%$.

(iv) The average recovery by the AAS-HGA analytical technique of 18 spiked MCEF samples containing cadmium in the range of 0.5 to 2.0 times the action level TWA target concentration of 2.5 $\mu\text{g/m}^3$ (assuming a 60 L air volume) was 94.2% with a pooled coefficient of variation (CV^1) of 0.043. The AAS-HGA analytical technique exhibited a negative bias of -5.8% for the validated concentration range. The overall analytical error (OAE) for the AAS-HGA analytical technique was $\pm 14.2\%$.

(v) Sensitivity in flame atomic absorption is defined as the characteristic concentration of an element required to produce a signal of 1% absorbance (0.0044 absorbance units). Sensitivity values are listed for each element by the atomic absorption spectrophotometer manufacturer and have proved to be a very valuable diagnostic tool to determine if instrumental parameters are optimized and if the instrument is performing up to specification. The sensitivity of the spectrophotometer used in the validation of the flame AAS analytical technique agreed with the manufacturer specifications (subsection (5)(f) of this section); the 2 $\mu\text{g/mL}$ cadmium standard gave an absorbance reading of 0.350 abs. units.

(vi) Sensitivity in graphite furnace atomic absorption is defined in terms of the characteristic mass, the number of picograms required to give an integrated absorbance value of 0.0044 absorbance-second (subsection (5)(g) of this section). Data suggests that under stabilized temperature platform furnace (STPF) conditions (see (f)(ii) of this subsection), characteristic mass values are transferable between properly functioning instruments to an accuracy of about twenty percent

(subsection (5)(b) of this section). The characteristic mass for STPF analysis of cadmium with Zeeman background correction listed by the manufacturer of the instrument used in the validation of the AAS-HGA analytical technique was 0.35 pg. The experimental characteristic mass value observed during the determination of the working range and detection limits of the AAS-HGA analytical technique was 0.41 pg.

(f) Interferences.

(i) High concentrations of silicate interfere in determining cadmium by flame AAS (subsection (5)(f) of this section). However, silicates are not significantly soluble in the acid matrix used to prepare the samples.

(ii) Interferences, such as background absorption, are reduced to a minimum in the AAS-HGA analytical technique by taking full advantage of the stabilized temperature platform furnace (STPF) concept. STPF includes all of the following parameters (subsection (5)(b) of this section):

- (A) Integrated absorbance;
- (B) Fast instrument electronics and sampling frequency;
- (C) Background correction;
- (D) Maximum power heating;
- (E) Atomization off the L'vov platform in a pyrolytically coated graphite tube;
- (F) Gas stop during atomization;
- (G) Use of matrix modifiers.
- (g) Toxicology (subsection (5)(n) of this section).

Information listed within this section is synopsis of current knowledge of the physiological effects of cadmium and is not intended to be used as the basis for WISHA policy. IARC classifies cadmium and certain of its compounds as Group 2A carcinogens (probably carcinogenic to humans). Cadmium fume is intensely irritating to the respiratory tract. Workplace exposure to cadmium can cause both chronic and acute effects. Acute effects include tracheobronchitis, pneumonitis, and pulmonary edema. Chronic effects include anemia, rhinitis/anosmia, pulmonary emphysema, proteinuria and lung cancer. The primary target organs for chronic disease are the kidneys (noncarcinogenic) and the lungs (carcinogenic).

(2) Sampling.

(a) Apparatus.

(i) Filter cassette unit for air sampling: A 37-mm diameter mixed cellulose ester membrane filter with a pore size of 0.8 μm contained in a 37-mm polystyrene two- or three-piece cassette filter holder (part no. MAWP 037 A0, Millipore Corp., Bedford, MA). The filter is supported with a cellulose backup pad. The cassette is sealed prior to use with a shrinkable gel band.

(ii) A calibrated personal sampling pump whose flow is determined to an accuracy of $\pm 5\%$ at the recommended flow rate with the filter cassette unit in line.

(b) Procedure

(i) Attach the prepared cassette to the calibrated sampling pump (the backup pad should face the pump) using flexible tubing. Place the sampling device on the employee such that air is sampled from the breathing zone.

(ii) Collect air samples at a flow rate of 2.0 L/min. If the filter does not become overloaded, a full-shift (at least seven hours) sample is strongly recommended for TWA and action level TWA measurements with a maximum air volume of

960 L. If overloading occurs, collect consecutive air samples for shorter sampling periods to cover the full workshift.

(iii) Replace the end plugs into the filter cassettes immediately after sampling. Record the sampling conditions.

(iv) Securely wrap each sample filter cassette end-to-end with a sample seal.

(v) Submit at least one blank sample. With each set of air samples. The blank sample should be handled the same as the other samples except that no air is drawn through it.

(vi) Ship the samples to the laboratory for analysis as soon as possible in a suitable container designed to prevent damage in transit.

(3) Analysis.

(a) Safety precautions.

(i) Wear safety glasses, protective clothing and gloves at all times.

(ii) Handle acid solutions with care. Handle all cadmium samples and solutions with extra care (see subsection (1)(g) of this section). Avoid their direct contact with work area surfaces, eyes, skin and clothes. Flush acid solutions which contact the skin or eyes with copious amounts of water.

(iii) Perform all acid digestions and acid dilutions in an exhaust hood while wearing a face shield. To avoid exposure to acid vapors, do not remove beakers containing concentrated acid solutions from the exhaust hood until they have returned to room temperature and have been diluted or emptied.

(iv) Exercise care when using laboratory glassware. Do not use chipped pipets, volumetric flasks, beakers or any glassware with sharp edges exposed in order to avoid the possibility of cuts or abrasions.

(v) Never pipet by mouth.

(vi) Refer to the instrument instruction manuals and SOPs (subsection (5)(h) and (i) of this section) for proper and safe operation of the atomic absorption spectrophotometer, graphite furnace atomizer and associated equipment.

(vii) Because metallic elements and other toxic substances are vaporized during AAS flame or graphite furnace atomizer operation, it is imperative that an exhaust vent be used. Always ensure that the exhaust system is operating properly during instrument use.

(b) Apparatus for sample and standard preparation.

(i) Hot plate, capable of reaching 150°C, installed in an exhaust hood.

(ii) Phillips beakers, 125 mL.

(iii) Bottles, narrow-mouth, polyethylene or glass with leakproof caps: used for storage of standards and matrix modifier.

(iv) Volumetric flasks, volumetric pipets, beakers and other associated general laboratory glassware.

(v) Forceps and other associated general laboratory equipment.

(c) Apparatus for flame AAS analysis.

(i) Atomic absorption spectrophotometer consisting of a(an):

Nebulizer and burner head; pressure regulating devices capable of maintaining constant oxidant and fuel pressures; optical system capable of isolating the desired wavelength of radiation (228.8 nm); adjustable slit; light measuring and amplifying device; display, strip chart, or computer interface for indicating the amount of absorbed radiation; cadmium

hollow cathode lamp or electrodeless discharge lamp (EDL) and power supply.

(ii) Oxidant: Compressed air, filtered to remove water, oil and other foreign substances.

(iii) Fuel: Standard commercially available tanks of acetylene dissolved in acetone; tanks should be equipped with flash arresters.

Caution: Do not use grades of acetylene containing solvents other than acetone because they may damage the PVC tubing used in some instruments.

(iv) Pressure-reducing valves: Two gauge, two-stage pressure regulators to maintain fuel and oxidant pressures somewhat higher than the controlled operating pressures of the instrument.

(v) Exhaust vent installed directly above the spectrophotometer burner head.

(d) Apparatus for AAS-HGA analysis.

(i) Atomic absorption spectrophotometer consisting of a(an):

Heated graphite furnace atomizer (HGA) with argon purge system pressure-regulating devices capable of maintaining constant argon purge pressure; optical system capable of isolating the desired wavelength of radiation (228.8 nm); adjustable slit; light measuring and amplifying device; display, strip chart, or computer interface for indicating the amount of absorbed radiation (as integrated absorbance, peak area); background corrector: Zeeman or deuterium arc. The Zeeman background corrector is recommended; cadmium hollow cathode lamp or electrodeless discharge lamp (EDL) and power supply; autosampler capable of accurately injecting 5 to 20 μL sample aliquots onto the L'vov Platform in a graphite tube.

(ii) Pyrolytically coated graphite tubes containing solid, pyrolytic L'vov platforms.

(iii) Polyethylene sample cups, 2.0 to 2.5 mL, for use with the autosampler.

(iv) Inert purge gas for graphite furnace atomizer: Compressed gas cylinder of purified argon.

(v) Two gauge, two-stage pressure regulator for the argon gas cylinder.

(vi) Cooling water supply for graphite furnace atomizer.

(vii) Exhaust vent installed directly above the graphite furnace atomizer.

(e) Reagents. All reagents should be ACS analytical reagent grade or better.

(i) Deionized water with a specific conductance of less than 10 μS .

(ii) Concentrated nitric acid, HNO_3 .

(iii) Concentrated hydrochloric acid, HCl .

(iv) Ammonium phosphate, monobasic, $\text{NH}_4\text{H}_2\text{PO}_4$.

(v) Magnesium nitrate, $\text{Mg}(\text{NO}_3)_2 \cdot 6\text{H}_2\text{O}$.

(vi) Diluting solution (4% HNO_3 , 0.4% HCl): Add 40 mL HNO_3 and 4 mL HCl carefully to approximately 500 mL deionized water and dilute to 1 L with deionized water.

(vii) Cadmium standard stock solution, 1,000 $\mu\text{g/mL}$: Use a commercially available certified 1,000 $\mu\text{g/mL}$ cadmium standard or, alternatively, dissolve 1.0000 g of cadmium metal in a minimum volume of 1:1 HCl and dilute to 1 L with 4% HNO_3 . Observe expiration dates of commercial standards. Properly dispose of commercial standards with no

expiration dates or prepared standards one year after their receipt or preparation date.

(viii) Matrix modifier for AAS-HGA analysis: Dissolve 1.0 g $\text{NH}_4\text{H}_2\text{PO}_4$ and 0.15 g $\text{Mg}(\text{NO}_3)_2 \cdot 6\text{H}_2\text{O}$ in approximately 200 mL deionized water. Add 1 mL HNO_3 and dilute to 500 mL with deionized water.

(ix) Nitric Acid, 1:1 $\text{HNO}_3/\text{DI H}_2\text{O}$ mixture: Carefully add a measured volume of concentrated HNO_3 to an equal volume of $\text{DI H}_2\text{O}$.

(x) Nitric acid, 10% v/v: Carefully add 100 mL of concentrated HNO_3 to 500 mL of $\text{DI H}_2\text{O}$ and dilute to 1 L.

(f) Glassware preparation.

(i) Clean Phillips beakers by refluxing with 1:1 nitric acid on a hot plate in a fume hood. Thoroughly rinse with deionized water and invert the beakers to allow them to drain dry.

(ii) Rinse volumetric flasks and all other glassware with 10% nitric acid and deionized water prior to use.

(g) Standard preparation for flame AAS analysis.

(i) Dilute stock solutions: Prepare 1, 5, 10 and 100 $\mu\text{g/mL}$ cadmium standard stock solutions by making appropriate serial dilutions of 1,000 $\mu\text{g/mL}$ cadmium standard stock solution with the diluting solution described in (e)(vi) of this subsection.

(ii) Working standards: Prepare cadmium working standards in the range of 0.02 to 2.0 $\mu\text{g/mL}$ by making appropriate serial dilutions of the dilute stock solutions with the same diluting solution. A suggested method of preparation of the working standards is given below.

Working standard ($\mu\text{g/mL}$)	Std solution ($\mu\text{g/mL}$)	Aliquot (mL)	Final vol. (mL)
0.02	1	10	500
0.05	5	5	500
0.1	10	5	500
0.2	10	10	500
0.5	10	25	500
1	100	5	500
2	100	10	500

Store the working standards in 500-mL, narrow-mouth polyethylene or glass bottles with leak proof caps. Prepare every twelve months.

(h) Standard preparation for AAS-HGA analysis.

(i) Dilute stock solutions: Prepare 10, 100 and 1,000 ng/mL cadmium standard stock solutions by making appropriate ten-fold serial dilutions of the 1,000 $\mu\text{g/mL}$ cadmium standard stock solution with the diluting solution described in (e)(vi) of this subsection.

(ii) Working standards: Prepare cadmium working standards in the range of 0.2 to 20 ng/mL by making appropriate serial dilutions of the dilute stock solutions with the same diluting solution. A suggested method of preparation of the working standards is given below.

Working standard (ng/mL)	Std solution (ng/mL)	Aliquot (mL)	Final vol. (mL)
0.2	10	2	100
0.5	10	5	100

Working standard (ng/mL)	Std solution (ng/mL)	Aliquot (mL)	Final vol. (mL)
1	10	10	100
2	100	2	100
5	100	5	100
10	100	10	100
20	1,000	2	100

Store the working standards in narrow-mouth polyethylene or glass bottles with leakproof caps. Prepare monthly.

(i) Sample preparation.

(i) Carefully transfer each sample filter with forceps from its filter cassette unit to a clean, separate 125-mL Phillips beaker along with any loose dust found in the cassette. Label each Phillips beaker with the appropriate sample number.

(ii) Digest the sample by adding 5 mL of concentrated nitric acid (HNO_3) to each Phillips beaker containing an air filter sample. Place the Phillips beakers on a hot plate in an exhaust hood and heat the samples until approximately 0.5 mL remains. The sample solution in each Phillips beaker should become clear. If it is not clear, digest the sample with another portion of concentrated nitric acid.

(iii) After completing the HNO_3 digestion and cooling the samples, add 40 μL (2 drops) of concentrated HCl to each air sample solution and then swirl the contents. Carefully add about 5 mL of deionized water by pouring it down the inside of each beaker.

(iv) Quantitatively transfer each cooled air sample solution from each Phillips beaker to a clean 10-mL volumetric flask. Dilute each flask to volume with deionized water and mix well.

(j) Flame AAS analysis.

Analyze all of the air samples for their cadmium content by flame atomic absorption spectroscopy (AAS) according to the instructions given below.

(i) Set up the atomic absorption spectrophotometer for the air/acetylene flame analysis of cadmium according to the SOP (subsection (5)(h) of this section) or the manufacturer's operational instructions. For the source lamp, use the cadmium hollow cathode or electrodeless discharge lamp operated at the manufacturer's recommended rating for continuous operation. Allow the lamp to warm up ten to twenty minutes or until the energy output stabilizes. Optimize conditions such as lamp position, burner head alignment, fuel and oxidant flow rates, etc. See the SOP or specific instrument manuals for details. Instrumental parameters for the Perkin-Elmer Model 603 used in the validation of this method are given in subsection (6) of this section.

(ii) Aspirate and measure the absorbance of a standard solution of cadmium. The standard concentration should be within the linear range. For the instrumentation used in the validation of this method a 2 $\mu\text{g/mL}$ cadmium standard gives a net absorbance reading of about 0.350 abs. units (see subsection (1)(e)(v) of this section) when the instrument and the source lamp are performing to manufacturer specifications.

(iii) To increase instrument response, scale expand the absorbance reading of the aspirated 2 $\mu\text{g/mL}$ working stan-

dard approximately four times. Increase the integration time to at least three seconds to reduce signal noise.

(iv) Autozero the instrument while aspirating a deionized water blank. Monitor the variation in the baseline absorbance reading (baseline noise) for a few minutes to insure that the instrument, source lamp and associated equipment are in good operating condition.

(v) Aspirate the working standards and samples directly into the flame and record their absorbance readings. Aspirate the deionized water blank immediately after every standard or sample to correct for and monitor any baseline drift and noise. Record the baseline absorbance reading of each deionized water blank. Label each standard and sample reading and its accompanying baseline reading.

(vi) It is recommended that the entire series of working standards be analyzed at the beginning and end of the analysis of a set of samples to establish a concentration-response curve, ensure that the standard readings agree with each other and are reproducible. Also, analyze a working standard after every five or six samples to monitor the performance of the spectrophotometer. Standard readings should agree within ± 10 to 15% of the readings obtained at the beginning of the analysis.

(vii) Bracket the sample readings with standards during the analysis. If the absorbance reading of a sample is above the absorbance reading of the highest working standard, dilute the sample with diluting solution and reanalyze. Use the appropriate dilution factor in the calculations.

(viii) Repeat the analysis of approximately ten percent of the samples for a check of precision.

(ix) If possible, analyze quality control samples from an independent source as a check on analytical recovery and precision.

(x) Record the final instrument settings at the end of the analysis. Date and label the output.

(k) AAS-HGA analysis.

Initially analyze all of the air samples for their cadmium content by flame atomic absorption spectroscopy (AAS) according to the instructions given in (j) of this subsection. If the concentration of cadmium in a sample solution is less than three times the quantitative detection limit (0.04 $\mu\text{g/mL}$ (40 ng/mL) for the instrumentation used in the validation) and the sample results are to be averaged with other samples for TWA calculations, proceed with the AAS-HGA analysis of the sample as described below.

(i) Set up the atomic absorption spectrophotometer and HGA for flameless atomic absorption analysis of cadmium according to the SOP (subsection (5)(i) of this section) or the manufacturer's operational instructions and allow the instrument to stabilize. The graphite furnace atomizer is equipped with a pyrolytically coated graphite tube containing a pyrolytic platform. For the source lamp, use a cadmium hollow cathode or electrodeless discharge lamp operated at the manufacturer's recommended setting for graphite furnace operation. The Zeeman background corrector and EDL are recommended for use with the L'vov platform. Instrumental parameters for the Perkin-Elmer Model 5100 spectrophotometer and Zeeman HGA-600 graphite furnace used in the validation of this method are given in subsection (7) of this section.

(ii) Optimize the energy reading of the spectrophotometer at 228.8 nm by adjusting the lamp position and the wavelength according to the manufacturer's instructions.

(iii) Set up the autosampler to inject a 5- μ L aliquot of the working standard, sample or reagent blank solution onto the L'vov platform along with a 10- μ L overlay of the matrix modifier.

(iv) Analyze the reagent blank (diluting solution, (e)(vi) of this subsection) and then autozero the instrument before starting the analysis of a set of samples. It is recommended that the reagent blank be analyzed several times during the analysis to assure the integrated absorbance (peak area) reading remains at or near zero.

(v) Analyze a working standard approximately midway in the linear portion of the working standard range two or three times to check for reproducibility and sensitivity (see subsection (1)(e)(v) and (vi) of this section) before starting the analysis of samples. Calculate the experimental characteristic mass value from the average integrated absorbance reading and injection volume of the analyzed working standard. Compare this value to the manufacturer's suggested value as a check of proper instrument operation.

(vi) Analyze the reagent blank, working standard, and sample solutions. Record and label the peak area (abs-sec) readings and the peak and background peak profiles on the printer/plotter.

(vii) It is recommended the entire series of working standards be analyzed at the beginning and end of the analysis of a set of samples. Establish a concentration-response curve and ensure standard readings agree with each other and are reproducible. Also, analyze a working standard after every five or six samples to monitor the performance of the system. Standard readings should agree within $\pm 15\%$ of the readings obtained at the beginning of the analysis.

(viii) Bracket the sample readings with standards during the analysis. If the peak area reading of a sample is above the peak area reading of the highest working standard, dilute the sample with the diluting solution and reanalyze. Use the appropriate dilution factor in the calculations.

(ix) Repeat the analysis of approximately ten percent of the samples for a check of precision.

(x) If possible, analyze quality control samples from an independent source as a check of analytical recovery and precision.

(xi) Record the final instrument settings at the end of the analysis. Date and label the output.

(I) Calculations.

Note: Standards used for HGA analysis are in ng/mL. Total amounts of cadmium from calculations will be in ng (not μ g) unless a prior conversion is made.

(i) Correct for baseline drift and noise in flame AAS analysis by subtracting each baseline absorbance reading from its corresponding working standard or sample absorbance reading to obtain the net absorbance reading for each standard and sample.

(ii) Use a least squares regression program to plot a concentration-response curve of net absorbance reading (or peak area for HGA analysis) versus concentration (μ g/mL or ng/mL) of cadmium in each working standard.

(iii) Determine the concentration (μ g/mL or ng/mL) of cadmium in each sample from the resulting concentration-response curve. If the concentration of cadmium in a sample solution is less than three times the quantitative detection limit (0.04 μ g/mL (40 ng/mL) for the instrumentation used in the validation of the method) and if consecutive samples were taken on one employee and the sample results are to be averaged with other samples to determine a single TWA, reanalyze the sample by AAS-HGA as described in (k) of this subsection and report the AAS-HGA analytical results.

(iv) Calculate the total amount (μ g or ng) of cadmium in each sample from the sample solution volume (mL):

$$W = (C)(\text{sample vol, mL})(DF)$$

Where: W = Total cadmium in sample
C = Calculated concentration of cadmium
DF = Dilution Factor (if applicable)

(v) Make a blank correction for each air sample by subtracting the total amount of cadmium in the corresponding blank sample from the total amount of cadmium in the sample.

(vi) Calculate the concentration of cadmium in an air sample (mg/m^3 or $\mu\text{g}/\text{m}^3$) by using one of the following equations:

$$\text{mg}/\text{m}^3 = W_{bc} / (\text{Air vol sampled, L})$$

or

$$\mu\text{g}/\text{m}^3 = (W_{bc})(1,000 \text{ ng}/\mu\text{g}) / (\text{Air vol sampled, L})$$

Where: W_{bc} = blank corrected total μ g cadmium in the sample.
(1 μ g = 1,000 ng)

(4) Backup data.

(a) Introduction.

(i) The purpose of this evaluation is to determine the analytical method recovery, working standard range, and qualitative and quantitative detection limits of the two atomic absorption analytical techniques included in this method. The evaluation consisted of the following experiments:

(A) An analysis of twenty-four samples (six samples each at 0.1, 0.5, 1 and 2 times the TWA-PEL) for the analytical method recovery study of the flame AAS analytical technique.

(B) An analysis of eighteen samples (six samples each at 0.5, 1 and 2 times the action level TWA-PEL) for the analytical method recovery study of the AAS-HGA analytical technique.

(C) Multiple analyses of the reagent blank and a series of standard solutions to determine the working standard range and the qualitative and quantitative detection limits for both atomic absorption analytical techniques.

(ii) The analytical method recovery results at all test levels were calculated from concentration-response curves and statistically examined for outliers at the ninety-nine percent confidence level. Possible outliers were determined using the Treatment of Outliers test (subsection (5)(j) of this section). In addition, the sample results of the two analytical techniques, at 0.5, 1.0 and 2.0 times their target concentrations, were tested for homogeneity of variances also at the ninety-nine percent confidence level. Homogeneity of the coefficients of variation was determined using the Bartlett's test (subsection (5)(k) of this section). The overall analytical error

(OAE) at the ninety-five percent confidence level was calculated using the equation (subsection (5)(l) of this section):

$$\text{OAE} = \pm [|\text{Bias}| + (1.96)(\text{CV}_{\text{pooled}})(100\%)]$$

(iii) A derivation of the International Union of Pure and Applied Chemistry (IUPAC) detection limit equation (subsection (5)(m) of this section) was used to determine the qualitative and quantitative detection limits for both atomic absorption analytical techniques:

$$C_{\text{ld}} = k(\text{sd})/m \quad (\text{Equation 1})$$

Where: C_{ld} = the smallest reliable detectable concentration an analytical instrument can determine at a given confidence level.
 $k=3$ for the Qualitative Detection Limit at the 99.86% Confidence Level
 $=10$ for the Quantitative Detection Limit at the 99.99% Confidence Level.
 sd = standard deviation of the reagent blank (Rbl) readings.
 m = analytical sensitivity or slope as calculated by linear regression.

(iv) Collection efficiencies of metallic fume and dust atmospheres on 0.8- μm mixed cellulose ester membrane filters are well documented and have been shown to be excellent (subsection (5)(k) of this section). Since elemental cadmium and the cadmium component of cadmium compounds are nonvolatile, stability studies of cadmium spiked MCEF samples were not performed.

(b) Equipment.

(i) A Perkin-Elmer (PE) Model 603 spectrophotometer equipped with a manual gas control system, a stainless steel nebulizer, a burner mixing chamber, a flow spoiler and a 10 cm (one-slot) burner head was used in the experimental validation of the flame AAS analytical technique. A PE cadmium hollow cathode lamp, operated at the manufacturer's recommended current setting for continuous operation (4 mA), was used as the source lamp. Instrument parameters are listed in subsection (6) of this section.

(ii) A PE Model 5100 spectrophotometer, Zeeman HGA-600 graphite furnace atomizer and AS-60 HGA autosampler were used in the experimental validation of the AAS-HGA analytical technique. The spectrophotometer was equipped with a PE Series 7700 professional computer and Model PR-310 printer. A PE System 2 cadmium electrodeless discharge lamp, operated at the manufacturer's recommended current setting for modulated operation (170 mA), was used as the source lamp. Instrument parameters are listed in subsection (7) of this section.

(c) Reagents.

(i) J.T. Baker Chem. Co. (Analyzed grade) concentrated nitric acid, 69.0-71.0%, and concentrated hydrochloric acid, 36.5-38.0%, were used to prepare the samples and standards.

(ii) Ammonium phosphate, monobasic, $\text{NH}_4\text{H}_2\text{PO}_4$ and magnesium nitrate hexahydrate, $\text{Mg}(\text{NO}_3)_2 \cdot 6 \text{H}_2\text{O}$ both manufactured by the Mallinckrodt Chem. Co., were used to prepare the matrix modifier for AAS-HGA analysis.

(d) Standard preparation for flame AAS analysis.

(i) Dilute stock solutions: Prepared 0.01, 0.1, 1, 10 and 100 $\mu\text{g/mL}$ cadmium standard stock solutions by making appropriate serial dilutions of a commercially available 1,000 $\mu\text{g/mL}$ cadmium standard stock solution (RICCA Chemical

Co., Lot# A102) with the diluting solution (4% HNO_3 , 0.4% HCl).

(ii) Analyzed standards: Prepared cadmium standards in the range of 0.001 to 2.0 $\mu\text{g/mL}$ by pipetting 2 to 10 mL of the appropriate dilute cadmium stock solution into a 100-mL volumetric flask and diluting to volume with the diluting solution. (See subsection (3)(g)(ii) of this section).

(e) Standard preparation for AAS-HGA analysis.

(i) Dilute stock solutions: Prepared 1, 10, 100 and 1,000 ng/mL cadmium standard stock solutions by making appropriate serial dilutions of a commercially available 1,000 $\mu\text{g/mL}$ cadmium standard stock solution (J.T. Baker Chemical Co., Instra-analyzed, Lot# D22642) with the diluting solution (4% HNO_3 , 0.4% HCl).

(ii) Analyzed standards: Prepared cadmium standards in the range of 0.1 to 40 ng/mL by pipetting 2 to 10 mL of the appropriate dilute cadmium stock solution into a 100-mL volumetric flask and diluting to volume with the diluting solution. (See subsection (3)(h)(ii) of this section).

(f) Detection limits and standard working range for flame AAS analysis.

(i) Analyzed the reagent blank solution and the entire series of cadmium standards in the range of 0.001 to 2.0 $\mu\text{g/mL}$ three to six times according to the instructions given in subsection (3)(j) of this section. The diluting solution (4% HNO_3 , 0.4% HCl) was used as the reagent blank. The integration time on the PE 603 spectrophotometer was set to 3.0 seconds and a four-fold expansion of the absorbance reading of the 2.0 $\mu\text{g/mL}$ cadmium standard was made prior to analysis. The 2.0 $\mu\text{g/mL}$ standard gave a net absorbance reading of 0.350 abs. units prior to expansion in agreement with the manufacturer's specifications (subsection (5)(f) of this section).

(ii) The net absorbance readings of the reagent blank and the low concentration Cd standards from 0.001 to 0.1 $\mu\text{g/mL}$ and the statistical analysis of the results are shown in Table 1. The standard deviation, sd , of the six net absorbance readings of the reagent blank is 1.05 abs. units. The slope, m , as calculated by a linear regression plot of the net absorbance readings (shown in Table 2) of the 0.02 to 1.0 $\mu\text{g/mL}$ cadmium standards versus their concentration is 772.7 abs. units/ $(\mu\text{g/mL})$.

(iii) If these values for sd and the slope, m , are used in Eqn. 1 ((a)(ii) of this subsection), the qualitative and quantitative detection limits as determined by the IUPAC Method are:

$$C_{\text{ld}} = (3)(1.05 \text{ abs. units}) / (772.7 \text{ abs. units}/(\mu\text{g/mL})) = 0.0041 \mu\text{g/mL}$$

for the qualitative detection limit.

$$C_{\text{ld}} = (10)(1.05 \text{ abs. units}) / (772.7 \text{ abs. units}/(\mu\text{g/mL})) = 0.014 \mu\text{g/mL}$$

for the quantitative detection limit.

The qualitative and quantitative detection limits for the flame AAS analytical technique are 0.041 μg and 0.14 μg cadmium, respectively, for a 10 mL solution volume. These correspond, respectively, to 0.2 $\mu\text{g}/\text{m}^3$ and 0.70 $\mu\text{g}/\text{m}^3$ for a 200 L air volume.

(iv) The recommended Cd standard working range for flame AAS analysis is 0.02 to 2.0 $\mu\text{g/mL}$. The net absorbance readings of the reagent blank and the recommended working range standards and the statistical analysis of the results are

shown in Table 2. The standard of lowest concentration in the working range, 0.02 µg/mL, is slightly greater than the calculated quantitative detection limit, 0.014 µg/mL. The standard of highest concentration in the working range, 2.0 µg/mL, is at the upper end of the linear working range suggested by the manufacturer (subsection (5)(f) of this section). Although the standard net absorbance readings are not strictly linear at concentrations above 0.5 µg/mL, the deviation from linearity is only about ten percent at the upper end of the recommended standard working range. The deviation from linearity is probably caused by the four-fold expansion of the signal suggested in the method. As shown in Table 2, the precision of the standard net absorbance readings are excellent throughout the recommended working range; the relative standard deviations of the readings range from 0.009 to 0.064.

(g) Detection limits and standard working range for AAS-HGA analysis.

(i) Analyzed the reagent blank solution and the entire series of cadmium standards in the range of 0.1 to 40 ng/mL according to the instructions given in subsection (3)(k) of this section. The diluting solution (4% HNO₃, 0.4% HCl) was used as the reagent blank. A fresh aliquot of the reagent blank and of each standard was used for every analysis. The experimental characteristic mass value was 0.41 pg, calculated from the average peak area (abs-sec) reading of the 5 ng/mL standard which is approximately midway in the linear portion of the working standard range. This agreed within twenty percent with the characteristic mass value, 0.35 pg, listed by the manufacturer of the instrument (subsection (5)(b) of this section).

(ii) The peak area (abs-sec) readings of the reagent blank and the low concentration Cd standards from 0.1 to 2.0 ng/mL and statistical analysis of the results are shown in Table 3. Five of the reagent blank peak area readings were zero and the sixth reading was 1 and was an outlier. The near lack of a blank signal does not satisfy a strict interpretation of the IUPAC method for determining the detection limits. Therefore, the standard deviation of the six peak area readings of the 0.2 ng/mL cadmium standard, 0.75 abs-sec, was used to calculate the detection limits by the IUPAC method. The slope, *m*, as calculated by a linear regression plot of the peak area (abs-sec) readings (shown in Table 4) of the 0.2 to 10 ng/mL cadmium standards versus their concentration is 51.5 abs-sec/(ng/mL).

(iii) If 0.75 abs-sec (sd) and 51.5 abs-sec/(ng/mL) (*m*) are used in Eqn. 1 ((a)(iii) of this subsection), the qualitative and quantitative detection limits as determined by the IUPAC method are:

$$C_{ld} = (3)(0.75 \text{ abs-sec}) / (51.5 \text{ abs-sec}/(\text{ng/mL})) = 0.044 \text{ ng/mL for the qualitative detection limit.}$$

$$C_{ld} = (10)(0.75 \text{ abs-sec}) / (51.5 \text{ abs-sec}/(\text{ng/mL})) = 0.15 \text{ ng/mL for the quantitative detection limit. The qualitative and quantitative detection limits for the AAS-HGA analytical technique are 0.44 ng and 1.5 ng cadmium, respectively, for a 10 mL solution volume. These correspond, respectively, to 0.007 µg/m³ and 0.025 µg/m³ for a 60 L air volume.}$$

(iv) The peak area (abs-sec) readings of the Cd standards from 0.2 to 40 ng/mL and the statistical analysis of the results are given in Table 4. The recommended standard working range for AAS-HGA analysis is 0.2 to 20 ng/mL. The stan-

dard of lowest concentration in the recommended working range is slightly greater than the calculated quantitative detection limit, 0.15 ng/mL. The deviation from linearity of the peak area readings of the 20 ng/mL standard, the highest concentration standard in the recommended working range, is approximately ten percent. The deviations from linearity of the peak area readings of the thirty and forty ng/mL standards are significantly greater than ten percent. As shown in Table 4, the precision of the peak area readings are satisfactory throughout the recommended working range; the relative standard deviations of the readings range from 0.025 to 0.083.

(h) Analytical method recovery for flame AAS analysis.

(i) Four sets of spiked MCEF samples were prepared by injecting 20 µL of 10, 50, 100 and 200 µg/mL dilute cadmium stock solutions on 37 mm diameter filters (part No. AAWP 037 00, Millipore Corp., Bedford, MA) with a calibrated micropipet. The dilute stock solutions were prepared by making appropriate serial dilutions of a commercially available 1,000 µg/mL cadmium standard stock solution (RICCA Chemical Co., Lot # A102) with the diluting solution (4% HNO₃, 0.4% HCl). Each set contained six samples and a sample blank. The amount of cadmium in the prepared sets were equivalent to 0.1, 0.5, 1.0 and 2.0 times the TWA PEL target concentration of 5 µg/m³ for a 400 L air volume.

(ii) The air-dried spiked filters were digested and analyzed for their cadmium content by flame atomic absorption spectroscopy (AAS) following the procedure described in subsection (3) of this section. The 0.02 to 2.0 µg/mL cadmium standards (the suggested working range) were used in the analysis of the spiked filters.

(iii) The results of the analysis are given in Table 5. One result at 0.5 times the TWA PEL target concentration was an outlier and was excluded from statistical analysis. Experimental justification for rejecting it is that the outlier value was probably due to a spiking error. The coefficients of variation for the three test levels at 0.5 to 2.0 times the TWA PEL target concentration passed the Bartlett's test and were pooled.

(iv) The average recovery of the six spiked filter samples at 0.1 times the TWA PEL target concentration was 118.2% with a coefficient of variation (CV1) of 0.128. The average recovery of the spiked filter samples in the range of 0.5 to 2.0 times the TWA target concentration was 104.0% with a pooled coefficient of variation (CV1) of 0.010. Consequently, the analytical bias found in these spiked sample results over the tested concentration range was +4.0% and the OAE was ±6.0%.

(i) Analytical method recovery for AAS-HGA analysis.

(i) Three sets of spiked MCEF samples were prepared by injecting 15 µL of 5, 10 and 20 µg/mL dilute cadmium stock solutions on 37 mm diameter filters (part no. AAWP 037 00, Millipore Corp., Bedford, MA) with a calibrated micropipet. The dilute stock solutions were prepared by making appropriate serial dilutions of a commercially available certified 1,000 µg/mL cadmium standard stock solution (Fisher Chemical Co., Lot# 913438-24) with the diluting solution (4% HNO₃, 0.4% HCl). Each set contained six samples and a sample blank. The amount of cadmium in the prepared sets

were equivalent to 0.5, 1 and 2 times the action level TWA target concentration of 2.5 µg/m³ for a 60 L air volume.

(ii) The air-dried spiked filters were digested and analyzed for their cadmium content by flameless atomic absorption spectroscopy using a heated graphite furnace atomizer following the procedure described in subsection (3) of this section. A five-fold dilution of the spiked filter samples at 2 times the action level TWA was made prior to their analysis. The 0.05 to 20 ng/mL cadmium standards were used in the analysis of the spiked filters.

(iii) The results of the analysis are given in Table 6. There were no outliers. The coefficients of variation for the three test levels at 0.5 to 2.0 times the action level TWA PEL passed the Bartlett's test and were pooled. The average recovery of the spiked filter samples was 94.2% with a pooled coefficient of variation (CV1) of 0.043. Consequently, the analytical bias was -5.8% and the OAE was ±14.2%.

(j) Conclusions.

The experiments performed in this evaluation show the two atomic absorption analytical techniques included in this method to be precise and accurate and have sufficient sensitivity to measure airborne cadmium over a broad range of exposure levels and sampling periods.

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Table 1—Cd Detection Limit Study
[Flame AAS Analysis]

STD (μg/mL)	Absorbance reading at 228.8 nm		Statistical analysis
Reagent blank	5	2	n=6.
	4	3	mean=3.50.
	4	3	std dev=1.05.
			CV=0.30.
0.001	6	6	n=6.
	2	4	mean=5.00.
	6	6	std dev=1.67.
			CV=0.335.
0.002	5	7	n=6.
	7	3	mean=5.50.
	7	4	std dev=1.76.
			CV=0.320.
0.005	7	7	n=6.
	8	8	mean=7.33.
	8	6	std dev=0.817.
			CV=0.111.
0.010	10	9	n=6.
	10	13	mean=10.3.
	10	10	std dev=1.37.
			CV=0.133.
0.020	20	23	n=6.
	20	22	mean=20.8.
	20	20	std dev=1.33.
			CV=0.064.
0.050	42	42	n=6.
	42	42	mean=42.5.
	42	45	std dev=1.22.
			CV=0.029.
0.10	84		n=3.
	80		mean=82.3.
	83		std dev=2.08.
			CV=0.025.

Table 2—Cd Standard Working Range

Study [Flame AAS Analysis]			STD (ng/mL)	Peak area readings x 10 ³ at 228.8 nm		Statistical analysis mean=54.8. std dev=2.0. CV=0.037.
STD(μg/mL)	Absorbance reading at 228.8 nm	Statistical analysis n=6. mean=3.50. std dev=1.05. CV=0.30.		56	58	
Reagent blank	5 2 4 3 4 3	n=6. mean=3.50. std dev=1.05. CV=0.30.	2.0	101	112	n=6. mean=108.8. std dev=3.9. CV=0.036.
0.020	20 23 20 22 20 20	n=6. mean=20.8. std dev=1.33.		110	110	
0.050	42 42 42 42 42 45	n=6. mean=42.5. std dev=1.22. CV=0.029.				
0.10	84 80 83	n=3. mean=82.3. std dev=2.08. CV=0.025.	0.2	11	13	n=6. mean=11.8. std dev=0.75. CV=0.064.
0.20	161 161 158	n=3. mean=160.0. std dev=1.73. CV=0.011.	0.5	28	33	n=6. mean=28.8. std dev=2.4. CV=0.083.
0.50	391 389 393	n=3. mean=391.0. std dev=2.00. CV=0.005.	1.0	52	55	n=6. mean=54.8. std dev=2.0. CV=0.037.
1.00	760 748 752	n=3. mean=753.3. std dev=6.11. CV=0.008.	2.0	101	112	n=6. mean=108.8. std dev=3.9. CV=0.036.
2.00	1416 1426 1401	n=3. mean=1414.3. std dev=12.6. CV=0.009.	5.0	247	265	n=6. mean=265.5. std dev=11.5. CV=0.044.

Table 4—Cd Standard Working Range Study
[AAS-HGA Analysis]

Study [AAS-HGA Analysis]			STD (ng/mL)	Peak area readings x 10 ³ at 228.8 nm		Statistical analysis n=6. mean=516.7. std dev=12.7. CV=0.025.
STD (ng/mL)	Peak area readings x 10 ³ at 228.8 nm	Statistical analysis n=6. mean=0.167. std dev=0.41. CV=2.45.		56	58	
Reagent blank	0 0 0 1 0 0	n=6. mean=0.167. std dev=0.41. CV=2.45.	10.0	495	520	n=6. mean=516.7. std dev=12.7. CV=0.025.
0.1	8 6 5 7 13 7	n=6. mean=7.7. std dev=2.8. CV=0.366.	20.0	950	953	n=6. mean=941.8. std dev=25.6. CV=0.027.
0.2	11 13 11 12 12 12	n=6. mean=11.8. std dev=0.75. CV=0.064.	30.0	949	890	n=6. mean=1293. std dev=13.3. CV=0.010.
0.5	28 33 26 28 28 30	n=6. mean=28.8. std dev=2.4. CV=0.083.	40.0	1269	1291	n=6. mean=1552. std dev=26.6. CV=0.017.
1.0	52 55	n=6.		1303	1307	

Table 3—Cd Detection Limit Study
[AAS-HGA Analysis]

Study [AAS-HGA Analysis]			STD (ng/mL)	Peak area readings x 10 ³ at 228.8 nm		Statistical analysis n=6. mean=0.167. std dev=0.41. CV=2.45.
STD (ng/mL)	Peak area readings x 10 ³ at 228.8 nm	Statistical analysis n=6. mean=0.167. std dev=0.41. CV=2.45.		56	58	
Reagent blank	0 0 0 1 0 0	n=6. mean=0.167. std dev=0.41. CV=2.45.	10.0	495	520	n=6. mean=516.7. std dev=12.7. CV=0.025.
0.1	8 6 5 7 13 7	n=6. mean=7.7. std dev=2.8. CV=0.366.	20.0	950	953	n=6. mean=941.8. std dev=25.6. CV=0.027.
0.2	11 13 11 12 12 12	n=6. mean=11.8. std dev=0.75. CV=0.064.	30.0	949	890	n=6. mean=1293. std dev=13.3. CV=0.010.
0.5	28 33 26 28 28 30	n=6. mean=28.8. std dev=2.4. CV=0.083.	40.0	1269	1291	n=6. mean=1552. std dev=26.6. CV=0.017.
1.0	52 55	n=6.		1303	1307	

Table 5—Analytical Method Recovery
[Flame AAS Analysis]

Test level	0.5x		1.0x		2.0x			
μg taken	μg found	Percent rec.	μg taken	μg found	Percent rec.	μg taken	μg found	Percent rec.
1.00	1.0715	107.2	2.00	2.0688	103.4	4.00	4.1504	103.8
1.00	1.0842	108.4	2.00	2.0174	100.9	4.00	4.1108	102.8
1.00	1.0842	108.4	2.00	2.0431	102.2	4.00	4.0581	101.5
1.00	*1.0081	*100.8	2.00	2.0431	102.2	4.00	4.0844	102.1
1.00	1.0715	107.2	2.00	2.0174	100.9	4.00	4.1504	103.8
1.00	1.0842	108.4	2.00	2.0045	100.2	4.00	4.1899	104.7
n=	5		6		6			
mean=	107.9		101.6		103.1			
std dev=	0.657		1.174		1.199			
CV ₁ =	0.006		0.011		0.012			
CV ₁								
(pooled)=	0.010							

*Rejected as an outlier—this value did not pass the outlier T-test at the 99% confidence level.

Test level 0.1x

taken	μg found	μg rec.	Percent
0.200	0.2509	125.5	
0.200	0.2509	125.5	
0.200	0.2761	138.1	
0.200	0.2258	112.9	
0.200	0.2258	112.9	
0.200	0.1881	94.1	
n=	6		
mean=	118.2		
std dev=	15.1		
CV ₁ =	0.128		

Table 6—Analytical Method Recovery
[AAS-HGA analysis]

Test level	0.5x		1.0x		2.0x			
ng taken	ng found	Percent rec.	ng taken	ng found	Percent rec.	ng taken	ng found	Percent rec.
75	71.23	95.0	150	138.00	92.0	300	258.43	86.1
75	71.47	95.3	150	138.29	92.2	300	258.46	86.2
75	70.02	93.4	150	136.30	90.9	300	280.55	93.5
75	77.34	103.1	150	146.62	97.7	300	288.34	96.1
75	78.32	104.4	150	145.17	96.8	300	261.74	87.2
75	71.96	95.9	150	144.88	96.6	300	277.22	92.4
n=	6		6		6			
mean=	97.9		94.4		90.3			
std dev=	4.66		2.98		4.30			
CV ₁ =	0.048		0.032		0.048			
CV ₁								
(pooled)=	0.043							

- (6) Instrumental Parameters for Flame AAS Analysis
Atomic Absorption Spectrophotometer
(Perkin-Elmer Model 603)
Flame: Air/Acetylene—lean, blue
Oxidant Flow: 55
Fuel Flow: 32
Wavelength: 228.8 nm
Slit: 4 (0.7 nm)
Range: UV
Signal: Concentration (4 exp)
Integration Time: 3 sec

- (7) Instrumental Parameters for HGA Analysis
Atomic Absorption Spectrophotometer
(Perkin-Elmer Model 5100)
Signal Type: Zeeman AA
Slitwidth: 0.7 nm
Wavelength: 228.8 nm
Measurement: Peak Area
Integration Time: 6.0 sec
BOC Time: 5 sec BOC=Background Offset
Correction: Zeeman Graphite Furnace
(Perkin-Elmer Model HGA-600)

Step	Ramp time (sec)	Hold time (sec)	Temp. (°C)	Argon flow (mL/min)	Read (sec)
1) Predry	5	10	90	300	
2) Dry	30	10	140	300	
3) Char	10	20	900	300	
4) Cool Down	1	8	30	300	
5) Atomize	0	5	1600	0	-1
6) Burnout	1	8	2500	300	

[Statutory Authority: Chapter 49.17 RCW. 93-21-075 (Order 93-06), § 296-62-07449, filed 10/20/93, effective 12/1/93; 93-07-044 (Order 93-01), § 296-62-07449, filed 3/13/93, effective 4/27/93.]

Reviser's note: The brackets and enclosed material in the text of the above section occurred in the copy filed by the agency.

WAC 296-62-07451 A short description of Appendix F to 29 CFR 1910.1027—Nonmandatory protocol for biological monitoring. Appendix F is not included in this standard due to limited employer/employee application. The following is a brief synopsis of the content of Appendix F to 29 CFR 1910.1027, Cadmium.

(1) The medical monitoring program for cadmium requires that blood and urine samples must be collected at defined intervals from workers by physicians responsible for medical monitoring. These samples are sent to commercial laboratories that perform the required analyses and report results of these analyses to the responsible physicians. To ensure the accuracy and reliability of these laboratory analyses, the laboratories to which samples are submitted should participate in an ongoing and efficacious proficiency testing program.

(2) This nonmandatory protocol is intended to provide guidelines and recommendations for physicians and laboratories to improve the accuracy and reliability of the procedures used to analyze the biological samples collected as part of the medical monitoring program for cadmium. This protocol provides procedures for characterizing and maintaining the quality of analytic results derived from the analyses of cadmium in blood (CDB), cadmium in urine (CDU), and beta-2-microglobulin in urine (B2MU) by commercial laboratories. Laboratories conforming to the provisions of this nonmandatory protocol shall be known as "participating laboratories."

(3) This protocol describes procedures that may be used by the responsible physicians to identify laboratories most likely to be proficient in the analysis of samples used in the biological monitoring of cadmium. It also provides procedures for record keeping and reporting by laboratories participating in proficiency testing programs, and recommendations to assist these physicians in interpreting analytical results determined by participating laboratories.

(4) For those needing Appendix F, 29 CFR 1910.1027, in its entirety, a copy may be obtained by request to:

Department of Labor and Industries
Division of Industrial Safety and Health
Standards and Information
Post Office Box 44620
Olympia, Washington 98504-4620
or telephone (360) 956-5527

[Statutory Authority: Chapter 49.17 RCW. 93-07-044 (Order 93-01), § 296-62-07451, filed 3/13/93, effective 4/27/93.]

WAC 296-62-07460 Butadiene. (1) Scope and application.

(a) This section applies to all occupational exposures to 1,3-Butadiene (BD), Chemical Abstracts Service Registry No. 106-99-0, except as provided in (b) of this subsection.

(b)(i) Except for the recordkeeping provisions in subsection (13)(a) of this section, this section does not apply to the processing, use, or handling of products containing BD or to other work operations and streams in which BD is present where objective data are reasonably relied upon that demonstrate the work operation or the product or the group of products or operations to which it belongs may not reasonably be foreseen to release BD in airborne concentrations at or above the action level or in excess of the STEL under the expected conditions of processing, use, or handling that will cause the greatest possible release or in any plausible accident.

(ii) This section also does not apply to work operations, products or streams where the only exposure to BD is from liquid mixtures containing 0.1% or less of BD by volume or the vapors released from such liquids, unless objective data become available that show that airborne concentrations generated by such mixtures can exceed the action level or STEL under reasonably predictable conditions of processing, use or handling that will cause the greatest possible release.

(iii) Except for labeling requirements and requirements for emergency response, this section does not apply to the storage, transportation, distribution or sale of BD or liquid mixtures in intact containers or in transportation pipelines sealed in such a manner as to fully contain BD vapors or liquids.

(c) Where products or processes containing BD are exempted under (b) of this subsection, the employer shall maintain records of the objective data supporting that exemption and the basis for the employer's reliance on the data, as provided in subsection (13)(a) of this section.

(2) Definitions: For the purpose of this section, the following definitions shall apply:

"Action level" means a concentration of airborne BD of 0.5 ppm calculated as an 8-hour time-weighted average.

"Director" means the director of the department of labor and industries, or authorized representatives.

"Authorized person" means any person specifically designated by the employer, whose duties require entrance into a regulated area, or a person entering such an area as a designated representative of employees to exercise the right to observe monitoring and measuring procedures under subsection (4)(h) of this section, or a person designated under the WISH Act or regulations issued under the WISH Act to enter a regulated area.

(2007 Ed.)

"1,3-Butadiene" means an organic compound with chemical formula $\text{CH}_2=\text{CH}-\text{CH}=\text{CH}_2$ that has a molecular weight of approximately 54.15 gm/mole.

"Business day" means any Monday through Friday, except those days designated as federal, state, local or company specific holidays.

"Complete blood count (CBC)" means laboratory tests performed on whole blood specimens and includes the following: White blood cell count (WBC), hematocrit (Hct), red blood cell count (RBC), hemoglobin (Hgb), differential count of white blood cells, red blood cell morphology, red blood cell indices, and platelet count.

"Day" means any part of a calendar day.

"Emergency situation" means any occurrence such as, but not limited to, equipment failure, rupture of containers, or failure of control equipment that may or does result in an uncontrolled significant release of BD.

"Employee exposure" means exposure of a worker to airborne concentrations of BD which would occur if the employee were not using respiratory protective equipment.

"Objective data" means monitoring data, or mathematical modelling or calculations based on composition, chemical and physical properties of a material, stream or product.

"Permissible exposure limits (PELs)" means either the 8-hour time-weighted average (8-hour TWA) exposure or the short-term exposure limit (STEL).

"Physician or other licensed health care professional" is an individual whose legally permitted scope of practice (i.e., license, registration, or certification) allows him or her to independently provide or be delegated the responsibility to provide one or more of the specific health care services required by (k) of this subsection.

"Regulated area" means any area where airborne concentrations of BD exceed or can reasonably be expected to exceed the 8-hour time-weighted average (8-hour TWA) exposure of 1 ppm or the short-term exposure limit (STEL) of 5 ppm for 15 minutes.

"This section" means this 1,3-butadiene standard.

(3) Permissible exposure limits (PELs).

(a) Time-weighted average (TWA) limit. The employer shall ensure that no employee is exposed to an airborne concentration of BD in excess of one part BD per million parts of air (ppm) measured as an eight (8)-hour time-weighted average.

(b) Short-term exposure limit (STEL). The employer shall ensure that no employee is exposed to an airborne concentration of BD in excess of five parts of BD per million parts of air (5 ppm) as determined over a sampling period of fifteen minutes.

(4) Exposure monitoring.

(a) General.

(i) Determinations of employee exposure shall be made from breathing zone air samples that are representative of the 8-hour TWA and 15-minute short-term exposures of each employee.

(ii) Representative 8-hour TWA employee exposure shall be determined on the basis of one or more samples representing full-shift exposure for each shift and for each job classification in each work area.

(iii) Representative 15-minute short-term employee exposures shall be determined on the basis of one or more

samples representing 15-minute exposures associated with operations that are most likely to produce exposures above the STEL for each shift and for each job classification in each work area.

(iv) Except for the initial monitoring required under (b) of this subsection, where the employer can document that exposure levels are equivalent for similar operations on different work shifts, the employer need only determine representative employee exposure for that operation from the shift during which the highest exposure is expected.

(b) Initial monitoring.

(i) Each employer who has a workplace or work operation covered by this section, shall perform initial monitoring to determine accurately the airborne concentrations of BD to which employees may be exposed, or shall rely on objective data pursuant to subsection (1)(b)(i) of this section to fulfill this requirement.

(ii) Where the employer has monitored within two years prior to the effective date of this section and the monitoring satisfies all other requirements of this section, the employer may rely on such earlier monitoring results to satisfy the requirements of (b)(i) of this subsection, provided that the conditions under which the initial monitoring was conducted have not changed in a manner that may result in new or additional exposures.

(c) Periodic monitoring and its frequency.

(i) If the initial monitoring required by (b) of this subsection reveals employee exposure to be at or above the action level but at or below both the 8-hour TWA limit and the STEL, the employer shall repeat the representative monitoring required by (a) of this subsection every twelve months.

(ii) If the initial monitoring required by (b) of this subsection reveals employee exposure to be above the 8-hour TWA limit, the employer shall repeat the representative monitoring required by (a)(ii) of this subsection at least every three months until the employer has collected two samples per quarter (each at least 7 days apart) within a two-year period, after which such monitoring must occur at least every six months.

(iii) If the initial monitoring required by (b) of this subsection reveals employee exposure to be above the STEL, the employer shall repeat the representative monitoring required by (a)(iii) of this subsection at least every three months until the employer has collected two samples per quarter (each at least 7 days apart) within a two-year period, after which such monitoring must occur at least every six months.

(iv) The employer may alter the monitoring schedule from every six months to annually for any required representative monitoring for which two consecutive measurements taken at least 7 days apart indicate that employee exposure has decreased to or below the 8-hour TWA, but is at or above the action level.

(d) Termination of monitoring.

(i) If the initial monitoring required by (b) of this subsection reveals employee exposure to be below the action level and at or below the STEL, the employer may discontinue the monitoring for employees whose exposures are represented by the initial monitoring.

(ii) If the periodic monitoring required by (c) of this subsection reveals that employee exposures, as indicated by at least two consecutive measurements taken at least 7 days

apart, are below the action level and at or below the STEL, the employer may discontinue the monitoring for those employees who are represented by such monitoring.

(e) Additional monitoring.

(i) The employer shall institute the exposure monitoring required under subsection (4) of this section whenever there has been a change in the production, process, control equipment, personnel or work practices that may result in new or additional exposures to BD or when the employer has any reason to suspect that a change may result in new or additional exposures.

(ii) Whenever spills, leaks, ruptures or other breakdowns occur that may lead to employee exposure above the 8-hour TWA limit or above the STEL, the employer shall monitor (using leak source, such as direct reading instruments, area or personal monitoring), after the cleanup of the spill or repair of the leak, rupture or other breakdown, to ensure that exposures have returned to the level that existed prior to the incident.

(f) Accuracy of monitoring.

Monitoring shall be accurate, at a confidence level of 95 percent, to within plus or minus 25 percent for airborne concentrations of BD at or above the 1 ppm TWA limit and to within plus or minus 35 percent for airborne concentrations of BD at or above the action level of 0.5 ppm and below the 1 ppm TWA limit.

(g) Employee notification of monitoring results.

(i) The employer shall, within 5 business days after the receipt of the results of any monitoring performed under this section, notify the affected employees of these results in writing either individually or by posting of results in an appropriate location that is accessible to affected employees.

(ii) The employer shall, within 15 business days after receipt of any monitoring performed under this section indicating the 8-hour TWA or STEL has been exceeded, provide the affected employees, in writing, with information on the corrective action being taken by the employer to reduce employee exposure to or below the 8-hour TWA or STEL and the schedule for completion of this action.

(h) Observation of monitoring.

(i) Employee observation. The employer shall provide affected employees or their designated representatives an opportunity to observe any monitoring of employee exposure to BD conducted in accordance with this section.

(ii) Observation procedures. When observation of the monitoring of employee exposure to BD requires entry into an area where the use of protective clothing or equipment is required, the employer shall provide the observer at no cost with protective clothing and equipment, and shall ensure that the observer uses this equipment and complies with all other applicable safety and health procedures.

(5) Regulated areas.

(a) The employer shall establish a regulated area whenever occupational exposures to airborne concentrations of BD exceed or can reasonably be expected to exceed the permissible exposure limits, either the 8-hour TWA or the STEL.

(b) Access to regulated areas shall be limited to authorized persons.

(c) Regulated areas shall be demarcated from the rest of the workplace in any manner that minimizes the number of employees exposed to BD within the regulated area.

(d) An employer at a multiemployer worksite who establishes a regulated area shall communicate the access restrictions and locations of these areas to other employers with work operations at that worksite whose employees may have access to these areas.

(6) Methods of compliance.

(a) Engineering controls and work practices.

(i) The employer shall institute engineering controls and work practices to reduce and maintain employee exposure to or below the PELs, except to the extent that the employer can establish that these controls are not feasible or where subsection (8)(a)(i) of this section applies.

(ii) Wherever the feasible engineering controls and work practices which can be instituted are not sufficient to reduce employee exposure to or below the 8-hour TWA or STEL, the employer shall use them to reduce employee exposure to the lowest levels achievable by these controls and shall supplement them by the use of respiratory protection that complies with the requirements of subsection (8) of this section.

(b) Compliance plan.

(i) Where any exposures are over the PELs, the employer shall establish and implement a written plan to reduce employee exposure to or below the PELs primarily by means of engineering and work practice controls, as required by (a) of this subsection, and by the use of respiratory protection where required or permitted under this section. No compliance plan is required if all exposures are under the PELs.

(ii) The written compliance plan shall include a schedule for the development and implementation of the engineering controls and work practice controls including periodic leak detection surveys.

(iii) Copies of the compliance plan required in (b) of this subsection shall be furnished upon request for examination and copying to the director, affected employees and designated employee representatives. Such plans shall be reviewed at least every 12 months, and shall be updated as necessary to reflect significant changes in the status of the employer's compliance program.

(iv) The employer shall not implement a schedule of employee rotation as a means of compliance with the PELs.

(7) Exposure goal program.

(a) For those operations and job classifications where employee exposures are greater than the action level, in addition to compliance with the PELs, the employer shall have an exposure goal program that is intended to limit employee exposures to below the action level during normal operations.

(b) Written plans for the exposure goal program shall be furnished upon request for examination and copying to the director, affected employees and designated employee representatives.

(c) Such plans shall be updated as necessary to reflect significant changes in the status of the exposure goal program.

(d) Respirator use is not required in the exposure goal program.

(e) The exposure goal program shall include the following items unless the employer can demonstrate that the item is not feasible, will have no significant effect in reducing

employee exposures, or is not necessary to achieve exposures below the action level:

(i) A leak prevention, detection, and repair program.

(ii) A program for maintaining the effectiveness of local exhaust ventilation systems.

(iii) The use of pump exposure control technology such as, but not limited to, mechanical double-sealed or seal-less pumps.

(iv) Gauging devices designed to limit employee exposure, such as magnetic gauges on rail cars.

(v) Unloading devices designed to limit employee exposure, such as a vapor return system.

(vi) A program to maintain BD concentration below the action level in control rooms by use of engineering controls.

(8) Respiratory protection.

(a) General. For employees who use respirators required by this section, the employer must provide respirators that comply with the requirements of this subsection. Respirators must be used during:

(i) Periods necessary to install or implement feasible engineering and work-practice controls;

(ii) Nonroutine work operations that are performed infrequently and for which exposures are limited in duration;

(iii) Work operations for which feasible engineering controls and work-practice controls are not yet sufficient to reduce employee exposures to or below the PELs;

(iv) Emergencies.

(b) Respirator program.

(i) The employer must implement a respiratory protection program as required by chapter 296-842 WAC, except WAC 296-842-13005 and 296-842-14005.

(ii) If air-purifying respirators are used, the employer must replace the air-purifying filter elements according to the replacement schedule set for the class of respirators listed in Table 1 of this section, and at the beginning of each work shift.

(iii) Instead of using the replacement schedule listed in Table 1 of this section, the employer may replace cartridges or canisters at 90% of their expiration service life, provided the employer:

(A) Demonstrates that employees will be adequately protected by this procedure;

(B) Uses BD breakthrough data for this purpose that have been derived from tests conducted under worst-case conditions of humidity, temperature, and air-flow rate through the filter element, and the employer also describes the data supporting the cartridge- or canister-change schedule, as well as the basis for using the data in the employer's respirator program.

(iv) A label must be attached to each filter element to indicate the date and time it is first installed on the respirator.

(v) If NIOSH approves an end-of-service-life indicator (ESLI) for an air-purifying filter element, the element may be used until the ESLI shows no further useful service life or until the element is replaced at the beginning of the next work shift, whichever occurs first.

(vi) Regardless of the air-purifying element used, if an employee detects the odor of BD, the employer must replace the air-purifying element immediately.

(c) Respirator selection.

(i) The employer must select appropriate respirators from Table 1 of this section.

Table 1. - Minimum Requirements for Respiratory Protection for Airborne BD

Concentration of Airborne BD (ppm) or condition of use	Minimum required respirator
Less than or equal to 5 ppm (5 times PEL)	(a) Air-purifying half mask or full facepiece respirator equipped with approved BD or organic vapor cartridges or canisters. Cartridges or canisters shall be replaced every 4 hours.
Less than or equal to 10 ppm (10 times PEL)	(a) Air-purifying half mask or full facepiece respirator equipped with approved BD or organic vapor cartridges or canisters. Cartridges or canisters shall be replaced every 3 hours.
Less than or equal to 25 ppm (25 times PEL)	(a) Air-purifying full facepiece respirator equipped with approved BD or organic vapor cartridges or canisters. Cartridges or canisters shall be replaced every 2 hours. (b) Any powered air-purifying respirator equipped with approved BD or organic vapor cartridges. PAPR cartridges shall be replaced every 2 hours. (c) Continuous flow supplied air respirator equipped with a hood or helmet.
Less than or equal to 50 ppm (50 times PEL)	(a) Air-purifying full facepiece respirator equipped with approved BD or organic vapor cartridges or canisters. Cartridges or canisters shall be replaced every 1 hour. (b) Powered air purifying respirator equipped with a tight-fitting facepiece and an approved BD or organic vapor cartridges. PAPR cartridges shall be replaced every 1 hour.
Less than or equal to 1,000 ppm (1,000 times PEL)	(a) Supplied air respirator equipped with a half mask or full facepiece and operated in a pressure demand or other positive pressure mode.

Table 1. - Minimum Requirements for Respiratory Protection for Airborne BD

Concentration of Airborne BD (ppm) or condition of use	Minimum required respirator
Greater than 1,000 ppm	(a) Self-contained breathing unknown concentration, or apparatus equipped with a fire fighting full facepiece and operated in a pressure demand or other positive pressure mode. (b) Any supplied air respirator equipped with a full facepiece and operated in a pressure demand or other positive pressure mode in combination with an auxiliary self-contained breathing apparatus operated in a pressure demand or other positive pressure mode.
Escape from IDLH Conditions	(a) Any positive pressure self-contained breathing apparatus with an appropriate service life. (b) Any air-purifying full facepiece respirator equipped with a front or back mounted BD or organic vapor canister.

Notes: Respirators approved for use in higher concentrations are permitted to be used in lower concentrations. Full facepiece is required when eye irritation is anticipated.

(ii) Air-purifying respirators must have filter elements certified by NIOSH for organic vapor or BD.

(iii) When an employee whose job requires the use of a respirator cannot use a negative-pressure respirator, the employer must provide the employee with a respirator that has less breathing resistance than the negative-pressure respirator, such as a powered air-purifying respirator or supplied-air respirator, when the employee is able to use it and if it provides the employee adequate protection.

(9) Protective clothing and equipment. Where appropriate to prevent eye contact and limit dermal exposure to BD, the employer shall provide protective clothing and equipment at no cost to the employee and shall ensure its use. Eye and face protection shall meet the requirements of WAC 296-800-160.

(10) Emergency situations. Written plan. A written plan for emergency situations shall be developed, or an existing plan shall be modified, to contain the applicable elements specified in WAC 296-24-567, Employee emergency plans and fire prevention plans, and in WAC 296-62-3112, hazardous waste operations and emergency responses, for each workplace where there is a possibility of an emergency.

(11) Medical screening and surveillance.

(a) Employees covered. The employer shall institute a medical screening and surveillance program as specified in this subsection for:

(i) Each employee with exposure to BD at concentrations at or above the action level on 30 or more days or for employees who have or may have exposure to BD at or above the PELs on 10 or more days a year;

(ii) Employers (including successor owners) shall continue to provide medical screening and surveillance for employees, even after transfer to a non-BD exposed job and regardless of when the employee is transferred, whose work histories suggest exposure to BD:

(A) At or above the PELs on 30 or more days a year for 10 or more years;

(B) At or above the action level on 60 or more days a year for 10 or more years; or

(C) Above 10 ppm on 30 or more days in any past year; and

(iii) Each employee exposed to BD following an emergency situation.

(b) Program administration.

(i) The employer shall ensure that the health questionnaire, physical examination and medical procedures are provided without cost to the employee, without loss of pay, and at a reasonable time and place.

(ii) Physical examinations, health questionnaires, and medical procedures shall be performed or administered by a physician or other licensed health care professional.

(iii) Laboratory tests shall be conducted by an accredited laboratory.

(c) Frequency of medical screening activities. The employer shall make medical screening available on the following schedule:

(i) For each employee covered under (a)(i) and (ii) of this subsection, a health questionnaire and complete blood count (CBC) with differential and platelet count every year, and a physical examination as specified below:

(A) An initial physical examination that meets the requirements of this rule, if twelve months or more have elapsed since the last physical examination conducted as part of a medical screening program for BD exposure;

(B) Before assumption of duties by the employee in a job with BD exposure;

(C) Every 3 years after the initial physical examination;

(D) At the discretion of the physician or other licensed health care professional reviewing the annual health questionnaire and CBC;

(E) At the time of employee reassignment to an area where exposure to BD is below the action level, if the employee's past exposure history does not meet the criteria of (a)(ii) of this subsection for continued coverage in the screening and surveillance program, and if twelve months or more have elapsed since the last physical examination; and

(F) At termination of employment if twelve months or more have elapsed since the last physical examination.

(ii) Following an emergency situation, medical screening shall be conducted as quickly as possible, but not later than 48 hours after the exposure.

(iii) For each employee who must wear a respirator, physical ability to perform the work and use the respirator must be determined as required by chapter 296-842 WAC.

(d) Content of medical screening.

(i) Medical screening for employees covered by (a)(i) and (ii) of this subsection shall include:

(A) A baseline health questionnaire that includes a comprehensive occupational and health history and is updated annually. Particular emphasis shall be placed on the hematopoietic and reticuloendothelial systems, including exposure to chemicals, in addition to BD, that may have an adverse effect on these systems, the presence of signs and symptoms that might be related to disorders of these systems, and any other information determined by the examining physician or other licensed health care professional to be necessary to evaluate whether the employee is at increased risk of material impairment of health from BD exposure. Health questionnaires shall consist of the sample forms in Appendix C to this section, or be equivalent to those samples;

(B) A complete physical examination, with special emphasis on the liver, spleen, lymph nodes, and skin;

(C) A CBC; and

(D) Any other test which the examining physician or other licensed health care professional deems necessary to evaluate whether the employee may be at increased risk from exposure to BD.

(ii) Medical screening for employees exposed to BD in an emergency situation shall focus on the acute effects of BD exposure and at a minimum include: A CBC within 48 hours of the exposure and then monthly for three months; and a physical examination if the employee reports irritation of the eyes, nose, throat, lungs, or skin, blurred vision, coughing, drowsiness, nausea, or headache. Continued employee participation in the medical screening and surveillance program, beyond these minimum requirements, shall be at the discretion of the physician or other licensed health care professional.

(e) Additional medical evaluations and referrals.

(i) Where the results of medical screening indicate abnormalities of the hematopoietic or reticuloendothelial systems, for which a nonoccupational cause is not readily apparent, the examining physician or other licensed health care professional shall refer the employee to an appropriate specialist for further evaluation and shall make available to the specialist the results of the medical screening.

(ii) The specialist to whom the employee is referred under this subsection shall determine the appropriate content for the medical evaluation, e.g., examinations, diagnostic tests and procedures, etc.

(f) Information provided to the physician or other licensed health care professional. The employer shall provide the following information to the examining physician or other licensed health care professional involved in the evaluation:

(i) A copy of this section including its appendices;

(ii) A description of the affected employee's duties as they relate to the employee's BD exposure;

(iii) The employee's actual or representative BD exposure level during employment tenure, including exposure incurred in an emergency situation;

(iv) A description of pertinent personal protective equipment used or to be used; and

(v) Information, when available, from previous employment-related medical evaluations of the affected employee which is not otherwise available to the physician or other licensed health care professional or the specialist.

(g) The written medical opinion.

(i) For each medical evaluation required by this section, the employer shall ensure that the physician or other licensed health care professional produces a written opinion and provides a copy to the employer and the employee within 15 business days of the evaluation. The written opinion shall be limited to the following information:

(A) The occupationally pertinent results of the medical evaluation;

(B) A medical opinion concerning whether the employee has any detected medical conditions which would place the employee's health at increased risk of material impairment from exposure to BD;

(C) Any recommended limitations upon the employee's exposure to BD; and

(D) A statement that the employee has been informed of the results of the medical evaluation and any medical conditions resulting from BD exposure that require further explanation or treatment.

(ii) The written medical opinion provided to the employer shall not reveal specific records, findings, and diagnoses that have no bearing on the employee's ability to work with BD.

Note: This provision does not negate the ethical obligation of the physician or other licensed health care professional to transmit any other adverse findings directly to the employee.

(h) Medical surveillance.

(i) The employer shall ensure that information obtained from the medical screening program activities is aggregated (with all personal identifiers removed) and periodically reviewed, to ascertain whether the health of the employee population of that employer is adversely affected by exposure to BD.

(ii) Information learned from medical surveillance activities must be disseminated to covered employees, as defined in (a) of this subsection, in a manner that ensures the confidentiality of individual medical information.

(12) Communication of BD hazards to employees.

(a) Hazard communication. The employer shall communicate the hazards associated with BD exposure in accordance with the requirements of the chemical hazard communication standard, WAC 296-800-170.

(b) Employee information and training.

(i) The employer shall provide all employees exposed to BD with information and training in accordance with the requirements of the chemical hazard communication standard, WAC 296-800-170.

(ii) The employer shall institute a training program for all employees who are potentially exposed to BD at or above the action level or the STEL, ensure employee participation in the program and maintain a record of the contents of such program.

(iii) Training shall be provided prior to or at the time of initial assignment to a job potentially involving exposure to BD at or above the action level or STEL and at least annually thereafter.

(iv) The training program shall be conducted in a manner that the employee is able to understand. The employer shall ensure that each employee exposed to BD over the action level or STEL is informed of the following:

(A) The health hazards associated with BD exposure, and the purpose and a description of the medical screening and surveillance program required by this section;

(B) The quantity, location, manner of use, release, and storage of BD and the specific operations that could result in exposure to BD, especially exposures above the PEL or STEL;

(C) The engineering controls and work practices associated with the employee's job assignment, and emergency procedures and personal protective equipment;

(D) The measures employees can take to protect themselves from exposure to BD;

(E) The contents of this standard and its appendices; and

(F) The right of each employee exposed to BD at or above the action level or STEL to obtain:

(I) Medical examinations as required by subsection (10) of this section at no cost to the employee;

(II) The employee's medical records required to be maintained by subsection (13)(c) of this section; and

(III) All air monitoring results representing the employee's exposure to BD and required to be kept by subsection (13)(b) of this section.

(c) Access to information and training materials.

(i) The employer shall make a copy of this standard and its appendices readily available without cost to all affected employees and their designated representatives and shall provide a copy if requested.

(ii) The employer shall provide to the director, or the designated employee representatives, upon request, all materials relating to the employee information and the training program.

(13) Recordkeeping.

(a) Objective data for exemption from initial monitoring.

(i) Where the processing, use, or handling of products or streams made from or containing BD are exempted from other requirements of this section under subsection (1)(b) of this section, or where objective data have been relied on in lieu of initial monitoring under subsection (4)(b)(ii) of this section, the employer shall establish and maintain a record of the objective data reasonably relied upon in support of the exemption.

(ii) This record shall include at least the following information:

(A) The product or activity qualifying for exemption;

(B) The source of the objective data;

(C) The testing protocol, results of testing, and analysis of the material for the release of BD;

(D) A description of the operation exempted and how the data support the exemption; and

(E) Other data relevant to the operations, materials, processing, or employee exposures covered by the exemption.

(iii) The employer shall maintain this record for the duration of the employer's reliance upon such objective data.

(b) Exposure measurements.

(i) The employer shall establish and maintain an accurate record of all measurements taken to monitor employee exposure to BD as prescribed in subsection (4) of this section.

(ii) The record shall include at least the following information:

(A) The date of measurement;

(B) The operation involving exposure to BD which is being monitored;

(C) Sampling and analytical methods used and evidence of their accuracy;

(D) Number, duration, and results of samples taken;

(E) Type of protective devices worn, if any;

(F) Name, Social Security number and exposure of the employees whose exposures are represented; and

(G) The written corrective action and the schedule for completion of this action required by subsection (4)(g)(ii) of this section.

(iii) The employer shall maintain this record for at least 30 years in accordance with chapter 296-802 WAC.

(c) Medical screening and surveillance.

(i) The employer shall establish and maintain an accurate record for each employee subject to medical screening and surveillance under this section.

(ii) The record shall include at least the following information:

(A) The name and Social Security number of the employee;

(B) Physician's or other licensed health care professional's written opinions as described in subsection (11)(e) of this section;

(C) A copy of the information provided to the physician or other licensed health care professional as required by subsection (11)(e) of this section.

(iii) Medical screening and surveillance records shall be maintained for each employee for the duration of employment plus 30 years, in accordance with chapter 296-802 WAC.

(d) Availability.

(i) The employer, upon written request, shall make all records required to be maintained by this section available for examination and copying to the director.

(ii) Access to records required to be maintained by (a) and (b) of this subsection shall be granted in accordance with chapter 296-802 WAC.

(e) Transfer of records.

(i) Whenever the employer ceases to do business, the employer shall transfer records required by this section to the successor employer. The successor employer shall receive and maintain these records. If there is no successor employer, the employer shall notify the director, at least three months prior to disposal, and transmit them to the director if requested by the director within that period.

(ii) The employer shall transfer medical and exposure records as set forth in chapter 296-802 WAC.

(14) Dates.

(a) Effective date. This section shall become effective (day, month), 1997.

(b) Start-up dates.

(i) The initial monitoring required under subsection (4)(b) of this section shall be completed immediately or within sixty days of the introduction of BD into the workplace.

(ii) The requirements of subsections (3) through (13) of this section, including feasible work practice controls but not including engineering controls specified in subsection (6)(a) of this section, shall be complied with immediately.

(iii) Engineering controls specified by subsection (6)(a) of this section shall be implemented by February 4, 1999, and the exposure goal program specified in subsection (7) of this section shall be implemented by February 4, 2000.

(15) Appendices.

Appendices A, B, C, D, and F to this section are informational and are not intended to create any additional obligations not otherwise imposed or to detract from any existing obligations.

Appendix A. Substance Safety Data Sheet For 1,3-Butadiene (Non-Mandatory)

(1) Substance Identification.

(a) Substance: 1,3-Butadiene ($\text{CH}_2=\text{CH}-\text{CH}=\text{CH}_2$).

(b) Synonyms: 1,3-Butadiene (BD); butadiene; biethylen; bi-vinyl; divinyl; butadiene-1,3; buta-1,3-diene; erythrene; NCI-C50602; CAS-106-99-0.

(c) BD can be found as a gas or liquid.

(d) BD is used in production of styrene-butadiene rubber and polybutadiene rubber for the tire industry. Other uses include copolymer latexes for carpet backing and paper coating, as well as resins and polymers for pipes and automobile and appliance parts. It is also used as an intermediate in the production of such chemicals as fungicides.

(e) Appearance and odor: BD is a colorless, noncorrosive, flammable gas with a mild aromatic odor at standard ambient temperature and pressure.

(f) Permissible exposure: Exposure may not exceed 1 part BD per million parts of air averaged over the 8-hour workday, nor may short-term exposure exceed 5 parts of BD per million parts of air averaged over any 15-minute period in the 8-hour workday.

(2) Health Hazard Data.

(a) BD can affect the body if the gas is inhaled or if the liquid form, which is very cold (cryogenic), comes in contact with the eyes or skin.

(b) Effects of overexposure: Breathing very high levels of BD for a short time can cause central nervous system effects, blurred vision, nausea, fatigue, headache, decreased blood pressure and pulse rate, and unconsciousness. There are no recorded cases of accidental exposures at high levels that have caused death in humans, but this could occur. Breathing lower levels of BD may cause irritation of the eyes, nose, and throat. Skin contact with liquefied BD can cause irritation and frostbite.

(c) Long-term (chronic) exposure: BD has been found to be a potent carcinogen in rodents, inducing neoplastic lesions at multiple target sites in mice and rats. A recent study of BD-exposed workers showed that exposed workers have an increased risk of developing leukemia. The risk of leukemia increases with increased exposure to BD. OSHA has concluded that there is strong evidence that workplace exposure to BD poses an increased risk of death from cancers of the lymphohematopoietic system.

(d) Reporting signs and symptoms: You should inform your supervisor if you develop any of these signs or symptoms and suspect that they are caused by exposure to BD.

(3) Emergency First-Aid Procedures.

In the event of an emergency, follow the emergency plan and procedures designated for your work area. If you have been trained in first-aid procedures, provide the necessary

first aid measures. If necessary, call for additional assistance from co-workers and emergency medical personnel.

(a) Eye and Skin Exposures: If there is a potential that liquefied BD can come in contact with eye or skin, face shields and skin protective equipment must be provided and used. If liquefied BD comes in contact with the eye, immediately flush the eyes with large amounts of water, occasionally lifting the lower and the upper lids. Flush repeatedly. Get medical attention immediately. Contact lenses should not be worn when working with this chemical. In the event of skin contact, which can cause frostbite, remove any contaminated clothing and flush the affected area repeatedly with large amounts of tepid water.

(b) Breathing: If a person breathes in large amounts of BD, move the exposed person to fresh air at once. If breathing has stopped, begin cardiopulmonary resuscitation (CPR) if you have been trained in this procedure. Keep the affected person warm and at rest. Get medical attention immediately.

(c) Rescue: Move the affected person from the hazardous exposure. If the exposed person has been overcome, call for help and begin emergency rescue procedures. Use extreme caution so that you do not become a casualty. Understand the plant's emergency rescue procedures and know the locations of rescue equipment before the need arises.

(4) Respirators and Protective Clothing.

(a) Respirators: Good industrial hygiene practices recommend that engineering and work practice controls be used to reduce environmental concentrations to the permissible exposure level. However, there are some exceptions where respirators may be used to control exposure. Respirators may be used when engineering and work practice controls are not technically feasible, when such controls are in the process of being installed, or when these controls fail and need to be supplemented or during brief, nonroutine, intermittent exposure. Respirators may also be used in situations involving nonroutine work operations which are performed infrequently and in which exposures are limited in duration, and in emergency situations. In some instances cartridge respirator use is allowed, but only with strict time constraints. For example, at exposure below 5 ppm BD, a cartridge (or canister) respirator, either full or half face, may be used, but the cartridge must be replaced at least every 4 hours, and it must be replaced every 3 hours when the exposure is between 5 and 10 ppm.

If the use of respirators is necessary, the only respirators permitted are those that have been approved by the National Institute for Occupational Safety and Health (NIOSH). In addition to respirator selection, a complete respiratory protection program must be instituted which includes regular training, maintenance, fit testing, inspection, cleaning, and evaluation of respirators. If you can smell BD while wearing a respirator, proceed immediately to fresh air, and change cartridge (or canister) before re-entering an area where there is BD exposure. If you experience difficulty in breathing while wearing a respirator, tell your supervisor.

(b) Protective Clothing: Employees should be provided with and required to use impervious clothing, gloves, face shields (eight-inch minimum), and other appropriate protective clothing necessary to prevent the skin from becoming frozen by contact with liquefied BD (or a vessel containing liquid BD).

Employees should be provided with and required to use splash-proof safety goggles where liquefied BD may contact the eyes.

(5) Precautions for Safe Use, Handling, and Storage.

(a) Fire and Explosion Hazards: BD is a flammable gas and can easily form explosive mixtures in air. It has a lower explosive limit of 2%, and an upper explosive limit of 11.5%. It has an autoignition temperature of 420 deg. C (788 deg. F). Its vapor is heavier than air (vapor density, 1.9) and may travel a considerable distance to a source of ignition and flash back. Usually it contains inhibitors to prevent self-polymerization (which is accompanied by evolution of heat) and to prevent formation of explosive peroxides. At elevated temperatures, such as in fire conditions, polymerization may take place. If the polymerization takes place in a container, there is a possibility of violent rupture of the container.

(b) Hazard: Slightly toxic. Slight respiratory irritant. Direct contact of liquefied BD on skin may cause freeze burns and frostbite.

(c) Storage: Protect against physical damage to BD containers. Outside or detached storage of BD containers is preferred. Inside storage should be in a cool, dry, well-ventilated, noncombustible location, away from all possible sources of ignition. Store cylinders vertically and do not stack. Do not store with oxidizing material.

(d) Usual Shipping Containers: Liquefied BD is contained in steel pressure apparatus.

(e) Electrical Equipment: Electrical installations in Class I hazardous locations, as defined in Article 500 of the National Electrical Code, should be in accordance with Article 501 of the Code. If explosion-proof electrical equipment is necessary, it shall be suitable for use in Group B. Group D equipment may be used if such equipment is isolated in accordance with Section 501-5(a) by sealing all conduit 1/2-inch size or larger. See Venting of Deflagrations (NFPA No. 68, 1994), National Electrical Code (NFPA No. 70, 1996), Static Electricity (NFPA No. 77, 1993), Lightning Protection Systems (NFPA No. 780, 1995), and Fire Hazard Properties of Flammable Liquids, Gases and Volatile Solids (NFPA No. 325, 1994).

(f) Fire Fighting: Stop flow of gas. Use water to keep fire-exposed containers cool. Fire extinguishers and quick drenching facilities must be readily available, and you should know where they are and how to operate them.

(g) Spill and Leak: Persons not wearing protective equipment and clothing should be restricted from areas of spills or leaks until clean-up has been completed. If BD is spilled or leaked, the following steps should be taken:

(i) Eliminate all ignition sources.

(ii) Ventilate area of spill or leak.

(iii) If in liquid form, for small quantities, allow to evaporate in a safe manner.

(iv) Stop or control the leak if this can be done without risk. If source of leak is a cylinder and the leak cannot be stopped in place, remove the leaking cylinder to a safe place and repair the leak or allow the cylinder to empty.

(h) Disposal: This substance, when discarded or disposed of, is a hazardous waste according to Federal regulations (40 CFR part 261). It is listed as hazardous waste number D001 due to its ignitability. The transportation, storage, treatment, and disposal of this waste material must be con-

ducted in compliance with 40 CFR parts 262, 263, 264, 268 and 270. Disposal can occur only in properly permitted facilities. Check state and local regulation of any additional requirements as these may be more restrictive than federal laws and regulation.

(i) You should not keep food, beverages, or smoking materials in areas where there is BD exposure, nor should you eat or drink in such areas.

(j) Ask your supervisor where BD is used in your work area and ask for any additional plant safety and health rules.

(6) Medical Requirements.

Your employer is required to offer you the opportunity to participate in a medical screening and surveillance program if you are exposed to BD at concentrations exceeding the action level (0.5 ppm BD as an 8-hour TWA) on 30 days or more a year, or at or above the 8-hr TWA (1 ppm) or STEL (5 ppm for 15 minutes) on 10 days or more a year. Exposure for any part of a day counts. If you have had exposure to BD in the past, but have been transferred to another job, you may still be eligible to participate in the medical screening and surveillance program.

The WISHA rule specifies the past exposures that would qualify you for participation in the program. These past exposures are work histories that suggest the following:

(a) That you have been exposed at or above the PELs on 30 days a year for 10 or more years;

(b) That you have been exposed at or above the action level on 60 days a year for 10 or more years; or

(c) That you have been exposed above 10 ppm on 30 days in any past year.

Additionally, if you are exposed to BD in an emergency situation, you are eligible for a medical examination within 48 hours. The basic medical screening program includes a health questionnaire, physical examination, and blood test. These medical evaluations must be offered to you at a reasonable time and place, and without cost or loss of pay.

(7) Observation of Monitoring.

Your employer is required to perform measurements that are representative of your exposure to BD and you or your designated representative are entitled to observe the monitoring procedure. You are entitled to observe the steps taken in the measurement procedure, and to record the results obtained. When the monitoring procedure is taking place in an area where respirators or personal protective clothing and equipment are required to be worn, you or your representative must also be provided with, and must wear, the protective clothing and equipment.

(8) Access to Information.

(a) Each year, your employer is required to inform you of the information contained in this appendix. In addition, your employer must instruct you in the proper work practices for using BD, emergency procedures, and the correct use of protective equipment.

(b) Your employer is required to determine whether you are being exposed to BD. You or your representative has the right to observe employee measurements and to record the results obtained. Your employer is required to inform you of your exposure. If your employer determines that you are being overexposed, he or she is required to inform you of the actions which are being taken to reduce your exposure to

within permissible exposure limits and of the schedule to implement these actions.

(c) Your employer is required to keep records of your exposures and medical examinations. These records must be kept by the employer for at least thirty (30) years.

(d) Your employer is required to release your exposure and medical records to you or your representative upon your request.

Appendix B. Substance Technical Guidelines for 1,3-Butadiene (Non-Mandatory)

(1) Physical and Chemical Data.

(a) Substance identification:

(i) Synonyms: 1,3-Butadiene (BD); butadiene; biethylene; bivinyl; divinyl; butadiene-1,3; buta-1,3-diene; erythrene; NCI-C50620; CAS-106-99-0.

(ii) Formula: $(CH_2)=CH-CH=CH_2$.

(iii) Molecular weight: 54.1.

(b) Physical data:

(i) Boiling point (760 mm Hg): -4.7 deg. C (23.5 deg. F).

(ii) Specific gravity (water = 1): 0.62 at 20 deg. C (68 deg. F).

(iii) Vapor density (air = 1 at boiling point of BD): 1.87.

(iv) Vapor pressure at 20 deg. C (68 deg. F): 910 mm Hg.

(v) Solubility in water, g/100 g water at 20 deg. C (68 deg. F): 0.05.

(vi) Appearance and odor: Colorless, flammable gas with a mildly aromatic odor. Liquefied BD is a colorless liquid with a mildly aromatic odor.

(2) Fire, Explosion, and Reactivity Hazard Data.

(a) Fire:

(i) Flash point: -76 deg. C (-105 deg. F) for take out; liquefied BD; Not applicable to BD gas.

(ii) Stability: A stabilizer is added to the monomer to inhibit formation of polymer during storage. Forms explosive peroxides in air in absence of inhibitor.

(iii) Flammable limits in air, percent by volume: Lower: 2.0; Upper: 11.5.

(iv) Extinguishing media: Carbon dioxide for small fires, polymer or alcohol foams for large fires.

(v) Special fire fighting procedures: Fight fire from protected location or maximum possible distance. Stop flow of gas before extinguishing fire. Use water spray to keep fire-exposed cylinders cool.

(vi) Unusual fire and explosion hazards: BD vapors are heavier than air and may travel to a source of ignition and flash back. Closed containers may rupture violently when heated.

(vii) For purposes of compliance with the requirements of WAC 296-24-330, BD is classified as a flammable gas. For example, 7,500 ppm, approximately one-fourth of the lower flammable limit, would be considered to pose a potential fire and explosion hazard.

(viii) For purposes of compliance with WAC 296-24-585, BD is classified as a Class B fire hazard.

(ix) For purposes of compliance with WAC 296-24-956 and 296-800-280, locations classified as hazardous due to the presence of BD shall be Class I.

(b) Reactivity:

(i) Conditions contributing to instability: Heat. Peroxides are formed when inhibitor concentration is not main-

tained at proper level. At elevated temperatures, such as in fire conditions, polymerization may take place.

(ii) Incompatibilities: Contact with strong oxidizing agents may cause fires and explosions. The contacting of crude BD (not BD monomer) with copper and copper alloys may cause formations of explosive copper compounds.

(iii) Hazardous decomposition products: Toxic gases (such as carbon monoxide) may be released in a fire involving BD.

(iv) Special precautions: BD will attack some forms of plastics, rubber, and coatings. BD in storage should be checked for proper inhibitor content, for self-polymerization, and for formation of peroxides when in contact with air and iron. Piping carrying BD may become plugged by formation of rubbery polymer.

(c) Warning Properties:

(i) Odor Threshold: An odor threshold of 0.45 ppm has been reported in The American Industrial Hygiene Association (AIHA) Report, Odor Thresholds for Chemicals with Established Occupational Health Standards. (Ex. 32-28C).

(ii) Eye Irritation Level: Workers exposed to vapors of BD (concentration or purity unspecified) have complained of irritation of eyes, nasal passages, throat, and lungs. Dogs and rabbits exposed experimentally to as much as 6700 ppm for 7 1/2 hours a day for 8 months have developed no histologically demonstrable abnormality of the eyes.

(iii) Evaluation of Warning Properties: Since the mean odor threshold is about half of the 1 ppm PEL, and more than 10-fold below the 5 ppm STEL, most wearers of air purifying respirators should still be able to detect breakthrough before a significant overexposure to BD occurs.

(3) Spill, Leak, and Disposal Procedures.

(a) Persons not wearing protective equipment and clothing should be restricted from areas of spills or leaks until cleanup has been completed. If BD is spilled or leaked, the following steps should be taken:

(i) Eliminate all ignition sources.

(ii) Ventilate areas of spill or leak.

(iii) If in liquid form, for small quantities, allow to evaporate in a safe manner.

(iv) Stop or control the leak if this can be done without risk. If source of leak is a cylinder and the leak cannot be stopped in place, remove the leaking cylinder to a safe place and repair the leak or allow the cylinder to empty.

(b) Disposal: This substance, when discarded or disposed of, is a hazardous waste according to Federal regulations (40 CFR part 261). It is listed by the EPA as hazardous waste number D001 due to its ignitability. The transportation, storage, treatment, and disposal of this waste material must be conducted in compliance with 40 CFR parts 262, 263, 264, 268 and 270. Disposal can occur only in properly permitted facilities. Check state and local regulations for any additional requirements because these may be more restrictive than federal laws and regulations.

(4) Monitoring and Measurement Procedures.

(a) Exposure above the Permissible Exposure Limit (8-hr TWA) or Short-Term Exposure Limit (STEL):

(i) 8-hr TWA exposure evaluation: Measurements taken for the purpose of determining employee exposure under this standard are best taken with consecutive samples covering the full shift. Air samples must be taken in the employee's

breathing zone (air that would most nearly represent that inhaled by the employee).

(ii) STEL exposure evaluation: Measurements must represent 15 minute exposures associated with operations most likely to exceed the STEL in each job and on each shift.

(iii) Monitoring frequencies: Table 1 gives various exposure scenarios and their required monitoring frequencies, as required by the final standard for occupational exposure to butadiene.

Table 1. — Five Exposure Scenarios and Their Associated Monitoring Frequencies

Action Level	8-hr TWA	STEL	Required Monitoring Activity
—*	—	—	No 8-hour TWA or STEL monitoring required.
+*	—	—	No STEL monitoring required. Monitor 8-hr TWA annually.
+	—	—	No STEL monitoring required. Periodic monitoring 8-hour TWA, in accordance with (4)(c)(iii).**
+	+	+	Periodic monitoring 8-hour TWA, in accordance with (4)(c)(iii)**. Periodic monitoring STEL in accordance with (4)(c)(iii).
+	—	+	Periodic monitoring STEL, in accordance with (4)(c)(iii). Monitor 8-hour TWA annually.

Footnote (*) Exposure Scenario, Limit Exceeded: + = Yes, - = No.

Footnote (**) The employer may decrease the frequency of exposure monitoring to annually when at least 2 consecutive measurements taken at least 7 days apart show exposures to be below the 8-hour TWA, but at or above the action level.

(iv) Monitoring techniques: Appendix D describes the validated method of sampling and analysis which has been tested by OSHA for use with BD. The employer has the obligation of selecting a monitoring method which meets the accuracy and precision requirements of the standard under his or her unique field conditions. The standard requires that the method of monitoring must be accurate, to a 95 percent confidence level, to plus or minus 25 percent for concentrations of BD at or above 1 ppm, and to plus or minus 35 percent for concentrations below 1 ppm.

(5) Personal Protective Equipment.

(a) Employees should be provided with and required to use impervious clothing, gloves, face shields (eight-inch minimum), and other appropriate protective clothing necessary to prevent the skin from becoming frozen from contact with liquid BD.

(b) Any clothing which becomes wet with liquid BD should be removed immediately and not reworn until the butadiene has evaporated.

(c) Employees should be provided with and required to use splash proof safety goggles where liquid BD may contact the eyes.

(6) Housekeeping and Hygiene Facilities.

For purposes of complying with WAC 296-800-220 and 296-800-230, the following items should be emphasized:

(a) The workplace should be kept clean, orderly, and in a sanitary condition.

(b) Adequate washing facilities with hot and cold water are to be provided and maintained in a sanitary condition.

(7) Additional Precautions.

(a) Store BD in tightly closed containers in a cool, well-ventilated area and take all necessary precautions to avoid any explosion hazard.

(b) Nonsparking tools must be used to open and close metal containers. These containers must be effectively grounded.

(c) Do not incinerate BD cartridges, tanks or other containers.

(d) Employers must advise employees of all areas and operations where exposure to BD might occur.

Appendix C. Medical Screening and Surveillance for 1,3-Butadiene (Nonmandatory)

(1) Basis for Medical Screening and Surveillance Requirements.

(a) Route of Entry Inhalation.

(b) Toxicology.

Inhalation of BD has been linked to an increased risk of cancer, damage to the reproductive organs, and fetotoxicity. Butadiene can be converted via oxidation to epoxybutene and diepoxybutane, two genotoxic metabolites that may play a role in the expression of BD's toxic effects. BD has been tested for carcinogenicity in mice and rats. Both species responded to BD exposure by developing cancer at multiple primary organ sites. Early deaths in mice were caused by malignant lymphomas, primarily lymphocytic type, originating in the thymus.

Mice exposed to BD have developed ovarian or testicular atrophy. Sperm head morphology tests also revealed abnormal sperm in mice exposed to BD; lethal mutations were found in a dominant lethal test. In light of these results in animals, the possibility that BD may adversely affect the reproductive systems of male and female workers must be considered.

Additionally, anemia has been observed in animals exposed to butadiene. In some cases, this anemia appeared to be a primary response to exposure; in other cases, it may have been secondary to a neoplastic response.

(c) Epidemiology.

Epidemiologic evidence demonstrates that BD exposure poses an increased risk of leukemia. Mild alterations of hematologic parameters have also been observed in synthetic rubber workers exposed to BD.

(2) Potential Adverse Health Effects.

(a) Acute.

Skin contact with liquid BD causes characteristic burns or frostbite. BD in gaseous form can irritate the eyes, nasal passages, throat, and lungs. Blurred vision, coughing, and drowsiness may also occur. Effects are mild at 2,000 ppm and pronounced at 8,000 ppm for exposures occurring over the full workshift.

At very high concentrations in air, BD is an anesthetic, causing narcosis, respiratory paralysis, unconsciousness, and death. Such concentrations are unlikely, however, except in

an extreme emergency because BD poses an explosion hazard at these levels.

(b) Chronic.

The principal adverse health effects of concern are BD-induced lymphoma, leukemia and potential reproductive toxicity. Anemia and other changes in the peripheral blood cells may be indicators of excessive exposure to BD.

(c) Reproductive.

Workers may be concerned about the possibility that their BD exposure may be affecting their ability to procreate a healthy child. For workers with high exposures to BD, especially those who have experienced difficulties in conceiving, miscarriages, or stillbirths, appropriate medical and laboratory evaluation of fertility may be necessary to determine if BD is having any adverse effect on the reproductive system or on the health of the fetus.

(3) Medical Screening Components At-A-Glance.

(a) Health Questionnaire.

The most important goal of the health questionnaire is to elicit information from the worker regarding potential signs or symptoms generally related to leukemia or other blood abnormalities. Therefore, physicians or other licensed health care professionals should be aware of the presenting symptoms and signs of lymphohematopoietic disorders and cancers, as well as the procedures necessary to confirm or exclude such diagnoses. Additionally, the health questionnaire will assist with the identification of workers at greatest risk of developing leukemia or adverse reproductive effects from their exposures to BD.

Workers with a history of reproductive difficulties or a personal or family history of immune deficiency syndromes, blood dyscrasias, lymphoma, or leukemia, and those who are or have been exposed to medicinal drugs or chemicals known to affect the hematopoietic or lymphatic systems may be at higher risk from their exposure to BD. After the initial administration, the health questionnaire must be updated annually.

(b) Complete Blood Count (CBC).

The medical screening and surveillance program requires an annual CBC, with differential and platelet count, to be provided for each employee with BD exposure. This test is to be performed on a blood sample obtained by phlebotomy of the venous system or, if technically feasible, from a fingerstick sample of capillary blood. The sample is to be analyzed by an accredited laboratory.

Abnormalities in a CBC may be due to a number of different etiologies. The concern for workers exposed to BD includes, but is not limited to, timely identification of lymphohematopoietic cancers, such as leukemia and non-Hodgkin's lymphoma. Abnormalities of portions of the CBC are identified by comparing an individual's results to those of an established range of normal values for males and females. A substantial change in any individual employee's CBC may also be viewed as "abnormal" for that individual even if all measurements fall within the population-based range of normal values. It is suggested that a flowsheet for laboratory values be included in each employee's medical record so that comparisons and trends in annual CBCs can be easily made.

A determination of the clinical significance of an abnormal CBC shall be the responsibility of the examining physician, other licensed health care professional, or medical spe-

cialist to whom the employee is referred. Ideally, an abnormal CBC should be compared to previous CBC measurements for the same employee, when available. Clinical common sense may dictate that a CBC value that is very slightly outside the normal range does not warrant medical concern. A CBC abnormality may also be the result of a temporary physical stressor, such as a transient viral illness, blood donation, or menorrhagia, or laboratory error. In these cases, the CBC should be repeated in a timely fashion, i.e., within 6 weeks, to verify that return to the normal range has occurred. A clinically significant abnormal CBC should result in removal of the employee from further exposure to BD. Transfer of the employee to other work duties in a BD-free environment would be the preferred recommendation.

(c) Physical Examination.

The medical screening and surveillance program requires an initial physical examination for workers exposed to BD; this examination is repeated once every three years. The initial physical examination should assess each worker's baseline general health and rule out clinical signs of medical conditions that may be caused by or aggravated by occupational BD exposure. The physical examination should be directed at identification of signs of lymphohematopoietic disorders, including lymph node enlargement, splenomegaly, and hepatomegaly.

Repeated physical examinations should update objective clinical findings that could be indicative of interim development of a lymphohematopoietic disorder, such as lymphoma, leukemia, or other blood abnormality. Physical examinations may also be provided on an as needed basis in order to follow up on a positive answer on the health questionnaire, or in response to an abnormal CBC. Physical examination of workers who will no longer be working in jobs with BD exposure are intended to rule out lymphohematopoietic disorders.

The need for physical examinations for workers concerned about adverse reproductive effects from their exposure to BD should be identified by the physician or other licensed health care professional and provided accordingly. For these workers, such consultations and examinations may relate to developmental toxicity and reproductive capacity.

Physical examination of workers acutely exposed to significant levels of BD should be especially directed at the respiratory system, eyes, sinuses, skin, nervous system, and any region associated with particular complaints. If the worker has received a severe acute exposure, hospitalization may be required to assure proper medical management. Since this type of exposure may place workers at greater risk of blood abnormalities, a CBC must be obtained within 48 hours and repeated at one, two, and three months.

Appendix D: Sampling and Analytical Method for 1,3-Butadiene (Nonmandatory)

OSHA Method No.: 56.

Matrix: Air.

Target concentration: 1 ppm (2.21 mg/m(3)).

Procedure: Air samples are collected by drawing known volumes of air through sampling tubes containing charcoal adsorbent which has been coated with 4-tert-butylcatechol. The samples are desorbed with carbon disulfide and then ana-

lyzed by gas chromatography using a flame ionization detector.

Recommended sampling rate and air volume: 0.05 L/min and 3 L.

Detection limit of the overall procedure: 90 ppb (200 ug/m(3)) (based on 3 L air volume).

Reliable quantitation limit: 155 ppb (343 ug/m(3)) (based on 3 L air volume).

Standard error of estimate at the target concentration: 6.5%.

Special requirements: The sampling tubes must be coated with 4-tert-butylcatechol. Collected samples should be stored in a freezer.

Status of method: A sampling and analytical method has been subjected to the established evaluation procedures of the Organic Methods Evaluation Branch, OSHA Analytical Laboratory, Salt Lake City, Utah 84165.

(1) Background.

This work was undertaken to develop a sampling and analytical procedure for BD at 1 ppm. The current method recommended by OSHA for collecting BD uses activated coconut shell charcoal as the sampling medium (Ref. 5.2). This method was found to be inadequate for use at low BD levels because of sample instability.

The stability of samples has been significantly improved through the use of a specially cleaned charcoal which is coated with 4-tert-butylcatechol (TBC). TBC is a polymerization inhibitor for BD (Ref. 5.3).

(a) Toxic effects.

Symptoms of human exposure to BD include irritation of the eyes, nose and throat. It can also cause coughing, drowsiness and fatigue. Dermatitis and frostbite can result from skin exposure to liquid BD. (Ref. 5.1)

NIOSH recommends that BD be handled in the workplace as a potential occupational carcinogen. This recommendation is based on two inhalation studies that resulted in cancers at multiple sites in rats and in mice. BD has also demonstrated mutagenic activity in the presence of a liver microsomal activating system. It has also been reported to have adverse reproductive effects. (Ref. 5.1)

(b) Potential workplace exposure.

About 90% of the annual production of BD is used to manufacture styrene-butadiene rubber and Polybutadiene rubber. Other uses include: Polychloroprene rubber, acrylonitrile butadiene-styrene resins, nylon intermediates, styrene-butadiene latexes, butadiene polymers, thermoplastic elastomers, nitrile resins, methyl methacrylate-butadiene styrene resins and chemical intermediates. (Ref. 5.1)

(c) Physical properties (Ref. 5.1).

CAS No.: 106-99-0

Molecular weight: 54.1

Appearance: Colorless gas

Boiling point: -4.41 deg. C (760 mm Hg)

Freezing point: -108.9 deg. C

Vapor pressure: 2 atm (a) 15.3 deg. C; 5 atm (a) 47 deg. C

Explosive limits: 2 to 11.5% (by volume in air)

Odor threshold: 0.45 ppm

Structural formula: H(2)C:CHCH:CH(2)

Synonyms: BD; biethylene; bivinylyl; butadiene; divinyl; buta-1,3-diene; alpha-gamma-butadiene; erythrene; NCI-C50602; pyrrolylene; vinylethylene.

(d) Limit defining parameters.

The analyte air concentrations listed throughout this method are based on an air volume of 3 L and a desorption volume of 1 mL. Air concentrations listed in ppm are referenced to 25 deg. C and 760 mm Hg.

(e) Detection limit of the analytical procedure.

The detection limit of the analytical procedure was 304 pg per injection. This was the amount of BD which gave a response relative to the interferences present in a standard.

(f) Detection limit of the overall procedure.

The detection limit of the overall procedure was 0.60 ug per sample (90 ppb or 200 ug/m(3)). This amount was determined graphically. It was the amount of analyte which, when spiked on the sampling device, would allow recovery approximately equal to the detection limit of the analytical procedure.

(g) Reliable quantitation limit.

The reliable quantitation limit was 1.03 ug per sample (155 ppb or 343 ug/m(3)). This was the smallest amount of analyte which could be quantitated within the limits of a recovery of at least 75% and a precision (+/- 1.96 SD) of +/- 25% or better.

(h) Sensitivity.(1)

Footnote (1) The reliable quantitation limit and detection limits reported in the method are based upon optimization of the instrument for the smallest possible amount of analyte. When the target concentration of an analyte is exceptionally higher than these limits, they may not be attainable at the routine operation parameters.

The sensitivity of the analytical procedure over a concentration range representing 0.6 to 2 times the target concentration, based on the recommended air volume, was 387 area units per ug/mL. This value was determined from the slope of the calibration curve. The sensitivity may vary with the particular instrument used in the analysis.

(i) Recovery.

The recovery of BD from samples used in storage tests remained above 77% when the samples were stored at ambient temperature and above 94% when the samples were stored at refrigerated temperature. These values were determined from regression lines which were calculated from the storage data. The recovery of the analyte from the collection device must be at least 75% following storage.

(j) Precision (analytical method only).

The pooled coefficient of variation obtained from replicate determinations of analytical standards over the range of 0.6 to 2 times the target concentration was 0.011.

(k) Precision (overall procedure).

The precision at the 95% confidence level for the refrigerated temperature storage test was +/- 12.7%. This value includes an additional +/- 5% for sampling error. The overall procedure must provide results at the target concentrations that are +/- 25% at the 95% confidence level.

(l) Reproducibility.

Samples collected from a controlled test atmosphere and a draft copy of this procedure were given to a chemist unassociated with this evaluation. The average recovery was 97.2% and the standard deviation was 6.2%.

(2) Sampling procedure.

(a) Apparatus. Samples are collected by use of a personal sampling pump that can be calibrated to within +/- 5% of the recommended 0.05 L/min sampling rate with the sampling tube in line.

(b) Samples are collected with laboratory prepared sampling tubes. The sampling tube is constructed of silane-treated glass and is about 5 cm long. The ID is 4 mm and the OD is 6 mm. One end of the tube is tapered so that a glass wool end plug will hold the contents of the tube in place during sampling. The opening in the tapered end of the sampling tube is at least one-half the ID of the tube (2 mm). The other end of the sampling tube is open to its full 4-mm ID to facilitate packing of the tube. Both ends of the tube are fire-polished for safety. The tube is packed with 2 sections of pretreated charcoal which has been coated with TBC. The tube is packed with a 50-mg backup section, located nearest the tapered end, and with a 100-mg sampling section of charcoal. The two sections of coated adsorbent are separated and retained with small plugs of silanized glass wool. Following packing, the sampling tubes are sealed with two 7/32 inch OD plastic end caps. Instructions for the pretreatment and coating of the charcoal are presented in Section 4.1 of this method.

(c) Reagents.

None required.

(d) Technique.

(i) Properly label the sampling tube before sampling and then remove the plastic end caps.

(ii) Attach the sampling tube to the pump using a section of flexible plastic tubing such that the larger front section of the sampling tube is exposed directly to the atmosphere. Do not place any tubing ahead of the sampling tube. The sampling tube should be attached in the worker's breathing zone in a vertical manner such that it does not impede work performance.

(iii) After sampling for the appropriate time, remove the sampling tube from the pump and then seal the tube with plastic end caps. Wrap the tube lengthwise.

(iv) Include at least one blank for each sampling set. The blank should be handled in the same manner as the samples with the exception that air is not drawn through it.

(v) List any potential interferences on the sample data sheet.

(vi) The samples require no special shipping precautions under normal conditions. The samples should be refrigerated if they are to be exposed to higher than normal ambient temperatures. If the samples are to be stored before they are shipped to the laboratory, they should be kept in a freezer. The samples should be placed in a freezer upon receipt at the laboratory.

(e) Breakthrough.

(Breakthrough was defined as the relative amount of analyte found on the backup section of the tube in relation to the total amount of analyte collected on the sampling tube. Five-percent breakthrough occurred after sampling a test atmosphere containing 2.0 ppm BD for 90 min. at 0.05 L/min. At the end of this time 4.5 L of air had been sampled and 20.1 ug of the analyte was collected. The relative humidity of the sampled air was 80% at 23 deg. C.)

Breakthrough studies have shown that the recommended sampling procedure can be used at air concentrations higher

than the target concentration. The sampling time, however, should be reduced to 45 min. if both the expected BD level and the relative humidity of the sampled air are high.

(f) Desorption efficiency.

The average desorption efficiency for BD from TBC coated charcoal over the range from 0.6 to 2 times the target concentration was 96.4%. The efficiency was essentially constant over the range studied.

(g) Recommended air volume and sampling rate.

(h) The recommended air volume is 3 L.

(i) The recommended sampling rate is 0.05 L/min. for 1 hour.

(j) Interferences.

There are no known interferences to the sampling method.

(k) Safety precautions.

(i) Attach the sampling equipment to the worker in such a manner that it will not interfere with work performance or safety.

(ii) Follow all safety practices that apply to the work area being sampled.

(3) Analytical procedure.

(a) Apparatus.

(i) A gas chromatograph (GC), equipped with a flame ionization detector (FID).(2)

Footnote (2) A Hewlett-Packard Model 5840A GC was used for this evaluation. Injections were performed using a Hewlett-Packard Model 7671A automatic sampler.

(ii) A GC column capable of resolving the analytes from any interference.(3)

Footnote (3) A 20-ft x 1/8-inch OD stainless steel GC column containing 20% FFAP on 80/100 mesh Chromabsorb W-AW-DMCS was used for this evaluation.

(iii) Vials, glass 2-mL with Teflon-lined caps.

(iv) Disposable Pasteur-type pipets, volumetric flasks, pipets and syringes for preparing samples and standards, making dilutions and performing injections.

(b) Reagents.

(i) Carbon disulfide.(4)

Footnote (4) Fisher Scientific Company A.C.S. Reagent Grade solvent was used in this evaluation.

The benzene contaminant that was present in the carbon disulfide was used as an internal standard (ISTD) in this evaluation.

(ii) Nitrogen, hydrogen and air, GC grade.

(iii) BD of known high purity.(5)

Footnote (5) Matheson Gas Products, CP Grade 1,3-butadiene was used in this study.

(c) Standard preparation.

(i) Prepare standards by diluting known volumes of BD gas with carbon disulfide. This can be accomplished by injecting the appropriate volume of BD into the headspace above the 1-mL of carbon disulfide contained in sealed 2-mL vial. Shake the vial after the needle is removed from the septum.(6)

Footnote (6) A standard containing 7.71 ug/mL (at ambient temperature and pressure) was prepared by diluting 4 uL of the gas with 1-mL of carbon disulfide.

(ii) The mass of BD gas used to prepare standards can be determined by use of the following equations:

$$MV = (760/BP)(273+t)/(273)(22.41)$$

Where:

MV = ambient molar volume

BP = ambient barometric pressure

T = ambient temperature

ug/uL = 54.09/MV

ug/standard = (ug/uL)(uL) BD used to prepare the standard

(d) Sample preparation.

(i) Transfer the 100-mg section of the sampling tube to a 2-mL vial. Place the 50-mg section in a separate vial. If the glass wool plugs contain a significant amount of charcoal, place them with the appropriate sampling tube section.

(ii) Add 1-mL of carbon disulfide to each vial.

(iii) Seal the vials with Teflon-lined caps and then allow them to desorb for one hour. Shake the vials by hand vigorously several times during the desorption period.

(iv) If it is not possible to analyze the samples within 4 hours, separate the carbon disulfide from the charcoal, using a disposable Pasteur-type pipet, following the one hour. This separation will improve the stability of desorbed samples.

(v) Save the used sampling tubes to be cleaned and repacked with fresh adsorbent.

(e) Analysis.

(i) GC Conditions.

Column temperature: 95 deg. C

Injector temperature: 180 deg. C

Detector temperature: 275 deg. C

Carrier gas flow rate: 30 mL/min.

Injection volume: 0.80 uL

GC column: 20-ft x 1/8-in OD stainless steel GC column containing 20%

FFAP on 80/100 Chromabsorb W-AW-DMCS.

(ii) Chromatogram. See Section 4.2.

(iii) Use a suitable method, such as electronic or peak heights, to measure detector response.

(iv) Prepare a calibration curve using several standard solutions of different concentrations. Prepare the calibration curve daily. Program the integrator to report the results in ug/mL.

(v) Bracket sample concentrations with standards.

(f) Interferences (analytical).

(i) Any compound with the same general retention time as the analyte and which also gives a detector response is a potential interference. Possible interferences should be reported by the industrial hygienist to the laboratory with submitted samples.

(ii) GC parameters (temperature, column, etc.) may be changed to circumvent interferences.

(iii) A useful means of structure designation is GC/MS. It is recommended that this procedure be used to confirm samples whenever possible.

(g) Calculations.

(i) Results are obtained by use of calibration curves. Calibration curves are prepared by plotting detector response against concentration for each standard. The best line through the data points is determined by curve fitting.

(ii) The concentration, in ug/mL, for a particular sample is determined by comparing its detector response to the calibration curve. If any analyte is found on the backup section, this amount is added to the amount found on the front section.

Blank corrections should be performed before adding the results together.

(iii) The BD air concentration can be expressed using the following equation:

$$\text{mg/m(3)} = (A)(B)/(C)(D)$$

Where:

A = ug/mL from Section 3.7.2

B = volume

C = L of air sampled

D = efficiency

(iv) The following equation can be used to convert results in mg/m(3) to ppm:

$$\text{ppm} = (\text{mg/m(3)})(24.46)/54.09$$

Where:

mg/m(3) = result from Section 3.7.3.

24.46 = molar volume of an ideal gas at 760 mm Hg and 25 deg. C.

(h) Safety precautions (analytical).

(i) Avoid skin contact and inhalation of all chemicals.

(ii) Restrict the use of all chemicals to a fume hood whenever possible.

(iii) Wear safety glasses and a lab coat in all laboratory areas.

(4) Additional Information.

(a) A procedure to prepare specially cleaned charcoal coated with TBC.

(i) Apparatus.

(A) Magnetic stirrer and stir bar.

(B) Tube furnace capable of maintaining a temperature of 700 deg. C and equipped with a quartz tube that can hold 30 g of charcoal.(8)

Footnote (8) A Lindberg Type 55035 Tube furnace was used in this evaluation.

(C) A means to purge nitrogen gas through the charcoal inside the quartz tube.

(D) Water bath capable of maintaining a temperature of 60 deg. C.

(E) Miscellaneous laboratory equipment: One-liter vacuum flask, 1-L Erlenmeyer flask, 350-M1 Buchner funnel with a coarse fitted disc, 4-oz brown bottle, rubber stopper, Teflon tape etc.

(ii) Reagents.

(A) Phosphoric acid, 10% by weight, in water.(9)

Footnote (9) Baker Analyzed Reagent grade was diluted with water for use in this evaluation.

(B) 4-tert-Butylcatechol (TBC).(10)

Footnote (10) The Aldrich Chemical Company 99% grade was used in this evaluation.

(C) Specially cleaned coconut shell charcoal, 20/40 mesh.(11)

Footnote (11) Specially cleaned charcoal was obtained from Supelco, Inc. for use in this evaluation. The cleaning process used by Supelco is proprietary.

(D) Nitrogen gas, GC grade.

(iii) Procedure.

Weigh 30g of charcoal into a 500-mL Erlenmeyer flask. Add about 250 mL of 10% phosphoric acid to the flask and then swirl the mixture. Stir the mixture for 1 hour using a magnetic stirrer. Filter the mixture using a fitted Buchner funnel. Wash the charcoal several times with 250-mL por-

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tions of deionized water to remove all traces of the acid. Transfer the washed charcoal to the tube furnace quartz tube. Place the quartz tube in the furnace and then connect the nitrogen gas purge to the tube. Fire the charcoal to 700 deg. C. Maintain that temperature for at least 1 hour. After the charcoal has cooled to room temperature, transfer it to a tared beaker. Determine the weight of the charcoal and then add an amount of TBC which is 10% of the charcoal, by weight.

CAUTION-TBC is toxic and should only be handled in a fume hood while wearing gloves.

Carefully mix the contents of the beaker and then transfer the mixture to a 4-oz bottle. Stopper the bottle with a clean rubber stopper which has been wrapped with Teflon tape. Clamp the bottle in a water bath so that the water level is above the charcoal level. Gently heat the bath to 60 deg. C and then maintain that temperature for 1 hour. Cool the charcoal to room temperature and then transfer the coated charcoal to a suitable container.

The coated charcoal is now ready to be packed into sampling tubes. The sampling tubes should be stored in a sealed container to prevent contamination. Sampling tubes should be stored in the dark at room temperature. The sampling tubes should be segregated by coated adsorbent lot number.

(b) Chromatograms.

The chromatograms were obtained using the recommended analytical method. The chart speed was set at 1 cm/min. for the first three min. and then at 0.2 cm/min. for the time remaining in the analysis.

The peak which elutes just before BD is a reaction product between an impurity on the charcoal and TBC. This peak is always present, but it is easily resolved from the analyte. The peak which elutes immediately before benzene is an oxidation product of TBC.

(5) References.

(a) "Current Intelligence Bulletin 41, 1,3-Butadiene", U.S. Dept. of Health and Human Services, Public Health Service, Center for Disease Control, NIOSH.

(b) "NIOSH Manual of Analytical Methods", 2nd ed.; U.S. Dept. of Health Education and Welfare, National Institute for Occupational Safety and Health: Cincinnati, OH. 1977, Vol. 2, Method No. S91 DHEW (NIOSH) Publ. (U.S.), No. 77-157-B.

(c) Hawley, G.C., Ed. "The Condensed Chemical Dictionary", 8th ed.; Van Nostrand Reinhold Company: New York, 1971; 139.5.4. Chem. Eng. News (June 10, 1985), (63), 22-66.

Appendix E: Reserved.

APPENDIX F, MEDICAL QUESTIONNAIRES, (Non-mandatory)

1,3-Butadiene (BD) Initial Health Questionnaire

DIRECTIONS:

You have been asked to answer the questions on this form because you work with BD (butadiene). These questions are about your work, medical history, and health concerns. Please do your best to answer all of the questions. If you need help, please tell the doctor or health care professional who reviews this form.

This form is a confidential medical record. Only information directly related to your health and safety on the job may be given to your employer. Personal health information will not be given to anyone without your consent.

Date: _____
 Name: _____ SSN ____/____/____
 Last First MI

Job Title: _____
 Company's Name: _____
 Supervisor's Name: _____
 Supervisor's Phone No.: () ____-____

Work History

1. Please list all jobs you have had in the past, starting with the job you have now and moving back in time to your first job. (For more space, write on the back of this page.)

Main Job Duty
 Year
 Company Name
 City, State

Chemicals

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____

2. Please describe what you do during a typical work day. Be sure to tell about your work with BD.

3. Please check any of these chemicals that you work with now or have worked with in the past:

benzene	_____
glues	_____
toluene	_____
inks, dyes	_____
other solvents, grease cutters	_____
insecticides (like DDT, lindane, etc.)	_____
paints, varnishes, thinners, strippers	_____
dusts	_____
carbon tetrachloride ("carbon tet")	_____
arsine	_____
carbon disulfide	_____
lead	_____
cement	_____
petroleum products	_____
nitrites	_____

4. Please check the protective clothing or equipment you use at the job you have now:

gloves	_____
coveralls	_____
respirator	_____

dust mask	_____
safety glasses, goggles	_____

Please circle your answer.

5. Does your protective clothing or equipment fit you properly? yes no

6. Have you ever made changes in your protective clothing or equipment to make it fit better? yes no

7. Have you been exposed to BD when you were not wearing protective clothing or equipment? yes no

8. Where do you eat, drink and/or smoke when you are at work? (Please check all that apply.)

Cafeteria/restaurant/snack bar	_____
Break room/employee lounge	_____
Smoking lounge	_____
At my work station	_____

Please circle your answer.

9. Have you been exposed to radiation (like x-rays or nuclear material) at the job you have now or at past jobs? yes no

10. Do you have any hobbies that expose you to dusts or chemicals (including paints, glues, etc.)? yes no

11. Do you have any second or side jobs? yes no
 If yes, what are your duties there?

12. Were you in the military? yes no

If yes, what did you do in the military? _____

Family Health History

1. In the FAMILY MEMBER column, across from the disease name, write which family member, if any, had the disease.

DISEASE	FAMILY MEMBER
Cancer	
Lymphoma	
Sickle Cell Disease or Trait	
Immune Disease	
Leukemia	
Anemia	

2. Please fill in the following information about family health

Relative	
Alive?	
Age at Death?	
Cause of Death?	
Father	
Mother	
Brother/Sister	
Brother/Sister	
Brother/Sister	

Personal Health History

Birth Date ___/___/___ Age ___ Sex ___ Height ___ Weight ___

Please circle your answer.

1. Do you smoke any tobacco products? yes no
2. Have you ever had any kind of surgery or operation?
yes no

If yes, what type of surgery:

3. Have you ever been in the hospital for any other reasons? yes no

If yes, please describe the reason

4. Do you have any on-going or current medical problems or conditions? yes no

If yes, please describe:

5. Do you now have or have you ever had any of the following? Please check all that apply to you.

unexplained fever	___
anemia ("low blood")	___
HIV/AIDS	___
weakness	___
sickle cell	___
miscarriage	___
skin rash	___
bloody stools	___
leukemia/lymphoma	___
neck mass/swelling	___
wheezing	___
yellowing of skin	___
bruising easily	___
lupus	___
weight loss	___
kidney problems	___
enlarged lymph nodes	___
liver disease	___
cancer	___
infertility	___
drinking problems	___
thyroid problems	___
night sweats	___
chest pain	___
still birth	___
eye redness	___
lumps you can feel	___
child with birth defect	___
autoimmune disease	___
overly tired	___
lung problems	___
rheumatoid arthritis	___

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mononucleosis ("mono") _____

nagging cough _____

Please circle your answer.

6. Do you have any symptoms or health problems that you think may be related to your work with BD? yes no

If yes, please describe:

7. Have any of your co-workers had similar symptoms or problems? yes no don't know

If yes, please describe:

8. Do you notice any irritation of your eyes, nose, throat, lungs, or skin when working with BD? yes no

9. Do you notice any blurred vision, coughing, drowsiness, nausea, or headache when working with BD? yes no

10. Do you take any medications (including birth control or over-the-counter)? yes no

If yes, please list:

11. Are you allergic to any medication, food, or chemicals? yes no

If yes, please list:

12. Do you have any health conditions not covered by this questionnaire that you think are affected by your work with BD? yes no

If yes, please explain:

13. Did you understand all the questions? yes no

Signature

1,3-Butadiene (BD) Health Update Questionnaire

DIRECTIONS:

You have been asked to answer the questions on this form because you work with BD (butadiene). These questions are about your work, medical history, and health concerns. Please do your best to answer all of the questions. If you need help, please tell the doctor or health care professional who reviews this form.

This form is a confidential medical record. Only information directly related to your health and safety on the job may be given to your employer. Personal health information will not be given to anyone without your consent.

Date: _____

Name: _____ SSN ___/___/___

Last First MI

Job Title: _____

Company's Name: _____

Supervisor's Name: _____

Supervisor's Phone No.: () ____ - ____

1. Please describe any NEW duties that you have at your job. _____

2. Please describe any additional job duties you have:

Please circle your answer.

3. Are you exposed to any other chemicals in your work since the last time you were evaluated for exposure to BD? yes no

If yes, please list what they are: _____

4. Does your personal protective equipment and clothing fit you properly? yes no

5. Have you made changes in this equipment or clothing to make it fit better? yes no

6. Have you been exposed to BD when you were not wearing protective clothing or equipment? yes no

7. Are you exposed to any NEW chemicals at home or while working on hobbies? yes no

If yes, please list what they are: _____

8. Since your last BD health evaluation, have you started working any new second or side jobs? yes no

If yes, what are your duties there? _____

Personal Health History

1. What is your current weight? pounds

2. Have you been diagnosed with any new medical conditions or illness since your last evaluation?
 yes no

If yes, please tell what they are: _____

3. Since your last evaluation, have you been in the hospital for any illnesses, injuries, or surgery? yes no

If yes, please describe: _____

4. Do you have any of the following? Please place a check for all that apply to you.

unexplained fever _____
 anemia ("low blood") _____
 HIV/AIDS _____
 weakness _____
 sickle cell _____

miscarriage _____
 skin rash _____
 bloody stools _____
 leukemia/lymphoma _____
 neck mass/swelling _____
 wheezing _____
 yellowing of skin _____
 bruising easily _____
 lupus _____
 weight loss _____
 kidney problems _____
 enlarged lymph nodes _____
 liver disease _____
 cancer _____
 infertility _____
 drinking problems _____
 thyroid problems _____
 night sweats _____
 chest pain _____
 still birth _____
 eye redness _____
 lumps you can feel _____
 child with birth defect _____
 autoimmune disease _____
 overly tired _____
 lung problems _____
 rheumatoid arthritis _____
 mononucleosis ("mono") _____
 nagging cough _____

Please circle your answer.

5. Do you have any symptoms or health problems that you think may be related to your work with BD? yes no

If yes, please describe: _____

6. Have any of your co-workers had similar symptoms or problems? yes no don't know

If yes, please describe: _____

7. Do you notice any irritation of your eyes, nose, throat, lungs, or skin when working with BD? yes no

8. Do you notice any blurred vision, coughing, drowsiness, nausea, or headache when working with BD? yes no

9. Have you been taking any NEW medications (including birth control or over-the-counter)? yes no

If yes, please list:

10. Have you developed any new allergies to medications, foods, or chemicals? yes no

If yes, please list:

11. Do you have any health conditions not covered by this questionnaire that you think are affected by your work with BD? yes no

If yes, please explain: _____

12. Do you understand all the questions? yes no

Signature

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060, 05-03-093, § 296-62-07460, filed 1/18/05, effective 3/1/05; 04-10-026, § 296-62-07460, filed 4/27/04, effective 8/1/04; 03-18-090, § 296-62-07460, filed 9/2/03, effective 11/1/03. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 01-11-038, § 296-62-07460, filed 5/9/01, effective 9/1/01; 99-10-071, § 296-62-07460, filed 5/4/99, effective 9/1/99. Statutory Authority: RCW 49.17.040, [49.17].050 and [49.17].060. 97-19-014, § 296-62-07460, filed 9/5/97, effective 11/5/97.]

WAC 296-62-07470 Methylene chloride. This occupational health standard establishes requirements for employers to control occupational exposure to methylene chloride (MC). Employees exposed to MC are at increased risk of developing cancer, adverse effects on the heart, central nervous system and liver, and skin or eye irritation. Exposure may occur through inhalation, by absorption through the skin, or through contact with the skin. MC is a solvent which is used in many different types of work activities, such as paint stripping, polyurethane foam manufacturing, and cleaning and degreasing. Under the requirements of subsection (4) of this section, each covered employer must make an initial determination of each employee's exposure to MC. If the employer determines that employees are exposed below the action level, the only other provisions of this section that apply are that a record must be made of the determination, the employees must receive information and training under subsection (12) of this section and, where appropriate, employees must be protected from contact with liquid MC under subsection (8) of this section.

The provisions of the MC standard are as follows:

(1) Scope and application. This section applies to all occupational exposures to methylene chloride (MC), Chemical Abstracts Service Registry Number 75-09-2, in general industry, construction and shipyard employment.

(2) Definitions. For the purposes of this section, the following definitions shall apply:

"Action level" means a concentration of airborne MC of 12.5 parts per million (ppm) calculated as an eight (8)-hour time-weighted average (TWA).

"Authorized person" means any person specifically authorized by the employer and required by work duties to be present in regulated areas, or any person entering such an area as a designated representative of employees for the purpose of exercising the right to observe monitoring and measuring procedures under subsection (4) of this section, or any other person authorized by the WISH Act or regulations issued under the act.

"Director" means the director of the department of labor and industries, or designee.

"Emergency" means any occurrence, such as, but not limited to, equipment failure, rupture of containers, or failure of control equipment, which results, or is likely to result in an

uncontrolled release of MC. If an incidental release of MC can be controlled by employees such as maintenance personnel at the time of release and in accordance with the leak/spill provisions required by subsection (6) of this section, it is not considered an emergency as defined by this standard.

"Employee exposure" means exposure to airborne MC which occurs or would occur if the employee were not using respiratory protection.

"Methylene chloride (MC)" means an organic compound with chemical formula, CH₂Cl₂. Its Chemical Abstracts Service Registry Number is 75-09-2. Its molecular weight is 84.9 g/mole.

"Physician or other licensed health care professional" is an individual whose legally permitted scope of practice (i.e., license, registration, or certification) allows him or her to independently provide or be delegated the responsibility to provide some or all of the health care services required by subsection (10) of this section.

"Regulated area" means an area, demarcated by the employer, where an employee's exposure to airborne concentrations of MC exceeds or can reasonably be expected to exceed either the 8-hour TWA PEL or the STEL.

"Symptom" means central nervous system effects such as headaches, disorientation, dizziness, fatigue, and decreased attention span; skin effects such as chapping, erythema, cracked skin, or skin burns; and cardiac effects such as chest pain or shortness of breath.

"This section" means this methylene chloride standard.

(3) Permissible exposure limits (PELs).

(a) Eight-hour time-weighted average (TWA) PEL. The employer shall ensure that no employee is exposed to an airborne concentration of MC in excess of twenty-five parts of MC per million parts of air (25 ppm) as an 8-hour TWA.

(b) Short-term exposure limit (STEL). The employer shall ensure that no employee is exposed to an airborne concentration of MC in excess of one hundred and twenty-five parts of MC per million parts of air (125 ppm) as determined over a sampling period of fifteen minutes.

(4) Exposure monitoring.

(a) Characterization of employee exposure.

(i) Where MC is present in the workplace, the employer shall determine each employee's exposure by either:

(A) Taking a personal breathing zone air sample of each employee's exposure; or

(B) Taking personal breathing zone air samples that are representative of each employee's exposure.

(ii) Representative samples. The employer may consider personal breathing zone air samples to be representative of employee exposures when they are taken as follows:

(A) 8-hour TWA PEL. The employer has taken one or more personal breathing zone air samples for at least one employee in each job classification in a work area during every work shift, and the employee sampled is expected to have the highest MC exposure.

(B) Short-term exposure limits. The employer has taken one or more personal breathing zone air samples which indicate the highest likely 15-minute exposures during such operations for at least one employee in each job classification in the work area during every work shift, and the employee sampled is expected to have the highest MC exposure.

(C) Exception. Personal breathing zone air samples taken during one work shift may be used to represent employee exposures on other work shifts where the employer can document that the tasks performed and conditions in the workplace are similar across shifts.

(iii) Accuracy of monitoring. The employer shall ensure that the methods used to perform exposure monitoring produce results that are accurate to a confidence level of 95 percent, and are:

(A) Within plus or minus 25 percent for airborne concentrations of MC above the 8-hour TWA PEL or the STEL; or

(B) Within plus or minus 35 percent for airborne concentrations of MC at or above the action level but at or below the 8-hour TWA PEL.

(b) Initial determination. Each employer whose employees are exposed to MC shall perform initial exposure monitoring to determine each affected employee's exposure, except under the following conditions:

(i) Where objective data demonstrate that MC cannot be released in the workplace in airborne concentrations at or above the action level or above the STEL. The objective data shall represent the highest MC exposures likely to occur under reasonably foreseeable conditions of processing, use, or handling. The employer shall document the objective data exemption as specified in subsection (13) of this section;

(ii) Where the employer has performed exposure monitoring within 12 months prior to December 1, and that exposure monitoring meets all other requirements of this section, and was conducted under conditions substantially equivalent to existing conditions; or

(iii) Where employees are exposed to MC on fewer than 30 days per year (e.g., on a construction site), and the employer has measurements by direct reading instruments which give immediate results (such as a detector tube) and which provide sufficient information regarding employee exposures to determine what control measures are necessary to reduce exposures to acceptable levels.

(c) Periodic monitoring. Where the initial determination shows employee exposures at or above the action level or above the STEL, the employer shall establish an exposure monitoring program for periodic monitoring of employee exposure to MC in accordance with Table 1:

Table 1
Six Initial Determination Exposure Scenarios and Their Associated Monitoring Frequencies

Exposure scenario	Required monitoring activity
Below the action level and at or below the STEL.	No 8-hour TWA or STEL monitoring required.
Below the action level and above the STEL.	No 8-hour TWA monitoring required; monitor STEL exposures every three months.
At or above the action level, at or below the TWA, and at or below the STEL.	Monitor 8-hour TWA exposures every six months.
At or above the action level, at or below the TWA, and above the STEL.	Monitor 8-hour TWA exposures every six months and monitor STEL exposures every three months.

Exposure scenario	Required monitoring activity
Above the TWA and at or below the STEL.	Monitor 8-hour TWA exposures every three months. In addition, without regard to the last sentence of the note to subsection (3) of this section, the following employers must monitor STEL exposures every three months until either the date by which they must achieve the 8-hour TWAs PEL under subsection (3) of this section or the date by which they in fact achieve the 8-hour TWA PEL, whichever comes first: <ul style="list-style-type: none"> • Employers engaged in polyurethane foam manufacturing; • Foam fabrication; • Furniture refinishing; • General aviation aircraft stripping; • Product formulation; • Use of MC-based adhesives for boat building and repair; • Recreational vehicle manufacture, van conversion, or upholstery; and use of MC in construction work for restoration and preservation of buildings, painting and paint removal, cabinet making, or floor refinishing and resurfacing.
Above the TWA and above the STEL.	Monitor both 8-hour TWA exposures and STEL exposures every three months.

(Note to subsection (3)(c) of this section: The employer may decrease the frequency of exposure monitoring to every six months when at least 2 consecutive measurements taken at least 7 days apart show exposures to be at or below the 8-hour TWA PEL. The employer may discontinue the periodic 8-hour TWA monitoring for employees where at least two consecutive measurements taken at least 7 days apart are below the action level. The employer may discontinue the periodic STEL monitoring for employees where at least two consecutive measurements taken at least 7 days apart are at or below the STEL.)

(d) Additional monitoring.

(i) The employer shall perform exposure monitoring when a change in workplace conditions indicates that employee exposure may have increased. Examples of situations that may require additional monitoring include changes in production, process, control equipment, or work practices, or a leak, rupture, or other breakdown.

(ii) Where exposure monitoring is performed due to a spill, leak, rupture or equipment breakdown, the employer shall clean up the MC and perform the appropriate repairs before monitoring.

(e) Employee notification of monitoring results.

(i) The employer shall, within 15 working days after the receipt of the results of any monitoring performed under this section, notify each affected employee of these results in writing, either individually or by posting of results in an appropriate location that is accessible to affected employees.

(ii) Whenever monitoring results indicate that employee exposure is above the 8-hour TWA PEL or the STEL, the employer shall describe in the written notification the corrective action being taken to reduce employee exposure to or below the 8-hour TWA PEL or STEL and the schedule for completion of this action.

(f) Observation of monitoring.

(i) Employee observation. The employer shall provide affected employees or their designated representatives an opportunity to observe any monitoring of employee exposure to MC conducted in accordance with this section.

(ii) Observation procedures. When observation of the monitoring of employee exposure to MC requires entry into an area where the use of protective clothing or equipment is required, the employer shall provide, at no cost to the observer(s), and the observer(s) shall be required to use such clothing and equipment and shall comply with all other applicable safety and health procedures.

(5) Regulated areas.

(a) The employer shall establish a regulated area whenever an employee's exposure to airborne concentrations of MC exceeds or can reasonably be expected to exceed either the 8-hour TWA PEL or the STEL.

(b) The employer shall limit access to regulated areas to authorized persons.

(c) The employer shall supply a respirator, selected in accordance with subsection (7)(c) of this section, to each person who enters a regulated area and shall require each affected employee to use that respirator whenever MC exposures are likely to exceed the 8-hour TWA PEL or STEL.

(Note to subsection (5)(c) of this section: An employer who has implemented all feasible engineering, work practice and administrative controls (as required in subsection (6) of this section), and who has established a regulated area (as required by subsection (5)(a) of this section) where MC exposure can be reliably predicted to exceed the 8-hour TWA PEL or the STEL only on certain days (for example, because of work or process schedule) would need to have affected employees use respirators in that regulated area only on those days.)

(d) The employer shall ensure that, within a regulated area, employees do not engage in nonwork activities which may increase dermal or oral MC exposure.

(e) The employer shall ensure that while employees are wearing respirators, they do not engage in activities (such as taking medication or chewing gum or tobacco) which interfere with respirator seal or performance.

(f) The employer shall demarcate regulated areas from the rest of the workplace in any manner that adequately establishes and alerts employees to the boundaries of the area and minimizes the number of authorized employees exposed to MC within the regulated area.

(g) An employer at a multiemployer worksite who establishes a regulated area shall communicate the access restrictions and locations of these areas to all other employers with work operations at that worksite.

(6) Methods of compliance.

(a) Engineering and work practice controls. The employer shall institute and maintain the effectiveness of engineering controls and work practices to reduce employee exposure to or below the PELs except to the extent that the employer can demonstrate that such controls are not feasible.

(b) Wherever the feasible engineering controls and work practices which can be instituted are not sufficient to reduce employee exposure to or below the 8-TWA PEL or STEL, the employer shall use them to reduce employee exposure to the lowest levels achievable by these controls and shall supplement them by the use of respiratory protection that complies with the requirements of subsection (7) of this section.

(c) Prohibition of rotation. The employer shall not implement a schedule of employee rotation as a means of compliance with the PELs.

(d) Leak and spill detection.

(i) The employer shall implement procedures to detect leaks of MC in the workplace. In work areas where spills may occur, the employer shall make provisions to contain any spills and to safely dispose of any MC-contaminated waste materials.

(ii) The employer shall ensure that all incidental leaks are repaired and that incidental spills are cleaned promptly by employees who use the appropriate personal protective equipment and are trained in proper methods of cleanup.

(Note to subsection (6)(d)(ii) of this section: See Appendix A of this section for examples of procedures that satisfy this requirement. Employers covered by this standard may also be subject to the hazardous waste and emergency response provisions contained in WAC 296-62-3112.)

(7) Respiratory protection.

(a) General requirements. For employees who use respirators required by this section, the employer must provide respirators that comply with the requirements of this subsection. Respirators must be used during:

(i) Periods when an employee's exposure to MC exceeds or can reasonably be expected to exceed the 8-hour TWA PEL or the STEL (for example, when an employee is using MC in a regulated area);

(ii) Periods necessary to install or implement feasible engineering and work-practice controls;

(iii) In a few work operations, such as some maintenance operations and repair activities, for which the employer demonstrates that engineering and work practice controls are infeasible;

(iv) Work operations for which feasible engineering and work practice controls are not sufficient to reduce exposures to or below the PELs;

(v) Emergencies.

(b) Respirator program.

(i) The employer must implement a respiratory protection program as required by chapter 296-62 WAC, Part E (except WAC 296-62-07130(1) and 296-62-07131 (4)(b)(i) and (ii)).

(ii) Employers who provide employees with gas masks with organic-vapor canisters for the purpose of emergency escape must replace the canisters after any emergency use and before the gas masks are returned to service.

(c) Respirator selection. The employer must select appropriate atmosphere-supplying respirators from Table 2 of this section.

Table 2.—Minimum Requirements for Respiratory Protection for Airborne Methylene Chloride

Methylene chloride airborne concentration (ppm) or condition of use	Minimum respirator required ¹
Up to 625 ppm (25 X PEL)	(1) Continuous flow supplied-air respirator, hood or helmet.
Up to 1250 ppm (50 X 8 hr TWA PEL)	(1) Full facepiece supplied-air respirator operated in negative pressure (demand) mode. (2) Full facepiece self-contained breathing apparatus (SCBA) operated in negative pressure (demand) mode.
Up to 5000 ppm (200 X 8-TWA PEL)	(1) Continuous flow supplied-air respirator, full facepiece. (2) Pressure demand supplied-air respirator, full facepiece. (3) Positive pressure full facepiece SCBA.
Unknown concentration, or above 5000 ppm (Greater than 200 X 8-TWA PEL)	(1) Positive pressure full facepiece SCBA. (2) Full facepiece pressure demand supplied-air respirator with an auxiliary self-contained air supply.
Fire fighting	Positive pressure full facepiece SCBA.
Emergency escape	(1) Any continuous flow or pressure demand SCBA. (2) Gas mask with organic vapor canister.

¹ Respirators assigned for higher airborne concentrations may be used at lower concentrations.

(d) Medical evaluation. Before having an employee use a supplied-air respirator in the negative-pressure mode, or a gas mask with an organic-vapor canister for emergency escape, the employer must:

(i) Have a physician or other licensed health care professional (PLHCP) evaluate the employee's ability to use such respiratory protection;

(ii) Ensure that the PLHCP provides their findings in a written opinion to the employee and the employer.

Note: See WAC 296-62-07150 through 296-62-07156 for medical evaluation requirements for employees using respirators.

(8) Protective work clothing and equipment.

(a) Where needed to prevent MC-induced skin or eye irritation, the employer shall provide clean protective clothing and equipment which is resistant to MC, at no cost to the employee, and shall ensure that each affected employee uses it. Eye and face protection shall meet the requirements of WAC 296-800-160, as applicable.

(b) The employer shall clean, launder, repair and replace all protective clothing and equipment required by this subsection as needed to maintain their effectiveness.

(c) The employer shall be responsible for the safe disposal of such clothing and equipment.

(Note to subsection (8)(c) of this section: See Appendix A for examples of disposal procedures that will satisfy this requirement.)

(9) Hygiene facilities.

(a) If it is reasonably foreseeable that employees' skin may contact solutions containing 0.1 percent or greater MC (for example, through splashes, spills or improper work practices), the employer shall provide conveniently located washing facilities capable of removing the MC, and shall ensure that affected employees use these facilities as needed.

(b) If it is reasonably foreseeable that an employee's eyes may contact solutions containing 0.1 percent or greater MC (for example through splashes, spills or improper work practices), the employer shall provide appropriate eyewash facilities within the immediate work area for emergency use, and shall ensure that affected employees use those facilities when necessary.

(10) Medical surveillance.

(a) Affected employees. The employer shall make medical surveillance available for employees who are or may be exposed to MC as follows:

(i) At or above the action level on 30 or more days per year, or above the 8-hour TWA PEL or the STEL on 10 or more days per year;

(ii) Above the 8-TWA PEL or STEL for any time period where an employee has been identified by a physician or other licensed health care professional as being at risk from cardiac disease or from some other serious MC-related health condition and such employee requests inclusion in the medical surveillance program;

(iii) During an emergency.

(b) Costs. The employer shall provide all required medical surveillance at no cost to affected employees, without loss of pay and at a reasonable time and place.

(c) Medical personnel. The employer shall ensure that all medical surveillance procedures are performed by a physician or other licensed health care professional, as defined in subsection (2) of this section.

(d) Frequency of medical surveillance. The employer shall make medical surveillance available to each affected employee as follows:

(i) Initial surveillance. The employer shall provide initial medical surveillance under the schedule provided by subsection (14)(b)(iii) of this section, or before the time of initial assignment of the employee, whichever is later. The employer need not provide the initial surveillance if medical records show that an affected employee has been provided with medical surveillance that complies with this section within 12 months before December 1.

(ii) Periodic medical surveillance. The employer shall update the medical and work history for each affected employee annually. The employer shall provide periodic physical examinations, including appropriate laboratory surveillance, as follows:

(A) For employees 45 years of age or older, within 12 months of the initial surveillance or any subsequent medical surveillance; and

(B) For employees younger than 45 years of age, within 36 months of the initial surveillance or any subsequent medical surveillance.

(iii) Termination of employment or reassignment. When an employee leaves the employer's workplace, or is reassigned to an area where exposure to MC is consistently at or below the action level and STEL, medical surveillance shall be made available if six months or more have elapsed since the last medical surveillance.

(iv) Additional surveillance. The employer shall provide additional medical surveillance at frequencies other than those listed above when recommended in the written medical opinion. (For example, the physician or other licensed health care professional may determine an examination is warranted in less than 36 months for employees younger than 45 years of age based upon evaluation of the results of the annual medical and work history.)

(e) Content of medical surveillance.

(i) Medical and work history. The comprehensive medical and work history shall emphasize neurological symptoms, skin conditions, history of hematologic or liver disease, signs or symptoms suggestive of heart disease (angina, coronary artery disease), risk factors for cardiac disease, MC exposures, and work practices and personal protective equipment used during such exposures.

(Note to subsection (10)(e)(i) of this section: See Appendix B of this section for an example of a medical and work history format that would satisfy this requirement.)

(ii) Physical examination. Where physical examinations are provided as required above, the physician or other licensed health care professional shall accord particular attention to the lungs, cardiovascular system (including blood pressure and pulse), liver, nervous system, and skin. The physician or other licensed health care professional shall determine the extent and nature of the physical examination based on the health status of the employee and analysis of the medical and work history.

(iii) Laboratory surveillance. The physician or other licensed health care professional shall determine the extent of any required laboratory surveillance based on the employee's observed health status and the medical and work history.

(Note to subsection (10)(e)(iii) of this section: See Appendix B of this section for information regarding medical tests. Laboratory surveillance may include before-and after-shift carboxyhemoglobin determinations, resting ECG, hematocrit, liver function tests and cholesterol levels.)

(iv) Other information or reports. The medical surveillance shall also include any other information or reports the physician or other licensed health care professional determines are necessary to assess the employee's health in relation to MC exposure.

(f) Content of emergency medical surveillance. The employer shall ensure that medical surveillance made available when an employee has been exposed to MC in emergency situations includes, at a minimum:

(i) Appropriate emergency treatment and decontamination of the exposed employee;

(ii) Comprehensive physical examination with special emphasis on the nervous system, cardiovascular system, lungs, liver and skin, including blood pressure and pulse;

(iii) Updated medical and work history, as appropriate for the medical condition of the employee; and

(iv) Laboratory surveillance, as indicated by the employee's health status.

(Note to subsection (10)(f)(iv) of this section: See Appendix B for examples of tests which may be appropriate.)

(g) Additional examinations and referrals. Where the physician or other licensed health care professional determines it is necessary, the scope of the medical examination shall be expanded and the appropriate additional medical surveillance, such as referrals for consultation or examination, shall be provided.

(h) Information provided to the physician or other licensed health care professional. The employer shall provide the following information to a physician or other licensed health care professional who is involved in the diagnosis of MC-induced health effects:

(i) A copy of this section including its applicable appendices;

(ii) A description of the affected employee's past, current and anticipated future duties as they relate to the employee's MC exposure;

(iii) The employee's former or current exposure levels or, for employees not yet occupationally exposed to MC, the employee's anticipated exposure levels and the frequency and exposure levels anticipated to be associated with emergencies;

(iv) A description of any personal protective equipment, such as respirators, used or to be used; and

(v) Information from previous employment-related medical surveillance of the affected employee which is not otherwise available to the physician or other licensed health care professional.

(i) Written medical opinions.

(i) For each physical examination required by this section, the employer shall ensure that the physician or other licensed health care professional provides to the employer and to the affected employee a written opinion regarding the results of that examination within 15 days of completion of the evaluation of medical and laboratory findings, but not more than 30 days after the examination. The written medical opinion shall be limited to the following information:

(A) The physician's or other licensed health care professional's opinion concerning whether exposure to MC may contribute to or aggravate the employee's existing cardiac, hepatic, neurological (including stroke) or dermal disease or whether the employee has any other medical condition(s) that would place the employee's health at increased risk of material impairment from exposure to MC;

(B) Any recommended limitations upon the employee's exposure to MC, removal from MC exposure, or upon the employee's use of protective clothing or equipment and respirators;

(C) A statement that the employee has been informed by the physician or other licensed health care professional that MC is a potential occupational carcinogen, of risk factors for heart disease, and the potential for exacerbation of underlying

heart disease by exposure to MC through its metabolism to carbon monoxide; and

(D) A statement that the employee has been informed by the physician or other licensed health care professional of the results of the medical examination and any medical conditions resulting from MC exposure which require further explanation or treatment.

(ii) The employer shall instruct the physician or other licensed health care professional not to reveal to the employer, orally or in the written opinion, any specific records, findings, and diagnoses that have no bearing on occupational exposure to MC.

(Note to subsection (10)(h)(ii) of this section: The written medical opinion may also include information and opinions generated to comply with other OSHA health standards.)

(j) Medical presumption. For purposes of this subsection (10), the physician or other licensed health care professional shall presume, unless medical evidence indicates to the contrary, that a medical condition is unlikely to require medical removal from MC exposure if the employee is not exposed to MC above the 8-hour TWA PEL. If the physician or other licensed health care professional recommends removal for an employee exposed below the 8-hour TWA PEL, the physician or other licensed health care professional shall cite specific medical evidence, sufficient to rebut the presumption that exposure below the 8-hour TWA PEL is unlikely to require removal, to support the recommendation. If such evidence is cited by the physician or other licensed health care professional, the employer must remove the employee. If such evidence is not cited by the physician or other licensed health care professional, the employer is not required to remove the employee.

(k) Medical removal protection (MRP).

(i) Temporary medical removal and return of an employee.

(A) Except as provided in (j) of this subsection, when a medical determination recommends removal because the employee's exposure to MC may contribute to or aggravate the employee's existing cardiac, hepatic, neurological (including stroke), or skin disease, the employer must provide medical removal protection benefits to the employee and either:

(I) Transfer the employee to comparable work where methylene chloride exposure is below the action level; or

(II) Remove the employee from MC exposure.

(B) If comparable work is not available and the employer is able to demonstrate that removal and the costs of extending MRP benefits to an additional employee, considering feasibility in relation to the size of the employer's business and the other requirements of this standard, make further reliance on MRP an inappropriate remedy, the employer may retain the additional employee in the existing job until transfer or removal becomes appropriate, provided:

(I) The employer ensures that the employee receives additional medical surveillance, including a physical examination at least every 60 days until transfer or removal occurs; and

(II) The employer or PLHCP informs the employee of the risk to the employee's health from continued MC exposure.

(C) The employer shall maintain in effect any job-related protective measures or limitations, other than removal, for as long as a medical determination recommends them to be necessary.

(ii) End of MRP benefits and return of the employee to former job status.

(A) The employer may cease providing MRP benefits at the earliest of the following:

(I) Six months;

(II) Return of the employee to the employee's former job status following receipt of a medical determination concluding that the employee's exposure to MC no longer will aggravate any cardiac, hepatic, neurological (including stroke), or dermal disease;

(III) Receipt of a medical determination concluding that the employee can never return to MC exposure.

(B) For the purposes of this subsection (10), the requirement that an employer return an employee to the employee's former job status is not intended to expand upon or restrict any rights an employee has or would have had, absent temporary medical removal, to a specific job classification or position under the terms of a collective bargaining agreement.

(I) Medical removal protection benefits.

(i) For purposes of this subsection (10), the term medical removal protection benefits means that, for each removal, an employer must maintain for up to six months the earnings, seniority, and other employment rights and benefits of the employee as though the employee had not been removed from MC exposure or transferred to a comparable job.

(ii) During the period of time that an employee is removed from exposure to MC, the employer may condition the provision of medical removal protection benefits upon the employee's participation in follow-up medical surveillance made available pursuant to this section.

(iii) If a removed employee files a workers' compensation claim for a MC-related disability, the employer shall continue the MRP benefits required by this section until either the claim is resolved or the 6-month period for payment of MRP benefits has passed, whichever occurs first. To the extent the employee is entitled to indemnity payments for earnings lost during the period of removal, the employer's obligation to provide medical removal protection benefits to the employee shall be reduced by the amount of such indemnity payments.

(iv) The employer's obligation to provide medical removal protection benefits to a removed employee shall be reduced to the extent that the employee receives compensation for earnings lost during the period of removal from either a publicly or an employer-funded compensation program, or receives income from employment with another employer made possible by virtue of the employee's removal.

(m) Voluntary removal or restriction of an employee. Where an employer, although not required by this section to do so, removes an employee from exposure to MC or otherwise places any limitation on an employee due to the effects of MC exposure on the employee's medical condition, the employer shall provide medical removal protection benefits to the employee equal to those required by (I) of this subsection.

(n) Multiple health care professional review mechanism.

(i) If the employer selects the initial physician or licensed health care professional (PLHCP) to conduct any medical examination or consultation provided to an employee under (k) of this subsection, the employer shall notify the employee of the right to seek a second medical opinion each time the employer provides the employee with a copy of the written opinion of that PLHCP.

(ii) If the employee does not agree with the opinion of the employer-selected PLHCP, notifies the employer of that fact, and takes steps to make an appointment with a second PLHCP within 15 days of receiving a copy of the written opinion of the initial PLHCP, the employer shall pay for the PLHCP chosen by the employee to perform at least the following:

(A) Review any findings, determinations or recommendations of the initial PLHCP; and

(B) Conduct such examinations, consultations, and laboratory tests as the PLHCP deems necessary to facilitate this review.

(iii) If the findings, determinations or recommendations of the second PLHCP differ from those of the initial PLHCP, then the employer and the employee shall instruct the two health care professionals to resolve the disagreement.

(iv) If the two health care professionals are unable to resolve their disagreement within 15 days, then those two health care professionals shall jointly designate a PLHCP who is a specialist in the field at issue. The employer shall pay for the specialist to perform at least the following:

(A) Review the findings, determinations, and recommendations of the first two PLHCPs; and

(B) Conduct such examinations, consultations, laboratory tests and discussions with the prior PLHCPs as the specialist deems necessary to resolve the disagreements of the prior health care professionals.

(v) The written opinion of the specialist shall be the definitive medical determination. The employer shall act consistent with the definitive medical determination, unless the employer and employee agree that the written opinion of one of the other two PLHCPs shall be the definitive medical determination.

(vi) The employer and the employee or authorized employee representative may agree upon the use of any expeditious alternate health care professional determination mechanism in lieu of the multiple health care professional review mechanism provided by this section so long as the alternate mechanism otherwise satisfies the requirements contained in this section.

(11) Hazard communication. The employer shall communicate the following hazards associated with MC on labels and in material safety data sheets in accordance with the requirements of the chemical hazard communication standard, WAC 296-800-170: Cancer, cardiac effects (including elevation of carboxyhemoglobin), central nervous system effects, liver effects, and skin and eye irritation.

(12) Employee information and training.

(a) The employer shall provide information and training for each affected employee prior to or at the time of initial assignment to a job involving potential exposure to MC.

(b) The employer shall ensure that information and training is presented in a manner that is understandable to the employees.

(c) In addition to the information required under the chemical hazard communication standard at WAC 296-800-170:

(i) The employer shall inform each affected employee of the requirements of this section and information available in its appendices, as well as how to access or obtain a copy of it in the workplace;

(ii) Wherever an employee's exposure to airborne concentrations of MC exceeds or can reasonably be expected to exceed the action level, the employer shall inform each affected employee of the quantity, location, manner of use, release, and storage of MC and the specific operations in the workplace that could result in exposure to MC, particularly noting where exposures may be above the 8-hour TWA PEL or STEL;

(d) The employer shall train each affected employee as required under the chemical hazard communication standard at WAC 296-800-170, as appropriate.

(e) The employer shall re-train each affected employee as necessary to ensure that each employee exposed above the action level or the STEL maintains the requisite understanding of the principles of safe use and handling of MC in the workplace.

(f) Whenever there are workplace changes, such as modifications of tasks or procedures or the institution of new tasks or procedures, which increase employee exposure, and where those exposures exceed or can reasonably be expected to exceed the action level, the employer shall update the training as necessary to ensure that each affected employee has the requisite proficiency.

(g) An employer whose employees are exposed to MC at a multiemployer worksite shall notify the other employers with work operations at that site in accordance with the requirements of the chemical hazard communication standard, WAC 296-800-170, as appropriate.

(h) The employer shall provide to the director, upon request, all available materials relating to employee information and training.

(13) Recordkeeping.

(a) Objective data.

(i) Where an employer seeks to demonstrate that initial monitoring is unnecessary through reasonable reliance on objective data showing that any materials in the workplace containing MC will not release MC at levels which exceed the action level or the STEL under foreseeable conditions of exposure, the employer shall establish and maintain an accurate record of the objective data relied upon in support of the exemption.

(ii) This record shall include at least the following information:

(A) The MC-containing material in question;

(B) The source of the objective data;

(C) The testing protocol, results of testing, and/or analysis of the material for the release of MC;

(D) A description of the operation exempted under subsection (4)(b)(i) of this section and how the data support the exemption; and

(E) Other data relevant to the operations, materials, processing, or employee exposures covered by the exemption.

(iii) The employer shall maintain this record for the duration of the employer's reliance upon such objective data.

(b) Exposure measurements.

(i) The employer shall establish and keep an accurate record of all measurements taken to monitor employee exposure to MC as prescribed in subsection (4) of this section.

(ii) Where the employer has 20 or more employees, this record shall include at least the following information:

(A) The date of measurement for each sample taken;

(B) The operation involving exposure to MC which is being monitored;

(C) Sampling and analytical methods used and evidence of their accuracy;

(D) Number, duration, and results of samples taken;

(E) Type of personal protective equipment, such as respiratory protective devices, worn, if any; and

(F) Name, Social Security number, job classification and exposure of all of the employees represented by monitoring, indicating which employees were actually monitored.

(iii) Where the employer has fewer than 20 employees, the record shall include at least the following information:

(A) The date of measurement for each sample taken;

(B) Number, duration, and results of samples taken; and

(C) Name, Social Security number, job classification and exposure of all of the employees represented by monitoring, indicating which employees were actually monitored.

(iv) The employer shall maintain this record for at least thirty (30) years, in accordance with chapter 296-802 WAC.

(c) Medical surveillance.

(i) The employer shall establish and maintain an accurate record for each employee subject to medical surveillance under subsection (10) of this section.

(ii) The record shall include at least the following information:

(A) The name, Social Security number and description of the duties of the employee;

(B) Written medical opinions; and

(C) Any employee medical conditions related to exposure to MC.

(iii) The employer shall ensure that this record is maintained for the duration of employment plus thirty (30) years, in accordance with chapter 296-802 WAC.

(d) Availability.

(i) The employer, upon written request, shall make all records required to be maintained by this section available to the director for examination and copying in accordance with chapter 296-802 WAC.

(Note to subsection (13)(d)(i) of this section: All records required to be maintained by this section may be kept in the most administratively convenient form (for example, electronic or computer records would satisfy this requirement).)

(ii) The employer, upon request, shall make any employee exposure and objective data records required by this section available for examination and copying by affected employees, former employees, and designated representatives in accordance with chapter 296-802 WAC.

(iii) The employer, upon request, shall make employee medical records required to be kept by this section available for examination and copying by the subject employee and by

anyone having the specific written consent of the subject employee in accordance with chapter 296-802 WAC.

(e) Transfer of records. The employer shall comply with the requirements concerning transfer of records set forth in WAC 296-62-05215.

(14) Dates.

(a) Engineering controls required under subsection (6)(a) of this section shall be implemented according to the following schedule:

(i) For employers with fewer than 20 employees, no later than April 10, 2000.

(ii) For employers with fewer than 150 employees engaged in foam fabrication; for employers with fewer than 50 employees engaged in furniture refinishing, general aviation aircraft stripping, and product formulation; for employers with fewer than 50 employees using MC-based adhesives for boat building and repair, recreational vehicle manufacture, van conversion, and upholstery; for employers with fewer than 50 employees using MC in construction work for restoration and preservation of buildings, painting and paint removal, cabinet making and/or floor refinishing and resurfacing, no later than April 10, 2000.

(iii) For employers engaged in polyurethane foam manufacturing with 20 or more employees, no later than October 10, 1999.

(b) Use of respiratory protection whenever an employee's exposure to MC exceeds or can reasonably be expected to exceed the 8-hour TWA PEL, in accordance with subsection (3)(a), (5)(c), (6)(a) and (7)(a) of this section, shall be implemented according to the following schedule:

(i) For employers with fewer than 150 employees engaged in foam fabrication; for employers with fewer than 50 employees engaged in furniture refinishing, general aviation aircraft stripping, and product formulation; for employers with fewer than 50 employees using MC-based adhesives for boat building and repair, recreational vehicle manufacture, van conversion, and upholstery; for employers with fewer than 50 employees using MC in construction work for restoration and preservation of buildings, painting and paint removal, cabinet making and/or floor refinishing and resurfacing, no later than April 10, 2000.

(ii) For employers engaged in polyurethane foam manufacturing with 20 or more employees, no later than October 10, 1999.

(c) Notification of corrective action under subsection (4)(e)(ii) of this section, no later than 90 days before the compliance date applicable to such corrective action.

(d) Transitional dates. The exposure limits for MC specified in WAC 296-62-07515 Table 1, shall remain in effect until the start up dates for the exposure limits specified in subsection (14) of this section, or if the exposure limits in this section are stayed or vacated.

(e) Unless otherwise specified in this subsection (14), all other requirements of this section shall be complied with immediately.

(15) Appendices. The information contained in the appendices does not, by itself, create any additional obligations not otherwise imposed or detract from any existing obligation.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060. 04-10-026, § 296-62-07470, filed 4/27/04, effective 8/1/04. Statutory

Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 01-11-038, § 296-62-07470, filed 5/9/01, effective 9/1/01; 99-10-071, § 296-62-07470, filed 5/4/99, effective 9/1/99. Statutory Authority: RCW 49.17.040, [49.17].050 and [49.17].060. 97-18-062, § 296-62-07470, filed 9/2/97, effective 12/1/97.]

WAC 296-62-07473 Appendix A. Substance Safety Data Sheet and Technical Guidelines for Methylene Chloride

I. Substance Identification

A. Substance: Methylene chloride (CH₂Cl₂).

B. Synonyms: MC, Dichloromethane (DCM); Methylene dichloride; Methylene bichloride; Methane dichloride; CAS: 75-09-2; NCI-C50102.

C. Physical data:

1. Molecular weight: 84.9.
2. Boiling point (760 mm Hg): 39.8 deg.C (104 deg.F).
3. Specific gravity (water = 1): 1.3.
4. Vapor density (air = 1 at boiling point): 2.9.
5. Vapor pressure at 20 deg. C (68 deg. F): 350 mm Hg.
6. Solubility in water, g/100 g water at 20 deg. C (68 deg. F) = 1.32.

7. Appearance and odor: colorless liquid with a chloroform-like odor.

D. Uses: MC is used as a solvent, especially where high volatility is required. It is a good solvent for oils, fats, waxes, resins, bitumen, rubber and cellulose acetate and is a useful paint stripper and degreaser. It is used in paint removers, in propellant mixtures for aerosol containers, as a solvent for plastics, as a degreasing agent, as an extracting agent in the pharmaceutical industry and as a blowing agent in polyurethane foams. Its solvent property is sometimes increased by mixing with methanol, petroleum naphtha or tetrachloroethylene.

E. Appearance and odor: MC is a clear colorless liquid with a chloroform-like odor. It is slightly soluble in water and completely miscible with most organic solvents.

F. Permissible exposure: Exposure may not exceed 25 parts MC per million parts of air (25 ppm) as an eight-hour time-weighted average (8-hour TWA PEL) or 125 parts of MC per million parts of air (125 ppm) averaged over a 15-minute period (STEL).

II. Health Hazard Data

A. MC can affect the body if it is inhaled or if the liquid comes in contact with the eyes or skin. It can also affect the body if it is swallowed.

B. Effects of overexposure:

1. Short-term Exposure: MC is an anesthetic. Inhaling the vapor may cause mental confusion, light-headedness, nausea, vomiting, and headache. Continued exposure may cause increased light-headedness, staggering, unconsciousness, and even death. High vapor concentrations may also cause irritation of the eyes and respiratory tract. Exposure to MC may make the symptoms of angina (chest pains) worse. Skin exposure to liquid MC may cause irritation. If liquid MC remains on the skin, it may cause skin burns. Splashes of the liquid into the eyes may cause irritation.

2. Long-term (chronic) exposure: The best evidence that MC causes cancer is from laboratory studies in which rats, mice and hamsters inhaled MC 6 hours per day, 5 days per week for 2 years. MC exposure produced lung and liver tumors in mice and mammary tumors in rats. No carcinogenic effects of MC were found in hamsters. There are also

some human epidemiological studies which show an association between occupational exposure to MC and increases in biliary (bile duct) cancer and a type of brain cancer. Other epidemiological studies have not observed a relationship between MC exposure and cancer. WISHA interprets these results to mean that there is suggestive (but not absolute) evidence that MC is a human carcinogen.

C. Reporting signs and symptoms: You should inform your employer if you develop any signs or symptoms and suspect that they are caused by exposure to MC.

D. Warning Properties:

1. Odor Threshold: Different authors have reported varying odor thresholds for MC. Kirk-Othmer and Sax both reported 25 to 50 ppm; Summer and May both reported 150 ppm; Spector reports 320 ppm. Patty, however, states that since one can become adapted to the odor, MC should not be considered to have adequate warning properties.

2. Eye Irritation Level: Kirk-Othmer reports that "MC vapor is seriously damaging to the eyes." Sax agrees with Kirk-Othmer's statement. The ACGIH Documentation of TLVs states that irritation of the eyes has been observed in workers exposed to concentrations up to 5000 ppm.

3. Evaluation of Warning Properties: Since a wide range of MC odor thresholds are reported (25-320 ppm), and human adaptation to the odor occurs, MC is considered to be a material with poor warning properties.

III. Emergency First-Aid Procedures

In the event of emergency, institute first-aid procedures and send for first-aid or medical assistance.

A. Eye and Skin Exposures: If there is a potential for liquid MC to come in contact with eye or skin, face shields and skin protective equipment must be provided and used. If liquid MC comes in contact with the eye, get medical attention. Contact lenses should not be worn when working with this chemical.

B. Breathing: If a person breathes in large amounts of MC, move the exposed person to fresh air at once. If breathing has stopped, perform cardiopulmonary resuscitation. Keep the affected person warm and at rest. Get medical attention as soon as possible.

C. Rescue: Move the affected person from the hazardous exposure immediately. If the exposed person has been overcome, notify someone else and put into effect the established emergency rescue procedures. Understand the facility's emergency rescue procedures and know the locations of rescue equipment before the need arises. Do not become a casualty yourself.

IV. Respirators, Protective Clothing, and Eye Protection

A. Respirators: Good industrial hygiene practices recommend that engineering controls be used to reduce environmental concentrations to the permissible exposure level. However, there are some exceptions where respirators may be used to control exposure. Respirators may be used when engineering and work practice controls are not feasible, when such controls are in the process of being installed, or when these controls fail and need to be supplemented. Respirators may also be used for operations which require entry into tanks or closed vessels, and in emergency situations. If the use of respirators is necessary, the only respirators permitted are those that have been approved by the National Institute for Occupational Safety and Health (NIOSH). Supplied-air

respirators are required because air-purifying respirators do not provide adequate respiratory protection against MC. In addition to respirator selection, a complete written respiratory protection program should be instituted which includes regular training, maintenance, inspection, cleaning, and evaluation. If you can smell MC while wearing a respirator, proceed immediately to fresh air. If you experience difficulty in breathing while wearing a respirator, tell your employer.

B. Protective Clothing: Employees must be provided with and required to use impervious clothing, gloves, face shields (eight-inch minimum), and other appropriate protective clothing necessary to prevent repeated or prolonged skin contact with liquid MC or contact with vessels containing liquid MC. Any clothing which becomes wet with liquid MC should be removed immediately and not reworn until the employer has ensured that the protective clothing is fit for reuse. Contaminated protective clothing should be placed in a regulated area designated by the employer for removal of MC before the clothing is laundered or disposed of. Clothing and equipment should remain in the regulated area until all of the MC contamination has evaporated; clothing and equipment should then be laundered or disposed of as appropriate.

C. Eye Protection: Employees should be provided with and required to use splash-proof safety goggles where liquid MC may contact the eyes.

V. Housekeeping and Hygiene Facilities

For purposes of complying with WAC 296-24-120, 296-800-220 and 296-800-230, the following items should be emphasized:

A. The workplace should be kept clean, orderly, and in a sanitary condition. The employer should institute a leak and spill detection program for operations involving liquid MC in order to detect sources of fugitive MC emissions.

B. Emergency drench showers and eyewash facilities are recommended. These should be maintained in a sanitary condition. Suitable cleansing agents should also be provided to assure the effective removal of MC from the skin.

C. Because of the hazardous nature of MC, contaminated protective clothing should be placed in a regulated area designated by the employer for removal of MC before the clothing is laundered or disposed of.

VI. Precautions for Safe Use, Handling, and Storage

A. Fire and Explosion Hazards: MC has no flash point in a conventional closed tester, but it forms flammable vapor-air mixtures at approximately 100 deg. C (212 deg. F), or higher. It has a lower explosion limit of 12%, and an upper explosion limit of 19% in air. It has an autoignition temperature of 556.1 deg. C (1033 deg. F), and a boiling point of 39.8 deg. C (104 deg. F). It is heavier than water with a specific gravity of 1.3. It is slightly soluble in water.

B. Reactivity Hazards: Conditions contributing to the instability of MC are heat and moisture. Contact with strong oxidizers, caustics, and chemically active metals such as aluminum or magnesium powder, sodium and potassium may cause fires and explosions. Special precautions: Liquid MC will attack some forms of plastics, rubber, and coatings.

C. Toxicity: Liquid MC is painful and irritating if splashed in the eyes or if confined on the skin by gloves, clothing, or shoes. Vapors in high concentrations may cause narcosis and death. Prolonged exposure to vapors may cause cancer or exacerbate cardiac disease.

D. Storage: Protect against physical damage. Because of its corrosive properties, and its high vapor pressure, MC should be stored in plain, galvanized or lead lined, mild steel containers in a cool, dry, well ventilated area away from direct sunlight, heat source and acute fire hazards.

E. Piping Material: All piping and valves at the loading or unloading station should be of material that is resistant to MC and should be carefully inspected prior to connection to the transport vehicle and periodically during the operation.

F. Usual Shipping Containers: Glass bottles, 5- and 55-gallon steel drums, tank cars, and tank trucks.

Note: This section addresses MC exposure in marine terminal and longshore employment only where leaking or broken packages allow MC exposure that is not addressed through compliance with WAC 296-56.

G. Electrical Equipment: Electrical installations in Class I hazardous locations as defined in Article 500 of the National Electrical Code, should be installed according to Article 501 of the code; and electrical equipment should be suitable for use in atmospheres containing MC vapors. See Flammable and Combustible Liquids Code (NFPA No. 325M), Chemical Safety Data Sheet SD-86 (Manufacturing Chemists' Association, Inc.).

H. Fire Fighting: When involved in fire, MC emits highly toxic and irritating fumes such as phosgene, hydrogen chloride and carbon monoxide. Wear breathing apparatus and use water spray to keep fire-exposed containers cool. Water spray may be used to flush spills away from exposures. Extinguishing media are dry chemical, carbon dioxide, foam. For purposes of compliance with WAC 296-24-956, locations classified as hazardous due to the presence of MC shall be Class I.

I. Spills and Leaks: Persons not wearing protective equipment and clothing should be restricted from areas of spills or leaks until cleanup has been completed. If MC has spilled or leaked, the following steps should be taken:

1. Remove all ignition sources.
2. Ventilate area of spill or leak.
3. Collect for reclamation or absorb in vermiculite, dry sand, earth, or a similar material.

J. Methods of Waste Disposal: Small spills should be absorbed onto sand and taken to a safe area for atmospheric evaporation. Incineration is the preferred method for disposal of large quantities by mixing with a combustible solvent and spraying into an incinerator equipped with acid scrubbers to remove hydrogen chloride gases formed. Complete combustion will convert carbon monoxide to carbon dioxide. Care should be taken for the presence of phosgene.

K. You should not keep food, beverage, or smoking materials, or eat or smoke in regulated areas where MC concentrations are above the permissible exposure limits.

L. Portable heating units should not be used in confined areas where MC is used.

M. Ask your supervisor where MC is used in your work area and for any additional plant safety and health rules.

VII. Medical Requirements

Your employer is required to offer you the opportunity to participate in a medical surveillance program if you are exposed to MC at concentrations at or above the action level (12.5 ppm 8-hour TWA) for more than 30 days a year or at concentrations exceeding the PELs (25 ppm 8-hour TWA or

125 ppm 15-minute STEL) for more than 10 days a year. If you are exposed to MC at concentrations over either of the PELs, your employer will also be required to have a physician or other licensed health care professional ensure that you are able to wear the respirator that you are assigned. Your employer must provide all medical examinations relating to your MC exposure at a reasonable time and place and at no cost to you.

VIII. Monitoring and Measurement Procedures

A. Exposure above the Permissible Exposure Limit:

1. Eight-hour exposure evaluation: Measurements taken for the purpose of determining employee exposure under this section are best taken with consecutive samples covering the full shift. Air samples must be taken in the employee's breathing zone.

2. Monitoring techniques: The sampling and analysis under this section may be performed by collection of the MC vapor on two charcoal adsorption tubes in series or other composition adsorption tubes, with subsequent chemical analysis. Sampling and analysis may also be performed by instruments such as real-time continuous monitoring systems, portable direct reading instruments, or passive dosimeters as long as measurements taken using these methods accurately evaluate the concentration of MC in employees' breathing zones. OSHA method 80 is an example of a validated method of sampling and analysis of MC. Copies of this method are available from OSHA or can be downloaded from the internet at <http://www.osha.gov>. The employer has the obligation of selecting a monitoring method which meets the accuracy and precision requirements of the standard under his or her unique field conditions. The standard requires that the method of monitoring must be accurate, to a 95 percent confidence level, to plus or minus 25 percent for concentrations of MC at or above 25 ppm, and to plus or minus 35 percent for concentrations at or below 25 ppm. In addition to OSHA method 80, there are numerous other methods available for monitoring for MC in the workplace.

B. Since many of the duties relating to employee exposure are dependent on the results of measurement procedures,

employers must assure that the evaluation of employee exposure is performed by a technically qualified person.

IX. Observation of Monitoring

Your employer is required to perform measurements that are representative of your exposure to MC and you or your designated representative are entitled to observe the monitoring procedure. You are entitled to observe the steps taken in the measurement procedure, and to record the results obtained. When the monitoring procedure is taking place in an area where respirators or personal protective clothing and equipment are required to be worn, you or your representative must also be provided with, and must wear, protective clothing and equipment.

Access To Information

A. Your employer is required to inform you of the information contained in this Appendix. In addition, your employer must instruct you in the proper work practices for using MC, emergency procedures, and the correct use of protective equipment.

B. Your employer is required to determine whether you are being exposed to MC. You or your representative has the right to observe employee measurements and to record the results obtained. Your employer is required to inform you of your exposure. If your employer determines that you are being over exposed, he or she is required to inform you of the actions which are being taken to reduce your exposure to within permissible exposure limits.

C. Your employer is required to keep records of your exposures and medical examinations. These records must be kept by the employer for at least thirty (30) years.

D. Your employer is required to release your exposure and medical records to you or your representative upon your request.

E. Your employer is required to provide labels and material safety data sheets (MSDS) for all materials, mixtures or solutions composed of greater than 0.1 percent MC. An example of a label that would satisfy these requirements would be:

Danger Contains Methylene Chloride Potential Cancer Hazard

May worsen heart disease because methylene chloride is converted to carbon monoxide in the body.

May cause dizziness, headache, irritation of the throat and lungs, loss of consciousness and death at high concentrations (for example, if used in a poorly ventilated room).

Avoid Skin Contact. Contact with liquid causes skin and eye irritation.

X. Common Operations and Controls

The following list includes some common operations in which exposure to MC may occur and control methods which may be effective in each case:

Operations	Controls
Use as solvent in paint and varnish removers cold cleaning and ultrasonic cleaning, and as a solvent in furniture stripping.	General dilution ventilation; local; manufacture of aerosols; cold cleaning exhaust ventilation; personal protective equipment; substitution.
Use as solvent in vapor degreasing.	Process enclosure; local exhaust ventilation; chilling coils; substitution.
Use as a secondary refrigerant in air scientific testing.	General dilution ventilation; local conditioning and exhaust ventilation; personal protective equipment.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 01-11-038, § 296-62-07473, filed 5/9/01, effective 9/1/01. Statutory Authority: RCW 49.17.040, [49.17].050 and [49.17].060. 97-18-062, § 296-62-07473, filed 9/2/97, effective 12/1/97.]

WAC 296-62-07475 Appendix B. Medical Surveillance for Methylene Chloride

I. Primary Route of Entry Inhalation.

II. Toxicology.

Methylene Chloride (MC) is primarily an inhalation hazard. The principal acute hazardous effects are the depressant action on the central nervous system, possible cardiac toxicity and possible liver toxicity. The range of CNS effects are from decreased eye/hand coordination and decreased performance in vigilance tasks to narcosis and even death of individuals exposed at very high doses. Cardiac toxicity is due to the metabolism of MC to carbon monoxide, and the effects of carbon monoxide on heart tissue. Carbon monoxide displaces oxygen in the blood, decreases the oxygen available to heart tissue, increasing the risk of damage to the heart, which may result in heart attacks in susceptible individuals. Susceptible individuals include persons with heart disease and those with risk factors for heart disease. Elevated liver enzymes and irritation to the respiratory passages and eyes have also been reported for both humans and experimental animals exposed to MC vapors.

MC is metabolized to carbon monoxide and carbon dioxide via two separate pathways. Through the first pathway, MC is metabolized to carbon monoxide as an end-product via the P-450 mixed function oxidase pathway located in the microsomal fraction of the cell. This biotransformation of MC to carbon monoxide occurs through the process of microsomal oxidative dechlorination which takes place primarily in the liver. The amount of conversion to carbon monoxide is significant as measured by the concentration of carboxyhemoglobin, up to 12% measured in the blood following occupational exposure of up to 610 ppm. Through the second pathway, MC is metabolized to carbon dioxide as an end product (with formaldehyde and formic acid as metabolic intermediates) via the glutathione dependent enzyme found in the cytosolic fraction of the liver cell. Metabolites along this pathway are believed to be associated with the carcinogenic activity of MC.

MC has been tested for carcinogenicity in several laboratory rodents. These rodent studies indicate that there is clear evidence that MC is carcinogenic to male and female mice and female rats. Based on epidemiologic studies, OSHA has concluded that there is suggestive evidence of increased cancer risk in MC-related worker populations. The epidemiological evidence is consistent with the finding of excess cancer in the experimental animal studies. NIOSH regards MC as a potential occupational carcinogen and the International Agency for Research Cancer (IARC) classifies MC as an animal carcinogen. OSHA considers MC as a suspected human carcinogen.

III. Medical Signs and Symptoms of Acute Exposure

Skin exposure to liquid MC may cause irritation or skin burns. Liquid MC can also be irritating to the eyes. MC is also absorbed through the skin and may contribute to the MC exposure by inhalation. At high concentrations in air, MC may cause nausea, vomiting, light-headedness, numbness of the extremities, changes in blood enzyme levels, and breathing problems, leading to bronchitis and pulmonary edema, unconsciousness and even death.

At lower concentrations in air, MC may cause irritation to the skin, eye, and respiratory tract and occasionally head-

ache and nausea. Perhaps the greatest problem from exposure to low concentrations of MC is the CNS effects on coordination and alertness that may cause unsafe operations of machinery and equipment, leading to self-injury or accidents. Low levels and short duration exposures do not seem to produce permanent disability, but chronic exposures to MC have been demonstrated to produce liver toxicity in animals, and therefore, the evidence is suggestive for liver toxicity in humans after chronic exposure. Chronic exposure to MC may also cause cancer.

IV. Surveillance and Preventive Considerations

As discussed above, MC is classified as a suspect or potential human carcinogen. It is a central nervous system (CNS) depressant and a skin, eye and respiratory tract irritant. At extremely high concentrations, MC has caused liver damage in animals. MC principally affects the CNS, where it acts as a narcotic. The observation of the symptoms characteristic of CNS depression, along with a physical examination, provides the best detection of early neurological disorders. Since exposure to MC also increases the carboxyhemoglobin level in the blood, ambient carbon monoxide levels would have an additive effect on that carboxyhemoglobin level. Based on such information, a periodic post-shift carboxyhemoglobin test as an index of the presence of carbon monoxide in the blood is recommended, but not required, for medical surveillance.

Based on the animal evidence and three epidemiologic studies previously mentioned, OSHA concludes that MC is a suspect human carcinogen. The medical surveillance program is designed to observe exposed workers on a regular basis. While the medical surveillance program cannot detect MC-induced cancer at a preneoplastic stage, OSHA anticipates that, as in the past, early detection and treatments of cancers leading to enhanced survival rates will continue to evolve.

A. Medical and Occupational History:

The medical and occupational work history plays an important role in the initial evaluation of workers exposed to MC. It is therefore extremely important for the examining physician or other licensed health care professional to evaluate the MC-exposed worker carefully and completely and to focus the examination on MC's potentially associated health hazards. The medical evaluation must include an annual detailed work and medical history with special emphasis on cardiac history and neurological symptoms.

An important goal of the medical history is to elicit information from the worker regarding potential signs or symptoms associated with increased levels of carboxyhemoglobin due to the presence of carbon monoxide in the blood. Physicians or other licensed health care professionals should ensure that the smoking history of all MC exposed employees is known. Exposure to MC may cause a significant increase in carboxyhemoglobin level in all exposed persons. However, smokers as well as workers with anemia or heart disease and those concurrently exposed to carbon monoxide are at especially high risk of toxic effects because of an already reduced oxygen carrying capacity of the blood.

A comprehensive or interim medical and work history should also include occurrence of headache, dizziness, fatigue, chest pain, shortness of breath, pain in the limbs, and irritation of the skin and eyes. In addition, it is important for the physician or other licensed health care professional to

become familiar with the operating conditions in which exposure to MC is likely to occur. The physician or other licensed health care professional also must become familiar with the signs and symptoms that may indicate that a worker is receiving otherwise unrecognized and exceptionally high exposure levels of MC.

An example of a medical and work history that would satisfy the requirement for a comprehensive or interim work history is represented by the following:

The following is a list of recommended questions and issues for the self-administered questionnaire for methylene chloride exposure.

Questionnaire For Methylene Chloride Exposure

I. Demographic Information

1. Name _____
2. Social Security Number _____
3. Date _____
4. Date of Birth _____
5. Age _____
6. Present occupation _____
7. Sex _____
8. Race _____

II. Occupational History

1. Have you ever worked with methylene chloride, dichloromethane, methylene dichloride, or CH₂Cl₂ (all are different names for the same chemical)? Please list which on the occupational history form if you have not already.

2. If you have worked in any of the following industries and have not listed them on the occupational history form, please do so.

- Furniture stripping _____
- Polyurethane foam manufacturing _____
- Chemical manufacturing or formulation _____
- Pharmaceutical manufacturing _____
- Any industry in which you used solvents to clean and degrease equipment or parts _____
- Construction, especially painting and refinishing _____
- Aerosol manufacturing _____
- Any industry in which you used aerosol adhesives _____

3. If you have not listed hobbies or household projects on the occupational history form, especially furniture refinishing, spray painting, or paint stripping, please do so.

III. Medical History

A. General

1. Do you consider yourself to be in good health? If no, state reason(s).

2. Do you or have you ever had:
 - a. Persistent thirst
 - b. Frequent urination (three times or more at night)
 - c. Dermatitis or irritated skin
 - d. Nonhealing wounds

3. What prescription or nonprescription medications do you take, and for what reasons?

4. Are you allergic to any medications, and what type of reaction do you have?

B. Respiratory

1. Do you have or have you ever had any chest illnesses or diseases? Explain.

2. Do you have or have you ever had any of the following:

- a. Asthma
- b. Wheezing
- c. Shortness of breath

3. Have you ever had an abnormal chest X ray? If so, when, where, and what were the findings?

4. Have you ever had difficulty using a respirator or breathing apparatus? Explain.

5. Do any chest or lung diseases run in your family? Explain.

6. Have you ever smoked cigarettes, cigars, or a pipe? Age started:

7. Do you now smoke?

8. If you have stopped smoking completely, how old were you when you stopped?

9. On the average of the entire time you smoked, how many packs of cigarettes, cigars, or bowls of tobacco did you smoke per day?

C. Cardiovascular

1. Have you ever been diagnosed with any of the following:

Which of the following apply to you now or did apply to you at some time in the past, even if the problem is controlled by medication? Please explain any yes answers (i.e., when problem was diagnosed, length of time on medication).

- a. High cholesterol or triglyceride level
- b. Hypertension (high blood pressure)
- c. Diabetes
- d. Family history of heart attack, stroke, or blocked arteries

2. Have you ever had chest pain? If so, answer the next five questions.

a. What was the quality of the pain (i.e., crushing, stabbing, squeezing)?

b. Did the pain go anywhere (i.e., into jaw, left arm)?

c. What brought the pain out?

d. How long did it last?

e. What made the pain go away?

3. Have you ever had heart disease, a heart attack, stroke, aneurysm, or blocked arteries anywhere in your body? Explain (when, treatment).

4. Have you ever had bypass surgery for blocked arteries in your heart or anywhere else? Explain.

5. Have you ever had any other procedures done to open up a blocked artery (balloon angioplasty, carotid endarterectomy, clot-dissolving drug)?

6. Do you have or have you ever had (explain each):

- a. Heart murmur
- b. Irregular heartbeat
- c. Shortness of breath while lying flat
- d. Congestive heart failure
- e. Ankle swelling
- f. Recurrent pain anywhere below the waist while walking

7. Have you ever had an electrocardiogram (EKG)? When?

8. Have you ever had an abnormal EKG? If so, when, where, and what were the findings?

9. Do any heart diseases, high blood pressure, diabetes, high cholesterol, or high triglycerides run in your family?

Explain.

D. Hepatobiliary and Pancreas

1. Do you now or have you ever drunk alcoholic beverages? Age started: ____ Age stopped: ____.

2. Average numbers per week:

a. Beers: ____, ounces in usual container: b. Glasses of wine: ____, ounces per glass: c. Drinks: ____, ounces in usual container:

3. Do you have or have you ever had (explain each):

a. Hepatitis (infectious, autoimmune, drug-induced, or chemical)

b. Jaundice

c. Elevated liver enzymes or elevated bilirubin

d. Liver disease or cancer

E. Central Nervous System

1. Do you or have you ever had (explain each):

a. Headache

b. Dizziness

c. Fainting

d. Loss of consciousness

e. Garbled speech

f. Lack of balance

g. Mental/psychiatric illness

h. Forgetfulness

F. Hematologic

1. Do you have, or have you ever had (explain each):

a. Anemia

b. Sickle cell disease or trait

c. Glucose-6-phosphate dehydrogenase deficiency

d. Bleeding tendency disorder

2. If not already mentioned previously, have you ever had a reaction to sulfa drugs or to drugs used to prevent or treat malaria? What was the drug? Describe the reaction.

B. Physical Examination

The complete physical examination, when coupled with the medical and occupational history, assists the physician or other licensed health care professional in detecting pre-existing conditions that might place the employee at increased risk, and establishes a baseline for future health monitoring. These examinations should include:

1. Clinical impressions of the nervous system, cardiovascular function and pulmonary function, with additional tests conducted where indicated or determined by the examining physician or other licensed health care professional to be necessary.

2. An evaluation of the advisability of the worker using a respirator, because the use of certain respirators places an additional burden on the cardiopulmonary system. It is necessary for the attending physician or other licensed health care professional to evaluate the cardiopulmonary function of these workers, in order to inform the employer in a written medical opinion of the worker's ability or fitness to work in an area requiring the use of certain types of respiratory protective equipment. The presence of facial hair or scars that might interfere with the worker's ability to wear certain types of respirators should also be noted during the examination and in the written medical opinion.

Because of the importance of lung function to workers required to wear certain types of respirators to protect themselves from MC exposure, these workers must receive an assessment of pulmonary function before they begin to wear

a negative pressure respirator and at least annually thereafter. The recommended pulmonary function tests include measurement of the employee's forced vital capacity (FVC), forced expiratory volume at one second (FEV1), as well as calculation of the ratios of FEV1 to FVC, and the ratios of measured FVC and measured FEV1 to expected respective values corrected for variation due to age, sex, race, and height. Pulmonary function evaluation must be conducted by a physician or other licensed health care professional experienced in pulmonary function tests.

The following is a summary of the elements of a physical exam which would fulfill the requirements under the MC standard:

Physical Exam

I. Skin and appendages

1. Irritated or broken skin 2. Jaundice 3. Clubbing cyanosis, edema 4. Capillary refill time 5. Pallor

II. Head

1. Facial deformities 2. Scars 3. Hair growth

III. Eyes

1. Scleral icterus 2. Corneal arcus 3. Pupillary size and response 4. Fundoscopic exam

IV. Chest

1. Standard exam

V. Heart

1. Standard exam 2. Jugular vein distension 3. Peripheral pulses

VI. Abdomen

1. Liver span

VII. Nervous System

1. Complete standard neurologic exam

VIII. Laboratory

1. Hemoglobin and hematocrit 2. Alanine aminotransferase (ALT, SGPT) 3. Post-shift carboxyhemoglobin

I. Studies

1. Pulmonary function testing

2. Electrocardiogram

An evaluation of the oxygen carrying capacity of the blood of employees (for example by measured red blood cell volume) is considered useful, especially for workers acutely exposed to MC. It is also recommended, but not required, that end of shift carboxyhemoglobin levels be determined periodically, and any level above 3% for nonsmokers and above 10% for smokers should prompt an investigation of the worker and his workplace. This test is recommended because MC is metabolized to CO, which combines strongly with hemoglobin, resulting in a reduced capacity of the blood to transport oxygen in the body. This is of particular concern for cigarette smokers because they already have a diminished hemoglobin capacity due to the presence of CO in cigarette smoke.

C. Additional Examinations and Referrals

1. Examination by a Specialist

When a worker examination reveals unexplained symptoms or signs (i.e. in the physical examination or in the laboratory tests), follow-up medical examinations are necessary to assure that MC exposure is not adversely affecting the worker's health. When the examining physician or other licensed health care professional finds it necessary, additional tests should be included to determine the nature of the medical problem and the underlying cause. Where relevant,

the worker should be sent to a specialist for further testing and treatment as deemed necessary. The final rule requires additional investigations to be covered and it also permits physicians or other licensed health care professionals to add appropriate or necessary tests to improve the diagnosis of disease should such tests become available in the future.

2. Emergencies

The examination of workers exposed to MC in an emergency should be directed at the organ systems most likely to be affected. If the worker has received a severe acute exposure, hospitalization may be required to assure proper medical intervention. It is not possible to precisely define "severe," but the physician or other licensed health care professional's judgment should not merely rest on hospitalization. If the worker has suffered significant conjunctival, oral, or nasal irritation, respiratory distress, or discomfort, the physician or other licensed health care professional should institute appropriate follow-up procedures. These include attention to the eyes, lungs and the neurological system. The frequency of follow-up examinations should be determined by the attending physician or other licensed health care professional. This testing permits the early identification essential to proper medical management of such workers.

D. Employer Obligations

The employer is required to provide the responsible physician or other licensed health care professional and any specialists involved in a diagnosis with the following information: a copy of the MC standard including relevant appendices, a description of the affected employee's duties as they relate to his or her exposure to MC; an estimate of the employee's exposure including duration (e.g., 15hr/wk, three 8-hour shifts/wk, full time); a description of any personal protective equipment used by the employee, including respirators; and the results of any previous medical determinations for the affected employee related to MC exposure to the extent that this information is within the employer's control.

E. Physicians' or Other Licensed Health Care Professionals' Obligations

The standard requires the employer to ensure that the physician or other licensed health care professional provides a written statement to the employee and the employer. This statement should contain the physician's or licensed health care professional's opinion as to whether the employee has any medical condition placing him or her at increased risk of impaired health from exposure to MC or use of respirators, as appropriate. The physician or other licensed health care professional should also state his or her opinion regarding any restrictions that should be placed on the employee's exposure to MC or upon the use of protective clothing or equipment such as respirators. If the employee wears a respirator as a result of his or her exposure to MC, the physician or other licensed health care professional's opinion should also contain a statement regarding the suitability of the employee to wear the type of respirator assigned.

Furthermore, the employee should be informed by the physician or other licensed health care professional about the cancer risk of MC and about risk factors for heart disease, and the potential for exacerbation of underlying heart disease by exposure to MC through its metabolism to carbon monoxide. Finally, the physician or other licensed health care professional should inform the employer that the employee has

been told the results of the medical examination and of any medical conditions which require further explanation or treatment. This written opinion must not contain any information on specific findings or diagnosis unrelated to employee's occupational exposures.

The purpose in requiring the examining physician or other licensed health care professional to supply the employer with a written opinion is to provide the employer with a medical basis to assist the employer in placing employees initially, in assuring that their health is not being impaired by exposure to MC, and to assess the employee's ability to use any required protective equipment.

[Statutory Authority: RCW 49.17.040, [49.17].050 and [49.17].060. 97-18-062, § 296-62-07475, filed 9/2/97, effective 12/1/97.]

WAC 296-62-07477 Appendix C.

Questions and Answers

Methylene Chloride Control in Furniture Stripping

(Adapted from NIOSH publication No. 93-133)

Introduction

This appendix answers commonly asked questions about the hazards from exposure to methylene chloride. It also describes approaches to controlling methylene chloride exposure during the most common furniture stripping processes. Although these approaches were developed and field tested by the National Institute of Occupational Safety and Health, each setting requires custom installation because of the different air flow interferences at each site.

1. What is the Stripping Solution Base?

The most common active ingredient in paint removers is a chemical called methylene chloride. Methylene chloride is present in the paint remover to penetrate, blister, and finally lift the old finish. Other chemicals in paint removers work to accelerate the stripping process, to retard evaporation, and to act as thickening agents. These other ingredients may include: methanol, toluene, acetone, or paraffin.¹

2. Is Methylene Chloride Bad for Me?

Exposure to methylene chloride may cause short-term health effects or long-term health effects.

Short-Term (Acute) Health Effects

Exposure to high levels of paint removers over short periods of time can cause irritation to the skin, eyes, mucous membranes, and respiratory tracts. Other symptoms of high exposure are dizziness, headache, and lack of coordination. The occurrence of any of these symptoms indicates that you are being exposed to high levels of methylene chloride. At the onset of any of these symptoms, you should leave the work area, get some fresh air, and determine why the levels were high.

A portion of inhaled methylene chloride is converted by the body to carbon monoxide, which can lower the blood's ability to carry oxygen. When the solvent is used properly, however, the levels of carbon monoxide should not be hazardous. Individuals with cardiovascular or pulmonary health problems should check with their physician before using the paint stripper. Individuals experiencing severe symptoms such as short-

ness of breath or chest pains should obtain proper medical care immediately.¹

Long-Term (Chronic) Health Effects

Methylene chloride has been shown to cause cancer in certain laboratory animal tests. The available human studies do not provide the necessary information to determine whether methylene chloride causes cancer in humans. However, as a result of the animal studies, methylene chloride is considered a potential occupational carcinogen. There is also considerable indirect evidence to suggest that workers exposed to methylene chloride may be at an increased risk of developing ischemic heart disease. Therefore, it is prudent to minimize exposure to solvent vapors.³

3. What does the Methylene Chloride Standard Require?

On January 10, 1997, the Occupational Safety and Health Administration published a new regulation for methylene chloride. The standard establishes an eight-hour time-weighted average exposure limit of 25 parts per million (ppm), as well as a short-term exposure limit of 125 ppm determined from a 15 minute sampling period. That is a reduction from the current WISHA limit of 100 ppm. The standard also sets a 12.5 ppm action level (a level that would trigger periodic exposure monitoring and medical surveillance provisions).² WISHA adopted an identical standard on [date].

The National Institute for Occupational Safety and Health recommends that methylene chloride be regarded as a "potential occupational carcinogen." NIOSH further recommends that occupational exposure to methylene chloride be controlled to the lowest feasible limit. This recommendation was based on the observation of cancers and tumors in both rats and mice exposed to methylene chloride in air.⁵

4. How Can I Be Exposed to Methylene Chloride while Stripping Furniture?

Methylene chloride can be inhaled when vapors are in the air. Inhalation of the methylene chloride vapors is generally the most important source of exposure. Methylene chloride evaporates quicker than most chemicals. The odor threshold of methylene chloride is 300 ppm.⁶ Therefore, once you smell methylene chloride, you are being over-exposed. Pouring, moving, or stirring the chemical will increase the rate of evaporation.

Methylene chloride can be absorbed through the skin either by directly touching the chemical or through your gloves. Methylene chloride can be swallowed if it gets on your hands, clothes, or beard, or if food or drinks become contaminated.

5. How Can Breathing Exposures be Reduced?

Install a Local Exhaust Ventilation System

Local exhaust ventilation can be used to control exposures. Local exhaust ventilation systems capture contaminated air from the source before it spreads into the workers' breathing zone.⁷ If engineering controls are not effective, only a self-contained breathing apparatus equipped with a full face piece and operated in a positive-pressure mode or a supplied-air respirator affords the level of protection. Air-purifying respirators such as gas masks with organic vapor canisters can

only be used for escape situations.⁸ These gas masks are not suitable for normal work situations because methylene chloride is poorly absorbed by the canister filtering material.

A local exhaust system consists of the following: a hood, a fan, ductwork, and a replacement air system.^{9,10,11} Two processes are commonly used in furniture stripping: Flow-over and dip tanks. For flow-over systems there are two common local exhaust controls for methylene chloride - a slot hood and a down draft hood. A slot hood of different design is most often used for dip tanks. (See Figures 1, 2, and 3.)

The hood is made of sheet metal and connected to the tank. All designs require a centrifugal fan to exhaust the fumes, ductwork connecting the hood and the fan, and a replacement air system to bring conditioned air into the building to replace the air exhausted.

In constructing or designing a slot or down draft hood, use the following data:

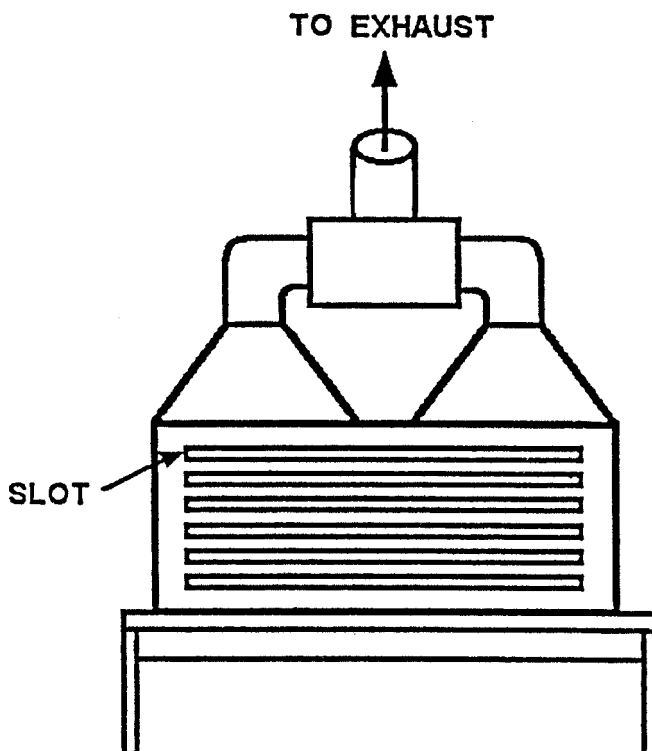


FIGURE 1—SLOT HOOD

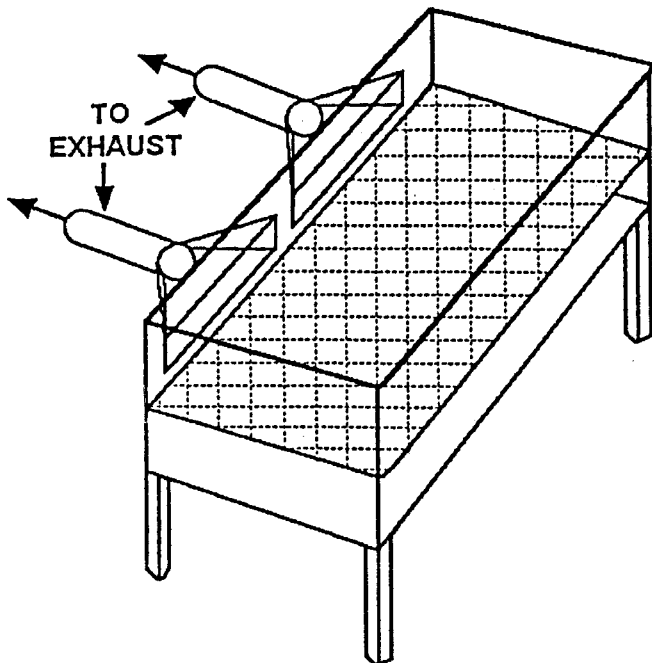


FIGURE 2—DOWNDRAFT HOOD

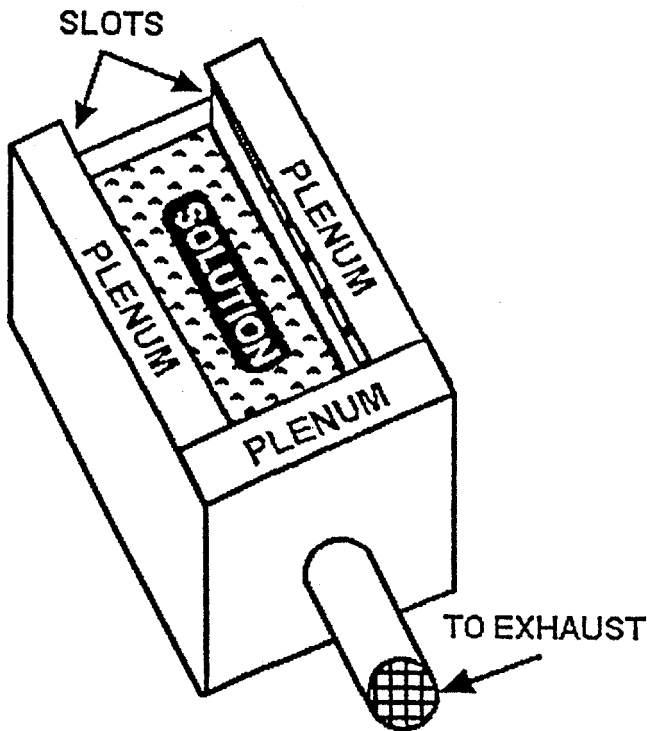


FIGURE 3—SLOT HOOD FOR DIP TANK

Safe Work Practices

Workers can lower exposures by decreasing their access to the methylene chloride.¹²

- 1) Turn on dip tank control system several minutes before entering the stripping area.
- 2) Avoid unnecessary transferring or moving of the stripping solution.

(2007 Ed.)

- 3) Keep face out of the air stream between the solution-covered furniture and the exhaust system.
- 4) Keep face out of vapor zone above the stripping solution and the dip tank.
- 5) Retrieve dropped items with a long handled tool.
- 6) Keep the solution-recycling system off when not in use. Cover reservoir for recycling system.
- 7) Cover dip tank when not in use.
- 8) Provide adequate ventilation for rinse area.

How Can Skin Exposures Be Reduced?

Skin exposures can be reduced by wearing gloves whenever you are in contact with the stripping solution.¹³

- 1) Two gloves should be worn. The inner glove should be made from polyethylene/ethylene vinyl alcohol (e.g., Silver Shield®, or 4H®). This material, however, does not provide good physical resistance against tears, so an outer glove made from nitrile or neoprene should be worn.
- 2) Shoulder-length gloves will be more protective.
- 3) Change gloves before the break-through time occurs. Rotate several pairs of gloves throughout the day. Let the gloves dry in a warm well ventilated area at least over night before reuse.
- 4) Keep gloves clean by rinsing often. Keep gloves in good condition. Inspect the gloves before use for pin-holes, cracks, thin spots, and stiffer than normal or sticky surfaces.
- 5) Wear a face shield or goggles to protect face and eyes.

6. What Other Problems Can Occur?

Stripping Solution Temperature

Most manufacturers of stripping solution recommend controlling the solution to a temperature of 70°F. This temperature is required for the wax in the solution to form a vapor barrier on top of the solution to keep the solution from evaporating too quickly. If the temperature is too high, the wax will not form the vapor barrier. If it is too cold, the wax will solidify and separate from the solvent causing increased evaporation. Use a belt heater to heat the solution to the correct temperature. Call your solution manufacturer for the correct temperature for your solution.¹⁴

Make-Up Air

Air will enter a building in an amount to equal the amount of air exhausted whether or not provision is made for this replacement. If a local exhaust system is added a make-up or replacement air system must be added to replace the air removed. Without a replacement air system, air will enter the building through cracks causing uncontrollable eddy currents. If the building perimeter is tightly sealed, it will prevent the air from entering and severely decrease the amount exhausted from the ventilation system. This will cause the building to be under negative pressure and decrease the performance of the exhaust system.¹⁵

Dilution Ventilation

With general or dilution ventilation, uncontaminated air is moved through the workroom by means of fans or open windows, which dilutes the pollutants in the air. Dilution ventilation does not provide effective protection to other workers

and does not confine the methylene chloride vapors to one area.¹⁶

Phosgene Poisoning from Use of Kerosene Heaters

Do not use kerosene heaters or other open flame heaters while stripping furniture. Use of kerosene heaters in connection with methylene chloride can create lethal or dangerous concentrations of phosgene. Methylene chloride vapor is mixed with the air used for the combustion of kerosene in kerosene stoves. The vapor thus passes through the flames, coming into close contact with carbon monoxide at high temperatures. Any chlorine formed by decomposition may, under these conditions, react with carbon monoxide and form phosgene.¹⁷

REFERENCES

¹Halogenated Solvents Industry Alliance and Consumer Product Safety Commission [1990]. Stripping Paint from Wood (Pamphlet for consumers on how to strip furniture and precautions to take). Washington DC: Consumer Product Safety Commission.

²*Ibid.*

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⁴56 Fed. Reg. 57036 [1991]. Occupational Safety and Health Administration: Proposed rule on occupational exposure to methylene chloride.

⁵NIOSH [1992].

⁶Kirk, R.E. and P.F. Othmer, Eds. [1978]. Encyclopedia of Chemical Technology, 3rd Ed., Vol. 5:690. New York: John Wiley & Sons, Inc.

⁷ACGIH [1988]. Industrial Ventilation: A Manual of Recommended Practice. 20th Ed. Cincinnati, OH: American Conference of Governmental Industrial Hygienists.

⁸NIOSH [1992].

⁹Fairfield, C.L. and A.A. Beasley [1991]. In-depth Survey Report at the Association for Retarded Citizens, Meadowlands, PA. The Control of Methylene Chloride During Furniture Stripping. Cincinnati, OH: U.S. Department of Health and Human Services, Public Health Service, Centers for Disease Control, National Institute for Occupational Safety and Health.

¹⁰Fairfield, C.L. [1991]. In-depth Survey Report at the J.M. Murray Center, Cortland, NY. The Control of Methylene Chloride During Furniture Stripping. Cincinnati, OH: U.S. Department of Health and Human Services, Public Health Service, Centers for Disease Control, National Institute for Occupational Safety and Health.

¹¹Hall, R.M., K.F. Martinez, and P.A. Jensen [1992]. In-depth Survey Report at Tri-County Furniture Stripping and Refinishing, Cincinnati, OH. The Control of Methylene Chloride During Furniture Stripping. Cincinnati, OH: U.S. Department of Health and Human Services, Public Health Service, Centers for Disease Control, National Institute for Occupational Safety and Health.

¹²Fairfield, C.L. and A.A. Beasley [1991]. In-depth Survey Report at the Association for Retarded Citizens, Meadowlands, PA. The Control of Methylene Chloride During Furniture Stripping. Cincinnati, OH: U.S. Department of Health and Human Service, Centers for Disease Control, National Institute for Occupational Safety and Health.

¹³Roder, M. [1991]. Memorandum of March 11, 1991 from Michael Roder of the Division of Safety Research to Cheryl L. Fairfield of the Division of Physical Sciences and Engineering, National Institute for Occupational Safety and Health, Centers for Disease Control, Public Health Service, U.S. Department of Health and Human Services.

¹⁴Kwick Kleen Industrial Solvents, Inc., [1981]. Operations Manual, Kwick Kleen Industrial Solvents, Inc., Vincennes, IN.

¹⁵ACGIH [1988].

¹⁶*Ibid.*

¹⁷Gerritsen, W.B. and C.H. Buschmann [1960]. Phosgene Poisoning Caused by the Use of Chemical Paint Removers containing Methylene Chloride in Ill-Ventilated Rooms Heated by Kerosene Stoves. British Journal of Industrial Medicine 17:187.

[Statutory Authority: RCW 49.17.040, [49.17].050, [49.17].060. 98-10-029, § 296-62-07477, filed 4/24/98, effective 7/24/98; 97-18-062, § 296-62-07477, filed 9/2/97, effective 12/1/97.]

Reviser's note: The brackets and enclosed material in the text of the above section occurred in the copy filed by the agency.

PART H—AIR CONTAMINANTS

Note: The air contaminant rules for general industry have been moved to chapter 296-841 WAC. The air contaminant rules for the agriculture industry have been moved to chapter 296-307 WAC, part Y-6.

PART I—AIR CONTAMINANTS (SPECIFIC)

WAC 296-62-07517 Reserved.

[Statutory Authority: Chapter 49.17 RCW. 90-09-026 (Order 90-01), § 296-62-07517, filed 4/10/90, effective 5/25/90; 87-24-051 (Order 87-24), § 296-62-07517, filed 11/30/87. Statutory Authority: RCW 49.17.050(2) and 49.17.040. 87-10-008 (Order 87-06), § 296-62-07517, filed 4/27/87. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-18-029 (Order 81-21), § 296-62-07517, filed 8/27/81; 81-16-015 (Order 81-20), § 296-62-07517, filed 7/27/81; 80-11-010 (Order 80-14), § 296-62-07517, filed 8/8/80; Order 77-12, § 296-62-07517, filed 7/11/77; Order 73-3, § 296-62-07517, filed 5/7/73.]

WAC 296-62-07519 Thiram. (1) Scope and application. This section applies to occupational exposure to thiram (tetramethylthiuram disulfide), in addition to those requirements listed in WAC 296-62-07515. Nothing in this section shall preclude the application of other appropriate standards and regulations to minimize worker exposure to thiram.

(2) Definitions. The following definitions are applicable to this section:

(a) Clean - the absence of dirt or materials which may be harmful to a worker's health.

(b) Large seedlings - those seedlings of such size, either by length or breadth, that it is difficult to avoid contact of the thiram treated plant with the mouth or face during planting operations.

(3) General requirements.

(a) Workers should not be allowed to work more than five days in any seven day period with or around the application of thiram or thiram treated seedlings.

(b) Washing and worker hygiene.

(i) Workers shall wash their hands prior to eating or smoking at the close of work.

(ii) Warm (at least 85°F, 29.4°C) wash water and single use hand wiping materials shall be provided for washing.

(iii) The warm water and hand wiping materials shall be at fixed work locations or at the planting unit.

(iv) Where warm water is not available within 15 minutes travel time, nonalcoholic based waterless hand cleaner shall be provided.

(v) Every planter or nursery worker shall be advised to bathe or shower daily.

(vi) The inside of worker carrying vehicles shall be washed or vacuumed and wiped down at least weekly during the period of thiram use.

(c) Personal protective measures.

(i) Clothing shall be worn by workers to reduce skin contact with thiram to the legs, arms and torso.

(ii) For those workers who have thiram skin irritations, exposed areas of the body shall be protected by a suitable barrier cream.

(iii) Clothing worn by workers shall be washed or changed at least every other day.

(iv) Only impervious gloves may be worn by workers.

(v) Workers hands should be clean of thiram before placing them into gloves.

(vi) Thiram applicators shall be provided with and use respiratory protection in accordance with WAC 296-62-071, disposable coveralls or rubber slickers or other impervious clothing, rubberized boots, head covers and rubberized gloves.

(vii) Nursery workers, other than applicators, who are likely to be exposed to thiram shall be provided with and use disposable coveralls or rubber slickers or other impervious clothing, impervious footwear and gloves, and head covers in accordance with WAC 296-800-160, unless showers have been provided and are used.

(viii) Eye protection according to WAC 296-800-160, shall be provided and worn by workers who may be exposed to splashes of thiram during spraying, plug bundling, belt line grading and plugging or other operations.

(ix) Item (viii) of this subdivision need not be complied with where pressurized emergency eye wash fountains are within 10 seconds travel time of the work location. (Approved respirator - see WAC 296-62-071.)

(x) A dust mask shall be worn, when planting large seedlings, to avoid mouth and face contact with the thiram treated plant unless equally effective measures or planting practices have been established.

(d) Food handling.

(i) Food snacks, beverages, smoking materials, or any other item which is consumed shall not be stored or consumed in the packing area of the nursery.

(ii) Worker carrying vehicles shall have a clean area for carrying lunches.

(iii) The clean area of the vehicle shall be elevated from the floor and not used to carry other than food or other consumable items.

(iv) The carrying of lunches, food or other consumable items in tree planting bags is prohibited.

(v) Care shall be taken to insure that worker exposure to thiram spray, including downwind driftings, is minimized or eliminated.

(vi) When bags that contained thiram or thiram treated seedlings are burned, prevent worker exposure to the smoke.

(e) Thiram use and handling.

(i) Thiram treated seedlings shall be allowed to dry or stabilize prior to packing.

(ii) Seedlings shall be kept moist during packing and whenever possible during planting operations.

(iii) Floors, where thiram is used, shall not be dry swept but instead vacuumed, washed or otherwise cleaned at least daily.

(iv) Silica chips used to cover thiram treated seedling plugs shall be removed at the nursery.

(f) Training.

(i) Each worker engaged in operations where exposure to thiram may occur shall be provided training on the hazards of thiram, as well as the necessary precautions for its safe use and handling.

(ii) The training shall include instruction in:

(A) The nature of the health hazard(s) from exposure to thiram including specifically the potential for alcohol intolerance, drug interaction, and skin irritation;

(B) The specific nature of operations which could result in exposure to thiram and the necessary protective steps;

(C) The purpose for, proper use, and limitations of protective devices including respirators and clothing;

(D) The necessity for and requirements of good personal hygiene; and

(E) A review of the thiram rules at the worker's first training and indoctrination, and annually thereafter.

(4) Effective date. This standard shall become effective 30 days after being filed with the code reviser.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 01-11-038, § 296-62-07519, filed 5/9/01, effective 9/1/01. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-16-016 (Order 81-19), § 296-62-07519, filed 7/27/81.]

WAC 296-62-07521 Lead. (1) Scope and application.

(a) This section applies to all occupational exposure to lead, except as provided in subdivision (1)(b).

(b) This section does not apply to the construction industry or to agricultural operations covered by chapter 296-307 WAC.

(2) Definitions as applicable to this part.

(a) "Action level" - employee exposure, without regard to the use of respirators, to an airborne concentration of lead of thirty micrograms per cubic meter of air (30 µg/m³) averaged over an eight-hour period.

(b) "Director" - the director of the department of labor and industries.

(c) "Lead" - metallic lead, all inorganic lead compounds, and organic lead soaps. Excluded from this definition are all other organic lead compounds.

(3) General requirements.

(a) Employers will assess the hazards of lead in the work place and provide information to the employees about the hazards of the lead exposures to which they may be exposed.

(b) Information provided shall include:

(i) Exposure monitoring (including employee notification);

(ii) Written compliance programs;

(iii) Respiratory protection programs;

(iv) Personnel protective equipment and housekeeping;

(v) Medical surveillance and examinations;

(vi) Training requirements;

(vii) Recordkeeping requirements.

(4) Permissible exposure limit (PEL).

(a) The employer shall assure that no employee is exposed to lead at concentrations greater than fifty micrograms per cubic meter of air ($50 \mu\text{g}/\text{m}^3$) averaged over an eight-hour period.

(b) If an employee is exposed to lead for more than eight hours in any work day, the permissible exposure limit, as a time weighted average (TWA) for that day, shall be reduced according to the following formula:

Maximum permissible limit (in $\mu\text{g}/\text{m}^3$) = $400 \div$
hours worked in the day.

(c) When respirators are used to supplement engineering and work practice controls to comply with the PEL and all the requirements of subsection (7) have been met, employee exposure, for the purpose of determining whether the employer has complied with the PEL, may be considered to be at the level provided by the protection factor of the respirator for those periods the respirator is worn. Those periods may be averaged with exposure levels during periods when respirators are not worn to determine the employee's daily TWA exposure.

(5) Exposure monitoring.

(a) General.

(i) For the purposes of subsection (5), employee exposure is that exposure which would occur if the employee were not using a respirator.

(ii) With the exception of monitoring under subdivision (5)(c), the employer shall collect full shift (for at least seven continuous hours) personal samples including at least one sample for each shift for each job classification in each work area.

(iii) Full shift personal samples shall be representative of the monitored employee's regular, daily exposure to lead.

(b) Initial determination. Each employer who has a workplace or work operation covered by this standard shall determine if any employee may be exposed to lead at or above the action level.

(c) Basis of initial determination.

(i) The employer shall monitor employee exposures and shall base initial determinations on the employee exposure monitoring results and any of the following, relevant considerations:

(A) Any information, observations, or calculations which would indicate employee exposure to lead;

(B) Any previous measurements of airborne lead; and

(C) Any employee complaints of symptoms which may be attributable to exposure to lead.

(ii) Monitoring for the initial determination may be limited to a representative sample of the exposed employees who the employer reasonably believes are exposed to the greatest airborne concentrations of lead in the workplace.

(iii) Measurements of airborne lead made in the preceding twelve months may be used to satisfy the requirement to monitor under item (5)(c)(i) if the sampling and analytical methods used meet the accuracy and confidence levels of subdivision (5)(i) of this section.

(d) Positive initial determination and initial monitoring.

(i) Where a determination conducted under subdivision (5)(b) and (5)(c) of this section shows the possibility of any employee exposure at or above the action level, the employer shall conduct monitoring which is representative of the exposure for each employee in the workplace who is exposed to lead.

(ii) Measurements of airborne lead made in the preceding twelve months may be used to satisfy this requirement if the sampling and analytical methods used meet the accuracy and confidence levels of subdivision (5)(i) of this section.

(e) Negative initial determination. Where a determination, conducted under subdivisions (5)(b) and (5)(c) of this section is made that no employee is exposed to airborne concentrations of lead at or above the action level, the employer shall make a written record of such determination. The record shall include at least the information specified in subdivision (5)(c) of this section and shall also include the date of determination, location within the worksite, and the name and social security number of each employee monitored.

(f) Frequency.

(i) If the initial monitoring reveals employee exposure to be below the action level the measurements need not be repeated except as otherwise provided in subdivision (5)(g) of this section.

(ii) If the initial determination or subsequent monitoring reveals employee exposure to be at or above the action level but below the permissible exposure limit the employer shall repeat monitoring in accordance with this subsection at least every six months. The employer shall continue monitoring at the required frequency until at least two consecutive measurements, taken at least seven days apart, are below the action level at which time the employer may discontinue monitoring for that employee except as otherwise provided in subdivision (5)(g) of this section.

(iii) If the initial monitoring reveals that employee exposure is above the permissible exposure limit the employer shall repeat monitoring quarterly. The employer shall continue monitoring at the required frequency until at least two consecutive measurements, taken at least seven days apart, are below the PEL but at or above the action level at which time the employer shall repeat monitoring for that employee at the frequency specified in item (5)(f)(ii), except as otherwise provided in subdivision (5)(g) of this section.

(g) Additional monitoring. Whenever there has been a production, process, control or personnel change which may result in new or additional exposure to lead, or whenever the employer has any other reason to suspect a change which may result in new or additional exposures to lead, additional monitoring in accordance with this subsection shall be conducted.

(h) Employee notification.

(i) Within five working days after the receipt of monitoring results, the employer shall notify each employee in writing of the results which represent that employee's exposure.

(ii) Whenever the results indicate that the representative employee exposure, without regard to respirators, exceeds the permissible exposure limit, the employer shall include in the written notice a statement that the permissible exposure limit was exceeded and a description of the corrective action taken or to be taken to reduce exposure to or below the permissible exposure limit.

(i) Accuracy of measurement. The employer shall use a method of monitoring and analysis which has an accuracy (to a confidence level of ninety-five percent) of not less than plus or minus twenty percent for airborne concentrations of lead equal to or greater than $30 \mu\text{g}/\text{m}^3$.

(6) Methods of compliance.

(a) Engineering and work practice controls.

(i) Where any employee is exposed to lead above the permissible exposure limit for more than thirty days per year, the employer shall implement engineering and work practice controls (including administrative controls) to reduce and maintain employee exposure to lead in accordance with the implementation schedule in Table I below, except to the extent that the employer can demonstrate that such controls are not feasible. Wherever the engineering and work practice controls which can be instituted are not sufficient to reduce employee exposure to or below the permissible exposure limit, the employer shall nonetheless use them to reduce exposures to the lowest feasible level and shall supplement them by the use of respiratory protection which complies with the requirements of subsection (7) of this section.

(ii) Where any employee is exposed to lead above the permissible exposure limit, but for thirty days or less per year, the employer shall implement engineering controls to reduce exposures to $200 \mu\text{g}/\text{m}^3$, but thereafter may implement any combination of engineering, work practice (including administrative controls), and respiratory controls to reduce and maintain employee exposure to lead to or below $50 \mu\text{g}/\text{m}^3$.

TABLE I

Industry	Compliance dates: ¹ ($50 \mu\text{g}/\text{m}^3$)
Lead chemicals, secondary copper smelting.	July 19, 1996
Nonferrous foundries	July 19, 1996. ²
Brass and bronze ingot manufacture.	6 years. ³

¹ Calculated by counting from the date the stay on implementation of subsection (6)(a) was lifted by the U.S. Court of Appeals for the District of Columbia, the number of years specified in the 1978 lead standard and subsequent amendments for compliance with the PEL of $50 \mu\text{g}/\text{m}^3$ for exposure to airborne concentrations of lead levels for the particular industry.

² Large nonferrous foundries (20 or more employees) are required to achieve the PEL of $50 \mu\text{g}/\text{m}^3$ by means of engineering and work practice controls. Small nonferrous foundries (fewer than 20 employees) are required to achieve an 8-hour TWA of $75 \mu\text{g}/\text{m}^3$ by such controls.

³ Expressed as the number of years from the date on which the Court lifts the stay on the implementation of subsection (6)(a) for this industry for employers to achieve a lead in air concentration

of $75 \mu\text{g}/\text{m}^3$. Compliance with subsection (6) in this industry is determined by a compliance directive that incorporates elements from the settlement agreement between OSHA and representatives of the industry.

(b) Respiratory protection. Where engineering and work practice controls do not reduce employee exposure to or below the $50 \mu\text{g}/\text{m}^3$ permissible exposure limit, the employer shall supplement these controls with respirators in accordance with subsection (7).

(c) Compliance program.

(i) Each employer shall establish and implement a written compliance program to reduce exposures to or below the permissible exposure limit, and interim levels if applicable, solely by means of engineering and work practice controls in accordance with the implementation schedule in subdivision (6)(a).

(ii) Written plans for these compliance programs shall include at least the following:

(A) A description of each operation in which lead is emitted; e.g., machinery used, material processed, controls in place, crew size, employee job responsibilities, operating procedures and maintenance practices;

(B) A description of the specific means that will be employed to achieve compliance, including engineering plans and studies used to determine methods selected for controlling exposure to lead;

(C) A report of the technology considered in meeting the permissible exposure limit;

(D) Air monitoring data which documents the source of lead emissions;

(E) A detailed schedule for implementation of the program, including documentation such as copies of purchase orders for equipment, construction contracts, etc.;

(F) A work practice program which includes items required under subsections (8), (9) and (10) of this regulation;

(G) An administrative control schedule required by subdivision (6)(f), if applicable; and

(H) Other relevant information.

(iii) Written programs shall be submitted upon request to the director, and shall be available at the worksite for examination and copying by the director, any affected employee or authorized employee representatives.

(iv) Written programs shall be revised and updated at least every six months to reflect the current status of the program.

(d) Mechanical ventilation.

(i) When ventilation is used to control exposure, measurements which demonstrate the effectiveness of the system in controlling exposure, such as capture velocity, duct velocity, or static pressure shall be made at least every three months. Measurements of the system's effectiveness in controlling exposure shall be made within five days of any change in production, process, or control which might result in a change in employee exposure to lead.

(ii) Recirculation of air. If air from exhaust ventilation is recirculated into the workplace, the employer shall assure that (A) the system has a high efficiency filter with reliable back-up filter; and (B) controls to monitor the concentration of lead in the return air and to bypass the recirculation system automatically if it fails are installed, operating, and maintained.

(e) Administrative controls. If administrative controls are used as a means of reducing employees TWA exposure to lead, the employer shall establish and implement a job rotation schedule which includes:

(i) Name or identification number of each affected employee;

(ii) Duration and exposure levels at each job or work station where each affected employee is located; and

(iii) Any other information which may be useful in assessing the reliability of administrative controls to reduce exposure to lead.

(7) Respiratory protection.

(a) General. For employees who use respirators required by this section, the employer must provide respirators that comply with the requirements of this subsection. Respirators must be used during:

(i) Period necessary to install or implement engineering or work-practice controls;

(ii) Work operations for which engineering and work-practice controls are not sufficient to reduce exposures to or below the permissible exposure limit;

(iii) Periods when an employee requests a respirator.

(b) Respirator program.

(i) The employer must implement a respiratory protection program as required by chapter 296-842 WAC, except WAC 296-842-13005 and 296-842-14005.

(ii) If an employee has breathing difficulty during fit testing or respirator use, the employer must provide the employee with a medical examination as required by subsection (11)(c)(ii)(C) of this section to determine whether or not the employee can use a respirator while performing the required duty.

(c) Respirator selection.

(i) The employer must select the appropriate respirator or combination of respirators from Table II of this section.

(ii) The employer must provide a powered air-purifying respirator instead of the respirator specified in Table II of this section when an employee chooses to use this type of respirator and that such a respirator provides adequate protection to the employee.

TABLE II

RESPIRATORY PROTECTION FOR LEAD AEROSOLS

Airborne Concentration of Lead or Condition of Use	Required Respirator ¹
Not in excess of 0.5 mg/m ³ (10X PEL).	Half-mask, air-purifying respirator equipped with high efficiency filters. ^{2,3}
Not in excess of 2.5 mg/m ³ (50X PEL).	Full facepiece, air-purifying respirator with high efficiency filters. ³
Not in excess of 50 mg/m ³ (1000X PEL).	(1) Any powered, air-purifying respirator with high efficiency filters ³ ; or (2) Half-mask supplied-air respirator operated in positive-pressure mode. ²
Not in excess of 100 mg/m ³ (2000X PEL).	Supplied-air respirators with full facepiece, hood, helmet, or suit, operated in positive pressure mode.

TABLE II

RESPIRATORY PROTECTION FOR LEAD AEROSOLS

Airborne Concentration of Lead or Condition of Use	Required Respirator ¹
Greater than 100 mg/m ³ , unknown concentration or fire fighting.	Full facepiece, self-contained breathing apparatus operated in positive-pressure mode.

Note: ¹ Respirators specified for high concentrations can be used at lower concentrations of lead.

² Full facepiece is required if the lead aerosols cause eye or skin irritation at the use concentrations.

³ A high efficiency particulate filter means 99.97 percent efficient against 0.3 micron size particles.

(8) Protective work clothing and equipment.

(a) Provision and use. If an employee is exposed to lead above the PEL, without regard to the use of respirators or where the possibility of skin or eye irritation exists, the employer shall provide at no cost to the employee and assure that the employee uses appropriate protective work clothing and equipment such as, but not limited to:

(i) Coveralls or similar full-body work clothing;

(ii) Gloves, hats, and shoes or disposable shoe coverlets; and

(iii) Face shields, vented goggles, or other appropriate protective equipment which complies with WAC 296-800-160.

(b) Cleaning and replacement.

(i) The employer shall provide the protective clothing required in subdivision (8)(a) of this section in a clean and dry condition at least weekly, and daily to employees whose exposure levels without regard to a respirator are over 200 µg/m³ of lead as an eight-hour TWA.

(ii) The employer shall provide for the cleaning, laundering, or disposal of protective clothing and equipment required by subdivision (8)(a) of this section.

(iii) The employer shall repair or replace required protective clothing and equipment as needed to maintain their effectiveness.

(iv) The employer shall assure that all protective clothing is removed at the completion of a work shift only in change rooms provided for that purpose as prescribed in subdivision (10)(b) of this section.

(v) The employer shall assure that contaminated protective clothing which is to be cleaned, laundered, or disposed of, is placed in a closed container in the change-room which prevents dispersion of lead outside the container.

(vi) The employer shall inform in writing any person who cleans or launders protective clothing or equipment of the potentially harmful effects of exposure to lead.

(vii) The employer shall assure that the containers of contaminated protective clothing and equipment required by subdivision (8)(b)(v) are labeled as follows:

CAUTION: CLOTHING CONTAMINATED WITH LEAD.

DO NOT REMOVE DUST BY BLOWING OR SHAKING.

DISPOSE OF LEAD CONTAMINATED WASH WATER IN ACCORDANCE WITH APPLICABLE LOCAL, STATE, OR FEDERAL REGULATIONS.

(viii) The employer shall prohibit the removal of lead from protective clothing or equipment by blowing, shaking, or any other means which disperses lead into the air.

(9) Housekeeping.

(a) Surfaces. All surfaces shall be maintained as free as practicable of accumulations of lead.

(b) Cleaning floors.

(i) Floors and other surfaces where lead accumulates may not be cleaned by the use of compressed air.

(ii) Shoveling, dry or wet sweeping, and brushing may be used only where vacuuming or other equally effective methods have been tried and found not to be effective.

(c) Vacuuming. Where vacuuming methods are selected, the vacuums shall be used and emptied in a manner which minimizes the reentry of lead into the workplace.

(10) Hygiene facilities and practices.

(a) The employer shall assure that in areas where employees are exposed to lead above the PEL, without regard to the use of respirators, food or beverage is not present or consumed, tobacco products are not present or used, and cosmetics are not applied, except in change rooms, lunchrooms, and showers required under subdivision (10)(b) through (10)(d) of this section.

(b) Change rooms.

(i) The employer shall provide clean change rooms for employees who work in areas where their airborne exposure to lead is above the PEL, without regard to the use of respirators.

(ii) The employer shall assure that change rooms are equipped with separate storage facilities for protective work clothing and equipment and for street clothes which prevent cross-contamination.

(c) Showers.

(i) The employer shall assure that employees who work in areas where their airborne exposure to lead is above the PEL, without regard to the use of respirators, shower at the end of the work shift.

(ii) The employer shall provide shower facilities in accordance with WAC 296-800-230.

(iii) The employer shall assure that employees who are required to shower pursuant to item (10)(c)(i) do not leave the workplace wearing any clothing or equipment worn during the work shift.

(d) Lunchrooms.

(i) The employer shall provide lunchroom facilities for employees who work in areas where their airborne exposure to lead is above the PEL, without regard to the use of respirators.

(ii) The employer shall assure that lunchroom facilities have a temperature controlled, positive pressure, filtered air supply, and are readily accessible to employees.

(iii) The employer shall assure that employees who work in areas where their airborne exposure to lead is above the PEL without regard to the use of a respirator wash their hands and face prior to eating, drinking, smoking or applying cosmetics.

(iv) The employer shall assure that employees do not enter lunchroom facilities with protective work clothing or equipment unless surface lead dust has been removed by vacuuming, downdraft booth, or other cleaning method.

(e) Lavatories. The employer shall provide an adequate number of lavatory facilities which comply with WAC 296-800-230.

(11) Medical surveillance.

(a) General.

(i) The employer shall institute a medical surveillance program for all employees who are or may be exposed above the action level for more than thirty days per year.

(ii) The employer shall assure that all medical examinations and procedures are performed by or under the supervision of a licensed physician.

(iii) The employer shall provide the required medical surveillance including multiple physician review under item (11)(c)(iii) without cost to employees and at a reasonable time and place.

(b) Biological monitoring.

(i) Blood lead and ZPP level sampling and analysis. The employer shall make available biological monitoring in the form of blood sampling and analysis for lead and zinc protoporphyrin levels to each employee covered under item (11)(a)(i) of this section on the following schedule:

(A) At least every six months to each employee covered under item (11)(a)(i) of this section;

(B) At least every two months for each employee whose last blood sampling and analysis indicated a blood lead level at or above 40 µg/100 g of whole blood. This frequency shall continue until two consecutive blood samples and analyses indicate a blood lead level below 40 µg/100 g of whole blood; and

(C) At least monthly during the removal period of each employee removed from exposure to lead due to an elevated blood lead level.

(ii) Follow-up blood sampling tests. Whenever the results of a blood lead level test indicate that an employee's blood lead level exceeds the numerical criterion for medical removal under item (12)(a)(i)(A), the employer shall provide a second (follow-up) blood sampling test within two weeks after the employer receives the results of the first blood sampling test.

(iii) Accuracy of blood lead level sampling and analysis. Blood lead level sampling and analysis provided pursuant to this section shall have an accuracy (to a confidence level of ninety-five percent) within plus or minus fifteen percent or 6 µg/100 ml, whichever is greater, and shall be conducted by a laboratory licensed by the Center for Disease Control (CDC), United States Department of Health, Education and Welfare or which has received a satisfactory grade in blood lead proficiency testing from CDC in the prior twelve months.

(iv) Employee notification. Within five working days after the receipt of biological monitoring results, the employer shall notify in writing each employee whose blood lead level exceeds 40 µg/100 g: (A) of that employee's blood lead level and (B) that the standard requires temporary medical removal with medical removal protection benefits when an employee's blood lead level exceeds the numerical criterion for medical removal under item (12)(a)(i) of this section.

(c) Medical examinations and consultations.

(i) Frequency. The employer shall make available medical examinations and consultations to each employee covered

under item (11)(a)(i) of this section on the following schedule:

(A) At least annually for each employee for whom a blood sampling test conducted at any time during the preceding twelve months indicated a blood lead level at or above 40 µg/100 g;

(B) Prior to assignment for each employee being assigned for the first time to an area in which airborne concentrations of lead are at or above the action level;

(C) As soon as possible, upon notification by an employee either that the employee has developed signs or symptoms commonly associated with lead intoxication, that the employee desires medical advice concerning the effects of current or past exposure to lead on the employee's ability to procreate a healthy child, or that the employee has demonstrated difficulty in breathing during a respirator fitting test or during use; and

(D) As medically appropriate for each employee either removed from exposure to lead due to a risk of sustaining material impairment to health, or otherwise limited pursuant to a final medical determination.

(ii) Content. Medical examinations made available pursuant to subitems (11)(c)(i)(A) through (B) of this section shall include the following elements:

(A) A detailed work history and a medical history, with particular attention to past lead exposure (occupational and nonoccupational), personal habits (smoking, hygiene), and past gastrointestinal, hematologic, renal, cardiovascular, reproductive and neurological problems;

(B) A thorough physical examination, with particular attention to teeth, gums, hematologic, gastrointestinal, renal, cardiovascular, and neurological systems. Pulmonary status should be evaluated if respiratory protection will be used;

(C) A blood pressure measurement;

(D) A blood sample and analysis which determines:

(I) Blood lead level;

(II) Hemoglobin and hematocrit determinations, red cell indices, and examination of peripheral smear morphology;

(III) Zinc protoporphyrin;

(IV) Blood urea nitrogen; and

(V) Serum creatinine;

(E) A routine urinalysis with microscopic examination; and

(F) Any laboratory or other test which the examining physician deems necessary by sound medical practice.

The content of medical examinations made available pursuant to subitems (11)(c)(i)(C) through (D) of this section shall be determined by an examining physician and, if requested by an employee, shall include pregnancy testing or laboratory evaluation of male fertility.

(iii) Multiple physician review mechanism.

(A) If the employer selects the initial physician who conducts any medical examination or consultation provided to an employee under this section, the employee may designate a second physician:

(I) To review any findings, determinations or recommendations of the initial physician; and

(II) To conduct such examinations, consultations, and laboratory tests as the second physician deems necessary to facilitate this review.

(B) The employer shall promptly notify an employee of the right to seek a second medical opinion after each occasion that an initial physician conducts a medical examination or consultation pursuant to this section. The employer may condition its participation in, and payment for, the multiple physician review mechanism upon the employee doing the following within fifteen days after receipt of the foregoing notification, or receipt of the initial physician's written opinion, whichever is later:

(I) The employee informing the employer that he or she intends to seek a second medical opinion, and

(II) The employee initiating steps to make an appointment with a second physician.

(C) If the findings, determinations or recommendations of the second physician differ from those of the initial physician, then the employer and the employee shall assure that efforts are made for the two physicians to resolve any disagreement.

(D) If the two physicians have been unable to quickly resolve their disagreement, then the employer and the employee through their respective physicians shall designate a third physician:

(I) To review any findings, determinations or recommendations of the prior physicians; and

(II) To conduct such examinations, consultations, laboratory tests and discussions with the prior physicians as the third physician deems necessary to resolve the disagreement of the prior physicians.

(E) The employer shall act consistent with the findings, determinations and recommendations of the third physician, unless the employer and the employee reach an agreement which is otherwise consistent with the recommendations of at least one of the three physicians.

(iv) Information provided to examining and consulting physicians.

(A) The employer shall provide an initial physician conducting a medical examination or consultation under this section with the following information:

(I) A copy of this regulation for lead including all appendices;

(II) A description of the affected employee's duties as they relate to the employee's exposure;

(III) The employee's exposure level or anticipated exposure level to lead and to any other toxic substance (if applicable);

(IV) A description of any personal protective equipment used or to be used;

(V) Prior blood lead determinations; and

(VI) All prior written medical opinions concerning the employee in the employer's possession or control.

(B) The employer shall provide the foregoing information to a second or third physician conducting a medical examination or consultation under this section upon request either by the second or third physician, or by the employee.

(v) Written medical opinions.

(A) The employer shall obtain and furnish the employee with a copy of a written medical opinion from each examining or consulting physician which contains the following information:

(I) The physician's opinion as to whether the employee has any detected medical condition which would place the

employee at increased risk of material impairment of the employee's health from exposure to lead;

(II) Any recommended special protective measures to be provided to the employee, or limitations to be placed upon the employee's exposure to lead;

(III) Any recommended limitation upon the employee's use of respirators, including a determination of whether the employee can wear a powered air purifying respirator if a physician determines that the employee cannot wear a negative pressure respirator; and

(IV) The results of the blood lead determinations.

(B) The employer shall instruct each examining and consulting physician to:

(I) Not reveal either in the written opinion, or in any other means of communication with the employer, findings, including laboratory results, or diagnoses unrelated to an employee's occupational exposure to lead; and

(II) Advise the employee of any medical condition, occupational or nonoccupational, which dictates further medical examination or treatment.

(vi) Alternate physician determination mechanisms. The employer and an employee or authorized employee representative may agree upon the use of any expeditious alternate physician determination mechanism in lieu of the multiple physician review mechanism provided by this subsection so long as the alternate mechanism otherwise satisfies the requirements contained in this subsection.

(d) Chelation.

(i) The employer shall assure that any person whom he retains, employs, supervises or controls does not engage in prophylactic chelation of any employee at any time.

(ii) If therapeutic or diagnostic chelation is to be performed by any person in item (11)(d)(i), the employer shall assure that it be done under the supervision of a licensed physician in a clinical setting with thorough and appropriate medical monitoring and that the employee is notified in writing prior to its occurrence.

(12) Medical removal protection.

(a) Temporary medical removal and return of an employee.

(i) Temporary removal due to elevated blood lead levels.

(A) The employer shall remove an employee from work having an exposure to lead at or above the action level on each occasion that a periodic and a follow-up blood sampling test conducted pursuant to this section indicate that the employee's blood lead level is at or above 60 µg/100g of whole blood; and

(B) The employer shall remove an employee from work having an exposure to lead at or above the action level on each occasion that the average of the last three blood sampling tests conducted pursuant to this section (or the average of all blood sampling tests conducted over the previous six months, whichever is longer) indicates that the employee's blood lead level is at or above 50 µg/100g of whole blood; provided, however, that an employee need not be removed if the last blood sampling test indicates a blood lead level at or below 40 µg/100g of whole blood.

(ii) Temporary removal due to a final medical determination.

(A) The employer shall remove an employee from work having an exposure to lead at or above the action level on each occasion that a final medical determination results in a medical finding, determination, or opinion that the employee has a detected medical condition which places the employee at increased risk of material impairment to health from exposure to lead.

(B) For the purposes of this section, the phrase "final medical determination" shall mean the outcome of the multiple physician review mechanism or alternate medical determination mechanism used pursuant to the medical surveillance provisions of this section.

(C) Where a final medical determination results in any recommended special protective measures for an employee, or limitations on an employee's exposure to lead, the employer shall implement and act consistent with the recommendation.

(iii) Return of the employee to former job status.

(A) The employer shall return an employee to his or her former job status:

(I) For an employee removed due to a blood lead level at or above 60 µg/100g, or due to an average blood lead level at or above 50 µg/100g, when two consecutive blood sampling tests indicate that the employee's blood lead level is at or below 40 µg/100 g of whole blood;

(II) For an employee removed due to a final medical determination, when a subsequent final medical determination results in a medical finding, determination, or opinion that the employee no longer has a detected medical condition which places the employee at increased risk of material impairment to health from exposure to lead.

(B) For the purposes of this section, the requirement that an employer return an employee to his or her former job status is not intended to expand upon or restrict any rights an employee has or would have had, absent temporary medical removal, to a specific job classification or position under the terms of a collective bargaining agreement.

(iv) Removal of other employee special protective measure or limitations. The employer shall remove any limitations placed on an employee or end any special protective measures provided to an employee pursuant to a final medical determination when a subsequent final medical determination indicates that the limitations or special protective measures are no longer necessary.

(v) Employer options pending a final medical determination. Where the multiple physician review mechanism, or alternate medical determination mechanism used pursuant to the medical surveillance provisions of this section, has not yet resulted in a final medical determination with respect to an employee, the employer shall act as follows:

(A) Removal. The employer may remove the employee from exposure to lead, provide special protective measures to the employee, or place limitations upon the employee, consistent with the medical findings, determinations, or recommendations of any of the physicians who have reviewed the employee's health status.

(B) Return. The employer may return the employee to his or her former job status, end any special protective measures provided to the employee, and remove any limitations placed upon the employee, consistent with the medical find-

ings, determinations, or recommendations of any of the physicians who have reviewed the employee's health status, with two exceptions. If:

(I) The initial removal, special protection, or limitation of the employee resulted from a final medical determination which differed from the findings, determinations, or recommendations of the initial physician; or

(II) The employee has been on removal status for the preceding eighteen months due to an elevated blood lead level, then the employer shall await a final medical determination.

(b) Medical removal protection benefits.

(i) Provision of medical removal protection benefits. The employer shall provide to an employee up to eighteen months of medical removal protection benefits on each occasion that an employee is removed from exposure to lead or otherwise limited pursuant to this section.

(ii) Definition of medical removal protection benefits. For the purposes of this section, the requirement that an employer provide medical removal protection benefits means that the employer shall maintain the earnings, seniority and other employment rights and benefits of an employee as though the employee had not been removed from normal exposure to lead or otherwise limited.

(iii) Follow-up medical surveillance during the period of employee removal or limitation. During the period of time that an employee is removed from normal exposure to lead or otherwise limited, the employer may condition the provision of medical removal protection benefits upon the employee's participation in follow-up medical surveillance made available pursuant to this section.

(iv) Workers' compensation claims. If a removed employee files a claim for workers' compensation payments for a lead-related disability, then the employer shall continue to provide medical removal protection benefits pending disposition of the claim. To the extent that an award is made to the employee for earnings lost during the period of removal, the employer's medical removal protection obligation shall be reduced by such amount. The employer shall receive no credit for workers' compensation payments received by the employee for treatment related expenses.

(v) Other credits. The employer's obligation to provide medical removal protection benefits to a removed employee shall be reduced to the extent that the employee receives compensation for earnings lost during the period of removal either from a publicly or employer-funded compensation program, or receives income from employment with another employer made possible by virtue of the employee's removal.

(vi) Employees whose blood lead levels do not adequately decline within eighteen months of removal. The employer shall take the following measures with respect to any employee removed from exposure to lead due to an elevated blood lead level whose blood lead level has not declined within the past eighteen months of removal so that the employee has been returned to his or her former job status:

(A) The employer shall make available to the employee a medical examination pursuant to this section to obtain a final medical determination with respect to the employee;

(B) The employer shall assure that the final medical determination obtained indicates whether or not the

employee may be returned to his or her former job status, and if not, what steps should be taken to protect the employee's health;

(C) Where the final medical determination has not yet been obtained, or once obtained indicates that the employee may not yet be returned to his or her former job status, the employer shall continue to provide medical removal protection benefits to the employee until either the employee is returned to former job status, or a final medical determination is made that the employee is incapable of ever safely returning to his or her former job status.

(D) Where the employer acts pursuant to a final medical determination which permits the return of the employee to his or her former job status despite what would otherwise be an unacceptable blood lead level, later questions concerning removing the employee again shall be decided by a final medical determination. The employer need not automatically remove such an employee pursuant to the blood lead level removal criteria provided by this section.

(vii) Voluntary removal or restriction of an employee. Where an employer, although not required by this section to do so, removes an employee from exposure to lead or otherwise places limitations on an employee due to the effects of lead exposure on the employee's medical condition, the employer shall provide medical removal protection benefits to the employee equal to that required by item (12)(b)(i) of this section.

(13) Employee information and training.

(a) Training program.

(i) Each employer who has a workplace in which there is a potential exposure to airborne lead at any level shall inform employees of the content of Appendices A and B of this regulation.

(ii) The employer shall institute a training program for and assure the participation of all employees who are subject to exposure to lead at or above the action level or for whom the possibility of skin or eye irritation exists.

(iii) The employer shall provide initial training by one hundred eighty days from the effective date for those employees covered by item (13)(a)(ii) on the standard's effective date and prior to the time of initial job assignment for those employees subsequently covered by this subsection.

(iv) The training program shall be repeated at least annually for each employee.

(v) The employer shall assure that each employee is informed of the following:

(A) The content of this standard and its appendices;

(B) The specific nature of the operations which could result in exposure to lead above the action level;

(C) The purpose, proper use, limitations, and other training requirements for respiratory protection as required by chapter 296-62 WAC, Part E;

(D) The purpose and a description of the medical surveillance program, and the medical removal protection program including information concerning the adverse health effects associated with excessive exposure to lead (with particular attention to the adverse reproductive effects on both males and females);

(E) The engineering controls and work practices associated with the employee's job assignment;

(F) The contents of any compliance plan in effect; and

(G) Instructions to employees that chelating agents should not routinely be used to remove lead from their bodies and should not be used at all except under the direction of a licensed physician.

(b) Access to information and training materials.

(i) The employer shall make readily available to all affected employees a copy of this standard and its appendices.

(ii) The employer shall provide, upon request, all materials relating to the employee information and training program to the director.

(iii) In addition to the information required by item (13)(a)(v), the employer shall include as part of the training program, and shall distribute to employees, any materials pertaining to the Occupational Safety and Health Act, the regulations issued pursuant to the act, and this lead standard, which are made available to the employer by the director.

(14) Signs.

(a) General.

(i) The employer may use signs required by other statutes, regulations or ordinances in addition to, or in combination with, signs required by this subsection.

(ii) The employer shall assure that no statement appears on or near any sign required by this subsection which contradicts or detracts from the meaning of the required sign.

(b) Signs.

(i) The employer shall post the following warning signs in each work area where the PEL is exceeded:

WARNING
LEAD WORK AREA
POISON
NO SMOKING OR EATING

(ii) The employer shall assure that signs required by this subsection are illuminated and cleaned as necessary so that the legend is readily visible.

(15) Recordkeeping.

(a) Exposure monitoring.

(i) The employer shall establish and maintain an accurate record of all monitoring required in subsection (5) of this section.

(ii) This record shall include:

(A) The date(s), number, duration, location and results of each of the samples taken, including a description of the sampling procedure used to determine representative employee exposure where applicable;

(B) A description of the sampling and analytical methods used and evidence of their accuracy;

(C) The type of respiratory protective devices worn, if any;

(D) Name, social security number, and job classification of the employee monitored and of all other employees whose exposure the measurement is intended to represent; and

(E) The environmental variables that could affect the measurement of employee exposure.

(iii) The employer shall maintain these monitoring records for at least forty years or for the duration of employment plus twenty years, whichever is longer.

(b) Medical surveillance.

(i) The employer shall establish and maintain an accurate record for each employee subject to medical surveillance as required by subsection (11) of this section.

(ii) This record shall include:

(A) The name, social security number, and description of the duties of the employee;

(B) A copy of the physician's written opinions;

(C) Results of any airborne exposure monitoring done for that employee and the representative exposure levels supplied to the physician; and

(D) Any employee medical complaints related to exposure to lead.

(iii) The employer shall keep, or assure that the examining physician keeps, the following medical records:

(A) A copy of the medical examination results including medical and work history required under subsection (11) of this section;

(B) A description of the laboratory procedures and a copy of any standards or guidelines used to interpret the test results or references to that information; and

(C) A copy of the results of biological monitoring.

(iv) The employer shall maintain or assure that the physician maintains those medical records for at least forty years, or for the duration of employment plus twenty years, whichever is longer.

(c) Medical removals.

(i) The employer shall establish and maintain an accurate record for each employee removed from current exposure to lead pursuant to subsection (12) of this section.

(ii) Each record shall include:

(A) The name and social security number of the employee;

(B) The date on each occasion that the employee was removed from current exposure to lead as well as the corresponding date on which the employee was returned to his or her former job status;

(C) A brief explanation of how each removal was or is being accomplished; and

(D) A statement with respect to each removal indicating whether or not the reason for the removal was an elevated blood lead level.

(iii) The employer shall maintain each medical removal record for at least the duration of an employee's employment.

(d) Availability.

(i) The employer shall make available upon request all records required to be maintained by subsection (15) of this section to the director for examination and copying.

(ii) Environmental monitoring, medical removal, and medical records required by this subsection shall be provided upon request to employees, designated representatives, and the assistant director in accordance with chapter 296-802 WAC. Medical removal records shall be provided in the same manner as environmental monitoring records.

(iii) Upon request, the employer shall make an employee's medical records required to be maintained by this section available to the affected employee or former employee or to a physician or other individual designated by such affected employee or former employees for examination and copying.

(e) Transfer of records.

(i) Whenever the employer ceases to do business, the successor employer shall receive and retain all records required to be maintained by subsection (15) of this section.

(ii) Whenever the employer ceases to do business and there is no successor employer to receive and retain the records required to be maintained by this section for the prescribed period, these records shall be transmitted to the director.

(iii) At the expiration of the retention period for the records required to be maintained by this section, the employer shall notify the director at least three months prior to the disposal of such records and shall transmit those records to the director if requested within the period.

(iv) The employer shall also comply with any additional requirements involving transfer of records set forth in chapter 296-802 WAC.

(16) Observation of monitoring.

(a) Employee observation. The employer shall provide affected employees or their designated representatives an opportunity to observe any monitoring of employee exposure to lead conducted pursuant to subsection (5) of this section.

(b) Observation procedures.

(i) Whenever observation of the monitoring of employee exposure to lead requires entry into an area where the use of respirators, protective clothing or equipment is required, the employer shall provide the observer with and assure the use of such respirators, clothing and such equipment, and shall require the observer to comply with all other applicable safety and health procedures.

(ii) Without interfering with the monitoring, observers shall be entitled to:

(A) Receive an explanation of the measurement procedures;

(B) Observe all steps related to the monitoring of lead performed at the place of exposure; and

(C) Record the results obtained or receive copies of the results when returned by the laboratory.

(17) Appendices. The information contained in the appendices to this section is not intended by itself, to create any additional obligations not otherwise imposed by this standard nor detract from any existing obligation.

(a) Appendix A. Substance Data Sheet for Occupational Exposure to Lead.

(i) Substance identification.

(A) Substance. Pure lead (Pb) is a heavy metal at room temperature and pressure and is a basic chemical element. It can combine with various other substances to form numerous lead compounds.

(B) Compounds covered by the standard. The word "lead" when used in this standard means elemental lead, all inorganic lead compounds (except those which are not biologically available due to either solubility or specific chemical interaction), and a class of organic lead compounds called lead soaps. This standard does not apply to other organic lead compounds.

(C) Uses. Exposure to lead occurs in at least 120 different occupations, including primary and secondary lead smelting, lead storage battery manufacturing, lead pigment manufacturing and use, solder manufacturing and use, shipbuilding and ship repairing, auto manufacturing, and printing.

(D) Permissible exposure. The Permissible Exposure Limit (PEL) set by the standard is 50 micrograms of lead per cubic meter of air ($50 \mu\text{g}/\text{m}^3$), averaged over an eight-hour work day.

(E) Action level. The standard establishes an action level of 30 micrograms per cubic meter of air ($30 \mu\text{g}/\text{m}^3$) time weighted average, based on an eight-hour work day. The action level initiates several requirements of the standard, such as exposure monitoring, medical surveillance, and training and education.

(ii) Health hazard data.

(A) Ways in which lead enters your body.

(I) When absorbed into your body in certain doses lead is a toxic substance. The object of the lead standard is to prevent absorption of harmful quantities of lead. The standard is intended to protect you not only from the immediate toxic effects of lead, but also from the serious toxic effects that may not become apparent until years of exposure have passed.

(II) Lead can be absorbed into your body by inhalation (breathing) and ingestion (eating). Lead (except for certain organic lead compounds not covered by the standard, such as tetraethyl lead) is not absorbed through your skin. When lead is scattered in the air as a dust, fume or mist, it can be inhaled and absorbed through your lungs and upper respiratory tract. Inhalation of airborne lead is generally the most important source of occupational lead absorption. You can also absorb lead through your digestive system if lead gets into your mouth and is swallowed. If you handle food, cigarettes, chewing tobacco, or make-up which have lead on them or handle them with hands contaminated with lead, this will contribute to ingestion.

(III) A significant portion of the lead that you inhale or ingest gets into your blood stream. Once in your blood stream lead is circulated throughout your body and stored in various organs and body tissues. Some of this lead is quickly filtered out of your body and excreted, but some remains in your blood and other tissue. As exposure to lead continues, the amount stored in your body will increase if you are absorbing more lead than your body is excreting. Even though you may not be aware of any immediate symptoms of disease, this lead stored in your tissues can be slowly causing irreversible damage, first to individual cells, then to your organs and whole body systems.

(B) Effects of overexposure to lead.

(I) Short-term (acute) overexposure. Lead is a potent, systemic poison that serves no known useful function once absorbed by your body. Taken in large enough doses, lead can kill you in a matter of days. A condition affecting the brain called acute encephalopathy may arise which develops quickly to seizures, coma, and death from cardiorespiratory arrest. A short-term dose of lead can lead to acute encephalopathy. Short-term occupational exposures of this magnitude are highly unusual, but not impossible. Similar forms of encephalopathy may, however arise from extended, chronic exposure to lower doses of lead. There is no sharp dividing line between rapidly developing acute effects of lead, and chronic effects which take longer to acquire. Lead adversely affects numerous body systems, and causes forms of health

impairment and disease which arise after periods of exposure as short as days or as long as several years.

(II) Long-term (chronic) overexposure.

a) Chronic overexposure to lead may result in severe damage to your blood-forming, nervous, urinary and reproductive systems. Some common symptoms of chronic overexposure include loss of appetite, metallic taste in the mouth, anxiety, constipation, nausea, pallor, excessive tiredness, weakness, insomnia, headache, nervous irritability, muscle and joint pain or soreness, fine tremors, numbness, dizziness, hyperactivity and colic. In lead colic there may be severe abdominal pain.

b) Damage to the central nervous system in general and the brain (encephalopathy) in particular is one of the most severe forms of lead poisoning. The most severe, often fatal, form of encephalopathy may be preceded by vomiting, a feeling of dullness progressing to drowsiness and stupor, poor memory, restlessness, irritability, tremor, and convulsions. It may arise suddenly with the onset of seizures, followed by coma, and death. There is a tendency for muscular weakness to develop at the same time. This weakness may progress to paralysis often observed as a characteristic "wrist drop" or "foot drop" and is a manifestation of a disease to the nervous system called peripheral neuropathy.

c) Chronic overexposure to lead also results in kidney disease with few, if any, symptoms appearing until extensive and most likely permanent kidney damage has occurred. Routine laboratory tests reveal the presence of this kidney disease only after about two-thirds of kidney function is lost. When overt symptoms of urinary dysfunction arise, it is often too late to correct or prevent worsening conditions, and progression of kidney dialysis or death is possible.

d) Chronic overexposure to lead impairs the reproductive systems of both men and women. Overexposure to lead may result in decreased sex drive, impotence and sterility in men. Lead can alter the structure of sperm cells raising the risk of birth defects. There is evidence of miscarriage and stillbirth in women whose husbands were exposed to lead or who were exposed to lead themselves. Lead exposure also may result in decreased fertility, and abnormal menstrual cycles in women. The course of pregnancy may be adversely affected by exposure to lead since lead crosses the placental barrier and poses risks to developing fetuses. Children born of parents either one of whom were exposed to excess lead levels are more likely to have birth defects, mental retardation, behavioral disorders or die during the first year of childhood.

e) Overexposure to lead also disrupts the blood-forming system resulting in decreased hemoglobin (the substance in the blood that carries oxygen to the cells) and ultimately anemia. Anemia is characterized by weakness, pallor and fatigability as a result of decreased oxygen carrying capacity in the blood.

(III) Health protection goals of the standard.

a) Prevention of adverse health effects for most workers from exposure to lead throughout a working lifetime requires that worker blood lead (PbB) levels be maintained at or below forty micrograms per one hundred grams of whole blood (40 $\mu\text{g}/100\text{g}$). The blood lead levels of workers (both male and female workers) who intend to have children should

be maintained below 30 $\mu\text{g}/100\text{g}$ to minimize adverse reproductive health effects to the parents and to the developing fetus.

b) The measurement of your blood lead level is the most useful indicator of the amount of lead absorbed by your body. Blood lead levels (PbB) are most often reported in units of milligrams (mg) or micrograms (μg) of lead (1 mg = 1000 μg) per 100 grams (100g), 100 milliliters (100 ml) or deciliter (dl) of blood. These three units are essentially the same. Sometimes PbB's are expressed in the form of mg% or $\mu\text{g}\%$. This is a shorthand notation for 100g, 100ml, or dl.

c) PbB measurements show the amount of lead circulating in your blood stream, but do not give any information about the amount of lead stored in your various tissues. PbB measurements merely show current absorption of lead, not the effect that lead is having on your body or the effects that past lead exposure may have already caused. Past research into lead-related diseases, however, has focused heavily on associations between PbBs and various diseases. As a result, your PbB is an important indicator of the likelihood that you will gradually acquire a lead-related health impairment or disease.

d) Once your blood lead level climbs above 40 $\mu\text{g}/100\text{g}$, your risk of disease increases. There is a wide variability of individual response to lead, thus it is difficult to say that a particular PbB in a given person will cause a particular effect. Studies have associated fatal encephalopathy with PbBs as low as 150 $\mu\text{g}/100\text{g}$. Other studies have shown other forms of disease in some workers with PbBs well below 80 $\mu\text{g}/100\text{g}$. Your PbB is a crucial indicator of the risks to your health, but one other factor is extremely important. This factor is the length of time you have had elevated PbBs. The longer you have an elevated PbB, the greater the risk that large quantities of lead are being gradually stored in your organs and tissues (body burden). The greater your overall body burden, the greater the chances of substantial permanent damage.

e) The best way to prevent all forms of lead-related impairments and diseases—both short-term and long-term—is to maintain your PbB below 40 $\mu\text{g}/100\text{g}$. The provisions of the standard are designed with this end in mind. Your employer has prime responsibility to assure that the provisions of the standard are complied with both by the company and by individual workers. You as a worker, however, also have a responsibility to assist your employer in complying with the standard. You can play a key role in protecting your own health by learning about the lead hazards and their control, learning what the standard requires, following the standard where it governs your own action, and seeing that your employer complies with the provisions governing his actions.

(IV) Reporting signs and symptoms of health problems. You should immediately notify your employer if you develop signs or symptoms associated with lead poisoning or if you desire medical advice concerning the effects of current or past exposure to lead on your ability to have a healthy child. You should also notify your employer if you have difficulty breathing during a respirator fit test or while wearing a respirator. In each of these cases your employer must make available to you appropriate medical examinations or consultations. These must be provided at no cost to you and at a reasonable time and place.

(b) Appendix B. Employee Standard Summary. This appendix summarizes key provisions of the standard that you as a worker should become familiar with. The appendix discusses the entire standard.

(i) Permissible exposure limit (PEL). The standard sets a permissible exposure limit (PEL) of fifty micrograms of lead per cubic meter of air ($50 \mu\text{g}/\text{m}^3$), averaged over an eight-hour workday. This is the highest level of lead in air to which you may be permissibly exposed over an eight-hour workday. Since it is an eight-hour average it permits short exposures above the PEL so long as for each eight-hour workday your average exposure does not exceed the PEL.

(ii) Exposure monitoring.

(A) If lead is present in the work place where you work in any quantity, your employer is required to make an initial determination of whether the action level is exceeded for any employee. The initial determination must include instrument monitoring of the air for the presence of lead and must cover the exposure of a representative number of employees who are reasonably believed to have the highest exposure levels. If your employer has conducted appropriate air sampling for lead in the past year he may use these results. If there have been any employee complaints of symptoms which may be attributable to exposure to lead or if there is any other information or observations which would indicate employee exposure to lead, this must also be considered as part of the initial determination. If this initial determination shows that a reasonable possibility exists that any employee may be exposed, without regard to respirators, over the action level ($30 \mu\text{g}/\text{m}^3$) your employer must set up an air monitoring program to determine the exposure level of every employee exposed to lead at your work place.

(B) In carrying out this air monitoring program, your employer is not required to monitor the exposure of every employee, but he or she must monitor a representative number of employees and job types. Enough sampling must be done to enable each employee's exposure level to be reasonably represented by at least one full shift (at least seven hours) air sample. In addition, these air samples must be taken under conditions which represent each employee's regular, daily exposure to lead.

(C) If you are exposed to lead and air sampling is performed, your employer is required to quickly notify you in writing of air monitoring results which represent your exposure. If the results indicate your exposure exceeds the PEL (without regard to your use of respirators), then your employer must also notify you of this in writing, and provide you with a description of the corrective action that will be taken to reduce your exposure.

(D) Your exposure must be rechecked by monitoring every six months if your exposure is over the action level but below the PEL. Air monitoring must be repeated every three months if you are exposed over the PEL. Your employer may discontinue monitoring for you if two consecutive measurements, taken at least two weeks apart, are below the action level. However, whenever there is a production, process, control, or personnel change at your work place which may result in new or additional exposure to lead, or whenever there is any other reason to suspect a change which may result in new

or additional exposure to lead, your employer must perform additional monitoring.

(iii) Methods of compliance. Your employer is required to assure that no employee is exposed to lead in excess of the PEL. The standard establishes a priority of methods to be used to meet the PEL.

(iv) Respiratory protection.

(A) Your employer is required to provide and assure your use of respirators when your exposure to lead is not controlled below the PEL by other means. The employer must pay the cost of the respirator. Whenever you request one, your employer is also required to provide you a respirator even if your air exposure level does not exceed the PEL. You might desire a respirator when, for example, you have received medical advice that your lead absorption should be decreased. Or, you may intend to have children in the near future, and want to reduce the level of lead in your body to minimize adverse reproductive effects. While respirators are the least satisfactory means of controlling your exposure, they are capable of providing significant protection if properly chosen, fitted, worn, cleaned, maintained, and replaced when they stop providing adequate protection.

(B) Your employer is required to select respirators from the seven types listed in Table II of the respiratory protection section of this standard (see subsection (7)(c) of this section). Any respirator chosen must be certified by the National Institute for Occupational Safety and Health (NIOSH) under the provisions of 42 CFR part 84. This respirator selection table will enable your employer to choose a type of respirator which will give you a proper amount of protection based on your airborne lead exposure. Your employer may select a type of respirator that provides greater protection than that required by the standard; that is, one recommended for a higher concentration of lead than is present in your work place. For example, a powered air purifying respirator (PAPR) is much more protective than a typical negative-pressure respirator, and may also be more comfortable to wear. A PAPR has a filter, cartridge or canister to clean the air, and a power source which continuously blows filtered air into your breathing zone. Your employer might make a PAPR available to you to ease the burden of having to wear a respirator for long periods of time. The standard provides that you can obtain a PAPR upon request.

(C) Your employer must also start a respiratory protection program. This program must include written procedures for the proper selection, use, cleaning, storage, and maintenance of respirators.

(D) Your employer must assure that your respirator facepiece fits properly. Proper fit of a respirator facepiece is critical to your protection against air borne lead. Obtaining a proper fit on each employee may require your employer to make available several different types of respirator masks. To ensure that your respirator fits properly and that facepiece leakage is minimal, your employer must give you either a qualitative or quantitative fit test as required in chapter 296-842 WAC.

(E) You must also receive from your employer proper training in the use of respirators. Your employer is required to teach you how to wear a respirator, to know why it is needed, and to understand its limitations.

(F) The standard provides that if your respirator uses filter elements, you must be given an opportunity to change the filter elements whenever an increase in breathing resistance is detected. You also must be permitted to periodically leave your work area to wash your face and respirator facepiece whenever necessary to prevent skin irritation. If you ever have difficulty breathing during a fit test or while using a respirator, your employer must make a medical examination available to you to determine whether you can safely wear a respirator. The result of this examination may be to give you a positive pressure respirator (which reduces breathing resistance) or to provide alternative means of protection.

(v) Protective work clothing and equipment. If you are exposed to lead above the PEL, or if you are exposed to lead compounds such as lead arsenate or lead azide which can cause skin and eye irritation, your employer must provide you with protective work clothing and equipment appropriate for the hazard. If work clothing is provided, it must be provided in a clean and dry condition at least weekly, and daily if your airborne exposure to lead is greater than 200 $\mu\text{g}/\text{m}^3$. Appropriate protective work clothing and equipment can include coveralls or similar full-body work clothing, gloves, hats, shoes or disposable shoe coverlets, and face shields or vented goggles. Your employer is required to provide all such equipment at no cost to you. He or she is responsible for providing repairs and replacement as necessary and also is responsible for the cleaning, laundering or disposal of protective clothing and equipment. Contaminated work clothing or equipment must be removed in change rooms and not worn home or you will extend your exposure and expose your family since lead from your clothing can accumulate in your house, car, etc. Contaminated clothing which is to be cleaned, laundered or disposed of must be placed in closed containers in the change room. At no time may lead be removed from protective clothing or equipment by any means which disperses lead into the work room air.

(vi) Housekeeping. Your employer must establish a housekeeping program sufficient to maintain all surfaces as free as practicable of accumulations of lead dust. Vacuuming is the preferred method of meeting this requirement, and the use of compressed air to clean floors and other surfaces is absolutely prohibited. Dry or wet sweeping, shoveling, or brushing may not be used except where vacuuming or other equally effective methods have been tried and do not work. Vacuums must be used and emptied in a manner which minimizes the reentry of lead into the work place.

(vii) Hygiene facilities and practices.

(A) The standard requires that change rooms, showers and filtered air lunchrooms be constructed and made available to workers exposed to lead above the PEL. When the PEL is exceeded, the employer must assure that food and beverage is not present or consumed, tobacco products are not present or used, and cosmetics are not applied, except in these facilities. Change rooms, showers and lunchrooms, must be used by workers exposed in excess of the PEL. After showering, no clothing or equipment worn during the shift may be worn home and this includes shoes and underwear. Your own clothing worn during the shift should be carried home and cleaned carefully so that it does not contaminate your home. Lunchrooms may not be entered with protective clothing or equipment unless surface dust has been removed

by vacuuming, downdraft booth or other cleaning methods. Finally, workers exposed above the PEL must wash both their hands and faces prior to eating, drinking, smoking or applying cosmetics.

(B) All of the facilities and hygiene practices just discussed are essential to minimize additional sources of lead absorption from inhalation or ingestion of lead that may accumulate on you, your clothes or your possessions. Strict compliance with these provisions can virtually eliminate several sources of lead exposure which significantly contribute to excessive lead absorption.

(viii) Medical surveillance.

(A) The medical surveillance program is part of the standard's comprehensive approach to the prevention of lead-related disease. Its purpose is to supplement the main thrust of the standard which is aimed at minimizing airborne concentrations of lead and sources of ingestion. Only medical surveillance can determine if the other provisions of the standard have effectively protected you as an individual. Compliance with the standard's provision will protect most workers from the adverse effects of lead exposure, but may not be satisfactory to protect individual workers (I) who have high body burdens of lead acquired over past years, (II) who have additional uncontrolled sources of nonoccupational lead exposure, (III) who exhibit unusual variations in lead absorption rates, or (IV) who have specific nonwork related medical conditions which could be aggravated by lead exposure (e.g., renal disease, anemia). In addition, control systems may fail, or hygiene and respirator programs may be inadequate. Periodic medical surveillance of individual workers will help detect those failures. Medical surveillance will also be important to protect your reproductive ability - regardless of whether you are a man or a woman.

(B) All medical surveillance required by the standard must be performed by or under the supervision of a licensed physician. The employer must provide required medical surveillance without cost to employees and at a reasonable time and place. The standard's medical surveillance program has two parts - periodic biological monitoring, and medical examinations.

(C) Your employer's obligation to offer medical surveillance is triggered by the results of the air monitoring program. Medical surveillance must be made available to all employees who are exposed in excess of the action level for more than 30 days a year. The initial phase of the medical surveillance program, which included blood lead level tests and medical examinations, must be completed for all covered employees no later than 180 days from the effective date of this standard. Priority within this first round of medical surveillance must be given to employees whom the employer believes to be at greatest risk from continued exposure (for example, those with the longest prior exposure to lead, or those with the highest current exposure). Thereafter, the employer must periodically make medical surveillance - both biological monitoring and medical examinations - available to all covered employees.

(D) Biological monitoring under the standard consists of blood lead level (PbB) and zinc protoporphyrin tests at least every six months after the initial PbB test. A zinc protoporphyrin (ZPP) test is a very useful blood test which measures an effect of lead on your body. If a worker's PbB exceeds 40

µg/100g, the monitoring frequency must be increased from every six months to at least every two months and not reduced until two consecutive PbBs indicate a blood lead level below 40 µg/100g. Each time your PbB is determined to be over 40 µg/100g, your employer must notify you of this in writing within five working days of the receipt of the test results. The employer must also inform you that the standard requires temporary medical removal with economic protection when your PbB exceeds certain criteria (see Discussion of Medical Removal Protection - subsection (12)). During the first year of the standard, this removal criterion is 80 µg/100g. Anytime your PbB exceeds 80 µg/100g your employer must make available to you a prompt follow-up PbB test to ascertain your PbB. If the two tests both exceed 80 µg/100g and you are temporarily removed, then your employer must make successive PbB tests available to you on a monthly basis during the period of your removal.

(E) Medical examinations beyond the initial one must be made available on an annual basis if your blood lead levels exceeds 40µg/100g at any time during the preceding year. The initial examination will provide information to establish a baseline to which subsequent data can be compared. An initial medical examination must also be made available (prior to assignment) for each employee being assigned for the first time to an area where the airborne concentration of lead equals or exceeds the action level. In addition, a medical examination or consultation must be made available as soon as possible if you notify your employer that you are experiencing signs or symptoms commonly associated with lead poisoning or that you have difficulty breathing while wearing a respirator or during a respirator fit test. You must also be provided a medical examination or consultation if you notify your employer that you desire medical advice concerning the effects of current or past exposure to lead on your ability to procreate a healthy child.

(F) Finally, appropriate follow-up medical examinations or consultations may also be provided for employees who have been temporarily removed from exposure under the medical removal protection provisions of the standard (see item (ix) below).

(G) The standard specifies the minimum content of pre-assignment and annual medical examinations. The content of other types of medical examinations and consultations is left up to the sound discretion of the examining physician. Pre-assignment and annual medical examinations must include (I) a detailed work history and medical history, (II) a thorough physical examination, and (III) a series of laboratory tests designed to check your blood chemistry and your kidney function. In addition, at any time upon your request, a laboratory evaluation of male fertility will be made (microscopic examination of a sperm sample), or a pregnancy test will be given.

(H) The standard does not require that you participate in any of the medical procedures, tests, etc., which your employer is required to make available to you. Medical surveillance can, however, play a very important role in protecting your health. You are strongly encouraged, therefore, to participate in a meaningful fashion. Generally, your employer will choose the physician who conducts medical surveillance under the lead standard - unless you and your

employer can agree on the choice of a physician or physicians. Some companies and unions have agreed in advance, for example, to use certain independent medical laboratories or panels of physicians. Any of these arrangements are acceptable so long as required medical surveillance is made available to workers.

(I) The standard requires your employer to provide certain information to a physician to aid in his or her examination of you. This information includes (I) the standard and its appendices, (II) a description of your duties as they relate to lead exposure, (III) your exposure level, (IV) a description of personal protective equipment you wear, (V) prior blood level results, and (VI) prior written medical opinions concerning you that the employer has. After a medical examination or consultation the physician must prepare a written report which must contain (I) the physician's opinion as to whether you have any medical conditions which places you at increased risk of material impairment to health from exposure to lead, (II) any recommended special protective measures to be provided to you, (III) any blood lead level determinations, and (IV) any recommended limitation on your use of respirators. This last element must include a determination of whether you can wear a powered air purifying respirator (PAPR) if you are found unable to wear a negative pressure respirator.

(J) The medical surveillance program of the lead standard may at some point in time serve to notify certain workers that they have acquired a disease or other adverse medical condition as a result of occupational lead exposure. If this is true these workers might have legal rights to compensation from public agencies, their employers, firms that supply hazardous products to their employers, or other persons. Some states have laws, including worker compensation laws, that disallow a worker to learn of a job-related health impairment to sue, unless the worker sues within a short period of time after learning of the impairment. (This period of time may be a matter of months or years.) An attorney can be consulted about these possibilities. It should be stressed that WISHA is in no way trying to either encourage or discourage claims or lawsuits. However, since results of the standard's medical surveillance program can significantly affect the legal remedies of a worker who has acquired a job-related disease or impairment, it is proper for WISHA to make you aware of this.

(K) The medical surveillance section of the standard also contains provisions dealing with chelation. Chelation is the use of certain drugs (administered in pill form or injected into the body) to reduce the amount of lead absorbed in body tissues. Experience accumulated by the medical and scientific communities has largely confirmed the effectiveness of this type of therapy for the treatment of very severe lead poisoning. On the other hand it has also been established that there can be a long list of extremely harmful side effects associated with the use of chelating agents. The medical community has balanced the advantages and disadvantages resulting from the use of chelating agents in various circumstances and has established when the use of these agents is acceptable. The standard includes these accepted limitations due to a history of abuse of chelation therapy by some lead companies. The most widely used chelating agents are calcium disodium EDTA, (Ca Na₂EDTA), Calcium Disodium Versenate

(Versenate), and d-penicillamine (penicillamine or Cupramine).

(L) The standard prohibits "prophylactic chelation" of any employee by any person the employer retains, supervises or controls. "Prophylactic chelation" is the routine use of chelating or similarly acting drugs to prevent elevated blood levels in workers who are occupationally exposed to lead, or the use of these drugs to routinely lower blood lead levels to predesignated concentrations believed to be safe. It should be emphasized that where an employer takes a worker who has no symptoms of lead poisoning and has chelation carried out by a physician (either inside or outside of a hospital) solely to reduce the worker's blood lead level, that will generally be considered prophylactic chelation. The use of a hospital and a physician does not mean that prophylactic chelation is not being performed. Routine chelation to prevent increased or reduce current blood lead levels is unacceptable whatever the setting.

(M) The standard allows the use of "therapeutic" or "diagnostic" chelation if administered under the supervision of a licensed physician in a clinical setting with thorough and appropriate medical monitoring. Therapeutic chelation responds to severe lead poisoning where there are marked symptoms. Diagnostic chelation, involves giving a patient a dose of the drug then collecting all urine excreted for some period of time as an aid to the diagnosis of lead poisoning.

(N) In cases where the examining physician determines that chelation is appropriate, you must be notified in writing of this fact before such treatment. This will inform you of a potentially harmful treatment, and allow you to obtain a second opinion.

(ix) Medical removal protection.

(A) Excessive lead absorption subjects you to increased risk of disease. Medical removal protection (MRP) is a means of protecting you when for whatever reasons, other methods, such as engineering controls, work practices, and respirators, have failed to provide the protection you need. MRP involves the temporary removal of a worker from his or her regular job to a place of significantly lower exposure without any loss of earnings, seniority, or other employment rights or benefits. The purpose of this program is to cease further lead absorption and allow your body to naturally excrete lead which has previously been absorbed. Temporary medical removal can result from an elevated blood lead level, or a medical opinion. Up to eighteen months of protection is provided as a result of either form of removal. The vast majority of removed workers, however, will return to their former jobs long before this eighteen month period expires. The standard contains special provisions to deal with the extraordinary but possible case where a long-term worker's blood lead level does not adequately decline during eighteen months of removal.

(B) During the first year of the standard, if your blood lead level is 80 $\mu\text{g}/100\text{g}$ or above you must be removed from any exposure where your air lead level without a respirator would be 100 $\mu\text{g}/\text{m}^3$ or above. If you are removed from your normal job you may not be returned until your blood lead level declines to at least 60 $\mu\text{g}/100\text{g}$. These criteria for removal and return will change according to the following schedule:

TABLE 1

Effective Date	Removal Blood Level ($\mu\text{g}/100\text{g}$)	Air Lead ($\mu\text{g}/\text{m}^3$)	Return Blood Lead ($\mu\text{g}/100\text{g}$)
9/6/81	At or above 70	50 or above	At or below 50
9/6/82	At or above 60	30 or above	At or below 40
9/6/84	At or above 50 averaged over six months	30 or above	At or below 40

(C) You may also be removed from exposure even if your blood lead levels are below these criteria if a final medical determination indicates that you temporarily need reduced lead exposure for medical reasons. If the physician who is implementing your employer's medical program makes a final written opinion recommending your removal or other special protective measures, your employer must implement the physician's recommendation. If you are removed in this manner, you may only be returned when the physician indicates it is safe for you to do so.

(D) The standard does not give specific instructions dealing with what an employer must do with a removed worker. Your job assignment upon removal is a matter for you, your employer and your union (if any) to work out consistent with existing procedures for job assignments. Each removal must be accomplished in a manner consistent with existing collective bargaining relationships. Your employer is given broad discretion to implement temporary removals so long as no attempt is made to override existing agreements. Similarly, a removed worker is provided no right to veto an employer's choice which satisfies the standard.

(E) In most cases, employers will likely transfer removed employees to other jobs with sufficiently low lead exposure. Alternatively, a worker's hours may be reduced so that the time weighted average exposure is reduced, or he or she may be temporarily laid off if no other alternative is feasible.

(F) In all of these situations, MRP benefits must be provided during the period of removal - i.e., you continue to receive the same earnings, seniority, and other rights and benefits you would have had if you had not been removed. Earnings include more than just your base wage; it includes overtime, shift differentials, incentives, and other compensation you would have earned if you had not been removed. During the period of removal you must also be provided with appropriate follow-up medical surveillance. If you were removed because your blood lead level was too high, you must be provided with a monthly blood test. If a medical opinion caused your removal, you must be provided medical tests or examinations that the physician believes to be appropriate. If you do not participate in this follow-up medical surveillance, you may lose your eligibility for MRP benefits.

(G) When you are medically eligible to return to your former job, your employer must return you to your "former job status." This means that you are entitled to the position, wages, benefits, etc., you would have had if you had not been removed. If you would still be in your old job if no removal had occurred, that is where you go back. If not, you are

returned consistent with whatever job assignment discretion your employer would have had if no removal had occurred. MRP only seeks to maintain your rights, not expand them or diminish them.

(H) If you are removed under MRP and you are also eligible for worker compensation or other compensation for lost wages, your employer's MRP benefits obligation is reduced by the amount that you actually receive from these other sources. This is also true if you obtain other employment during the time you are laid off with MRP benefits.

(I) The standard also covers situations where an employer voluntarily removes a worker from exposure to lead due to the effects of lead on the employee's medical condition, even though the standard does not require removal. In these situations MRP benefits must still be provided as though the standard required removal. Finally, it is important to note that in all cases where removal is required, respirators cannot be used as a substitute. Respirators may be used before removal becomes necessary, but not as an alternative to a transfer to a low exposure job, or to a lay-off with MRP benefits.

(x) Employee information and training.

(A) Your employer is required to provide an information and training program for all employees exposed to lead above the action level or who may suffer skin or eye irritation from lead. This program must inform these employees of the specific hazards associated with their work environment, protective measures which can be taken, the danger of lead to their bodies (including their reproductive systems), and their rights under the standard. In addition, your employer must make readily available to all employees, including those exposed below the action level, a copy of the standard and its appendices and must distribute to all employees any materials provided to the employer under the Washington Industrial Safety and Health Act (WISHA).

(B) Your employer is required to complete this training for all employees by March 4, 1981. After this date, all new employees must be trained prior to initial assignment to areas where there is possibility of exposure over the action level. This training program must also be provided at least annually thereafter.

(xi) Signs. The standard requires that the following warning sign be posted in work areas where the exposure to lead exceeds the PEL:

WARNING
LEAD WORK AREA
NO SMOKING OR EATING

(xii) Recordkeeping.

(A) Your employer is required to keep all records of exposure monitoring for airborne lead. These records must include the name and job classification of employees measured, details of the sampling and analytic techniques, the results of this sampling and the type of respiratory protection being worn by the person sampled. Your employer is also required to keep all records of biological monitoring and medical examination results. These must include the names of the employees, the physician's written opinion and a copy of the results of the examination. All of the above kinds of records must be kept for 40 years, or for at least 20 years after your termination of employment, whichever is longer.

(B) Recordkeeping is also required if you are temporarily removed from your job under the MRP program. This record must include your name and social security number, the date of your removal and return, how the removal was or is being accomplished, and whether or not the reason for the removal was an elevated blood lead level. Your employer is required to keep each medical removal record only for as long as the duration of an employee's employment.

(C) The standard requires that if you request to see or copy environmental monitoring, blood lead level monitoring, or medical removal records, they must be made available to you or to a representative that you authorize. Your union also has access to these records. Medical records other than PbBs must also be provided to you upon request, to your physician or to any other person whom you may specifically designate. Your union does not have access to your personal medical records unless you authorize their access.

(xiii) Observations of monitoring. When air monitoring for lead is performed at your work place as required by this standard, your employer must allow you or someone you designate to act as an observer of the monitoring. Observers are entitled to an explanation of the measurement procedure, and to record the results obtained. Since results will not normally be available at the time of the monitoring, observers are entitled to record or receive the results of the monitoring when returned by the laboratory. Your employer is required to provide the observer with any personal protective devices required to be worn by employees working in the areas that is being monitored. The employer must require the observer to wear all such equipment and to comply with all other applicable safety and health procedures.

(xiv) Effective date. The standard's effective date is September 6, 1980, and the employer's obligation under the standard begin to come into effect as of that date. The standard was originally adopted as WAC 296-62-07349 and later recodified to WAC 296-62-07521.

(c) Appendix C. Medical Surveillance Guidelines.

(i) Introduction.

(A) The primary purpose of the Washington Industrial Safety and Health Act of 1973 is to assure, so far as possible, safe and healthful working conditions for every working man and woman. The occupational health standard for inorganic lead* was promulgated to protect workers exposed to inorganic lead including metallic lead, all inorganic lead compounds and organic lead soaps.

*The term inorganic lead used throughout the medical surveillance appendices is meant to be synonymous with the definition of lead set forth in the standard.

(B) Under this final standard in effect as of September 6, 1980, occupational exposure to inorganic lead is to be limited to 50 µg/m³ (micrograms per cubic meter) based on an eight-hour time-weighted average (TWA). This level of exposure eventually must be achieved through a combination of engineering, work practice and other administrative controls. Periods of time ranging from one to ten years are provided for different industries to implement these controls which are based on individual industry considerations. Until these controls are in place, respirators must be used to meet the 50 µg/m³ exposure limit.

(C) The standard also provides for a program of biological monitoring and medical surveillance for all employees exposed to levels of inorganic lead above the action level of 30 µg/m³ for more than thirty days per year.

(D) The purpose of this document is to outline the medical surveillance provisions of the standard for inorganic lead, and to provide further information to the physician regarding the examination and evaluation of workers exposed to inorganic lead.

(E) Item (ii) provides a detailed description of the monitoring procedure including the required frequency of blood testing for exposed workers, provisions for medical removal protection (MRP), the recommended right of the employee to a second medical opinion, and notification and recordkeeping requirements of the employer. A discussion of the requirements for respirator use and respirator monitoring and WISHA's position on prophylactic chelation therapy are also included in this section.

(F) Item (iii) discusses the toxic effects and clinical manifestations of lead poisoning and effects of lead intoxication on enzymatic pathways in heme synthesis. The adverse effects on both male and female reproductive capacity and on the fetus are also discussed.

(G) Item (iv) outlines the recommended medical evaluation of the worker exposed to inorganic lead including details of the medical history, physical examination, and recommended laboratory tests, which are based on the toxic effects of lead as discussed in item (ii).

(H) Item (v) provides detailed information concerning the laboratory tests available for the monitoring of exposed workers. Included also is a discussion of the relative value of each test and the limitations and precautions which are necessary in the interpretation of the laboratory results.

(I) Airborne levels to be achieved without reliance on respirator protection through a combination of engineering and work practice or other administrative controls are illustrated in the following table:

Industry	Permissible Lead Level/Compliance		
	Date		
	200µg/m ³	100µg/m ³	50µg/m ³
Primary Lead Production	1973	06/29/84	06/29/91
Secondary Lead Production	1973	06/29/84	06/29/91
Lead Acid Battery Manufacturing	1973	06/29/83	06/29/91
Automobile Mfg./Solder, Grinding	1973	N/A	03/08/97
Electronics, Gray Iron Foundries, Ink Mfg., Paints and Coatings			
Mfg., Can Mfg., Wallpaper Mfg., and Printing.	1973	N/A	06/29/91

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Industry	Permissible Lead Level/Compliance		
	Date		
	200µg/m ³	100µg/m ³	50µg/m ³
Lead Chemical Mfg., Nonferrous Foundries, Leaded Steel Mfg., Battery Breaking in the Collection and Processing of Scrap (when not a part of secondary lead smelter) Secondary Copper Smelter, Brass and Bronze Ingot Production.	1973	N/A	N/A ^{1*}
All Other Industries	1973	N/A	09/08/92

* Feasibility of achieving the PEL by engineering and work practice controls for these industries has yet to be resolved in court, therefore no date has been scheduled.

(ii) Medical surveillance and monitoring requirements for workers exposed to inorganic lead.

(A) Under the occupational health standard for inorganic lead, a program of biological monitoring and medical surveillance is to be made available to all employees exposed to lead above the action level of 30 µg/m³ TWA for more than thirty days each year. This program consists of periodic blood sampling and medical evaluation to be performed on a schedule which is defined by previous laboratory results, worker complaints or concerns, and the clinical assessment of the examining physician.

(B) Under this program, the blood lead level of all employees who are exposed to lead above the action level of 30 µg/m³ is to be determined at least every six months. The frequency is increased to every two months for employees whose last blood lead level was between 40µg/100g whole blood and the level requiring employee medical removal to be discussed below. For employees who are removed from exposure to lead due to an elevated blood lead, a new blood lead level must be measured monthly. Zinc protoporphyrin (ZPP) measurement is required on each occasion that a blood lead level measurement is made.

(C) An annual medical examination and consultation performed under the guidelines discussed in item (iv) is to be made available to each employee for whom a blood test conducted at any time during the preceding twelve months indicated a blood lead level at or above 40 µg/100g. Also, an examination is to be given to all employees prior to their assignment to an area in which airborne lead concentrations reach or exceed the action level. In addition, a medical examination must be provided as soon as possible after notification by an employee that the employee has developed signs or symptoms commonly associated with lead intoxication, that the employee desires medical advice regarding lead exposure and the ability to procreate a healthy child, or that the employee has demonstrated difficulty in breathing during a respirator fitting test or during respirator use. An examination

is also to be made available to each employee removed from exposure to lead due to a risk of sustaining material impairment to health, or otherwise limited or specially protected pursuant to medical recommendations.

(D) Results of biological monitoring or the recommendations of an examining physician may necessitate removal of an employee from further lead exposure pursuant to the standard's medical removal program (MRP). The object of

the MRP program is to provide temporary medical removals to workers either with substantially elevated blood lead levels or otherwise at risk of sustaining material health impairment from continued substantial exposure to lead. The following guidelines which are summarized in Table 10 were created under the standard for the temporary removal of an exposed employee and his or her subsequent return to work in an exposure area.

TABLE 10
EFFECTIVE DATE

	Sept. 6, 1980	Sept. 6, 1981	Sept. 6, 1982	Sept. 6, 1983	Sept. 6, 1984
A. Blood lead level requiring employee medical removal (level must be confirmed with second follow-up blood lead level within two weeks of first report).	>80 µg/100g.	>70 µg/100g.	>60 µg/100g.	>60 µg/100g.	>60 µg/100g or average of last three blood samples or all blood samples over previous 6 months (whichever is over a longer time period) is 50 µg/100g. or greater unless last sample is 40 µg/100g or less.
B. Frequency which employees exposed is action level of lead (30 µg/m ³ TWA) must have blood lead level checked. (ZPP is also required in each occasion that a blood test is obtained):					
1. Last blood lead level less than 40 µg/100g	Every 6 months.	Every 6 months.	Every 6 months.	Every 6 months.	Every 6 months.
2. Last blood lead level between 40 µg/100g and level requiring medical removal (see A above)	Every 2 months.	Every 2 months.	Every 2 months.	Every 2 months.	Every 2 months.
3. Employees removed from exposure to lead because of an elevated blood lead level	Every 1 month.	Every 1 month.	Every 1 month.	Every 1 month.	Every 1 month.

TABLE 10
EFFECTIVE DATE

	Sept. 6, 1980	Sept. 6, 1981	Sept. 6, 1982	Sept. 6, 1983	Sept. 6, 1984
C. Permissible airborne exposure limit for workers removed from work due to an elevated blood lead level (without regard to respirator protection).	100 $\mu\text{g}/\text{m}^3$ 8 hr TWA	50 $\mu\text{g}/\text{m}^3$ 8 hr TWA	30 $\mu\text{g}/\text{m}^3$ 8 hr TWA	30 $\mu\text{g}/\text{m}^3$ 8 hr TWA	30 $\mu\text{g}/\text{m}^3$ 8 hr TWA
D. Blood lead level confirmed with a second blood analysis, at which employee may return to work. Permissible exposure without regard to respirator protection is listed by industry in Table 1.	60 $\mu\text{g}/100\text{g}$	50 $\mu\text{g}/100\text{g}$	40 $\mu\text{g}/100\text{g}$	40 $\mu\text{g}/100\text{g}$	40 $\mu\text{g}/100\text{g}$

Note: Where medical opinion indicates that an employee is at risk of material impairment from exposure to lead, the physician can remove an employee from exposure exceeding the action level (or less) or recommend special protective measures as deemed appropriate and necessary. Medical monitoring during the medical removal period can be more stringent than noted in the table above if the physician so specifies. Return to work or removal of limitations and special protections is permitted when the physician indicates that the worker is no longer at risk of material impairment.

(E) Under the standard's ultimate worker removal criteria, a worker is to be removed from any work having any eight-hour TWA exposure to lead of 30 $\mu\text{g}/\text{m}^3$ or more whenever either of the following circumstances apply. (I) a blood lead level of 60 $\mu\text{g}/100\text{g}$ or greater is obtained and confirmed by a second follow-up blood lead level performed within two weeks after the employer receives the results of the first blood sample test, or (II) the average of the previous three blood lead determinations or the average of all blood lead determinations conducted during the previous six months, whichever encompasses the longest time period, equals or exceeds 50 $\mu\text{g}/100\text{g}$, unless the last blood sample indicates a blood lead level at or below 40 $\mu\text{g}/100\text{g}$, in which case the employee need not be removed. Medical removal is to continue until two consecutive blood lead levels are 40 $\mu\text{g}/100\text{g}$ or less.

(F) During the first two years that the ultimate removal criteria are being phased in, the return criteria have been set to assure that a worker's blood lead level has substantially declined during the period of removal. From March 1, 1979, to March 1, 1980, the blood lead level requiring employee medical removal is 80 $\mu\text{g}/100\text{g}$. Workers found to have a confirmed blood lead at this level or greater need only be removed from work having a daily eight hour TWA exposure to lead at or above 100 $\mu\text{g}/\text{m}^3$. Workers so removed are to be returned to work when their blood lead levels are at or below 60 $\mu\text{g}/100\text{g}$ of whole blood. From March 1, 1980, to March 1, 1981, the blood lead level requiring medical removal is 70 $\mu\text{g}/100\text{g}$. During this period workers need only be removed from jobs having a daily eight hour TWA exposure to lead at or above 50 $\mu\text{g}/\text{m}^3$ and are to be returned to work when a level of 50 $\mu\text{g}/100\text{g}$ is achieved. Beginning March 1, 1981, return depends on the worker's blood lead level declining to 40 $\mu\text{g}/100\text{g}$ of whole blood.

(G) As part of the standard, the employer is required to notify in writing each employee whose whole blood lead

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level exceeds 40 $\mu\text{g}/100\text{g}$. In addition, each such employee is to be informed that the standard requires medical removal with MRP benefits, discussed below, when an employee's blood lead level exceeds the above defined limits.

(H) In addition to the above blood lead level criteria, temporary worker removal may also take place as a result of medical determinations and recommendations. Written medical opinions must be prepared after each examination pursuant to the standard. If the examining physician includes medical finding, determination or opinion that the employee has a medical condition which places the employee at increased risk of material health impairment from exposure to lead, then the employee must be removed from exposure to lead at or above the action level. Alternatively, if the examining physician recommends special protective measures for an employee (e.g., use of a powered air purifying respirator) or recommends limitations on an employee's exposure to lead, then the employer must implement these recommendations. Recommendations may be more stringent than the specific provisions of the standard. The examining physician, therefore, is given broad flexibility to tailor special protective procedures to the needs of individual employees. This flexibility extends to the evaluation and management of pregnant workers and male and female workers who are planning to conceive children. Based on the history, physical examination, and laboratory studies, the physician might recommend special protective measures or medical removal for an employee who is pregnant or who is planning to conceive a child when, in the physician's judgment, continued exposure to lead at the current job would pose a significant risk. The return of the employee to his or her former job status, or the removal of special protections or limitations, depends upon the examining physician determining that the employee is no longer at increased risk of material impairment or that the special measures are no longer needed.

(I) During the period of any form of special protection or removal, the employer must maintain the worker's earnings,

seniority, and other employment rights and benefits (as though the worker has not been removed) for a period of up to eighteen months. This economic protection will maximize meaningful worker participation in the medical surveillance program, and is appropriate as part of the employer's overall obligation to provide a safe and healthful work place. The provisions of MRP benefits during the employee's removal period may, however, be conditioned upon participation in medical surveillance.

(J) On rare occasions, an employee's blood lead level may not acceptably decline within eighteen months of removal. This situation will arise only in unusual circumstances, thus the standard relies on an individual medical examination to determine how to protect such an employee. This medical determination is to be based on both laboratory values, including lead levels, zinc protoporphyrin levels, blood counts, and other tests felt to be warranted, as well as the physician's judgment that any symptoms or findings on physical examination are a result of lead toxicity. The medical determination may be that the employee is incapable of ever safely returning to his or her former job status. The medical determination may provide additional removal time past eighteen months for some employees or specify special protective measures to be implemented.

(K) The lead standard provides for a multiple physician review in cases where the employee wishes a second opinion concerning potential lead poisoning or toxicity. If an employee wishes a second opinion, he or she can make an appointment with a physician of his or her choice. This second physician will review the findings, recommendations or determinations of the first physician and conduct any examinations, consultations or tests deemed necessary in an attempt to make a final medical determination. If the first and second physicians do not agree in their assessment they must try to resolve their differences. If they cannot reach an agreement then they must designate a third physician to resolve the dispute.

(L) The employer must provide examining and consulting physicians with the following specific information: A copy of the lead regulations and all appendices, a description of the employee's duties as related to exposure, the exposure level to lead and any other toxic substances (if applicable), a description of personal protective equipment used, blood lead levels, and all prior written medical opinions regarding the employee in the employer's possession or control. The employer must also obtain from the physician and provide the employee with a written medical opinion containing blood lead levels, the physician's opinion as to whether the employee is at risk of material impairment to health, any recommended protective measures for the employee if further exposure is permitted, as well as any recommended limitations upon an employee's use of respirators.

(M) Employers must instruct each physician not to reveal to the employer in writing or in any other way his or her findings, laboratory results, or diagnoses which are felt to be unrelated to occupational lead exposure. They must also instruct each physician to advise the employee of any occupationally or nonoccupationally related medical condition requiring further treatment or evaluation.

(N) The standard provides for the use of respirators when engineering and other primary controls have not been fully

implemented. However, the use of respirator protection shall not be used in lieu of temporary medical removal due to elevated blood lead levels or findings that an employee is at risk of material health impairment. This is based on the numerous inadequacies of respirators including skin rash where the facepiece makes contact with the skin, unacceptable stress to breathing in some workers with underlying cardiopulmonary impairment, difficulty in providing adequate fit, the tendency for respirators to create additional hazards by interfering with vision, hearing, and mobility, and the difficulties of assuring the maximum effectiveness of a complicated work practice program involving respirators. Respirators do, however, serve a useful function where engineering and work practice are inadequate by providing interim or short-term protection, provided they are properly selected for the environment in which the employee will be working, properly fitted to the employee, maintained and cleaned periodically, and worn by the employee when required.

(O) In its final standard on occupational exposure to inorganic lead, WISHA has prohibited prophylactic chelation. Diagnostic and therapeutic chelation are permitted only under the supervision of a licensed physician with appropriate medical monitoring in an acceptable clinical setting. The decision to initiate chelation therapy must be made on an individual basis and take into account the severity of symptoms felt to be a result of lead toxicity along with blood lead levels, ZPP levels and other laboratory tests as appropriate. EDTA and penicillamine, which are the primary chelating agents used in the therapy of occupational lead poisoning, have significant potential side effects and their use must be justified on the basis of expected benefits to the worker.

(P) Unless frank and severe symptoms are present, therapeutic chelation is not recommended given the opportunity to remove a worker from exposure and allow the body to naturally excrete accumulated lead. As a diagnostic aid, the chelation mobilization test using CA-EDTA has limited applicability. According to some investigators, the tests can differentiate between lead-induced and other nephropathies. The test may also provide an estimation of the mobile fraction of the total body lead burden.

(Q) Employers are required to assure that accurate records are maintained on exposure monitoring, medical surveillance, and medical removal for each employee. Exposure monitoring and medical surveillance records must be kept for forty years or the duration of employment plus twenty years, whichever is longer, while medical removal records must be maintained for the duration of employment. All records required under the standard must be made available upon request to representatives of the director of the department of labor and industries. Employers must also make environmental and biological monitoring and medical removal records available to affected employees and to former employees or their authorized employee representatives. Employees or their specifically designated representatives have access to their entire medical surveillance records.

(R) In addition, the standard requires that the employer inform all workers exposed to lead at or above the action level of the provisions of the standard and all its appendices, the purpose and description of medical surveillance and provisions for medical removal protection if temporary removal is required. An understanding of the potential health effects

of lead exposure by all exposed employees along with full understanding of their rights under the lead standard is essential for an effective monitoring program.

(iii) Adverse health effects of inorganic lead.

(A) Although the toxicity of lead has been known for 2,000 years, the knowledge of the complex relationship between lead exposure and human response is still being refined. Significant research into the toxic properties of lead continues throughout the world, and it should be anticipated that our understanding of thresholds of effects and margins of safety will be improved in future years. The provisions of the lead standard are founded on two prime medical judgments; first, the prevention of adverse health effects from exposure to lead throughout a working lifetime requires that worker blood lead levels be maintained at or below 40 $\mu\text{g}/100\text{g}$, and second, the blood lead levels of workers, male or female, who intend to parent in the near future should be maintained below 30 $\mu\text{g}/100\text{g}$ to minimize adverse reproduction health effects to the parent and developing fetus. The adverse effects of lead on reproduction are being actively researched and WISHA encourages the physician to remain abreast of recent developments in the area to best advise pregnant workers or workers planning to conceive children.

(B) The spectrum of health effects caused by lead exposure can be subdivided into five developmental states; normal, physiological changes of uncertain significance, pathophysiological changes, overt symptoms (morbidity), and mortality. Within this process there are no sharp distinctions, but rather a continuum of effects. Boundaries between categories overlap due to the wide variation of individual responses and exposures in the working population. WISHA's development of the lead standard focused on pathophysiological changes as well as later stages of disease.

(I) Heme synthesis inhibition.

a) The earliest demonstrated effect of lead involves its ability to inhibit at least two enzymes of the heme synthesis pathway at very low blood levels. Inhibition of delta aminolevulinic acid dehydrase (ALA-D) which catalyzes the conversion of delta-aminolevulinic acid (ALA) to protoporphyrin is observed at a blood lead level below 20 $\mu\text{g}/100\text{g}$ whole blood. At a blood lead level of 40 $\mu\text{g}/100\text{g}$, more than twenty percent of the population would have seventy percent inhibition of ALA-D. There is an exponential increase in ALA excretion at blood lead levels greater than 40 $\mu\text{g}/100\text{g}$.

b) Another enzyme, ferrochelatase, is also inhibited at low blood lead levels. Inhibition of ferrochelatase leads to increased free erythrocyte protoporphyrin (FEP) in the blood which can then bind to zinc to yield zinc protoporphyrin. At a blood lead level of 50 $\mu\text{g}/100\text{g}$ or greater, nearly 100 percent of the population will have an increase FEP. There is also an exponential relationship between blood lead levels greater than 40 $\mu\text{g}/100\text{g}$ and the associated ZPP level, which has led to the development of the ZPP screening test for lead exposure.

c) While the significance of these effects is subject to debate, it is WISHA's position that these enzyme disturbances are early stages of a disease process which may eventually result in the clinical symptoms of lead poisoning. Whether or not the effects do progress to the later stages of clinical disease, disruption of these enzyme processes over a

working lifetime is considered to be a material impairment of health.

d) One of the eventual results of lead-induced inhibition of enzymes in the heme synthesis pathway is anemia which can be asymptomatic if mild but associated with a wide array of symptoms including dizziness, fatigue, and tachycardia when more severe. Studies have indicated that lead levels as low as 50 $\mu\text{g}/100\text{g}$ can be associated with a definite decreased hemoglobin, although most cases of lead-induced anemia, as well as shortened red-cell survival times, occur at lead levels exceeding 80 $\mu\text{g}/100\text{g}$. Inhibited hemoglobin synthesis is more common in chronic cases whereas shortened erythrocyte life span is more common in acute cases.

e) In lead-induced anemias, there is usually a reticulocytosis along with the presence of basophilic stippling, and ringed sideroblasts, although none of the above are pathognomonic for lead-induced anemia.

(II) Neurological effects.

a) Inorganic lead had been found to have toxic effects on both the central and peripheral nervous systems. The earliest stage of lead-induced central nervous system effects first manifest themselves in the form of behavioral disturbances and central nervous system symptoms including irritability, restlessness, insomnia and other sleep disturbances, fatigue, vertigo, headache, poor memory, tremor, depression, and apathy. With more severe exposure, symptoms can progress to drowsiness, stupor, hallucinations, delirium, convulsions and coma.

b) The most severe and acute form of lead poisoning which usually follows ingestion or inhalation of large amounts of lead is acute encephalopathy which may arise precipitously with the onset of intractable seizures, coma, cardiorespiratory arrest, and death within 48 hours.

c) While there is disagreement about what exposure levels are needed to produce the earliest symptoms, most experts agree that symptoms definitely can occur at blood lead levels of 60 $\mu\text{g}/100\text{g}$ whole blood and therefore recommend a 40 $\mu\text{g}/100\text{g}$ maximum. The central nervous system effects frequently are not reversible following discontinued exposure or chelation therapy and when improvement does occur, it is almost always only partial.

d) The peripheral neuropathy resulting from lead exposure characteristically involves only motor function with minimal sensory damage and has a marked predilection for the extensor muscles of the most active extremity. The peripheral neuropathy can occur with varying degrees of severity. The earliest and mildest form which can be detected in workers with blood lead levels as low as 50 $\mu\text{g}/100\text{g}$ is manifested by slowing or motor nerve conduction velocity often without clinical symptoms. With progression of the neuropathy there is development of painless extensor muscle weakness usually involving the extensor muscles of the fingers and hand in the most active upper extremity, followed in severe cases by wrist drop, much less commonly, foot drop.

e) In addition to slowing of nerve conduction, electromyographical studies in patients with blood lead levels greater than 50 $\mu\text{g}/100\text{g}$ have demonstrated a decrease in the number of acting motor unit potentials, an increase in the duration of motor unit potentials, and spontaneous patholog-

ical activity including fibrillations and fasciculation. Whether these effects occur at levels of 40 µg/100g is undetermined.

f) While the peripheral neuropathies can occasionally be reversed with therapy, again such recovery is not assured particularly in the more severe neuropathies and often improvement is only partial. The lack of reversibility is felt to be due in part to segmental demyelination.

(III) Gastrointestinal. Lead may also effect the gastrointestinal system producing abdominal colic or diffuse abdominal pain, constipation, obstipation, diarrhea, anorexia, nausea and vomiting. Lead colic rarely develops at blood lead levels below 80 µg/100g.

(IV) Renal.

a) Renal toxicity represents one of the most serious health effects of lead poisoning. In the early stages of disease nuclear inclusion bodies can frequently be identified in proximal renal tubular cells. Renal functions remain normal and the changes in this stage are probably reversible. With more advanced disease there is progressive interstitial fibrosis and impaired renal function. Eventually extensive interstitial fibrosis ensues with sclerotic glomeruli and dilated and atrophied proximal tubules; all represent end stage kidney disease. Azotemia can be progressive, eventually resulting in frank uremia necessitating dialysis. There is occasionally associated hypertension and hyperuricemia with or without gout.

b) Early kidney disease is difficult to detect. The urinalysis is normal in early lead nephropathy and the blood urea nitrogen and serum creatinine increase only when two-thirds of kidney function is lost. Measurement of creatinine clearance can often detect earlier disease as can other methods of measurement of glomerular filtration rate. An abnormal Ca-EDTA mobilization test has been used to differentiate between lead-induced and other nephropathies, but this procedure is not widely accepted. A form of Fanconi syndrome with aminoaciduria, glycosuria, and hyperphosphaturia indicating severe injury to the proximal renal tubules is occasionally seen in children.

(V) Reproductive effects.

a) Exposure to lead can have serious effects on reproductive function in both males and females. In male workers exposed to lead there can be a decrease in sexual drive, impotence, decreased ability to produce healthy sperm, and sterility. Malformed sperm (teratospermia), decreased number of sperm (hypospermia), and sperm with decreased motility (asthenospermia) can occur. Teratospermia has been noted at mean blood lead levels of 53 µg/100g and hypospermia and asthenospermia at 41 µg/100g. Furthermore, there appears to be a dose-response relationship for teratospermia in lead exposed workers.

b) Women exposed to lead may experience menstrual disturbances including dysmenorrhea, menorrhagia and amenorrhea. Following exposure to lead, women have a higher frequency of sterility, premature births, spontaneous miscarriages, and stillbirths.

c) Germ cells can be affected by lead and cause genetic damage in the egg or sperm cells before conception and result in failure to implant, miscarriage, stillbirth, or birth defects.

d) Infants of mothers with lead poisoning have a higher mortality during the first year and suffer from lowered birth weights, slower growth, and nervous system disorders.

e) Lead can pass through the placental barrier and lead levels in the mother's blood are comparable to concentrations of lead in the umbilical cord at birth. Transplacental passage becomes detectable at 12-14 weeks of gestation and increases until birth.

f) There is little direct data on damage to the fetus from exposure to lead but it is generally assumed that the fetus and newborn would be at least as susceptible to neurological damage as young children. Blood lead levels of 50-60 µg/100g in children can cause significant neurobehavioral impairments, and there is evidence of hyperactivity at blood levels as low as 25 µg/100g. Given the overall body of literature concerning the adverse health effects of lead in children, WISHA feels that the blood lead level in children should be maintained below 30 µg/100g with a population mean of 15 µg/100g. Blood lead levels in the fetus and newborn likewise should not exceed 30 µg/100g.

g) Because of lead's ability to pass through the placental barrier and also because of the demonstrated adverse effects of lead on reproductive function in both males and females as well as the risk of genetic damage of lead on both the ovum and sperm, WISHA recommends a 30 µg/100g maximum permissible blood lead level in both males and females who wish to bear children.

(IV) Other toxic effects.

a) Debate and research continue on the effects of lead on the human body. Hypertension has frequently been noted in occupationally exposed individuals although it is difficult to assess whether this is due to lead's adverse effects on the kidneys or if some other mechanism is involved.

b) Vascular and electrocardiographic changes have been detected but have not been well characterized. Lead is thought to impair thyroid function and interfere with the pituitary-adrenal axis, but again these effects have not been well defined.

(iv) Medical evaluation.

(A) The most important principle in evaluating a worker for any occupational disease including lead poisoning is a high index of suspicion on the part of the examining physician. As discussed in Section (ii), lead can affect numerous organ systems and produce a wide array of signs and symptoms, most of which are nonspecific and subtle in nature at least in the early stages of disease. Unless serious concern for lead toxicity is present, many of the early clues to diagnosis may easily be overlooked.

(B) The crucial initial step in the medical evaluation is recognizing that a worker's employment can result in exposure to lead. The worker will frequently be able to define exposures to lead and lead-containing materials but often will not volunteer this information unless specifically asked. In other situations the worker may not know of any exposures to lead but the suspicion might be raised on the part of the physician because of the industry or occupation of the worker. Potential occupational exposure to lead and its compounds occur in at least 120 occupations, including lead smelting, the manufacture of lead storage batteries, the manufacture of lead pigments and products containing pigments, solder manufac-

ture, shipbuilding and ship repair, auto manufacturing, construction, and painting.

(C) Once the possibility for lead exposure is raised, the focus can then be directed toward eliciting information from the medical history, physical exam, and finally from laboratory data to evaluate the worker for potential lead toxicity.

(D) A complete and detailed work history is important in the initial evaluation. A listing of all previous employment with information on work processes, exposure to fumes or dust, known exposures to lead or other toxic substances, respiratory protection used, and previous medical surveillance should all be included in the worker's record. Where exposure to lead is suspected, information concerning on-the-job personal hygiene, smoking or eating habits in work areas, laundry procedures, and use of any protective clothing or respiratory protection equipment should be noted. A complete work history is essential in the medical evaluation of a worker with suspected lead toxicity, especially when long-term effects such as neurotoxicity and nephrotoxicity are considered.

(E) The medical history is also of fundamental importance and should include a listing of all past and current medical conditions, current medications including proprietary drug intake, previous surgeries and hospitalizations, allergies, smoking history, alcohol consumption, and also nonoccupational lead exposures such as hobbies (hunting, riflery). Also known childhood exposures should be elicited. Any previous history of hematological, neurological, gastrointestinal, renal, psychological, gynecological, genetic, or reproductive problems should be specifically noted.

(F) A careful and complete review of systems must be performed to assess both recognized complaints and subtle or slowly acquired symptoms which the worker might not appreciate as being significant. The review of symptoms should include the following:

General	- weight loss, fatigue, decreased appetite.
Head, Eyes, Ears, Nose, Throat (HEENT)	- headaches, visual disturbance or decreased visual acuity, hearing deficits or tinnitus, pigmentation of the oral mucosa, or metallic taste in mouth.
Cardiopulmonary	- shortness of breath, cough, chest pains, palpitations, or orthopnea.
Gastrointestinal	- nausea, vomiting, heartburn, abdominal pain, constipation or diarrhea.
Neurologic	- irritability, insomnia, weakness (fatigue), dizziness, loss of memory, confusion, hallucinations, incoordination, ataxia, decreased strength in hands or feet, disturbance in gait, difficulty in climbing stairs, or seizures.
Hematologic	- pallor, easy fatigability, abnormal blood loss, melena.

Reproductive (male or female and spouse where relevant)

- history of infertility, impotence, loss of libido, abnormal menstrual periods, history of miscarriages, stillbirths, or children with birth defects.

Musculoskeletal

- muscle and joint pains.

(G) The physical examination should emphasize the neurological, gastrointestinal, and cardiovascular systems. The worker's weight and blood pressure should be recorded and the oral mucosa checked for pigmentation characteristic of a possible Burtonian or lead line on the gingiva. It should be noted, however, that the lead line may not be present even in severe lead poisoning if good oral hygiene is practiced.

(H) The presence of pallor on skin examination may indicate an anemia, which if severe might also be associated with a tachycardia. If an anemia is suspected, an active search for blood loss should be undertaken including potential blood loss through the gastrointestinal tract.

(I) A complete neurological examination should include an adequate mental status evaluation including a search for behavioral and psychological disturbances, memory testing, evaluation for irritability, insomnia, hallucinations, and mental clouding. Gait and coordination should be examined along with close observation for tremor. A detailed evaluation of peripheral nerve function including careful sensory and motor function testing is warranted. Strength testing particularly of extensor muscle groups of all extremities is of fundamental importance.

(J) Cranial nerve evaluation should also be included in the routine examination.

(K) The abdominal examination should include auscultation for bowel sounds and abnormal bruits and palpation for organomegaly, masses, and diffuse abdominal tenderness.

(L) Cardiovascular examination should evaluate possible early signs of congestive heart failure. Pulmonary status should be addressed particularly if respirator protection is contemplated.

(M) As part of the medical evaluation, the lead standard requires the following laboratory studies.

(I) Blood lead level.

(II) Hemoglobin and hematocrit determinations, red cell indices, and examination of the peripheral blood smear to evaluate red blood cell morphology.

(III) Blood urea nitrogen.

(IV) Serum creatinine.

(V) Routine urinalysis with microscopic examination.

(VI) A zinc protoporphyrin level.

(N) In addition to the above, the physician is authorized to order any further laboratory or other tests which he or she deems necessary in accordance with sound medical practice. The evaluation must also include pregnancy testing or laboratory evaluation of male fertility if requested by the employee.

(O) Additional tests which are probably not warranted on a routine basis but may be appropriate when blood lead and ZPP levels are equivocal include delta aminolevulinic acid and coproporphyrin concentrations in the urine, and dark-field illumination for detection of basophilic stippling in red blood cells.

(P) If an anemia is detected further studies including a careful examination of the peripheral smear, reticulocyte count, stool for occult blood, serum iron, total iron binding capacity, bilirubin, and, if appropriate vitamin B12 and folate may be of value in attempting to identify the cause of the anemia.

(Q) If a peripheral neuropathy is suspected, nerve conduction studies are warranted both for diagnosis and as a basis to monitor any therapy.

(R) If renal disease is questioned, a 24-hour urine collection for creatinine clearance, protein, and electrolytes may be indicated. Elevated uric acid levels may result from lead-induced renal disease and a serum uric acid level might be performed.

(S) An electrocardiogram and chest X ray may be obtained as deemed appropriate.

(T) Sophisticated and highly specialized testing should not be done routinely and where indicated should be under the direction of a specialist.

(v) Laboratory evaluation.

(A) The blood level at present remains the single most important test to monitor lead exposure and is the test used in the medical surveillance program under the lead standard to guide employee medical removal. The ZPP has several advantages over the blood lead level. Because of its relatively recent development and the lack of extensive data concerning its interpretation, the ZPP currently remains an ancillary test.

(B) This section will discuss the blood lead level and ZPP in detail and will outline their relative advantages and disadvantages. Other blood tests currently available to evaluate lead exposure will also be reviewed.

(C) The blood lead level is a good index of current or recent lead absorption when there is no anemia present and when the worker has not taken any chelating agents. However, blood lead levels along with urinary lead levels do not necessarily indicate the total body burden of lead and are not adequate measures of past exposure. One reason for this is that lead has a high affinity for bone and up to 90 percent of the body's total lead is deposited there. A very important component of the total lead body burden is lead in soft tissue (liver, kidneys, and brain). This fraction of the lead body burden, the biologically active lead, is not entirely reflected by blood lead levels since it is a function of the dynamics of lead absorption, distribution, deposition in bone and excretion. Following discontinuation of exposure to lead, the excess body burden is only slowly mobilized from bone and other relatively stable stores and excreted. Consequently, a high blood lead level may only represent recent heavy exposure to lead without a significant total body excess and likewise a low blood lead level does not exclude an elevated total body burden of lead.

(D) Also due to its correlation with recent exposures, the blood lead level may vary considerably over short time intervals.

(E) To minimize laboratory error and erroneous results due to contamination, blood specimens must be carefully collected after thorough cleaning of the skin with appropriate methods using lead-free containers and analyzed by a reliable laboratory. Under the standard, samples must be analyzed in laboratories which are approved by the Center for Disease Control (CDC) or which have received satisfactory grades in

proficiency testing by the CDC in the previous year. Analysis is to be made using atomic absorption spectrophotometry anodic stripping; voltammetry or any method which meets the accuracy requirements set forth by the standard.

(F) The determination of lead in urine is generally considered a less reliable monitoring technique than analysis of whole blood primarily due to individual variability in urinary excretion capacity as well as the technical difficulty of obtaining accurate 24 hour urine collections. In addition, workers with renal insufficiency, whether due to lead or some other cause, may have decreased lead clearance and consequently urine lead levels may underestimate the true lead burden. Therefore, urine lead levels should not be used as a routine test.

(G) The zinc protoporphyrin test, unlike the blood lead determination, measures an adverse metabolic effect of lead and as such is a better indicator of lead toxicity than the level of blood lead itself. The level of ZPP reflects lead absorption over the preceding three to four months, and therefore is a better indicator of lead body burden. The ZPP requires more time than the blood lead to read significantly elevated levels; the return to normal after discontinuing lead exposure is also slower. Furthermore, the ZPP test is simpler, faster, and less expensive to perform and no contamination is possible. Many investigators believe it is the most reliable means of monitoring chronic lead absorption.

(H) Zinc protoporphyrin results from the inhibition of the enzyme ferrochelatase which catalyzes the insertion of an iron molecule into the protoporphyrin molecule, which then becomes heme. If iron is not inserted into the molecule then zinc, having a greater affinity for protoporphyrin, takes place in the iron, forming ZPP.

(I) An elevation in the level of circulating ZPP may occur at blood lead levels as low as 20-30 $\mu\text{g}/100\text{g}$ in some workers. Once the blood lead level has reached 40 $\mu\text{g}/100\text{g}$ there is more marked rise in the ZPP value from its normal range of less than 100 $\mu\text{g}/100\text{ml}$. Increases in blood lead levels beyond 40 $\mu\text{g}/100\text{g}$ are associated with exponential increases in ZPP.

(J) Whereas blood lead levels fluctuate over short time spans, ZPP levels remain relatively stable. ZPP is measured directly in red blood cells and is present for the cell's entire 120 day lifespan. Therefore, the ZPP level in blood reflects the average ZPP production over the previous three to four months and consequently the average lead exposure during that time interval.

(K) It is recommended that a hematocrit be determined whenever a confirmed ZPP of 50 $\mu\text{g}/100\text{ml}$ whole blood is obtained to rule out a significant underlying anemia. If the ZPP is in excess of 100 $\mu\text{g}/100\text{ml}$ and not associated with abnormal elevations in blood lead levels, the laboratory should be checked to be sure the blood leads were determined using atomic absorption spectrophotometry, anodic stripping voltammetry or any method which meets the accuracy requirements set forth by the standard, by a CDC approved laboratory which is experienced in lead level determinations. Repeat periodic blood lead studies should be obtained in all individuals with elevated ZPP levels to be certain that an associated elevated blood lead level has not been missed due to transient fluctuations in blood leads.

(L) ZPP has characteristic fluorescence spectrum with a peak at 594nm which is detectable with a hematofluorimeter. The hematofluorimeter is accurate and portable and can provide on-site, instantaneous results for workers who can be frequently tested via a finger prick.

(M) However, careful attention must be given to calibration and quality control procedures. Limited data on blood lead -ZPP correlations and the ZPP levels which are associated with the adverse health effects discussed in item (ii) are the major limitations of the test. Also it is difficult to correlate ZPP levels with environmental exposure and there is some variation of response with age and sex. Nevertheless, the ZPP promises to be an important diagnostic test for the early detection of lead toxicity and its value will increase as more data is collected regarding its relationship to other manifestations of lead poisoning.

(N) Levels of delta-aminolevulinic acid (ALA) in the urine are also used as a measure of lead exposure. Increasing concentrations of ALA are believed to result from the inhibition of the enzyme delta-aminolevulinic acid dehydrase (ALA-D). Although the test is relatively easy to perform, inexpensive, and rapid, the disadvantages include variability in results, the necessity to collect a complete 24 hour urine sample which has a specific gravity greater than 1.010, and also the fact that ALA decomposes in the presence of light.

(O) The pattern of porphyrin excretion in the urine can also be helpful in identifying lead intoxication. With lead poisoning, the urine concentrations of coproporphyrins I and II, porphobilinogen and uroporphyrin I rise. The most important increase, however, is that of coproporphyrin III; levels may exceed 5,000 µg/l in the urine in lead poisoned individuals, but its correlation with blood lead levels and ZPP are not as good as those of ALA. Increases in urinary porphyrins are not diagnostic of lead toxicity and may be seen in porphyria, some liver diseases, and in patients with high reticulocyte counts.

(vi) Summary.

(A) The WISHA standard for inorganic lead places significant emphasis on the medical surveillance of all workers exposed to levels of inorganic lead above the action level of 30 µg/m³ TWA. The physician has a fundamental role in this surveillance program, and in the operation of the medical removal protection program.

(B) Even with adequate worker education on the adverse health effects of lead and appropriate training in work practices, personal hygiene and other control measures, the physician has a primary responsibility for evaluating potential lead toxicity in the worker. It is only through a careful and detailed medical and work history, a complete physical examination and appropriate laboratory testing that an accurate assessment can be made. Many of the adverse health effects of lead toxicity are either irreversible or only partially reversible and therefore early detection of disease is very important.

(C) This document outlines the medical monitoring program as defined by the occupational safety and health standard for inorganic lead. It reviews the adverse health effects of lead poisoning and describes the important elements of the history and physical examinations as they relate to these adverse effects.

(D) It is hoped that this review and discussion will give the physician a better understanding of the WISHA standard with the ultimate goal of protecting the health and well-being of the worker exposed to lead under his or her care.

(d) Appendix D. Recommendations to employers concerning high-risk tasks (nonmandatory).

The department advises employers that the following tasks have a high risk for lead overexposure (this list is not complete; other tasks also can result in lead over-exposure):

- Any open flame operation involving lead-containing solder in a manner producing molten solder, including the manufacture or repair of motor vehicle radiators;
- Sanding, cutting or grinding of lead-containing solder;
- Breaking, recycling or manufacture of lead-containing batteries;
- Casting objects using lead, brass, or lead-containing alloys;
- Where lead-containing coatings or paints are present:
 - abrasive blasting
 - welding
 - cutting
 - torch burning
 - manual demolition of structures
 - manual scraping
 - manual sanding
 - heat gun applications
 - power tool cleaning
 - rivet busting
 - clean-up activities where dry expendable abrasives are used
 - abrasive blasting enclosure movement and removal;
- Spray-painting with lead-containing paint;
- Using lead-containing mortar;
- Lead burning;
- Operation or cleaning of shooting facilities where lead bullets are used;
- Formulation or processing of lead-containing pigments or paints;
- Cutting, burning, or melting of lead-containing materials.

The department recommends that annual blood lead testing be offered to all employees potentially overexposed to lead, including those performing the tasks listed above, regardless of air lead levels. Research has shown that air lead levels often do not accurately predict workers' lead overexposure. The blood lead testing will provide the most information if performed during a period of peak lead exposure.

Employers should be aware that the United States Public Health Service has set a goal of eliminating occupational exposures which result in whole blood lead levels of 25 µg/dl or greater. This goal should guide whether employees' blood lead levels indicate lead overexposure.

If blood lead levels are elevated in an employee performing a task associated with lead overexposure, employers should assess the maintenance and effectiveness of exposure controls, hygiene facilities, respiratory protection program, the employee's work practices and personal hygiene, and the employee's respirator use, if any. If a deficiency exists in any of these areas, the employer should correct the problem.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060, 05-03-093, § 296-62-07521, filed 1/18/05, effective 3/1/05; 04-10-026, § 296-62-07521, filed 4/27/04, effective 8/1/04; 03-18-090, § 296-62-07521, filed 9/2/03, effective 11/1/03. Statutory Authority: RCW 49.17.010,

[49.17].040, and [49.17].050. 01-11-038, § 296-62-07521, filed 5/9/01, effective 9/1/01; 99-10-071, § 296-62-07521, filed 5/4/99, effective 9/1/99. Statutory Authority: Chapter 49.17 RCW. 96-09-030, § 296-62-07521, filed 4/10/96, effective 6/1/96; 95-04-078, § 296-62-07521, filed 1/30/95, effective 3/2/95; 91-24-017 (Order 91-07), § 296-62-07521, filed 11/22/91, effective 12/24/91; 90-17-051 (Order 90-10), § 296-62-07521, filed 8/13/90, effective 9/24/90; 90-03-029 (Order 89-20), § 296-62-07521, filed 1/11/90, effective 2/26/90; 88-14-108 (Order 88-11), § 296-62-07521, filed 7/6/88. Statutory Authority: RCW 49.17.040 and 49.17.050. 83-24-013 (Order 83-34), § 296-62-07521, filed 11/30/83; 82-13-045 (Order 82-22), § 296-62-07521, filed 6/11/82. Formerly WAC 296-62-07349.]

WAC 296-62-07525 Appendix A substance safety data sheet—Benzene. (1) Substance identification.

(a) Substance: Benzene.

(b) Permissible exposure: Except as to the use of gasoline, motor fuels, and other fuels subsequent to discharge from bulk terminals and other exemptions specified in WAC 296-62-07523 (1)(b):

(i) Airborne: The maximum time-weighted average (TWA) exposure limit is one part of benzene vapor per million parts of air (1 ppm) for an eight-hour workday and the maximum short-term exposure limit (STEL) is 5 ppm for any fifteen-minute period.

(ii) Dermal: Eye contact shall be prevented and skin contact with liquid benzene shall be limited.

(c) Appearance and odor: Benzene is a clear, colorless liquid with a pleasant, sweet odor. The odor of benzene does not provide adequate warning of its hazard.

(2) Health hazard data.

(a) Ways in which benzene affects your health. Benzene can affect your health if you inhale it, or if it comes in contact with your skin or eyes. Benzene is also harmful if you happen to swallow it.

(b) Effects of overexposure.

(i) Short-term (acute) overexposure: If you are overexposed to high concentrations of benzene, well above the levels where its odor is first recognizable, you may feel breathless, irritable, euphoric, or giddy; you may experience irritation in eyes, nose, and respiratory tract. You may develop a headache, feel dizzy, nauseated, or intoxicated. Severe exposures may lead to convulsions and loss of consciousness.

(ii) Long-term (chronic) exposure. Repeated or prolonged exposure to benzene, even at relatively low concentrations, may result in various blood disorders, ranging from anemia to leukemia, an irreversible, fatal disease. Many blood disorders associated with benzene exposure may occur without symptoms.

(3) Protective clothing and equipment.

(a) Respirators. Respirators are required for those operations in which engineering controls or work practice controls are not feasible to reduce exposure to the permissible level. However, where employers can document that benzene is present in the workplace less than thirty days a year, respirators may be used in lieu of engineering controls. If respirators are worn, they must have joint Mine Safety and Health Administration and the National Institute for Occupational Safety and Health (NIOSH) seal of approval, and cartridge or canisters must be replaced before the end of their service life, or the end of the shift, whichever occurs first. If you experience difficulty breathing while wearing a respirator, you may request a positive pressure respirator from your employer.

You must be thoroughly trained to use the assigned respirator, and the training will be provided by your employer.

(b) Protective clothing. You must wear appropriate protective clothing (such as boots, gloves, sleeves, aprons, etc.) over any parts of your body that could be exposed to liquid benzene.

(c) Eye and face protection. You must wear splash-proof safety goggles if it is possible that benzene may get into your eyes. In addition, you must wear a face shield if your face could be splashed with benzene liquid.

(4) Emergency and first-aid procedures.

(a) Eye and face exposure. If benzene is splashed in your eyes, wash it out immediately with large amounts of water. If irritation persists or vision appears to be affected see a doctor as soon as possible.

(b) Skin exposure. If benzene is spilled on your clothing or skin, remove the contaminated clothing and wash the exposed skin with large amounts of water and soap immediately. Wash contaminated clothing before you wear it again.

(c) Breathing. If you or any other person breathes in large amounts of benzene, get the exposed person to fresh air at once. Apply artificial respiration if breathing has stopped. Call for medical assistance or a doctor as soon as possible. Never enter any vessel or confined space where the benzene concentration might be high without proper safety equipment and at least one other person present who will stay outside. A life line should be used.

(d) Swallowing. If benzene has been swallowed and the patient is conscious, do not induce vomiting. Call for medical assistance or a doctor immediately.

(5) Medical requirements. If you are exposed to benzene at a concentration at or above 0.5 ppm as an 8-hour time-weighted average, or have been exposed at or above 10 ppm in the past while employed by your current employer, your employer is required to provide a medical examination and history and laboratory tests within sixty days of the effective date of this standard and annually thereafter. These tests shall be provided without cost to you. In addition, if you are accidentally exposed to benzene (either by ingestion, inhalation, or skin/eye contact) under emergency conditions known or suspected to constitute toxic exposure to benzene, your employer is required to make special laboratory tests available to you.

(6) Observation of monitoring. Your employer is required to perform measurements that are representative of your exposure to benzene and you or your designated representative are entitled to observe the monitoring procedure. You are entitled to observe the steps taken in the measurement procedure, and to record the results obtained. When the monitoring procedure is taking place in an area where respirators or personal protective clothing and equipment are required to be worn, you or your representative must also be provided with, and must wear the protective clothing and equipment.

(7) Access to records. You or your representative are entitled to see the records of measurements of your exposure to benzene upon written request to your employer. Your medical examination records can be furnished to yourself, your physician, or designated representative upon request by you to your employer.

(8) Precautions for safe use, handling, and storage. Benzene liquid is highly flammable. It should be stored in tightly closed containers in a cool, well ventilated area. Benzene vapor may form explosive mixtures in air. All sources of ignition must be controlled. Use nonsparking tools when opening or closing benzene containers. Fire extinguishers, where provided, must be readily available. Know where they are located and how to operate them. Smoking is prohibited in areas where benzene is used or stored. Ask your supervisor where benzene is used in your area and for additional plant safety rules.

[Statutory Authority: Chapter 49.17 RCW. 88-21-002 (Order 88-23), § 296-62-07525, filed 10/6/88, effective 11/7/88.]

WAC 296-62-07527 Appendix B substance technical guidelines—Benzene. (1) Physical and chemical data.

(a) Substance identification.

(i) Synonyms: Benzol, benzole, coal naphtha, cyclohexatriene, phene, phenyl hydride, pyrobenzol. (Benzin, petroleum benzin and Benzine do not contain benzene.)

(ii) Formula: C₆H₆ (CAS Registry Number: 71-43-2).

(b) Physical data.

(i) Boiling point (760 mm Hg): 80.1 C (176 F).

(ii) Specific gravity (water=1): 0.879.

(iii) Vapor density (air=1): 2.7.

(iv) Melting point: 5.5 C (42 F).

(v) Vapor pressure at 20 C (68 F): 75 mm Hg.

(vi) Solubility in water: .06%.

(vii) Evaporation rate (ether=1): 2.8.

(viii) Appearance and odor: Clear, colorless liquid with a distinctive sweet odor.

(2) Fire, explosion, and reactivity hazard data.

(a) Fire.

(i) Flash point (closed cup): -11 C (12 F).

(ii) Autoignition temperature: 580 C (1076 F).

(iii) Flammable limits in Air. % by volume: Lower: 1.3%, Upper: 7.5%.

(iv) Extinguishing media: Carbon dioxide, dry chemical, or foam.

(v) Special fire-fighting procedures: Do not use solid stream of water, since stream will scatter and spread fire. Fine water spray can be used to keep fire-exposed containers cool.

(vi) Unusual fire and explosion hazards: Benzene is a flammable liquid. Its vapors can form explosive mixtures. All ignition sources must be controlled when benzene is used, handled, or stored. Where liquid or vapor may be released, such areas shall be considered as hazardous locations. Benzene vapors are heavier than air; thus the vapors may travel along the ground and be ignited by open flames or sparks at locations remote from the site at which benzene is handled.

(vii) Benzene is classified as a 1 B flammable liquid for the purpose of conforming to the requirements of WAC 296-24-330. A concentration exceeding 3,250 ppm is considered a potential fire explosion hazard. Locations where benzene may be present in quantities sufficient to produce explosive or ignitable mixtures are considered Class I Group D for the purposes of conforming to the requirements of WAC 296-24-95613.

(b) Reactivity.

(i) Conditions contributing to instability: Heat.

(ii) Incompatibility: Heat and oxidizing materials.

(iii) Hazardous decomposition products: Toxic gases and vapors (such as carbon monoxide).

(3) Spill and leak procedures.

(a) Steps to be taken if the material is released or spilled. As much benzene as possible should be absorbed with suitable materials, such as dry sand or earth; benzene remaining must be flushed with large amounts of water. Do not flush benzene into a confined space, such as a sewer, because of explosion danger. Remove all ignition sources. Ventilate enclosed places.

(b) Waste disposal method. Disposal methods must conform to other jurisdictional regulations. If allowed, benzene may be disposed of:

(i) By absorbing it in dry sand or earth and disposing in a sanitary landfill;

(ii) If small quantities, by removing it to a safe location from buildings or other combustible sources, pouring it in dry sand or earth and cautiously igniting it; and

(iii) If large quantities, by atomizing it in a suitable combustion chamber.

(4) Miscellaneous precautions.

(a) High exposure to benzene can occur when transferring the liquid from one container to another. Such operations should be well ventilated and good work practices must be established to avoid spills.

(b) Use nonsparking tools to open benzene containers which are effectively grounded and bonded prior to opening and pouring.

(c) Employers must advise employees of all plant areas and operations where exposure to benzene could occur. Common operations in which high exposures to benzene may be encountered are: The primary production and utilization of benzene, and transfer of benzene.

[Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050. 02-12-098, § 296-62-07527, filed 6/5/02, effective 8/1/02. Statutory Authority: Chapter 49.17 RCW. 88-21-002 (Order 88-23), § 296-62-07527, filed 10/6/88, effective 11/7/88.]

WAC 296-62-07529 Appendix C medical surveillance guidelines for benzene. (1) Route of entry.

Inhalation; skin absorption.

(2) Toxicology. Benzene is primarily an inhalation hazard. Systemic absorption may cause depression of the hematopoietic system, pancytopenia, aplastic anemia, and leukemia. Inhalation of high concentrations can affect central nervous system function. Aspiration of small amounts of liquid benzene immediately causes pulmonary edema and hemorrhage of pulmonary tissue. There is some absorption through the skin. Absorption may be more rapid in the case of abraded skin, and benzene may be more readily absorbed if it is present in a mixture or as a contaminant in solvents which are readily absorbed. The defatting action of benzene may produce primary irritation due to repeated or prolonged contact with the skin. High concentrations are irritating to the eyes and the mucous membranes of the nose, and respiratory tract.

(3) Signs and symptoms. Direct skin contact with benzene may cause erythema. Repeated or prolonged contact may result in drying, scaling dermatitis, or development of secondary skin infections. In addition, there is benzene absorption through the skin. Local effects of benzene vapor

or liquid on the eye are slight. Only at very high concentrations is there any smarting sensation in the eye. Inhalation of high concentrations of benzene may have an initial stimulatory effect on the central nervous system characterized by exhilaration, nervous excitation, and/or giddiness, followed by a period of depression, drowsiness, or fatigue. A sensation of tightness in the chest accompanied by breathlessness may occur and ultimately the victim may lose consciousness. Tremors, convulsions, and death may follow from respiratory paralysis or circulatory collapse in a few minutes to several hours following severe exposures.

The detrimental effect on the blood-forming system of prolonged exposure to small quantities of benzene vapor is of extreme importance. The hematopoietic system is the chief target for benzene's toxic effects which are manifested by alterations in the levels of formed elements in the peripheral blood. These effects have occurred at concentrations of benzene which may not cause irritation of mucous membranes, or any unpleasant sensory effects. Early signs and symptoms of benzene morbidity are varied, often not readily noticed and nonspecific. Subjective complaints of headache, dizziness, and loss of appetite may precede or follow clinical signs. Rapid pulse and low blood pressure, in addition to a physical appearance of anemia, may accompany a subjective complaint of shortness of breath and excessive tiredness. Bleeding from the nose, gums, or mucous membranes, and the development of purpuric spots (small bruises) may occur as the condition progresses. Clinical evidence of leukopenia, anemia, and thrombocytopenia, singly or in combination, has been frequently reported among the first signs.

Bone marrow may appear normal, aplastic, or hyperplastic, and may not, in all situations, correlate with peripheral blood forming tissues. Because of variations in the susceptibility to benzene morbidity, there is no "typical" blood picture. The onset of effects of prolonged benzene exposure may be delayed for many months or years after the actual exposure has ceased and identification or correlation with benzene exposure must be sought out in the occupational history.

(4) Treatment of acute toxic effects. Remove from exposure immediately. Make sure you are adequately protected and do not risk being overcome by fumes. Give oxygen or artificial resuscitation if indicated. Flush eyes, wash skin if contaminated and remove all contaminated clothing. Symptoms of intoxication may persist following severe exposures. Recovery from mild exposures is usually rapid and complete.

(5) Surveillance and preventive considerations.

(a) General. The principal effects of benzene exposure which form the basis for this regulation are pathological changes in the hematopoietic system, reflected by changes in the peripheral blood and manifesting clinically as pancytopenia, aplastic anemia, and leukemia. Consequently, the medical surveillance program is designed to observe, on a regular basis, blood indices for early signs of these effects, and although early signs of leukemia are not usually available, emerging diagnostic technology and innovative regimes make consistent surveillance for leukemia, as well as other hematopoietic effects, essential.

Initial examinations are to be provided within sixty days of the effective date of this standard, or at the time of initial assignment, and periodic examinations annually thereafter.

There are special provisions for medical tests in the event of hematologic abnormalities or for emergency situations.

The blood values which require referral to a hematologist or internist are noted in (b)(i) of this subsection. The standard specifies that blood abnormalities that persist must be referred "unless the physician has good reason to believe such referral is unnecessary" ((b)(i) of this subsection). Examples of conditions that could make a referral unnecessary despite abnormal blood limits are iron or folate deficiency, menorrhagia, or blood loss due to some unrelated medical abnormality.

Symptoms and signs of benzene toxicity can be nonspecific. Only a detailed history and appropriate investigative procedure will enable a physician to rule out or confirm conditions that place the employee at increased risk. To assist the examining physician with regard to which laboratory tests are necessary and when to refer an employee to the specialist, OSHA has established the following guidelines.

(b) Hematology guidelines. A minimum battery of tests is to be performed by strictly standardized methods.

(i) Red cell, white cell, platelet counts, white blood cell differential, hematocrit and red cell indices must be performed by an accredited laboratory. The normal ranges for the red cell and white cell counts are influenced by altitude, race, and sex, and therefore should be determined by the accredited laboratory in the specific area where the tests are performed.

Either a decline from an absolute normal or an individual's baseline to a subnormal value or a rise to a supra-normal value, are indicative of potential toxicity, particularly if all blood parameters decline. The normal total white blood count is approximately 7,200/mm³ plus or minus 3,000. For cigarette smokers the white count may be higher and the upper range may be 2,000 cells higher than normal for the laboratory. In addition, infection, allergies and some drugs may raise the white cell count. The normal platelet count is approximately 250,000 with a range of 140,000 to 400,000. Counts outside this range should be regarded as possible evidence of benzene toxicity.

Certain abnormalities found through routine screening are of greater significance in the benzene-exposed worker and require prompt consultation with a specialist, namely:

(A) Thrombocytopenia.

(B) A trend of decreasing white cell, red cell, or platelet indices in an individual over time is more worrisome than an isolated abnormal finding at one test time. The importance of trend highlights the need to compare an individual's test results to baseline and/or previous periodic tests.

(C) A constellation or pattern of abnormalities in the different blood indices is of more significance than a single abnormality. A low white count not associated with any abnormalities in other cell indices may be a normal statistical variation, whereas if the low white count is accompanied by decreases in the platelet and/or red cell indices, such a pattern is more likely to be associated with benzene toxicity and merits thorough investigation.

Anemia, leukopenia, macrocytosis or an abnormal differential white blood cell count should alert the physician to further investigate and/or refer the patient if repeat tests confirm the abnormalities. If routine screening detects an abnor-

malities, follow-up tests which may be helpful in establishing the etiology of the abnormality are the peripheral blood smear and the reticulocyte count.

The extreme range of normal for reticulocytes is 0.4 to 2.5 percent of the red cells, the usual range being 0.5 to 1.2 percent of the red cells, but the typical value is in the range of 0.8 to 1.0 percent. A decline in reticulocytes to levels of less than 0.4 percent is to be regarded as possible evidence (unless another specific cause is found) of benzene toxicity requiring accelerated surveillance. An increase in reticulocyte levels to about 2.5 percent may also be consistent with (but is not as characteristic of) benzene toxicity.

(ii) An important diagnostic test is a careful examination of the peripheral blood smear. As with reticulocyte count the smear should be with fresh uncoagulated blood obtained from a needle tip following venipuncture or from a drop of earlobe blood (capillary blood). If necessary, the smear may, under certain limited conditions, be made from a blood sample anticoagulated with EDTA (but never with oxalate or heparin). When the smear is to be prepared from a specimen of venous blood which has been collected by a commercial Vacutainer type tube containing neutral EDTA, the smear should be made as soon as possible after the venesection. A delay of up to twelve hours is permissible between the drawing of the blood specimen into EDTA and the preparation of the smear if the blood is stored at refrigerator (not freezing) temperature.

(iii) The minimum mandatory observations to be made from the smear are:

- (A) The differential white blood cell count;
 - (B) Description of abnormalities in the appearance of red cells; and
 - (C) Description of any abnormalities in the platelets.
- (D) A careful search must be made throughout of every blood smear for immature white cells such as band forms (in more than normal proportion, i.e., over ten percent of the total differential count), any number of metamyelocytes, myelocytes, or myeloblasts. Any nucleate or multinucleated red blood cells should be reported. Large "giant" platelets or fragments of megakaryocytes must be recognized.

An increase in the proportion of band forms among the neutrophilic granulocytes is an abnormality deserving special mention, for it may represent a change which should be considered as an early warning of benzene toxicity in the absence of other causative factors (most commonly infection). Likewise, the appearance of metamyelocytes, in the absence of another probable cause, is to be considered a possible indication of benzene-induced toxicity.

An upward trend in the number of basophils, which normally do not exceed about 2.0 percent of the total white cells, is to be regarded as possible evidence of benzene toxicity. A rise in the eosinophil count is less specific but also may be suspicious of toxicity if it rises above 6.0 percent of the total white count.

The normal range of monocytes is from 2.0 to 8.0 percent of the total white count with an average of about 5.0 percent. About twenty percent of individuals reported to have mild but persisting abnormalities caused by exposure to benzene show a persistent monocytosis. The findings of a monocyte count which persists at more than ten to twelve percent of the normal white cell count (when the total count is nor-

mal) or persistence of an absolute monocyte count in excess of 800/mm³ should be regarded as a possible sign of benzene-induced toxicity.

A less frequent but more serious indication of benzene toxicity is the finding in the peripheral blood of the so-called "pseudo" (or acquired) Pelger-Huet anomaly. In this anomaly many, or sometimes the majority, of the neutrophilic granulocytes possess two round nuclear segments-less often one or three round segments-rather than three normally elongated segments. When this anomaly is not hereditary, it is often but not invariably predictive of subsequent leukemia. However, only about two percent of patients who ultimately develop acute myelogenous leukemia show the acquired Pelger-Huet anomaly. Other tests that can be administered to investigate blood abnormalities are discussed below; however, such procedures should be undertaken by the hematologist.

An uncommon sign, which cannot be detected from the smear, but can be elicited by a "sucrose water test" of peripheral blood, is transient paroxysmal nocturnal hemoglobinuria (PNH), which may first occur insidiously during a period of established aplastic anemia, and may be followed within one to a few years by the appearance of rapidly fatal acute myelogenous leukemia. Clinical detection of PNH, which occurs in only one or two percent of those destined to have acute myelogenous leukemia, may be difficult; if the "sucrose water test" is positive, the somewhat more definitive Ham test, also known as the acid-serum hemolysis test, may provide confirmation.

(E) Individuals documented to have developed acute myelogenous leukemia years after initial exposure to benzene may have progressed through a preliminary phase of hematologic abnormality. In some instances pancytopenia (i.e., a lowering in the counts of all circulating blood cells of bone marrow origin, but not to the extent implied by the term "aplastic anemia") preceded leukemia for many years. Depression of a single blood cell type or platelets may represent a harbinger of aplasia or leukemia. The finding of two or more cytopenias, or pancytopenia in a benzene-exposed individual, must be regarded as highly suspicious of more advanced although still reversible, toxicity. "Pancytopenia" coupled with the appearance of immature cells (myelocytes, myeloblasts, erythroblasts, etc.), with abnormal cells (pseudo Pelger-Huet anomaly, atypical nuclear heterochromatin, etc.), or unexplained elevations of white blood cells must be regarded as evidence of benzene overexposure unless proved otherwise. Many severely aplastic patients manifested the ominous finding of five to ten percent myeloblasts in the marrow, occasional myeloblasts and myelocytes in the blood and twenty to thirty monocytes. It is evident that isolated cytopenias, pancytopenias, and even aplastic anemias induced by benzene may be reversible and complete recovery has been reported on cessation of exposure. However, since any of these abnormalities is serious, the employee must immediately be removed from any possible exposure to benzene vapor. Certain tests may substantiate the employee's prospects for progression or regression. One such test would be an examination of the bone marrow, but the decision to perform a bone marrow aspiration or needle biopsy is made by the hematologist.

The findings of basophilic stippling in circulating red blood cells (usually found in one to five percent of red cells

following marrow injury), and detection in the bone marrow of what are termed "ringed sideroblasts" must be taken seriously, as they have been noted in recent years to be premonitory signs of subsequent leukemia.

Recently peroxidase-staining of circulating or marrow neutrophil granulocytes, employing benzidine dihydrochloride, have revealed the disappearance of, or diminution in, peroxidase in a sizable proportion of the granulocytes, and this has been reported as an early sign of leukemia. However, relatively few patients have been studied to date. Granulocyte granules are normally strongly peroxidase positive. A steady decline in leukocyte alkaline phosphatase has also been reported as suggestive of early acute leukemia. Exposure to benzene may cause an early rise in serum iron, often but not always associated with a fall in the reticulocyte count. Thus, serial measurements of serum iron levels may provide a means of determining whether or not there is a trend representing sustained suppression of erythropoiesis.

Measurement of serum iron, determination of peroxidase and of alkaline phosphatase activity in peripheral granulocytes can be performed in most pathology laboratories. Peroxidase and alkaline phosphatase staining are usually undertaken when the index of suspicion for leukemia is high.

[Statutory Authority: Chapter 49.17 RCW. 88-21-002 (Order 88-23), § 296-62-07529, filed 10/6/88, effective 11/7/88.]

WAC 296-62-07531 Appendix D sampling and analytical methods for benzene monitoring and measurement procedures. Measurements taken for the purpose of determining employee exposure to benzene are best taken so that the representative average eight-hour exposure may be determined from a single eight-hour sample or two four-hour samples. Short-time interval samples (or grab samples) may also be used to determine average exposure level if a minimum of five measurements are taken in a random manner over the eight-hour work shift. Random sampling means that any portion of the work shift has the same chance of being sampled as any other. The arithmetic average of all such random samples taken on one work shift is an estimate of an employee's average level of exposure for that work shift. Air samples should be taken in the employee's breathing zone (air that would most nearly represent that inhaled by the employee). Sampling and analysis must be performed with procedures meeting the requirements of the standard.

There are a number of methods available for monitoring employee exposures to benzene. The sampling and analysis may be performed by collection of the benzene vapor on charcoal adsorption tubes, with subsequent chemical analysis by gas chromatography. Sampling and analysis may also be performed by portable direct reading instruments, real-time continuous monitoring systems, passive dosimeters or other suitable methods. The employer has the obligation of selecting a monitoring method which meets the accuracy and precision requirements of the standard under his unique field conditions. The standard requires that the method of monitoring must have an accuracy, to a ninety-five percent confidence level, of not less than plus or minus twenty-five percent for concentrations of benzene greater than or equal to 0.5 ppm.

The WISHA laboratory uses NIOSH Method 1500 for evaluation of benzene air concentrations.

(1) WISHA method HYDCB for air samples.

Analyte: Benzene.

Matrix: Air.

Procedure: Adsorption on charcoal, desorption with carbon disulfide, analysis by GC.

Detection limit: 0.04 ppm.

Recommended air volume and sampling rate: 10L at 0.05 to 0.2 L/min.

(a) Principle of the method.

(i) A known volume of air is drawn through a charcoal tube to trap the organic vapors present.

(ii) The charcoal in the tube is transferred to a small, stoppered vial, and the analyte is desorbed with carbon disulfide.

(iii) An aliquot of the desorbed sample is injected into a gas chromatograph.

(iv) The area of the resulting peak is determined and compared with areas obtained from standards.

(b) Advantages and disadvantages of the method.

(i) The sampling device is small, portable, and involves no liquids. Interferences are minimal, and most of those which do occur can be eliminated by altering chromatographic conditions. The samples are analyzed by means of a quick, instrumental method.

(ii) The amount of sample which can be taken is limited by the number of milligrams that the tube will hold before overloading. When the sample value obtained for the backup section of the charcoal tube exceeds twenty-five percent of that found on the front section, the possibility of sample loss exists.

(c) Apparatus.

(i) A calibrated personal sampling pump whose flow can be determined within ± 5 percent at the recommended flow rate.

(ii) Charcoal tubes: Glass with both ends flame sealed, 7 cm long with a 6-mm O.D. and a 4-mm I.D., containing two sections of 20/40 mesh activated charcoal separated by a 2-mm portion of urethane foam. The activated charcoal is prepared from coconut shells and is obtained commercially. The adsorbing section contains 100 mg of charcoal, the back-up section 50 mg. A 3-mm portion of urethane foam is placed between the outlet end of the tube and the back-up section. A plug of silanized glass wool is placed in front of the adsorbing section. The pressure drop across the tube must be less than one inch of mercury at a flow rate of one liter per minute.

(iii) Gas chromatograph equipped with a flame ionization detector.

(iv) Column (10-ft 1/8-in stainless steel) packed with 80/100 Supelcoport coated with twenty percent SP 2100, 0.1 percent CW 1500.

(v) An electronic integrator or some other suitable method for measuring peak area.

(vi) Two-milliliter sample vials with Teflon-lined caps.

(vii) Microliter syringes: 10-microliter 10-uL syringe, and other convenient sizes for making standards, 1-uL syringe for sample injections.

(viii) Pipets: 1.0 mL delivery pipets.

(ix) Volumetric flasks: Convenient sizes for making standard solutions.

(d) Reagents.

(i) Chromatographic quality carbon disulfide (CS₂). Most commercially available carbon disulfide contains a trace of benzene which must be removed. It can be removed with the following procedure:

Heat under reflux for two to three hours, 500 mL of carbon disulfide, 10 mL concentrated sulfuric acid, and five drops of concentrated nitric acid. The benzene is converted to nitrobenzene. The carbon disulfide layer is removed, dried with anhydrous sodium sulfate, and distilled. The recovered carbon disulfide should be benzene free. (It has recently been determined that benzene can also be removed by passing the carbon disulfide through 13x molecular sieve.)

(ii) Benzene, reagent grade.

(iii) p-Cymene, reagent grade, (internal standard).

(iv) Desorbing reagent. The desorbing reagent is prepared by adding 0.05 mL of p-Cymene per milliliter of carbon disulfide. (The internal standard offers a convenient means correcting analytical response for slight inconsistencies in the size of sample injections. If the external standard technique is preferred, the internal standard can be eliminated.)

(v) Purified GC grade helium, hydrogen, and air.

(e) Procedure.

(i) Cleaning of equipment. All glassware used for the laboratory analysis should be properly cleaned and free of organics which could interfere in the analysis.

(ii) Calibration of personal pumps. Each pump must be calibrated with a representative charcoal tube in the line.

(iii) Collection and shipping of samples.

(A) Immediately before sampling, break the ends of the tube to provide an opening at least one-half the internal diameter of the tube (2 mm).

(B) The smaller section of the charcoal is used as the backup and should be placed nearest the sampling pump.

(C) The charcoal tube should be placed in a vertical position during sampling to minimize channeling through the charcoal.

(D) Air being sampled should not be passed through any hose or tubing before entering the charcoal tube.

(E) A sample size of ten liters is recommended. Sample at a flow rate of approximately 0.05 to 0.2 liters per minute. The flow rate should be known with an accuracy of at least \pm 5 percent.

(F) The charcoal tubes should be capped with the supplied plastic caps immediately after sampling.

(G) Submit at least one blank tube (a charcoal tube subjected to the same handling procedures, without having any air drawn through it) with each set of samples. Take necessary shipping and packing precautions to minimize breakage of samples.

(iv) Analysis of samples.

(A) Preparation of samples. In preparation for analysis, each charcoal tube is scored with a file in front of the first section of charcoal and broken open. The glass wool is removed and discarded. The charcoal in the first (larger) section is transferred to a 2-ml vial. The separating section of foam is removed and discarded; the second section is transferred to another capped vial. These two sections are analyzed separately.

(B) Desorption of samples. Prior to analysis, 1.0 mL of desorbing solution is pipetted into each sample container.

The desorbing solution consists of 0.05 μ L internal standard per mL of carbon disulfide. The sample vials are capped as soon as the solvent is added. Desorption should be done for thirty minutes with occasional shaking.

(C) GC conditions. Typical operating conditions for the gas chromatograph are:

(I) 30 mL/min (60 psig) helium carrier gas flow.

(II) 30 mL/min (40 psig) hydrogen gas flow to detector.

(III) 240 mL/min (40 psig) air flow to detector.

(IV) 150°C injector temperature.

(V) 250°C detector temperature.

(VI) 100°C column temperature.

(D) Injection size. 1 μ L.

(E) Measurement of area. The peak areas are measured by an electronic integrator or some other suitable form of area measurement.

(F) An internal standard procedure is used. The integrator is calibrated to report results in ppm for a ten liter air sample after correction for desorption efficiency.

(v) Determination of desorption efficiency.

(A) Importance of determination. The desorption efficiency of a particular compound can vary from one laboratory to another and from one lot of chemical to another. Thus, it is necessary to determine, at least once, the percentage of the specific compound that is removed in the desorption process, provided the same batch of charcoal is used.

(B) Procedure for determining desorption efficiency. The reference portion of the charcoal tube is removed. To the remaining portion, amounts representing 0.5X, 1X, and 2X and (X represents target concentration) based on a 10 L air sample are injected into several tubes at each level. Dilutions of benzene with carbon disulfide are made to allow injection of measurable quantities. These tubes are then allowed to equilibrate at least overnight. Following equilibration they are analyzed following the same procedure as the samples. Desorption efficiency is determined by dividing the amount of benzene found by amount spiked on the tube.

(f) Calibration and standards. A series of standards varying in concentration over the range of interest is prepared and analyzed under the same GC conditions that will be used on the samples. A calibration curve is prepared by plotting concentration (mg/mL) versus peak area.

(g) Calculations. Benzene air concentration can be calculated from the following equation:

$$\text{mg/m}^3 = (A)(B)/(C)(D)$$

Where: A = μ g/mL benzene, obtained from the calibration curve

B = desorption volume (1 mL)

C = Liters of air sampled

D = desorption efficiency

The concentration in mg/m³ can be converted to ppm (at 25° C and 760 mm) with the following equation:

$$\text{ppm} = (\text{mg/m}^3)(24.46)/(78.11)$$

Where: 24.46 = molar volume of an ideal gas

25° C and 760 mm

78.11 = molecular weight of benzene

(h) Backup data.

(i) Detection limit-air samples.

The detection limit for the analytical procedure is 1.28 mg with a coefficient of variation of 0.023 at this level. This

would be equivalent to an air concentration of 0.04 ppm for a 10 L air sample. This amount provided a chromatographic peak that could be identifiable in the presence of possible interferences. The detection limit data were obtained by making 1 µL injections of a 1.283 µg/mL standard.

Injection	Area Count	
1	655.4	
2	617.5	
3	662.0	Illus = 640.2
4	641.1	SD = 14.9
5	636.4	CV = 0.023
6	629.2	

(ii) Pooled coefficient of variation-Air Samples. The pooled coefficient of variation for the analytical procedure was determined by 1 µL replicate injections of analytical standards. The standards were 16.04, 32.08, and 64.16 µg/mL, which are equivalent to 0.5, 1.0, and 2.0 ppm for a 10 L air sample respectively.

Injection	Area Counts		
	0.5 ppm	1.0 ppm	2.0 ppm
1	3996.5	8130.2	16481
2	4059.4	8235.6	16493
3	4052.0	8307.9	16535
4	4027.2	8263.2	16609
5	4046.8	8291.1	16552
6	4137.9	8288.8	16618
Illus =	4053.3	8254.0	16548.3
SD =	47.2	62.5	57.1
CV =	0.0116	0.0076	0.0034
Illus= 0.008...			

(iii) Storage data-air samples.

Samples were generated at 1.03 ppm benzene at eighty percent relative humidity, 22° C, and 643 mm. All samples were taken for fifty minutes at 0.2 L/min. Six samples were analyzed immediately and the rest of the samples were divided into two groups by fifteen samples each. One group was stored at refrigerated temperature of -25° C, and the other group was stored at ambient temperature (approximately 23° C). These samples were analyzed over a period of fifteen days. The results are tabulated below.

PERCENT RECOVERY

Day Analyzed	Refrigerated			Ambient		
0	97.4	98.7	98.9	97.4	98.7	98.9
0	97.1	100.6	100.9	97.1	100.6	100.9
2	95.8	96.4	95.4	95.4	96.6	96.9
5	93.9	93.7	92.4	92.4	94.3	94.1
9	93.6	95.5	94.6	95.2	95.6	96.6
13	94.3	95.3	93.7	91.0	95.0	94.6
15	96.8	95.8	94.2	92.9	96.3	95.9

(iv) Desorption data.

Samples were prepared by injecting liquid benzene onto the A section of charcoal tubes. Samples were prepared that would be equivalent to 0.5, 1.0, and 2.0 ppm for a 10 L air sample.

Sample	0.5 ppm	1.0 ppm	2.0 ppm
1	99.4	98.8	99.5
2	99.5	98.7	99.7
3	99.2	98.6	99.8
4	99.4	99.1	100.0

Sample	0.5 ppm	1.0 ppm	2.0 ppm
5	99.2	99.0	99.7
6	99.8	99.1	99.9
Illus =	99.4	98.9	99.8
SD =	0.22	0.21	0.18
CV =	0.0022	0.0021	0.0018
Illus = 99.4			

(v) Carbon disulfide.

Carbon disulfide from a number of sources was analyzed for benzene contamination. The results are given in the following table. The benzene contaminant can be removed with the procedures given in (d)(i) of this subsection.

SAMPLE	ug Benzene/mL	ppm equivalent (for 10 L air sample)
Aldrich Lot 83017	4.20	0.13
Baker Lot 720364	1.0†	0.03
Baker Lot 822351	1.0†	0.03
Malinkrodt Lot WEMP	1.74	0.05
Malinkrodt Lot WHGA	5.65	0.18
Treated CS ₂	2.90	0.09

(2) WISHA laboratory method for bulk samples.

Analyte: Benzene.

Matrix: Bulk samples.

Procedure: Bulk samples are analyzed directly by high performance liquid chromatography (HPLC) or by capillary gas chromatography. See laboratory manual for GC procedure.

Detection limits: 0.01% by volume.

(a) Principle of the method.

(i) An aliquot of the bulk sample to be analyzed is injected into a liquid chromatograph or gas chromatograph.

(ii) The peak area for benzene is determined and compared to areas obtained from standards.

(b) Advantages and disadvantages of the method.

(i) The analytical procedure is quick, sensitive, and reproducible.

(ii) Reanalysis of samples is possible.

(iii) Interferences can be circumvented by proper selection of HPLC parameters or GC parameters.

(iv) Samples must be free of any particulates that may clog the capillary tubing in the liquid chromatograph. This may require distilling the sample or clarifying with a clarification kit.

(c) Apparatus.

(i) Liquid chromatograph equipped with a UV detector or capillary gas chromatograph with FID detector.

(ii) HPLC column that will separate benzene from other components in the bulk sample being analyzed. The column used for validation studies was a Waters uBondapak C18, 30 cm x 3.9 mm.

(iii) A clarification kit to remove any particulates in the bulk if necessary.

(iv) A micro-distillation apparatus to distill any samples if necessary.

(v) An electronic integrator or some other suitable method of measuring peak areas.

(vi) Microliter syringes-10 µL syringe and other convenient sizes for making standards. 10 µL syringe for sample injections.

(vii) Volumetric flasks, 5 mL and other convenient sizes for preparing standards and making dilutions.

(d) Reagents.

(i) Benzene, reagent grade.

(ii) HPLC grade water, methyl alcohol, and isopropyl alcohol.

(e) Collection and shipment of samples.

(i) Samples should be transported in glass containers with Teflon-lined caps.

(ii) Samples should not be put in the same container used for air samples.

(f) Analysis of samples.

(i) Sample preparation.

If necessary, the samples are distilled or clarified. Samples are analyzed undiluted. If the benzene concentration is out of the working range, suitable dilutions are made with isopropyl alcohol.

(ii) HPLC conditions.

The typical operating conditions for the high performance liquid chromatograph are:

(A) Mobile phase-Methyl alcohol/water, 50/50.

(B) Analytical wavelength-254 nm.

(C) Injection size-10 μ L.

(iii) Measurement of peak area and calibration.

Peak areas are measured by an integrator or other suitable means. The integrator is calibrated to report results % in benzene by volume.

(g) Calculations.

Since the integrator is programmed to report results in % benzene by volume in an undiluted sample, the following equation is used:

$$\% \text{ Benzene by Volume} = A \times B$$

Where: A = % by volume on report

B = Dilution Factor

(B = 1 for undiluted sample)

(h) Backup data.

(i) Detection limit-bulk samples.

The detection limit for the analytical procedure for bulk samples is 0.88 μ g, with a coefficient of variation of 0.019 at this level. This amount provided a chromatographic peak that could be identifiable in the presence of possible interferences. The detection limit data were obtained by making 10 μ L injections of a 0.10% by volume standard.

1	45386	Illus = 44040.1 SD = 852.5 CV = 0.019
2	44214	
3	43822	
4	44062	
6	42724	

(ii) Pooled coefficient of variation-bulk samples.

The pooled coefficient of variation for analytical procedure was determined by 50 μ L replicate injections of analytical standards. The standards were 0.01, 0.02, 0.04, 0.10, 1.0, and 2.0% benzene by volume.

Injection No.	0.01	0.02	0.04	0.10	1.0	2.0
1	45386	84737	166097	448497	4395380	9339150
2	44241	84300	170832	441299	4590800	9484900
3	43822	83835	164160	443719	4593200	9557580
4	44062	84381	164445	444842	4642350	9677060
5	44006	83012	168398	442564	4646430	9766240
6	42724	81957	173002	443975	4646260	
Illus =	44040.1	83703.6	167872	444149	4585767	9564986
SD =	852.5	1042.2	3589.8	2459.1	96839.3	166233
CV =	0.0194	0.0125	0.0213	0.0055	0.0211	0.0174
Illus =	0.017					

[Statutory Authority: Chapter 49.17 RCW, 90-09-026 (Order 90-01), § 296-62-07531, filed 4/10/90, effective 5/25/90; 89-11-035 (Order 89-03), § 296-62-07531, filed 5/15/89, effective 6/30/89; 88-21-002 (Order 88-23), § 296-62-07531, filed 10/6/88, effective 11/7/88.]

WAC 296-62-07540 Formaldehyde.

Note: The requirements in this chapter apply only to agriculture. The general industry requirements relating to formaldehyde have been moved to chapter 296-856 WAC, Formaldehyde.

(1) Scope and application. This standard applies to all occupational exposures to formaldehyde, i.e., from formaldehyde gas, its solutions, and materials that release formaldehyde.

(2) Definitions. For purposes of this standard, the following definitions shall apply:

(a) "Action level" means a concentration of 0.5 part formaldehyde per million parts of air (0.5 ppm) calculated as an 8-hour time-weighted average (TWA) concentration.

(b) "Approved" means approved by the director of the department of labor and industries or his/her authorized representative: Provided, however, That should a provision of this chapter state that approval by an agency or organization other than the department of labor and industries is required, such as Underwriters' Laboratories or the Mine Safety and

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Health Administration and the National Institute for Occupational Safety and Health, the provision of WAC 296-800-370 shall apply.

(c) "Authorized person" means any person required by work duties to be present in regulated work areas, or authorized to do so by the employer, by this section of the standard, or by the WISHA Act.

(d) "Director" means the director of the department of labor and industries, or his/her designated representative.

(e) "Emergency" is any occurrence, such as but not limited to equipment failure, rupture of containers, or failure of control equipment that results in an uncontrolled release of a significant amount of formaldehyde.

(f) "Employee exposure" means the exposure to airborne formaldehyde which would occur without corrections for protection provided by any respirator that is in use.

(g) "Formaldehyde" means the chemical substance, HCHO, Chemical Abstracts Service Registry No. 50-00-0.

(3) Permissible exposure limit (PEL).

(a) TWA: The employer shall assure that no employee is exposed to an airborne concentration of formaldehyde which exceeds 0.75 part formaldehyde per million parts of air as an 8-hour TWA.

(b) Short term exposure limit (STEL): The employer shall assure that no employee is exposed to an airborne concentration of formaldehyde which exceeds two parts formaldehyde per million parts of air (2 ppm) as a fifteen-minute STEL.

(4) Exposure monitoring.

(a) General.

(i) Each employer who has a workplace covered by this standard shall monitor employees to determine their exposure to formaldehyde.

(ii) Exception. Where the employer documents, using objective data, that the presence of formaldehyde or formaldehyde-releasing products in the workplace cannot result in airborne concentrations of formaldehyde that would cause any employee to be exposed at or above the action level or the STEL under foreseeable conditions of use, the employer will not be required to measure employee exposure to formaldehyde.

(iii) When an employee's exposure is determined from representative sampling, the measurements used shall be representative of the employee's full shift or short-term exposure to formaldehyde, as appropriate.

(iv) Representative samples for each job classification in each work area shall be taken for each shift unless the employer can document with objective data that exposure levels for a given job classification are equivalent for different workshifts.

(b) Initial monitoring. The employer shall identify all employees who may be exposed at or above the action level or at or above the STEL and accurately determine the exposure of each employee so identified.

(i) Unless the employer chooses to measure the exposure of each employee potentially exposed to formaldehyde, the employer shall develop a representative sampling strategy and measure sufficient exposures within each job classification for each workshift to correctly characterize and not underestimate the exposure of any employee within each exposure group.

(ii) The initial monitoring process shall be repeated each time there is a change in production, equipment, process, personnel, or control measures which may result in new or additional exposure to formaldehyde.

(iii) If the employer receives reports or signs or symptoms of respiratory or dermal conditions associated with formaldehyde exposure, the employer shall promptly monitor the affected employee's exposure.

(c) Periodic monitoring.

(i) The employer shall periodically measure and accurately determine exposure to formaldehyde for employees shown by the initial monitoring to be exposed at or above the action level or at or above the STEL.

(ii) If the last monitoring results reveal employee exposure at or above the action level, the employer shall repeat monitoring of the employees at least every six months.

(iii) If the last monitoring results reveal employee exposure at or above the STEL, the employer shall repeat monitor-

ing of the employees at least once a year under worst conditions.

(d) Termination of monitoring. The employer may discontinue periodic monitoring for employees if results from two consecutive sampling periods taken at least seven days apart show that employee exposure is below the action level and the STEL. The results must be statistically representative and consistent with the employer's knowledge of the job and work operation.

(e) Accuracy of monitoring. Monitoring shall be accurate, at the ninety-five percent confidence level, to within plus or minus twenty-five percent for airborne concentrations of formaldehyde at the TWA and the STEL and to within plus or minus thirty-five percent for airborne concentrations of formaldehyde at the action level.

(f) Employee notification of monitoring results. Within fifteen days of receiving the results of exposure monitoring conducted under this standard, the employer shall notify the affected employees of these results. Notification shall be in writing, either by distributing copies of the results to the employees or by posting the results. If the employee exposure is over either PEL, the employer shall develop and implement a written plan to reduce employee exposure to or below both PELs, and give written notice to employees. The written notice shall contain a description of the corrective action being taken by the employer to decrease exposure.

(g) Observation of monitoring.

(i) The employer shall provide affected employees or their designated representatives an opportunity to observe any monitoring of employee exposure to formaldehyde required by this standard.

(ii) When observation of the monitoring of employee exposure to formaldehyde requires entry into an area where the use of protective clothing or equipment is required, the employer shall provide the clothing and equipment to the observer, require the observer to use such clothing and equipment, and assure that the observer complies with all other applicable safety and health procedures.

(5) Regulated areas.

(a) The employer shall establish regulated areas where the concentration of airborne formaldehyde exceeds either the TWA or the STEL and post all entrances and accessways with signs bearing the following information:

DANGER
FORMALDEHYDE
IRRITANT AND POTENTIAL CANCER HAZARD
AUTHORIZED PERSONNEL ONLY

(b) The employer shall limit access to regulated areas to authorized persons who have been trained to recognize the hazards of formaldehyde.

(c) An employer at a multiemployer worksite who establishes a regulated area shall communicate the access restrictions and locations of these areas to other employers with work operations at that worksite.

(6) Methods of compliance.

(a) Engineering controls and work practices. The employer shall institute engineering and work practice controls to reduce and maintain employee exposures to formaldehyde at or below the TWA and the STEL.

(b) Exception. Whenever the employer has established that feasible engineering and work practice controls cannot reduce employee exposure to or below either of the PELs, the employer shall apply these controls to reduce employee exposures to the extent feasible and shall supplement them with respirators which satisfy this standard.

(7) Respiratory protection.

(a) General. For employees who use respirators required by this section, the employer must provide respirators that comply with the requirements of this subsection. Respirators must be used during:

(i) Periods necessary to install or implement feasible engineering and work-practice controls;

(ii) Work operations, such as maintenance and repair activities or vessel cleaning, for which the employer establishes that engineering and work-practice controls are not feasible;

(iii) Work operations for which feasible engineering and work-practice controls are not yet sufficient to reduce exposure to or below the PELs;

(iv) Emergencies.

(b) Respirator program.

(i) The employer must implement a respiratory protection program as required by chapter 296-842 WAC, except WAC 296-842-13005 and 296-842-14005.

(ii) If air-purifying chemical-cartridge respirators are used, the employer must:

(A) Replace the cartridge after three hours of use or at the end of the workshift, whichever occurs first, unless the cartridge contains a NIOSH-certified end-of-service-life indicator (ESLI) to show when breakthrough occurs.

(B) Unless the canister contains a NIOSH-certified ESLI to show when breakthrough occurs, replace canisters used in atmospheres up to 7.5 ppm (10 x PEL) every four hours and industrial-sized canisters used in atmospheres up to 75 ppm (100 x PEL) every two hours, or at the end of the workshift, whichever occurs first.

(c) Respirator selection.

(i) The employer must select appropriate respirators from Table 1 of this section.

TABLE 1
MINIMUM REQUIREMENTS FOR RESPIRATORY PROTECTION
AGAINST FORMALDEHYDE

Condition of use or formaldehyde concentration (ppm)	Minimum respirator required ¹
Up to 7.5 ppm (10 x PEL)	Full facepiece with cartridges or canisters specifically approved for protection against formaldehyde ² .
Up to 75 ppm (100 x PEL) . . .	Full-face mask with chin style or chest or back mounted type industrial size canister specifically approved for protection against formaldehyde. Type C supplied-air respirator pressure demand or continuous flow type, with full facepiece, hood, or helmet.

TABLE 1
MINIMUM REQUIREMENTS FOR RESPIRATORY PROTECTION
AGAINST FORMALDEHYDE

Above 75 ppm or unknown (emergen- cies) (100 x PEL)	Self-contained breathing apparatus (SCBA) with positive-pressure full facepiece. Combination supplied-air, full facepiece positive-pressure respirator with auxiliary self-contained air supply.
Fire fighting	SCBA with positive-pressure in full facepiece.
Escape	SCBA in demand or pressure demand mode. Full-face mask with chin style or front or back mounted type industrial size canister specifically approved for protection against formaldehyde.

¹Respirators specified for use at higher concentrations may be used at lower concentrations.

² A half-mask respirator with cartridges specifically approved for protection against formaldehyde can be substituted for the full facepiece respirator providing that effective gas-proof goggles are provided and used in combination with the half-mask respirator.

(ii) The employer must provide a powered air-purifying respirator adequate to protect against formaldehyde exposure to any employee who has difficulty using a negative-pressure respirator.

(8) Protective equipment and clothing. Employers shall comply with the provisions of WAC 296-800-160. When protective equipment or clothing is provided under these provisions, the employer shall provide these protective devices at no cost to the employee and assure that the employee wears them.

(a) Selection. The employer shall select protective clothing and equipment based upon the form of formaldehyde to be encountered, the conditions of use, and the hazard to be prevented.

(i) All contact of the eyes and skin with liquids containing one percent or more formaldehyde shall be prevented by the use of chemical protective clothing made of material impervious to formaldehyde and the use of other personal protective equipment, such as goggles and face shields, as appropriate to the operation.

(ii) Contact with irritating or sensitizing materials shall be prevented to the extent necessary to eliminate the hazard.

(iii) Where a face shield is worn, chemical safety goggles are also required if there is a danger of formaldehyde reaching the area of the eye.

(iv) Full body protection shall be worn for entry into areas where concentrations exceed 100 ppm and for emergency reentry into areas of unknown concentration.

(b) Maintenance of protective equipment and clothing.

(i) The employer shall assure that protective equipment and clothing that has become contaminated with formaldehyde is cleaned or laundered before its reuse.

(ii) When ventilating formaldehyde-contaminated clothing and equipment, the employer shall establish a storage

area so that employee exposure is minimized. Containers for contaminated clothing and equipment and storage areas shall have labels and signs containing the following information:

DANGER

FORMALDEHYDE-CONTAMINATED (CLOTHING) EQUIPMENT
AVOID INHALATION AND SKIN CONTACT

(iii) The employer shall assure that only persons trained to recognize the hazards of formaldehyde remove the contaminated material from the storage area for purposes of cleaning, laundering, or disposal.

(iv) The employer shall assure that no employee takes home equipment or clothing that is contaminated with formaldehyde.

(v) The employer shall repair or replace all required protective clothing and equipment for each affected employee as necessary to assure its effectiveness.

(vi) The employer shall inform any person who launders, cleans, or repairs such clothing or equipment of formaldehyde's potentially harmful effects and of procedures to safely handle the clothing and equipment.

(9) Hygiene protection.

(a) The employer shall provide change rooms, as described in WAC 296-24-120 for employees who are required to change from work clothing into protective clothing to prevent skin contact with formaldehyde.

(b) If employees' skin may become splashed with solutions containing one percent or greater formaldehyde, for example because of equipment failure or improper work practices, the employer shall provide conveniently located quick drench showers and assure that affected employees use these facilities immediately.

(c) If there is any possibility that an employee's eyes may be splashed with solutions containing 0.1 percent or greater formaldehyde, the employer shall provide acceptable eye-wash facilities within the immediate work area for emergency use.

(10) Housekeeping. For operations involving formaldehyde liquids or gas, the employer shall conduct a program to detect leaks and spills, including regular visual inspections.

(a) Preventative maintenance of equipment, including surveys for leaks, shall be undertaken at regular intervals.

(b) In work areas where spillage may occur, the employer shall make provisions to contain the spill, to decontaminate the work area, and to dispose of the waste.

(c) The employer shall assure that all leaks are repaired and spills are cleaned promptly by employees wearing suitable protective equipment and trained in proper methods for cleanup and decontamination.

(d) Formaldehyde-contaminated waste and debris resulting from leaks or spills shall be placed for disposal in sealed containers bearing a label warning of formaldehyde's presence and of the hazards associated with formaldehyde.

(11) Emergencies. For each workplace where there is the possibility of an emergency involving formaldehyde, the employer shall assure appropriate procedures are adopted to minimize injury and loss of life. Appropriate procedures shall be implemented in the event of an emergency.

(12) Medical surveillance.

(a) Employees covered.

(i) The employer shall institute medical surveillance programs for all employees exposed to formaldehyde at concentrations at or exceeding the action level or exceeding the STEL.

(ii) The employer shall make medical surveillance available for employees who develop signs and symptoms of overexposure to formaldehyde and for all employees exposed to formaldehyde in emergencies. When determining whether an employee may be experiencing signs and symptoms of possible overexposure to formaldehyde, the employer may rely on the evidence that signs and symptoms associated with formaldehyde exposure will occur only in exceptional circumstances when airborne exposure is less than 0.1 ppm and when formaldehyde is present in materials in concentrations less than 0.1 percent.

(b) Examination by a physician. All medical procedures, including administration of medical disease questionnaires, shall be performed by or under the supervision of a licensed physician and shall be provided without cost to the employee, without loss of pay, and at a reasonable time and place.

(c) Medical disease questionnaire. The employer shall make the following medical surveillance available to employees prior to assignment to a job where formaldehyde exposure is at or above the action level or above the STEL and annually thereafter. The employer shall also make the following medical surveillance available promptly upon determining that an employee is experiencing signs and symptoms indicative of possible overexposure to formaldehyde.

(i) Administration of a medical disease questionnaire, such as in Appendix D, which is designed to elicit information on work history, smoking history, any evidence of eye, nose, or throat irritation; chronic airway problems or hyperreactive airway disease; allergic skin conditions or dermatitis; and upper or lower respiratory problems.

(ii) A determination by the physician, based on evaluation of the medical disease questionnaire, of whether a medical examination is necessary for employees not required to wear respirators to reduce exposure to formaldehyde.

(d) Medical examinations. Medical examinations shall be given to any employee who the physician feels, based on information in the medical disease questionnaire, may be at increased risk from exposure to formaldehyde and at the time of initial assignment and at least annually thereafter to all employees required to wear a respirator to reduce exposure to formaldehyde. The medical examination shall include:

(i) A physical examination with emphasis on evidence of irritation or sensitization of the skin and respiratory system, shortness of breath, or irritation of the eyes.

(ii) Laboratory examinations for respirator wearers consisting of baseline and annual pulmonary function tests. As a minimum, these tests shall consist of forced vital capacity (FVC), forced expiratory volume in one second (FEV1), and forced expiratory flow (FEF).

(iii) Any other test which the examining physician deems necessary to complete the written opinion.

(iv) Counseling of employees having medical conditions that would be directly or indirectly aggravated by exposure to formaldehyde on the increased risk of impairment of their health.

(e) Examinations for employees exposed in an emergency. The employer shall make medical examinations available as soon as possible to all employees who have been exposed to formaldehyde in an emergency.

(i) The examination shall include a medical and work history with emphasis on any evidence of upper or lower respiratory problems, allergic conditions, skin reaction or hypersensitivity, and any evidence of eye, nose, or throat irritation.

(ii) Other examinations shall consist of those elements considered appropriate by the examining physician.

(f) Information provided to the physician. The employer shall provide the following information to the examining physician:

(i) A copy of this standard and Appendices A, C, D, and E;

(ii) A description of the affected employee's job duties as they relate to the employee's exposure to formaldehyde;

(iii) The representative exposure level for the employee's job assignment;

(iv) Information concerning any personal protective equipment and respiratory protection used or to be used by the employee; and

(v) Information from previous medical examinations of the affected employee within the control of the employer.

(vi) In the event of a nonroutine examination because of an emergency, the employer shall provide to the physician as soon as possible: A description of how the emergency occurred and the exposure the victim may have received.

(g) Physician's written opinion.

(i) For each examination required under this standard, the employer shall obtain a written opinion from the examining physician. This written opinion shall contain the results of the medical examination except that it shall not reveal specific findings or diagnoses unrelated to occupational exposure to formaldehyde. The written opinion shall include:

(A) The physician's opinion as to whether the employee has any medical condition that would place the employee at an increased risk of material impairment of health from exposure to formaldehyde;

(B) Any recommended limitations on the employee's exposure or changes in the use of personal protective equipment, including respirators;

(C) A statement that the employee has been informed by the physician of any medical conditions which would be aggravated by exposure to formaldehyde, whether these conditions may have resulted from past formaldehyde exposure or from exposure in an emergency, and whether there is a need for further examination or treatment.

(ii) The employer shall provide for retention of the results of the medical examination and tests conducted by the physician.

(iii) The employer shall provide a copy of the physician's written opinion to the affected employee within fifteen days of its receipt.

(h) Medical removal.

(i) The provisions of this subdivision apply when an employee reports significant irritation of the mucosa of the eyes or of the upper airways, respiratory sensitization, dermal irritation, or dermal sensitization attributed to workplace formaldehyde exposure. Medical removal provisions do not apply in case of dermal irritation or dermal sensitization

when the product suspected of causing the dermal condition contains less than 0.05% formaldehyde.

(ii) An employee's report of signs or symptoms of possible overexposure to formaldehyde shall be evaluated by a physician selected by the employer pursuant to (c) of this subsection. If the physician determines that a medical examination is not necessary under (c)(ii) of this subsection, there shall be a two-week evaluation and remediation period to permit the employer to ascertain whether the signs or symptoms subside untreated or with the use of creams, gloves, first-aid treatment, or personal protective equipment. Industrial hygiene measures that limit the employee's exposure to formaldehyde may also be implemented during this period. The employee shall be referred immediately to a physician prior to expiration of the two-week period if the signs or symptoms worsen. Earnings, seniority, and benefits may not be altered during the two-week period by virtue of the report.

(iii) If the signs or symptoms have not subsided or been remedied by the end of the two-week period, or earlier if signs or symptoms warrant, the employee shall be examined by a physician selected by the employer. The physician shall presume, absent contrary evidence, that observed dermal irritation or dermal sensitization are not attributable to formaldehyde when products to which the affected employee is exposed contain less than 0.1% formaldehyde.

(iv) Medical examinations shall be conducted in compliance with the requirements of (e)(i) and (ii) of this subsection. Additional guidelines for conducting medical exams are contained in WAC 296-62-07546, Appendix C.

(v) If the physician finds that significant irritation of the mucosa of the eyes or the upper airways, respiratory sensitization, dermal irritation, or dermal sensitization result from workplace formaldehyde exposure and recommends restrictions or removal. The employer shall promptly comply with the restrictions or recommendations of removal. In the event of a recommendation of removal, the employer shall remove the affected employee from the current formaldehyde exposure and if possible, transfer the employee to work having no or significantly less exposure to formaldehyde.

(vi) When an employee is removed pursuant to item (v) of this subdivision, the employer shall transfer the employee to comparable work for which the employee is qualified or can be trained in a short period (up to six months), where the formaldehyde exposures are as low as possible, but not higher than the action level. The employer shall maintain the employee's current earnings, seniority, and other benefits. If there is no such work available, the employer shall maintain the employee's current earnings, seniority, and other benefits until such work becomes available, until the employee is determined to be unable to return to workplace formaldehyde exposure, until the employee is determined to be able to return to the original job status, or for six months, whichever comes first.

(vii) The employer shall arrange for a follow-up medical examination to take place within six months after the employee is removed pursuant to this subsection. This examination shall determine if the employee can return to the original job status, or if the removal is to be permanent. The physician shall make a decision within six months of the date the employee was removed as to whether the employee can be

returned to the original job status, or if the removal is to be permanent.

(viii) An employer's obligation to provide earnings, seniority, and other benefits to a removed employee may be reduced to the extent that the employee receives compensation for earnings lost during the period of removal either from a publicly or employer-funded compensation program or from employment with another employer made possible by virtue of the employee's removal.

(ix) In making determinations of the formaldehyde content of materials under this subsection the employer may rely on objective data.

(i) Multiple physician review.

(i) After the employer selects the initial physician who conducts any medical examination or consultation to determine whether medical removal or restriction is appropriate, the employee may designate a second physician to review any findings, determinations, or recommendations of the initial physician and to conduct such examinations, consultations, and laboratory tests as the second physician deems necessary and appropriate to evaluate the effects of formaldehyde exposure and to facilitate this review.

(ii) The employer shall promptly notify an employee of the right to seek a second medical opinion after each occasion that an initial physician conducts a medical examination or consultation for the purpose of medical removal or restriction.

(iii) The employer may condition its participation in, and payment for, the multiple physician review mechanism upon the employee doing the following within fifteen days after receipt of the notification of the right to seek a second medical opinion, or receipt of the initial physician's written opinion, whichever is later:

(A) The employee informs the employer of the intention to seek a second medical opinion; and

(B) The employee initiates steps to make an appointment with a second physician.

(iv) If the findings, determinations, or recommendations of the second physician differ from those of the initial physician, then the employer and the employee shall assure that efforts are made for the two physicians to resolve the disagreement. If the two physicians are unable to quickly resolve their disagreement, then the employer and the employee through their respective physicians shall designate a third physician who shall be a specialist in the field at issue:

(A) To review the findings, determinations, or recommendations of the prior physicians; and

(B) To conduct such examinations, consultations, laboratory tests, and discussions with prior physicians as the third physician deems necessary to resolve the disagreement of the prior physicians.

(v) In the alternative, the employer and the employee or authorized employee representative may jointly designate such third physician.

(vi) The employer shall act consistent with the findings, determinations, and recommendations of the third physician, unless the employer and the employee reach an agreement which is otherwise consistent with the recommendations of at least one of the three physicians.

(13) Hazard communication.

(a) General. Notwithstanding any exemption granted in WAC 296-800-170 for wood products, each employer who has a workplace covered by this standard shall comply with the requirements of WAC 296-800-170. The definitions of the chemical hazard communication standard shall apply under this standard.

(i) The following shall be subject to the hazard communication requirements of this section: Formaldehyde gas, all mixtures or solutions composed of greater than 0.1 percent formaldehyde, and materials capable of releasing formaldehyde into the air under reasonably foreseeable concentrations reaching or exceeding 0.1 ppm.

(ii) As a minimum, specific health hazards that the employer shall address are: Cancer, irritation and sensitization of the skin and respiratory system, eye and throat irritation, and acute toxicity.

(b) Manufacturers and importers who produce or import formaldehyde or formaldehyde-containing products shall provide downstream employers using or handling these products with an objective determination through the required labels and MSDSs as required by chapter 296-839 WAC.

(c) Labels.

(i) The employer shall assure that hazard warning labels complying with the requirements of WAC 296-800-170 are affixed to all containers of materials listed in (a)(i) of this subsection, except to the extent that (a)(i) of this subsection is inconsistent with this item.

(ii) Information on labels. As a minimum, for all materials listed in (a)(i) of this subsection, capable of releasing formaldehyde at levels of 0.1 ppm to 0.5 ppm, labels shall identify that the product contains formaldehyde: List the name and address of the responsible party; and state that physical and health hazard information is readily available from the employer and from material safety data sheets.

(iii) For materials listed in (a)(i) of this subsection, capable of releasing formaldehyde at levels above 0.5 ppm, labels shall appropriately address all the hazards as defined in WAC 296-800-170, and Appendices A and B, including respiratory sensitization, and shall contain the words "Potential Cancer Hazard."

(iv) In making the determinations of anticipated levels of formaldehyde release, the employer may rely on objective data indicating the extent of potential formaldehyde release under reasonably foreseeable conditions of use.

(v) Substitute warning labels. The employer may use warning labels required by other statutes, regulations, or ordinances which impart the same information as the warning statements required by this subitem.

(d) Material safety data sheets.

(i) Any employer who uses formaldehyde-containing materials listed in (a)(i) of this subsection shall comply with the requirements of WAC 296-800-170 with regard to the development and updating of material safety data sheets.

(ii) Manufacturers, importers, and distributors of formaldehyde containing materials listed in (a)(i) of this subsection shall assure that material safety data sheets and updated information are provided to all employers purchasing such materials at the time of the initial shipment and at the time of the first shipment after a material safety data sheet is updated.

(e) Written hazard communication program. The employer shall develop, implement, and maintain at the

workplace, a written hazard communication program for formaldehyde exposures in the workplace, which at a minimum describes how the requirements specified in this section for labels and other forms of warning and material safety data sheets, and subsection (14) of this section for employee information and training, will be met. Employees in multiemployer workplaces shall comply with the requirements of WAC 296-800-170.

(14) Employee information and training.

(a) Participation. The employer shall assure that all employees who are assigned to workplaces where there is a health hazard from formaldehyde participate in a training program, except that where the employer can show, using objective data, that employees are not exposed to formaldehyde at or above 0.1 ppm, the employer is not required to provide training.

(b) Frequency. Employers shall provide such information and training to employees at the time of their initial assignment and whenever a new exposure to formaldehyde is introduced into their work area. The training shall be repeated at least annually.

(c) Training program. The training program shall be conducted in a manner which the employee is able to understand and shall include:

(i) A discussion of the contents of this regulation and the contents of the material safety data sheet;

(ii) The purpose for and a description of the medical surveillance program required by this standard, including:

(A) A description of the potential health hazards associated with exposure to formaldehyde and a description of the signs and symptoms of exposure to formaldehyde.

(B) Instructions to immediately report to the employer the development of any adverse signs or symptoms that the employee suspects is attributable to formaldehyde exposure.

(iii) Description of operations in the work area where formaldehyde is present and an explanation of the safe work practices appropriate for limiting exposure to formaldehyde in each job;

(iv) The purpose for, proper use of, and limitations of personal protective clothing;

(v) Instructions for the handling of spills, emergencies, and clean-up procedures;

(vi) An explanation of the importance of engineering and work practice controls for employee protection and any necessary instruction in the use of these controls;

(vii) A review of emergency procedures including the specific duties or assignments of each employee in the event of an emergency; and

(viii) The purpose, proper use, limitations, and other training requirements for respiratory protection as required by chapter 296-842 WAC.

(d) Access to training materials.

(i) The employer shall inform all affected employees of the location of written training materials and shall make these materials readily available, without cost, to the affected employees.

(ii) The employer shall provide, upon request, all training materials relating to the employee training program to the director of labor and industries, or his/her designated representative.

(15) Recordkeeping.

(a) Exposure measurements. The employer shall establish and maintain an accurate record of all measurements taken to monitor employee exposure to formaldehyde. This record shall include:

(i) The date of measurement;

(ii) The operation being monitored;

(iii) The methods of sampling and analysis and evidence of their accuracy and precision;

(iv) The number, durations, time, and results of samples taken;

(v) The types of protective devices worn; and

(vi) The names, job classifications, Social Security numbers, and exposure estimates of the employees whose exposures are represented by the actual monitoring results.

(b) Exposure determinations. Where the employer has determined that no monitoring is required under this standard, the employer shall maintain a record of the objective data relied upon to support the determination that no employee is exposed to formaldehyde at or above the action level.

(c) Medical surveillance. The employer shall establish and maintain an accurate record for each employee subject to medical surveillance under this standard. This record shall include:

(i) The name and Social Security number of the employee;

(ii) The physician's written opinion;

(iii) A list of any employee health complaints that may be related to exposure to formaldehyde; and

(iv) A copy of the medical examination results, including medical disease questionnaires and results of any medical tests required by the standard or mandated by the examining physician.

(d) Record retention. The employer shall retain records required by this standard for at least the following periods:

(i) Exposure records and determinations shall be kept for at least thirty years; and

(ii) Medical records shall be kept for the duration of employment plus thirty years.

(e) Availability of records.

(i) Upon request, the employer shall make all records maintained as a requirement of this standard available for examination and copying to the director of labor and industries, or his/her designated representative.

(ii) The employer shall make employee exposure records, including estimates made from representative monitoring and available upon request for examination and copying, to the subject employee, or former employee, and employee representatives in accordance with chapter 296-802 WAC.

(iii) Employee medical records required by this standard shall be provided upon request for examination and copying, to the subject employee, or former employee, or to anyone having the specific written consent of the subject employee or former employee in accordance with chapter 296-802 WAC.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060, 06-08-087, § 296-62-07540, filed 4/4/06, effective 9/1/06; 05-03-093, § 296-62-07540, filed 1/18/05, effective 3/1/05; 04-10-026, § 296-62-07540, filed 4/27/04, effective 8/1/04. Statutory Authority: RCW 49.17.010, [49.17].-

040, [49.17].050. 02-12-098, § 296-62-07540, filed 6/5/02, effective 8/1/02; 01-11-038, § 296-62-07540, filed 5/9/01, effective 9/1/01; 99-10-071, § 296-62-07540, filed 5/4/99, effective 9/1/99. Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-62-07540, filed 7/20/94, effective 9/20/94; 92-23-017 (Order 92-13), § 296-62-07540, filed 11/10/92, effective 12/18/92; 91-11-070 (Order 91-01), § 296-62-07540, filed 5/20/91, effective 6/20/91; 90-03-029 (Order 89-20), § 296-62-07540, filed 1/11/90, effective 2/26/90; 88-21-002 (Order 88-23), § 296-62-07540, filed 10/6/88, effective 11/7/88.]

WAC 296-62-07542 Appendix A—Substance technical guideline for formalin. (1) The following substance technical guideline for formalin provides information on uninhibited formalin solution (thirty-seven percent formaldehyde, no methanol stabilizer). It is designed to inform employees at the production level of their rights and duties under the formaldehyde standard whether their job title defines them as workers or supervisors. Much of the information provided is general; however, some information is specific for formalin. When employee exposure to formaldehyde is from resins capable of releasing formaldehyde, the resin itself and other impurities or decomposition products may also be toxic, and employers should include this information as well when informing employees of the hazards associated with the materials they handle. The precise hazards associated with exposure to formaldehyde depend both on the form (solid, liquid, or gas) of the material and the concentration of formaldehyde present. For example, thirty-seven to fifty percent solutions of formaldehyde present a much greater hazard to the skin and eyes from spills or splashes than solutions containing less than one percent formaldehyde. Individual substance technical guidelines used by the employer for training employees should be modified to properly give information on the material actually being used.

(a) Substance identification.

(i) Chemical name: Formaldehyde.

(ii) Chemical family: Aldehyde.

(iii) Chemical formula: HCHO .

(iv) Molecular weight: 30.03.

(v) Chemical abstracts service number (CAS number): 50-00-0.

Synonyms: Formalin; Formic Aldehyde; Paraform; Formol; Formalin (Methanol-free); Fyde; Formalith; Methanal; Methyl Aldehyde; Methylene Glycol; Methylene Oxide; Tetraoxymethalene; Oxomethane; Oxymethylene.

(b) Components and contaminants.

(i) Percent: 37.0 Formaldehyde.

(ii) Percent: 63.0 water.

Note: Inhibited solutions contain methanol.

(iii) Other contaminants: Formic acid (alcohol free).

Exposure limits:

(A) WISHA TWA-0.75 ppm.

(B) WISHA STEL-2 ppm.

(c) Physical data.

(i) Description: Colorless liquid, pungent odor.

(ii) Boiling point: 214°F (101°C).

(iii) Specific gravity: 1.08 ($\text{H}_2\text{O} = 1$ @ 20 C).

(iv) pH: 2.8-4.0.

(v) Solubility in water: Miscible.

(vi) Solvent solubility: Soluble in alcohol and acetone.

(vii) Vapor density: 1.04 (Air = 1 @ 20 C).

(viii) Odor threshold: 0.8-1 ppm.

(d) Fire and explosion hazard.

(i) Moderate fire and explosion hazard when exposed to heat or flame.

(ii) The flash point of thirty-seven percent formaldehyde solutions is above normal room temperature, but the explosion range is very wide, from seven to seventy-three percent by volume in air.

(iii) Reaction of formaldehyde with nitrogen dioxide, nitromethane, perchloric acid and aniline, or peroxyformic acid yields explosive compounds.

(iv) Flash point: 185°F (85°C) closed cup.

(v) Lower explosion limit: Seven percent.

(vi) Upper explosion limit: Seventy-three percent.

(vii) Autoignition temperature: 806°F (430°C).

(viii) Flammable class (WISHA): III A.

Extinguishing media:

(I) Use dry chemical, "alcohol foam," carbon dioxide, or water in flooding amounts as fog. Solid streams may not be effective. Cool fire-exposed containers with water from side until well after fire is out.

(II) Use of water spray to flush spills can also dilute the spill to produce nonflammable mixtures. Water runoff, however, should be contained for treatment.

(ix) National Fire Protection Association Section 325M Designation:

(A) Health: 2-Materials hazardous to health, but areas may be entered with full-faced mask self-contained breathing apparatus which provides eye protection.

(B) Flammability: 2-Materials which must be moderately heated before ignition will occur. Water spray may be used to extinguish the fire because the material can be cooled below its flash point.

(C) Reactivity: D-Materials which (in themselves) are normally stable even under fire exposure conditions and which are not reactive with water. Normal fire fighting procedures may be used.

(e) Reactivity.

(i) Stability: Formaldehyde solutions may self-polymerize to form paraformaldehyde which precipitates.

(ii) Incompatibility (materials to avoid):

(A) Strong oxidizing agents, caustics, strong alkalies, isocyanates, anhydrides, oxides, and inorganic acids.

(B) Formaldehyde reacts with hydrochloric acid to form the potent carcinogen, bis-chloromethyl ether. Formaldehyde reacts with nitrogen dioxide, nitromethane, perchloric acid and aniline, or peroxyformic acid to yield explosive compounds. A violent reaction occurs when formaldehyde is mixed with strong oxidizers.

(C) Hazardous combustion or decomposition products: Oxygen from the air can oxidize formaldehyde to formic acid, especially when heated. Formic acid is corrosive.

(f) Health hazard data.

(i) Acute effects of exposure.

(A) Ingestion (swallowing): Liquids containing ten to forty percent formaldehyde cause severe irritation and inflammation of the mouth, throat, and stomach. Severe stomach pains will follow ingestion with possible loss of consciousness and death. Ingestion of dilute formaldehyde solutions (0.03-0.04%) may cause discomfort in the stomach and pharynx.

(B) Inhalation (breathing):

(I) Formaldehyde is highly irritating to the upper respiratory tract and eyes. Concentrations of 0.5 to 2.0 ppm may irritate the eyes, nose, and throat of some individuals.

(II) Concentrations of 3 to 5 ppm also cause tearing of the eyes and are intolerable to some persons.

(III) Concentrations of 10 to 20 ppm cause difficulty in breathing, burning of the nose and throat, coughing, and heavy tearing of the eyes, and 25 to 30 ppm causes severe respiratory tract injury leading to pulmonary edema and pneumonia. A concentration of 100 ppm is immediately dangerous to life and health. Deaths from accidental exposure to high concentrations of formaldehyde have been reported.

(C) Skin (dermal): Formalin is a severe skin irritant and a sensitizer. Contact with formalin causes white discoloration, smarting, drying, cracking, and scaling. Prolonged and repeated contact can cause numbness and a hardening or tanning of the skin. Previously exposed persons may react to future exposure with an allergic eczematous dermatitis or hives.

(D) Eye contact: Formaldehyde solutions splashed in the eye can cause injuries ranging from transient discomfort to severe, permanent corneal clouding and loss of vision. The severity of the effect depends on the concentration of formaldehyde in the solution and whether or not the eyes are flushed with water immediately after the accident.

Note: The perception of formaldehyde by odor and eye irritation becomes less sensitive with time as one adapts to formaldehyde. This can lead to overexposure if a worker is relying on formaldehyde's warning properties to alert him or her to the potential for exposure.

(E) Acute animal toxicity:

(I) Oral, rats: LD₅₀=800 mg/kg.

(II) Oral, mouse: LD₅₀=42 mg/kg.

(III) Inhalation, rats: LC₅₀=250 mg/kg.

(IV) Inhalation, mouse: LC₅₀=900 mg/kg.

(V) Inhalation, rats: LC₅₀=590 mg/kg.

(g) Chronic effects of exposure.

(i) Carcinogenicity: Formaldehyde has the potential to cause cancer in humans. Repeated and prolonged exposure increases the risk. Various animal experiments have conclusively shown formaldehyde to be a carcinogen in rats. In humans, formaldehyde exposure has been associated with cancers of the lung, nasopharynx and oropharynx, and nasal passages.

(ii) Mutagenicity: Formaldehyde is genotoxic in several in vitro test systems showing properties of both an initiator and a promoter.

(iii) Toxicity: Prolonged or repeated exposure to formaldehyde may result in respiratory impairment. Rats exposed to formaldehyde at 2 ppm developed benign nasal tumors and changes of the cell structure in the nose as well as inflamed mucous membranes of the nose. Structural changes in the epithelial cells in the human nose have also been observed. Some persons have developed asthma or bronchitis following exposure to formaldehyde, most often as the result of an accidental spill involving a single exposure to a high concentration of formaldehyde.

(h) Emergency and first-aid procedures.

(i) Ingestion (swallowing): If the victim is conscious, dilute, inactivate, or absorb the ingested formaldehyde by giving milk, activated charcoal, or water. Any organic mate-

rial will inactivate formaldehyde. Keep affected person warm and at rest. Get medical attention immediately. If vomiting occurs, keep head lower than hips.

(ii) Inhalation (breathing): Remove the victim from the exposure area to fresh air immediately. Where the formaldehyde concentration may be very high, each rescuer must put on a self-contained breathing apparatus before attempting to remove the victim, and medical personnel should be informed of the formaldehyde exposure immediately. If breathing has stopped, give artificial respiration. Keep the affected person warm and at rest. Qualified first-aid or medical personnel should administer oxygen, if available, and maintain the patient's airways and blood pressure until the victim can be transported to a medical facility. If exposure results in a highly irritated upper respiratory tract and coughing continues for more than ten minutes, the worker should be hospitalized for observation and treatment.

(iii) Skin contact: Remove contaminated clothing (including shoes) immediately. Wash the affected area of your body with soap or mild detergent and large amounts of water until no evidence of the chemical remains (at least fifteen to twenty minutes). If there are chemical burns, get first aid to cover the area with sterile, dry dressing, and bandages. Get medical attention if you experience appreciable eye or respiratory irritation.

(iv) Eye contact: Wash the eyes immediately with large amounts of water occasionally lifting lower and upper lids, until no evidence of chemical remains (at least fifteen to twenty minutes). In case of burns, apply sterile bandages loosely without medication. Get medical attention immediately. If you have experienced appreciable eye irritation from a splash or excessive exposure, you should be referred promptly to an ophthalmologist for evaluation.

(i) Emergency procedures.

(i) Emergencies:

(A) If you work in an area where a large amount of formaldehyde could be released in an accident or from equipment failure, your employer must develop procedures to be followed in event of an emergency. You should be trained in your specific duties in the event of an emergency, and it is important that you clearly understand these duties. Emergency equipment must be accessible and you should be trained to use any equipment that you might need. Formaldehyde contaminated equipment must be cleaned before reuse.

(B) If a spill of appreciable quantity occurs, leave the area quickly unless you have specific emergency duties. Do not touch spilled material. Designated persons may stop the leak and shut off ignition sources if these procedures can be done without risk. Designated persons should isolate the hazard area and deny entry except for necessary people protected by suitable protective clothing and respirators adequate for the exposure. Use water spray to reduce vapors. Do not smoke, and prohibit all flames or flares in the hazard area.

(ii) Special fire fighting procedures:

(A) Learn procedures and responsibilities in the event of a fire in your workplace.

(B) Become familiar with the appropriate equipment and supplies and their location.

(C) In fire fighting, withdraw immediately in case of rising sound from venting safety device or any discoloration of storage tank due to fire.

(j) Spill, leak, and disposal procedures.

(i) Occupational spill: For small containers, place the leaking container in a well ventilated area. Take up small spills with absorbent material and place the waste into properly labeled containers for later disposal. For larger spills, dike the spill to minimize contamination and facilitate salvage or disposal. You may be able to neutralize the spill with sodium hydroxide or sodium sulfite. Your employer must comply with EPA rules regarding the clean-up of toxic waste and notify state and local authorities, if required. If the spill is greater than 1,000 lb/day, it is reportable under EPA's superfund legislation.

(ii) Waste disposal: Your employer must dispose of waste containing formaldehyde in accordance with applicable local, state, and federal law and in a manner that minimizes exposure of employees at the site and of the clean-up crew.

(k) Monitoring and measurement procedures.

(i) Monitoring requirements: If your exposure to formaldehyde exceeds the 0.5 ppm action level or the 2 ppm STEL, your employer must monitor your exposure. Your employer need not measure every exposure if a "high exposure" employee can be identified. This person usually spends the greatest amount of time nearest the process equipment. If you are a "representative employee," you will be asked to wear a sampling device to collect formaldehyde. This device may be a passive badge, a sorbent tube attached to a pump, or an impinger containing liquid. You should perform your work as usual, but inform the person who is conducting the monitoring of any difficulties you are having wearing the device.

(ii) Evaluation of 8-hour exposure: Measurements taken for the purpose of determining time-weighted average (TWA) exposures are best taken with samples covering the full shift. Samples collected must be taken from the employee's breathing zone air.

(iii) Short-term exposure evaluation: If there are tasks that involve brief but intense exposure to formaldehyde, employee exposure must be measured to assure compliance with the STEL. Sample collections are for brief periods, only fifteen minutes, but several samples may be needed to identify the peak exposure.

(iv) Monitoring techniques: WISHA's only requirement for selecting a method for sampling and analysis is that the methods used accurately evaluate the concentration of formaldehyde in employees' breathing zones. Sampling and analysis may be performed by collection of formaldehyde on liquid or solid sorbents with subsequent chemical analysis. Sampling and analysis may also be performed by passive diffusion monitors and short-term exposure may be measured by instruments such as real-time continuous monitoring systems and portable direct reading instruments.

(v) Notification of results: Your employer must inform you of the results of exposure monitoring representative of your job. You may be informed in writing, but posting the results where you have ready access to them constitutes compliance with the standard.

(l) Protective equipment and clothing.

(Material impervious to formaldehyde is needed if the employee handles formaldehyde solutions of one percent or more. Other employees may also require protective clothing or equipment to prevent dermatitis.)

(i) Respiratory protection. Use NIOSH-approved full facepiece negative pressure respirators equipped with approved cartridges or canisters within the use limitations of these devices. (Present restrictions on cartridges and canisters do not permit them to be used for a full workshift.) In all other situations, use positive pressure respirators such as the positive-pressure air purifying respirator or the self-contained breathing apparatus (SCBA).

(ii) Protective gloves:

(A) Wear protective (impervious) gloves provided by your employer, at no cost, to prevent contact with formalin.

(B) Your employer should select these gloves based on the results of permeation testing and in accordance with the ACGIH guidelines for selection of chemical protective clothing.

(iii) Eye protection:

(A) If you might be splashed in the eyes with formalin, it is essential that you wear goggles or some other type of complete protection for the eye.

(B) You may also need a face shield if your face is likely to be splashed with formalin, but you must not substitute face shields for eye protection. (This section pertains to formaldehyde solutions of one percent or more.)

(iv) Other protective equipment:

(A) You must wear protective (impervious) clothing and equipment provided by your employer at no cost to prevent repeated or prolonged contact with formaldehyde liquids.

(B) If you are required to change into whole-body chemical protective clothing, your employer must provide a change room for your privacy and for storage of your normal clothing.

(C) If you are splashed with formaldehyde, use the emergency showers and eyewash fountains provided by your employer immediately to prevent serious injury. Report the incident to your supervisor and obtain necessary medical support.

(2) Entry into an IDLH atmosphere. Enter areas where the formaldehyde concentration might be 100 ppm or more only with complete body protection including a self-contained breathing apparatus with a full facepiece operated in a positive pressure mode or a supplied-air respirator with full facepiece and operated in a positive pressure mode. This equipment is essential to protect your life and health under such extreme conditions.

(a) Engineering controls.

(i) Ventilation is the most widely applied engineering control method for reducing the concentration of airborne substances in the breathing zones of workers. There are two distinct types of ventilation.

(ii) Local exhaust: Local exhaust ventilation is designed to capture airborne contaminants as near to the point of generation as possible. To protect you, the direction of contaminant flow must always be toward the local exhaust system inlet and away from you.

(iii) General (mechanical):

(A) General dilution ventilation involves continuous introduction of fresh air into the workroom to mix with the contaminated air and lower your breathing zone concentration of formaldehyde. Effectiveness depends on the number of air changes per hour.

(B) Where devices emitting formaldehyde are spread out over a large area, general dilution ventilation may be the only practical method of control.

(iv) Work practices: Work practices and administrative procedures are an important part of a control system. If you are asked to perform a task in a certain manner to limit your exposure to formaldehyde, it is extremely important that you follow these procedures.

(b) Medical surveillance.

(i) Medical surveillance helps to protect employees' health. You are encouraged strongly to participate in the medical surveillance program.

(ii) Your employer must make a medical surveillance program available at no expense to you and at a reasonable time and place if you are exposed to formaldehyde at concentrations above 0.5 ppm as an 8-hour average or 2 ppm over any fifteen-minute period.

(A) You will be offered medical surveillance at the time of your initial assignment and once a year afterward as long as your exposure is at least 0.5 ppm (action level) or 2 ppm (STEL).

(B) Even if your exposure is below these levels, you should inform your employer if you have signs and symptoms that you suspect, through your training, are related to your formaldehyde exposure because you may need medical surveillance to determine if your health is being impaired by your exposure.

(iii) The surveillance plan includes:

(A) A medical disease questionnaire.

(B) A physical examination if the physician determines this is necessary.

(iv) If you are required to wear a respirator, your employer must offer you a physical examination and a pulmonary function test every year.

(v) The physician must collect all information needed to determine if you are at increased risk from your exposure to formaldehyde. At the physician's discretion, the medical examination may include other tests, such as a chest X ray, to make this determination.

(vi) After a medical examination the physician will provide your employer with a written opinion which includes any special protective measures recommended and any restrictions on your exposure. The physician must inform you of any medical conditions you have which would be aggravated by exposure to formaldehyde. All records from your medical examinations, including disease surveys, must be retained at your employer's expense.

(c) Emergencies.

(i) If you are exposed to formaldehyde in an emergency and develop signs or symptoms associated with acute toxicity from formaldehyde exposure, your employer must provide you with a medical examination as soon as possible.

(ii) This medical examination will include all steps necessary to stabilize your health.

(iii) You may be kept in the hospital for observation if your symptoms are severe to ensure that any delayed effects are recognized and treated.

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11/10/92, effective 12/18/92; 88-21-002 (Order 88-23), § 296-62-07542, filed 10/6/88, effective 11/7/88.]

WAC 296-62-07544 Appendix B—Sampling strategy and analytical methods for formaldehyde.

(1) To protect the health of employees, exposure measurements must be unbiased and representative of employee exposure. The proper measurement of employee exposure requires more than a token commitment on the part of the employer. WISHA's mandatory requirements establish a baseline; under the best of circumstances all questions regarding employee exposure will be answered. Many employers, however, will wish to conduct more extensive monitoring before undertaking expensive commitments, such as engineering controls, to assure that the modifications are truly necessary. The following sampling strategy, which was developed at NIOSH by Nelson A. Leidel, Kenneth A. Busch, and Jeremiah R. Lynch and described in NIOSH publication No. 77-173 (Occupational Exposure Sampling Strategy Manual) will assist the employer in developing a strategy for determining the exposure of his or her employees.

(2) There is no one correct way to determine employee exposure. Obviously, measuring the exposure of every employee exposed to formaldehyde will provide the most information on any given day. Where few employees are exposed, this may be a practical solution. For most employers, however, use of the following strategy will give just as much information at less cost.

(3) Exposure data collected on a single day will not automatically guarantee the employer that his or her workplace is always in compliance with the formaldehyde standard. This does not imply, however, that it is impossible for an employer to be sure that his or her worksite is in compliance with the standard. Indeed, a properly designed sampling strategy showing that all employees are exposed below the PELs, at least with a ninety-five percent certainty, is compelling evidence that the exposure limits are being achieved provided that measurements are conducted using valid sampling strategy and approved analytical methods.

(4) There are two PELs, the TWA concentration and the STEL.

(a) Most employers will find that one of these two limits is more critical in the control of their operations, and WISHA expects that the employer will concentrate monitoring efforts on the critical component.

(b) If the more difficult exposure is controlled, this information, along with calculations to support the assumptions, should be adequate to show that the other exposure limit is also being achieved.

(5) Sampling strategy.

(a) Determination of the need for exposure measurements.

(b) The employer must determine whether employees may be exposed to concentrations in excess of the action level. This determination becomes the first step in an employee exposure monitoring program that minimizes employer sampling burdens while providing adequate employee protection.

(c) If employees may be exposed above the action level, the employer must measure exposure. Otherwise, an objective determination that employee exposure is low provides

adequate evidence that exposure potential has been examined.

(d) The employer should examine all available relevant information, e.g., insurance company and trade association data and information from suppliers or exposure data collected from similar operations.

(e) The employer may also use previously-conducted sampling including area monitoring. The employer must make a determination relevant to each operation although this need not be on a separate piece of paper.

(f) If the employer can demonstrate conclusively that no employee is exposed above the action level or the STEL through the use of objective data, the employer need proceed no further on employee exposure monitoring until such time that conditions have changed and the determination is no longer valid.

(g) If the employer cannot determine that employee exposure is less than the action level and the STEL, employee exposure monitoring will have to be conducted.

(6) Workplace material survey.

(a) The primary purpose of a survey of raw material is to determine if formaldehyde is being used in the work environment and if so, the conditions under which formaldehyde is being used.

(b) The first step is to tabulate all situations where formaldehyde is used in a manner such that it may be released into the workplace atmosphere or contaminate the skin. This information should be available through analysis of company records and information on the MSDSs available through provisions of this standard and the hazard communication standard.

(c) If there is an indication from materials handling records and accompanying MSDSs that formaldehyde is being used in the following types of processes or work operations, there may be a potential for releasing formaldehyde into the workplace atmosphere:

(i) Any operation that involves grinding, sanding, sawing, cutting, crushing, screening, sieving, or any other manipulation of material that generates formaldehyde-bearing dust.

(ii) Any processes where there have been employee complaints or symptoms indicative of exposure to formaldehyde.

(iii) Any liquid or spray process involving formaldehyde.

(iv) Any process that uses formaldehyde in preserved tissue.

(v) Any process that involves the heating of a formaldehyde-bearing resin.

Processes and work operations that use formaldehyde in these manners will probably require further investigation at the worksite to determine the extent of employee monitoring that should be conducted.

(7) Workplace observations.

(a) To this point, the only intention has been to provide an indication as to the existence of potentially exposed employees. With this information, a visit to the workplace is needed to observe work operations, to identify potential health hazards, and to determine whether any employees may be exposed to hazardous concentrations of formaldehyde.

(b) In many circumstances, sources of formaldehyde can be identified through the sense of smell. However, this

method of detection should be used with caution because of olfactory fatigue.

(c) Employee location in relation to source of formaldehyde is important in determining if an employee may be significantly exposed to formaldehyde. In most instances, the closer a worker is to the source, the higher the probability that a significant exposure will occur.

(d) Other characteristics should be considered. Certain high temperature operations give rise to higher evaporation rates. Locations of open doors and windows provide natural ventilation that tend to dilute formaldehyde emissions. General room ventilation also provides a measure of control.

(8) Calculation of potential exposure concentrations.

(a) By knowing the ventilation rate in a workplace and the quantity of formaldehyde generated, the employer may be able to determine by calculation if the PELs might be exceeded.

(b) To account for poor mixing of formaldehyde into the entire room, locations of fans and proximity of employees to the work operation, the employer must include a safety factor.

(c) If an employee is relatively close to a source, particularly if he or she is located downwind, a safety factor of one hundred may be necessary.

(d) For other situations, a factor of ten may be acceptable. If the employer can demonstrate through such calculations that employee exposure does not exceed the action level or the STEL, the employer may use this information as objective data to demonstrate compliance with the standard.

(9) Sampling strategy.

(a) Once the employer determines that there is a possibility of substantial employee exposure to formaldehyde, the employer is obligated to measure employee exposure.

(b) The next step is selection of a maximum risk employee. When there are different processes where employees may be exposed to formaldehyde, a maximum risk employee should be selected for each work operation.

(c) Selection of the maximum risk employee requires professional judgment. The best procedure for selecting the maximum risk employee is to observe employees and select the person closest to the source of formaldehyde. Employee mobility may affect this selection; e.g., if the closest employee is mobile in his tasks, he may not be the maximum risk employee. Air movement patterns and differences in work habits will also affect selection of the maximum risk employee.

(d) When many employees perform essentially the same task, a maximum risk employee cannot be selected. In this circumstance, it is necessary to resort to random sampling of the group of workers. The objective is to select a subgroup of adequate size so that there is a high probability that the random sample will contain at least one worker with high exposure if one exists. The number of persons in the group influences the number that need to be sampled to ensure that at least one individual from the highest ten percent exposure group is contained in the sample. For example, to have ninety percent confidence in the results, if the group size is ten, nine should be sampled; for fifty, only eighteen need to be sampled.

(e) If measurement shows exposure to formaldehyde at or above the action level or the STEL, the employer needs to

identify all other employees who may be exposed at or above the action level or STEL and measure or otherwise accurately characterize the exposure of these employees.

(f) Whether representative monitoring or random sampling are conducted, the purpose remains the same to determine if the exposure of any employee is above the action level. If the exposure of the most exposed employee is less than the action level and the STEL, regardless of how the employee is identified, then it is reasonable to assume that measurements of exposure of the other employees in that operation would be below the action level and the STEL.

(10) Exposure measurements.

(a) There is no "best" measurement strategy for all situations. Some elements to consider in developing a strategy are:

- (i) Availability and cost of sampling equipment;
- (ii) Availability and cost of analytic facilities;
- (iii) Availability and cost of personnel to take samples;
- (iv) Location of employees and work operations;
- (v) Intraday and interday variations in the process;
- (vi) Precision and accuracy of sampling and analytic methods; and

(vii) Number of samples needed.

(b) Samples taken for determining compliance with the STEL differ from those that measure the TWA concentration in important ways. STEL samples are best taken in a nonrandom fashion using all available knowledge relating to the area, the individual, and the process to obtain samples during periods of maximum expected concentrations. At least three measurements on a shift are generally needed to spot gross errors or mistakes; however, only the highest value represents the STEL.

(c) If an operation remains constant throughout the workshift, a much greater number of samples would need to be taken over the thirty-two discrete nonoverlapping periods in an 8-hour workshift to verify compliance with a STEL. If employee exposure is truly uniform throughout the workshift, however, an employer in compliance with the 1 ppm TWA would be in compliance with the 2 ppm STEL, and this determination can probably be made using objective data.

(11) Need to repeat the monitoring strategy.

(a) Interday and intraday fluctuations in employee exposure are mostly influenced by the physical processes that generate formaldehyde and the work habits of the employee. Hence, in-plant process variations influence the employer's determination of whether or not additional controls need to be imposed. Measurements that employee exposure is low on a day that is not representative of worst conditions may not provide sufficient information to determine whether or not additional engineering controls should be installed to achieve the PELs.

(b) The person responsible for conducting sampling must be aware of systematic changes which will negate the validity of the sampling results. Systematic changes in formaldehyde exposure concentration for an employee can occur due to:

- (i) The employee changing patterns of movement in the workplace;
- (ii) Closing of plant doors and windows;
- (iii) Changes in ventilation from season to season;
- (iv) Decreases in ventilation efficiency or abrupt failure of engineering control equipment; and

(v) Changes in the production process or work habits of the employee.

(c) Any of these changes, if they may result in additional exposure that reaches the next level of action (i.e., 0.5 or 1.0 ppm as an 8-hour average or 2 ppm over fifteen minutes) require the employer to perform additional monitoring to reassess employee exposure.

(d) A number of methods are suitable for measuring employee exposure to formaldehyde or for characterizing emissions within the worksite. The preamble to this standard describes some methods that have been widely used or subjected to validation testing. A detailed analytical procedure derived from the WISHA Method A.C.R.O. for acrolein and formaldehyde is presented below for informational purposes.

(e) Inclusion of WISHA's method in this appendix in no way implies that it is the only acceptable way to measure employee exposure to formaldehyde. Other methods that are free from significant interferences and that can determine formaldehyde at the permissible exposure limits within ± 25 percent of the "true" value at the ninety-five percent confidence level are also acceptable. Where applicable, the method should also be capable of measuring formaldehyde at the action level to ± 35 percent of the "true" value with a ninety-five percent confidence level. WISHA encourages employers to choose methods that will be best for their individual needs. The employer must exercise caution, however, in choosing an appropriate method since some techniques suffer from interferences that are likely to be present in workplaces of certain industry sectors where formaldehyde is used.

(12) WISHA's analytical laboratory method.

A.C.R.O. (also use methods F.O.R.M. and F.O.R.M. 2 when applicable).

(a) Matrix: Air.

(b) Target concentration: 1 ppm (1.2 mg/m³).

(c) Procedures: Air samples are collected by drawing known volumes of air through sampling tubes containing XAD-2 adsorbent which have been coated with 2-(hydroxymethyl) piperidine. The samples are desorbed with toluene and then analyzed by gas chromatography using a nitrogen selective detector.

(d) Recommended sampling rate and air volumes: 0.1 L/min and 24 L.

(e) Reliable quantitation limit: 16 ppb (20 ug/m³).

(f) Standard error of estimate at the target concentration: 7.3%.

(g) Status of the method: A sampling and analytical method that has been subjected to the established evaluation procedures of the organic methods evaluation branch.

(h) Date: March, 1985.

(13) General discussion.

(a) Background: The current WISHA method for collecting acrolein vapor recommends the use of activated 13X molecular sieves. The samples must be stored in an ice bath during and after sampling and also they must be analyzed within forty-eight hours of collection. The current WISHA method for collecting formaldehyde vapor recommends the use of bubblers containing ten percent methanol in water as the trapping solution.

(b) This work was undertaken to resolve the sample stability problems associated with acrolein and also to eliminate the need to use bubblers to sample formaldehyde. A goal of this work was to develop and/or to evaluate a common sampling and analytical procedure for acrolein and formaldehyde.

(c) NIOSH has developed independent methodologies for acrolein and formaldehyde which recommend the use of reagent-coated adsorbent tubes to collect the aldehydes as stable derivatives. The formaldehyde sampling tubes contain Chromosorb 102 adsorbent coated with N-benzylethanolamine (BEA) which reacts with formaldehyde vapor to form a stable oxazolidine compound. The acrolein sampling tubes contain XAD-2 adsorbent coated with 2-(hydroxymethyl) piperidine (2-HMP) which reacts with acrolein vapor to form a different, stable oxazolidine derivative. Acrolein does not appear to react with BEA to give a suitable reaction product. Therefore, the formaldehyde procedure cannot provide a common method for both aldehydes. However, formaldehyde does react with 2-HMP to form a very suitable reaction product. It is the quantitative reaction of acrolein and formaldehyde with 2-HMP that provides the basis for this evaluation.

(d) This sampling and analytical procedure is very similar to the method recommended by NIOSH for acrolein. Some changes in the NIOSH methodology were necessary to permit the simultaneous determination of both aldehydes and also to accommodate WISHA laboratory equipment and analytical techniques.

(14) Limit-defining parameters: The analyte air concentrations reported in this method are based on the recommended air volume for each analyte collected separately and a desorption volume of 1 mL. The amounts are presented as acrolein and/or formaldehyde, even though the derivatives are the actual species analyzed.

(15) Detection limits of the analytical procedure: The detection limit of the analytical procedure was 386 pg per injection for formaldehyde. This was the amount of analyte which gave a peak whose height was about five times the height of the peak given by the residual formaldehyde derivative in a typical blank front section of the recommended sampling tube.

(16) Detection limits of the overall procedure: The detection limits of the overall procedure were 482 ng per sample (16 ppb or 20 ug/m³ for formaldehyde). This was the amount of analyte spiked on the sampling device which allowed recoveries approximately equal to the detection limit of the analytical procedure.

(17) Reliable quantitation limits:

(a) The reliable quantitation limit was 482 ng per sample (16 ppb or 20 ug/m³) for formaldehyde. These were the smallest amounts of analyte which could be quantitated within the limits of a recovery of at least seventy-five percent and a precision (± 1.96 SD) of $\pm 25\%$ or better.

(b) The reliable quantitation limit and detection limits reported in the method are based upon optimization of the instrument for the smallest possible amount of analyte. When the target concentration of an analyte is exceptionally higher than these limits, they may not be attainable at the routine operating parameters.

(18) Sensitivity: The sensitivity of the analytical procedure over concentration ranges representing 0.4 to 2 times the target concentration, based on the recommended air volumes, was seven thousand five hundred eighty-nine area units per ug/mL for formaldehyde. This value was determined from the slope of the calibration curve. The sensitivity may vary with the particular instrument used in the analysis.

(19) Recovery: The recovery of formaldehyde from samples used in an eighteen-day storage test remained above ninety-two percent when the samples were stored at ambient temperature. These values were determined from regression lines which were calculated from the storage data. The recovery of the analyte from the collection device must be at least seventy-five percent following storage.

(20) Precision (analytical method only): The pooled coefficient of variation obtained from replicate determinations of analytical standards over the range of 0.4 to 2 times the target concentration was 0.0052 for formaldehyde ((d)(C)(iii) of this subsection).

(21) Precision (overall procedure): The precision at the ninety-five percent confidence level for the ambient temperature storage tests was $\pm 14.3\%$ for formaldehyde. These values each include an additional $\pm 5\%$ for sampling error. The overall procedure must provide results at the target concentrations that are $\pm 25\%$ at the ninety-five percent confidence level.

(22) Reproducibility: Samples collected from controlled test atmospheres and a draft copy of this procedure were given to a chemist unassociated with this evaluation. The formaldehyde samples were analyzed following fifteen days storage. The average recovery was 96.3% and the standard deviation was 1.7%.

(23) Advantages:

(a) The sampling and analytical procedures permit the simultaneous determination of acrolein and formaldehyde.

(b) Samples are stable following storage at ambient temperature for at least eighteen days.

(24) Disadvantages: None.

(25) Sampling procedure.

(a) Apparatus:

(i) Samples are collected by use of a personal sampling pump that can be calibrated to within $\pm 5\%$ of the recommended 0.1 L/min sampling rate with the sampling tube in line.

(ii) Samples are collected with laboratory prepared sampling tubes. The sampling tube is constructed of silane treated glass and is about 8-cm long. The ID is 4 mm and the OD is 6 mm. One end of the tube is tapered so that a glass wool end plug will hold the contents of the tube in place during sampling. The other end of the sampling tube is open to its full 4-mm ID to facilitate packing of the tube. Both ends of the tube are fire-polished for safety. The tube is packed with a 75-mg backup section, located nearest the tapered end and a 150-mg sampling section of pretreated XAD-2 adsorbent which has been coated with 2-HMP. The two sections of coated adsorbent are separated and retained with small plugs of silanized glass wool. Following packing, the sampling tubes are sealed with two 7/32 inch OD plastic and caps. Instructions for the pretreatment and the coating of XAD-2 adsorbent are presented in (d) of this subsection.

(b) Sampling tubes, similar to those recommended in this method, are marketed by Supelco, Inc. These tubes were not available when this work was initiated; therefore, they were not evaluated.

(26) Reagents: None required.

(27) Technique:

(a) Properly label the sampling tube before sampling and then remove the plastic end caps.

(b) Attach the sampling tube to the pump using a section of flexible plastic tubing such that the large, front section of the sampling tube is exposed directly to the atmosphere. Do not place any tubing ahead of the sampling tube. The sampling tube should be attached in the worker's breathing zone in a vertical manner such that it does not impede work performance.

(c) After sampling for the appropriate time, remove the sampling tube from the pump and then seal the tube with plastic end caps.

(d) Include at least one blank for each sampling set. The blank should be handled in the same manner as the samples with the exception that air is not drawn through it.

(e) List any potential interferences on the sample data sheet.

(28) Breakthrough:

(a) Breakthrough was defined as the relative amount of analyte found on a backup sample in relation to the total amount of analyte collected on the sampling train.

(b) For formaldehyde collected from test atmospheres containing six times the PEL, the average five percent breakthrough air volume was 41 L. The sampling rate was 0.1 L/min and the average mass of formaldehyde collected was 250 ug.

(29) Desorption efficiency: No desorption efficiency corrections are necessary to compute air sample results because analytical standards are prepared using coated adsorbent. Desorption efficiencies were determined, however, to investigate the recoveries of the analytes from the sampling device. The average recovery over the range of 0.4 to 2 times the target concentration, based on the recommended air volumes, was 96.2% for formaldehyde. Desorption efficiencies were essentially constant over the ranges studied.

(30) Recommended air volume and sampling rate:

(a) The recommended air volume for formaldehyde is 24 L.

(b) The recommended sampling rate is 0.1 L/min.

(31) Interferences:

(a) Any collected substance that is capable of reacting with 2-HMP and thereby depleting the derivatizing agent is a potential interference. Chemicals which contain a carbonyl group, such as acetone, may be capable of reacting with 2-HMP.

(b) There are no other known interferences to the sampling method.

(32) Safety precautions:

(a) Attach the sampling equipment to the worker in such a manner that it will not interfere with work performance or safety.

(b) Follow all safety practices that apply to the work area being sampled.

(33) Analytical procedure.

(a) Apparatus:

(i) A gas chromatograph (GC), equipped with a nitrogen selective detector. A Hewlett-Packard model 5840A GC fitted with a nitrogen phosphorus flame ionization detector (NPD) was used for this evaluation. Injections were performed using a Hewlett-Packard model 7671A automatic sampler.

(ii) A GC column capable of resolving the analytes from any interference. A 6 ft x 1/4 in OD (2mm ID) glass GC column containing 10% UCON 50-HB-5100+ 2% KOH on 80/100 mesh Chromosorb W-AW was used for the evaluation. Injections were performed on-column.

(iii) Vials, glass 2-mL with Teflon-lined caps.

(iv) Volumetric flasks, pipets, and syringes for preparing standards, making dilutions, and performing injections.

(b) Reagents:

(i) Toluene and dimethylformamide. Burdick and Jackson solvents were used in this evaluation.

(ii) Helium, hydrogen, and air, GC grade.

(iii) Formaldehyde, thirty-seven percent by weight, in water. Aldrich Chemical, ACS Reagent Grade formaldehyde was used in this evaluation.

(iv) Amberlite XAD-2 adsorbent coated with 2-(hydroxymethyl) piperidine (2-HMP), 10% by weight ((d) of this subsection).

(v) Desorbing solution with internal standard. This solution was prepared by adding 20 uL of dimethylformamide to 100 mL of toluene.

(c) Standard preparation:

(i) Formaldehyde: Prepare stock standards by diluting known volumes of thirty-seven percent formaldehyde solution with methanol. A procedure to determine the formaldehyde content of these standards is presented in (d) of this subsection. A standard containing 7.7 mg/mL formaldehyde was prepared by diluting 1 mL of the thirty-seven percent reagent to 50 mL with methanol.

(ii) It is recommended that analytical standards be prepared about sixteen hours before the air samples are to be analyzed in order to ensure the complete reaction of the analytes with 2-HMP. However, rate studies have shown the reaction to be greater than ninety-five percent complete after four hours. Therefore, one or two standards can be analyzed after this reduced time if sample results are outside the concentration range of the prepared standards.

(iii) Place 150-mg portions of coated XAD-2 adsorbent, from the same lot number as used to collect the air samples, into each of several glass 2-mL vials. Seal each vial with a Teflon-lined cap.

(iv) Prepare fresh analytical standards each day by injecting appropriate amounts of the diluted analyte directly onto 150-mg portions of coated adsorbent. It is permissible to inject both acrolein and formaldehyde on the same adsorbent portion. Allow the standards to stand at room temperature. A standard, approximately the target levels, was prepared by injecting 11 uL of the acrolein and 12 uL of the formaldehyde stock standards onto a single coated XAD-2 adsorbent portion.

(v) Prepare a sufficient number of standards to generate the calibration curves. Analytical standard concentrations should bracket sample concentrations. Thus, if samples are not in the concentration range of the prepared standards,

additional standards must be prepared to determine detector response.

(vi) Desorb the standards in the same manner as the samples following the sixteen-hour reaction time.

(d) Sample preparation:

(i) Transfer the 150-mg section of the sampling tube to a 2-mL vial. Place the 75-mg section in a separate vial. If the glass wool plugs contain a significant number of adsorbent beads, place them with the appropriate sampling tube section. Discard the glass wool plugs if they do not contain a significant number of adsorbent beads.

(ii) Add 1 mL of desorbing solution to each vial.

(iii) Seal the vials with Teflon-lined caps and then allow them to desorb for one hour. Shake the vials by hand with vigorous force several times during the desorption time.

(iv) Save the used sampling tubes to be cleaned and recycled.

(e) Analysis:

(f) GC conditions.

(34) Column temperature:

(a) Bi-level temperature program.

(i) First level: 100°C to 140°C at 4°C/min following completion of the first level.

(ii) Second level: 140°C to 180°C at 20°C/min following completion of the first level.

(b) Isothermal period: Hold column at 180°C until the recorder pen returns to baseline (usually about twenty-five minutes after injection).

(c) Injector temperature: 180°C.

(d) Helium flow rate: 30 mL/min (detector response will be reduced if nitrogen is substituted for helium carrier gas).

(e) Injection volume: 51 0.8 uL.

(f) GC column: Six-ft x 1/4-in OD (2 mm ID) glass GC column containing 10% UCON 50-HB-5100NZG651 + 512% KOH on 80/100 Chromosorb W-AW.

(g) NPD conditions:

(i) Hydrogen flow rate: 3 mL/min.

(ii) Air flow rate: 50 mL/min.

(h) Detector temperature: 275 5151C.

(i) Use a suitable method, such as electronic integration, to measure detector response.

(ii) Use an internal standard method to prepare the calibration curve with several standard solutions of different concentrations. Prepare the calibration curve daily. Program the integrator to report results in ug/mL.

(iii) Bracket sample concentrations with standards.

(iv) Interferences (analytical).

(A) Any compound with the same general retention time as the analytes and which also gives a detector response is a potential interference. Possible interferences should be reported to the laboratory with submitted samples by the industrial hygienist.

(B) GC parameters (temperature, column, etc.), may be changed to circumvent interferences.

(C) A useful means of structure designation is GC/MS. It is recommended this procedure be used to confirm samples whenever possible.

(D) The coated adsorbent usually contains a very small amount of residual formaldehyde derivative.

(i) Calculations:

(i) Results are obtained by use of calibration curves. Calibration curves are prepared by plotting detector response against concentration for each standard. The best line through the data points is determined by curve fitting.

(ii) The concentration, in ug/mL, for a particular sample is determined by comparing its detector response to the calibration curve. If either of the analytes is found on the backup section, it is added to the amount found on the front section. Blank corrections should be performed before adding the results together.

(iii) The acrolein and/or formaldehyde air concentration can be expressed using the following equation:

$$\text{Mg/m}^3 = (A)(B)/C.$$

where A = ug/mL from 3.7.2, B = desorption volume, and C = L of air sampled.

No desorption efficiency corrections are required.

(iv) The following equation can be used to convert results in mg/m³ to ppm.

$$\text{ppm} = (\text{mg/m}^3)(24.45)/\text{MW}$$

where mg/m³ = result from 3.7.3, 24.45 = molar volume of an ideal gas at 760 mm Hg and 25 5151C, MW = molecular weight (Formaldehyde = 30.0).

(j) Backup data. Backup data on detection limits, reliable quantitation limits, sensitivity and precision of the analytical method, breakthrough, desorption efficiency, storage, reproducibility, and generation of test atmospheres are available in OSHA Method 52, developed by the Organics Methods Evaluation Branch, OSHA Analytical Laboratory, Salt Lake City, Utah.

(k) Procedure to coat XAD-2 adsorbent with 2-HMP:

(i) Apparatus: Soxhlet extraction apparatus, rotary evaporation apparatus, vacuum dessicator, 1-L vacuum flask, 1-L round-bottomed evaporative flask, 1-L Erlenmeyer flask, 250-mL Buchner funnel with a coarse fritted disc, etc.

(ii) Reagents:

(A) Methanol, isooctane, and toluene.

(B) (Hydroxymethyl) piperidine.

(C) Amberlite XAD-2 nonionic polymeric adsorbent, twenty to sixty mesh, Aldrich Chemical XAD-2 was used in this evaluation.

(l) Procedure: Weigh 125 g of crude XAD-2 adsorbent into a 1-L Erlenmeyer flask. Add about 200 mL of water to the flask and then swirl the mixture to wash the adsorbent. Discard any adsorbent that floats to the top of the water and then filter the mixture using a fritted Buchner funnel. Air dry the adsorbent for two minutes. Transfer the adsorbent back to the Erlenmeyer flask and then add about 200 mL of methanol to the flask. Swirl and then filter the mixture as before. Transfer the washed adsorbent back to the Erlenmeyer flask and then add about 200 mL of methanol to the flask. Swirl and then filter the mixture as before. Transfer the washed adsorbent to a 1-L round-bottomed evaporative flask, add 13 g of 2-HMP and then 200 mL of methanol, swirl the mixture and then allow it to stand for one hour. Remove the methanol at about 40°C and reduced pressure using a rotary evaporation apparatus. Transfer the coated adsorbent to a suitable container and store it in a vacuum desiccator at room temperature overnight. Transfer the coated adsorbent to a Soxhlet extractor and then extract the material with toluene for about twenty-four hours. Discard the contaminated toluene, add methanol in its place and then continue the Soxhlet extraction

for an additional four hours. Transfer the adsorbent to a weighted 1-L round-bottom evaporative flask and remove the methanol using the rotary evaporation apparatus. Determine the weight of the adsorbent and then add an amount of 2-HMP, which is ten percent by weight of the adsorbent. Add 200 mL of methanol and then swirl the mixture. Allow the mixture to stand for one hour. Remove the methanol by rotary evaporation. Transfer the coated adsorbent to a suitable container and store it in a vacuum desiccator until all traces of solvents are gone. Typically, this will take two to three days. The coated adsorbent should be protected from contamination. XAD-2 adsorbent treated in this manner will probably not contain residual acrolein derivative. However, this adsorbent will often contain residual formaldehyde derivative levels of about 0.1 ug per 150 mg of adsorbent. If the blank values for a batch of coated adsorbent are too high, then the batch should be returned to the Soxhlet extractor, extracted with toluene again and then recoated. This process can be repeated until the desired blank levels are attained.

The coated adsorbent is now ready to be packed into sampling tubes. The sampling tubes should be stored in a sealed container to prevent contamination. Sampling tubes should be stored in the dark at room temperature. The sampling tubes should be segregated by coated adsorbent lot number. A sufficient amount of each lot number of coated adsorbent should be retained to prepare analytical standards for use with air samples from that lot number.

(m) A procedure to determine formaldehyde by acid titration:

(i) Standardize the 0.1 N HCl solution using sodium carbonate and methyl orange indicator.

(ii) Place 50 mL of 0.1 M sodium sulfite and three drops of thymophthalein indicator into a 250-mL Erlenmeyer flask. Titrate the contents of the flask to a colorless endpoint with 0.1 N HCl (usually one or two drops is sufficient). Transfer 10 mL of the formaldehyde/methanol solution ((b)(iii)(A) of this subsection) into the same flask and titrate the mixture with 0.1 N HCl, again, to a colorless endpoint. The formaldehyde concentration of the standard may be calculated by the following equation:

$$\text{Formaldehyde, mg/mL} = \frac{\text{acid titer} \times \text{acid normality} \times 30.0}{\text{mL of Sample}}$$

(iii) This method is based on the quantitative liberation of sodium hydroxide when formaldehyde reacts with sodium sulfite to form the formaldehyde-bisulfite addition product. The volume of sample may be varied depending on the formaldehyde content but the solution to be titrated must contain excess sodium sulfite. Formaldehyde solutions containing substantial amounts of acid or base must be neutralized before analysis.

[Statutory Authority: Chapter 49.17 RCW. 91-11-070 (Order 91-01), § 296-62-07544, filed 5/20/91, effective 6/20/91; 90-03-029 (Order 89-20), § 296-62-07544, filed 1/11/90, effective 2/26/90; 89-11-035 (Order 89-03), § 296-62-07544, filed 5/15/89, effective 6/30/89; 88-21-002 (Order 88-23), § 296-62-07544, filed 10/6/88, effective 11/7/88.]

WAC 296-62-07546 Appendix C medical surveillance—Formaldehyde. (1) Health hazards. The occupational health hazards of formaldehyde are primarily due to its toxic effects after inhalation, after direct contact with the skin

or eyes by formaldehyde in liquid or vapor form, and after ingestion.

(2) Toxicology.

(a) Acute effects of exposure.

(i) Inhalation (breathing): Formaldehyde is highly irritating to the upper airways. The concentration of formaldehyde that is immediately dangerous to life and health is 100 ppm. Concentrations above 50 ppm can cause severe pulmonary reactions within minutes. These include pulmonary edema, pneumonia, and bronchial irritation which can result in death. Concentrations above 5 ppm readily cause lower airway irritation characterized by cough, chest tightness, and wheezing. There is some controversy regarding whether formaldehyde gas is a pulmonary sensitizer which can cause occupational asthma in a previously normal individual. Formaldehyde can produce symptoms of bronchial asthma in humans. The mechanism may be either sensitization of the individual by exposure to formaldehyde or direct irritation by formaldehyde in persons with preexisting asthma. Upper airway irritation is the most common respiratory effect reported by workers and can occur over a wide range of concentrations, most frequently above 1 ppm. However, airway irritation has occurred in some workers with exposures to formaldehyde as low as 0.1 ppm. Symptoms of upper airway irritation include dry or sore throat, itching and burning sensations of the nose, and nasal congestion. Tolerance to this level of exposure may develop within one to two hours. This tolerance can permit workers remaining in an environment of gradually increasing formaldehyde concentrations to be unaware of their increasingly hazardous exposure.

(ii) Eye contact: Concentrations of formaldehyde between 0.05 ppm and 0.5 ppm produce a sensation of irritation in the eyes with burning, itching, redness, and tearing. Increased rate of blinking and eye closure generally protects the eye from damage at these low levels, but these protective mechanisms may interfere with some workers' work abilities. Tolerance can occur in workers continuously exposed to concentrations of formaldehyde in this range. Accidental splash injuries of human eyes to aqueous solutions of formaldehyde (formalin) have resulted in a wide range of ocular injuries including corneal opacities and blindness. The severity of the reactions have been directly dependent on the concentration of formaldehyde in solution and the amount of time lapsed before emergency and medical intervention.

(iii) Skin contact: Exposure to formaldehyde solutions can cause irritation of the skin and allergic contact dermatitis. These skin diseases and disorders can occur at levels well below those encountered by many formaldehyde workers. Symptoms include erythema, edema, and vesiculation or hives. Exposure to liquid formalin or formaldehyde vapor can provoke skin reactions in sensitized individuals even when airborne concentrations of formaldehyde are well below 1 ppm.

(iv) Ingestion: Ingestion of as little as 30 mL of a thirty-seven percent solution of formaldehyde (formalin) can result in death. Gastrointestinal toxicity after ingestion is most severe in the stomach and results in symptoms which can include nausea, vomiting, and severe abdominal pain. Diverse damage to other organ systems including the liver, kidney, spleen, pancreas, brain, and central nervous systems

can occur from the acute response to ingestion of formaldehyde.

(b) Chronic effects of exposure. Long-term exposure to formaldehyde has been shown to be associated with an increased risk of cancer of the nose and accessory sinuses, nasopharyngeal and oropharyngeal cancer, and lung cancer in humans. Animal experiments provide conclusive evidence of a causal relationship between nasal cancer in rats and formaldehyde exposure. Concordant evidence of carcinogenicity includes DNA binding, genotoxicity in short-term tests, and cytotoxic changes in the cells of the target organ suggesting both preneoplastic changes and a dose-rate effect. Formaldehyde is a complete carcinogen and appears to exert an effect on at least two stages of the carcinogenic process.

(3) Surveillance considerations.

(a) History.

(i) Medical and occupational history: Along with its acute irritative effects, formaldehyde can cause allergic sensitization and cancer. One of the goals of the work history should be to elicit information on any prior or additional exposure to formaldehyde in either the occupational or the nonoccupational setting.

(ii) Respiratory history: As noted above, formaldehyde has recognized properties as an airway irritant and has been reported by some authors as a cause of occupational asthma. In addition, formaldehyde has been associated with cancer of the entire respiratory system of humans. For these reasons, it is appropriate to include a comprehensive review of the respiratory system in the medical history. Components of this history might include questions regarding dyspnea on exertion, shortness of breath, chronic airway complaints, hyperreactive airway disease, rhinitis, bronchitis, bronchiolitis, asthma, emphysema, respiratory allergic reaction, or other preexisting pulmonary disease.

In addition, generalized airway hypersensitivity can result from exposures to a single sensitizing agent. The examiner should, therefore, elicit any prior history of exposure to pulmonary irritants, and any short-term or long-term effects of that exposure.

Smoking is known to decrease mucociliary clearance of materials deposited during respiration in the nose and upper airways. This may increase a worker's exposure to inhaled materials such as formaldehyde vapor. In addition, smoking is a potential confounding factor in the investigation of any chronic respiratory disease, including cancer. For these reasons, a complete smoking history should be obtained.

(iii) Skin disorders: Because of the dermal irritant and sensitizing effects of formaldehyde, a history of skin disorders should be obtained. Such a history might include the existence of skin irritation, previously documented skin sensitivity, and other dermatologic disorders. Previous exposure to formaldehyde and other dermal sensitizers should be recorded.

(iv) History of atopic or allergic diseases: Since formaldehyde can cause allergic sensitization of the skin and airways, it might be useful to identify individuals with prior allergen sensitization. A history of atopic disease and allergies to formaldehyde or any other substances should also be obtained. It is not definitely known at this time whether atopic diseases and allergies to formaldehyde or any other substances should also be obtained. Also it is not definitely

known at this time whether atopic individuals have a greater propensity to develop formaldehyde sensitivity than the general population, but identification of these individuals may be useful for ongoing surveillance.

(v) Use of disease questionnaires: Comparison of the results from previous years with present results provides the best method for detecting a general deterioration in health when toxic signs and symptoms are measured subjectively. In this way recall bias does not affect the results of the analysis. Consequently, WISHA has determined that the findings of the medical and work histories should be kept in a standardized form for comparison of the year-to-year results.

(b) Physical examination.

(i) Mucosa of eyes and airways: Because of the irritant effects of formaldehyde, the examining physician should be alert to evidence of this irritation. A speculum examination of the nasal mucosa may be helpful in assessing possible irritation and cytotoxic changes, as may be indirect inspection of the posterior pharynx by mirror.

(ii) Pulmonary system: A conventional respiratory examination, including inspection of the thorax and auscultation and percussion of the lung fields should be performed as part of the periodic medical examination. Although routine pulmonary function testing is only required by the standard once every year for persons who are exposed over the TWA concentration limit, these tests have an obvious value in investigating possible respiratory dysfunction and should be used wherever deemed appropriate by the physician. In cases of alleged formaldehyde-induced airway disease, other possible causes of pulmonary dysfunction (including exposures to other substances) should be ruled out. A chest radiograph may be useful in these circumstances. In cases of suspected airway hypersensitivity or allergy, it may be appropriate to use bronchial challenge testing with formaldehyde or methacholine to determine the nature of the disorder. Such testing should be performed by or under the supervision of a physician experienced in the procedures involved.

(iii) Skin: The physician should be alert to evidence of dermal irritation of sensitization, including reddening and inflammation, urticaria, blistering, scaling, formation of skin fissures, or other symptoms. Since the integrity of the skin barrier is compromised by other dermal diseases, the presence of such disease should be noted. Skin sensitivity testing carries with it some risk of inducing sensitivity, and therefore, skin testing for formaldehyde sensitivity should not be used as a routine screening test. Sensitivity testing may be indicated in the investigation of a suspected existing sensitivity. Guidelines for such testing have been prepared by the North American Contact Dermatitis Group.

(4) Additional examinations or tests. The physician may deem it necessary to perform other medical examinations or tests as indicated. The standard provides a mechanism whereby these additional investigations are covered under the standard for occupational exposure to formaldehyde.

(5) Emergencies. The examination of workers exposed in an emergency should be directed at the organ systems most likely to be affected. Much of the content of the examination will be similar to the periodic examination unless the patient has received a severe acute exposure requiring immediate attention to prevent serious consequences. If a severe overexposure requiring medical intervention or hospitalization has

occurred, the physician must be alert to the possibility of delayed symptoms. Followup nonroutine examinations may be necessary to assure the patient's well-being.

(6) Employer obligations. The employer is required to provide the physician with the following information: A copy of this standard and appendices A, C, D, and E; a description of the affected employee's duties as they relate to his or her exposure concentration; an estimate of the employee's exposure including duration (e.g., fifteen hr./wk., three eight-hour shifts, full-time); a description of any personal protective equipment, including respirators, used by the employee; and the results of any previous medical determinations for the affected employee related to formaldehyde exposure to the extent that this information is within the employer's control.

(7) Physician's obligations. The standard requires the employer to obtain a written statement from the physician. This statement must contain the physician's opinion as to whether the employee has any medical condition which would place him or her at increased risk of impaired health from exposure to formaldehyde or use of respirators, as appropriate. The physician must also state his opinion regarding any restrictions that should be placed on the employee's exposure to formaldehyde or upon the use of protective clothing or equipment such as respirators. If the employee wears a respirator as a result of his or her exposure to formaldehyde, the physician's opinion must also contain a statement regarding the suitability of the employee to wear the type of respirator assigned. Finally, the physician must inform the employer that the employee has been told the results of the medical examination and of any medical conditions which require further explanation or treatment. This written opinion is not to contain any information on specific findings or diagnoses unrelated to occupational exposure to formaldehyde.

The purpose in requiring the examining physician to supply the employer with a written opinion is to provide the employer with a medical basis to assist the employer in placing employees initially, in assuring that their health is not being impaired by formaldehyde, and to assess the employee's ability to use any required protective equipment.

[Statutory Authority: Chapter 49.17 RCW. 88-21-002 (Order 88-23), § 296-62-07546, filed 10/6/88, effective 11/7/88.]

WAC 296-62-07548 Appendix D—Nonmandatory medical disease questionnaire. (1) Identification.

- (a) Plant name:
- (b) Date:
- (c) Employee name:
- (d) Social Security number:
- (e) Job title:
- (f) Birthdate:
- (g) Age:
- (h) Sex:
- (i) Height:
- (j) Weight:
- (2) Medical history.

- (a) Have you ever been in the hospital as a patient?
Yes ☐ No ☐
If yes, what kind of problem were you having?
- (b) Have you ever had any kind of operation?
Yes ☐ No ☐
If yes, what kind?
- (c) Do you take any kind of medicine regularly?
Yes ☐ No ☐
If yes, what kind?
- (d) Are you allergic to any drugs, foods, or chemicals?
Yes ☐ No ☐
If yes, what kind of allergy is it?

What causes the allergy?
- (e) Have you ever been told that you have asthma, hayfever, or sinusitis?
Yes ☐ No ☐
- (f) Have you ever been told that you have emphysema, bronchitis, or any other respiratory problems?
Yes ☐ No ☐
- (g) Have you ever been told you had hepatitis?
Yes ☐ No ☐
- (h) Have you ever been told that you have cirrhosis?
Yes ☐ No ☐
- (i) Have you ever been told that you had cancer?
Yes ☐ No ☐
- (j) Have you ever had arthritis or joint pain?
Yes ☐ No ☐
- (k) Have you ever been told that you had high blood pressure?
Yes ☐ No ☐
- (l) Have you ever had a heart attack or heart trouble?
Yes ☐ No ☐
- (3) Medical history update.
- (a) Have you been in the hospital as a patient any time within the past year?
Yes ☐ No ☐
If so, for what condition?

- (b) Have you been under the care of a physician during the past year?
Yes ☐ No ☐
If so, for what condition?

- (c) Is there any change in your breathing since last year?
Yes ☐ No ☐
(i) Better?
(ii) Worse?
(iii) No change?
If change, do you know why?
- (d) Is your general health different this year from last year?
Yes ☐ No ☐
If different, in what way?
- (e) Have you in the past year or are you now taking any medication on a regular basis?
Yes ☐ No ☐
(i) Name Rx
(ii) Condition being treated
- (4) Occupational history.
- (a) How long have you worked for your present employer?
- (b) What jobs have you held with this employer?
Include job title and length of time in each job.
- (c) In each of these jobs, how many hours a day were you exposed to chemicals?
- (d) What chemicals have you worked with most of the time?
- (e) Have you ever noticed any type of skin rash you feel was related to your work?
Yes ☐ No ☐
- (f) Have you ever noticed that any kind of chemical makes you cough?
Yes ☐ No ☐
(i) Wheeze:
Yes ☐ No ☐
(ii) Become short of breath or cause your chest to become tight?
Yes ☐ No ☐
- (g) Are you exposed to any dust or chemicals at home?
Yes ☐ No ☐
If yes, explain:
- (h) In other jobs, have you ever had exposure to:
(i) Wood dust?
Yes ☐ No ☐
(ii) Nickel or chromium?
Yes ☐ No ☐
(iii) Silica (foundry, sand blasting)?
Yes ☐ No ☐
(iv) Arsenic or asbestos?
Yes ☐ No ☐
(v) Organic solvents?
Yes ☐ No ☐
(vi) Urethane foams?
Yes ☐ No ☐
- (5) Occupational history update.
- (a) Are you working on the same job this year as you were last year?
Yes ☐ No ☐
If not, how has your job changed?
- (b) What chemicals are you exposed to on your job?
- (c) How many hours a day are you exposed to chemicals?
- (d) Have you noticed any skin rash within the past year you feel was related to your work?
Yes ☐ No ☐
If so, explain circumstances:
- (e) Have you noticed that any chemical makes you cough, be short of breath, or wheeze?
Yes ☐ No ☐
If so, can you identify it?
- (6) Miscellaneous.
- (a) Do you smoke?
Yes ☐ No ☐
If so, how much and for how long?
(i) Pipe
(ii) Cigars
(iii) Cigarettes
- (b) Do you drink alcohol in any form?
Yes ☐ No ☐
If so, how much, how long, and how often?
- (c) Do you wear glasses or contact lenses?
Yes ☐ No ☐
- (d) Do you get any physical exercise other than that required to do your job?
Yes ☐ No ☐
If so, explain:

- (e) Do you have any hobbies or "side jobs" that require you to use chemicals, such as furniture stripping, sand blasting, insulation or manufacture of urethane foam, furniture, etc.?
Yes ☐ No ☐
If so, please describe, giving type of business or hobby, chemicals used and length of exposures.
- (7) Symptoms questionnaire.
- (a) Do you ever have any shortness of breath?
Yes ☐ No ☐
(i) If yes, do you have to rest after climbing several flights of stairs?
Yes ☐ No ☐
(ii) If yes, if you walk on the level with people your own age, do you walk slower than they do?
Yes ☐ No ☐
(iii) If yes, if you walk slower than a normal pace, do you have to limit the distance that you walk?
Yes ☐ No ☐
(iv) If yes, do you have to stop and rest while bathing or dressing?
Yes ☐ No ☐
- (b) Do you cough as much as three months out of the year?
Yes ☐ No ☐
(i) If yes, have you had this cough for more than two years?
Yes ☐ No ☐
(ii) If yes, do you ever cough anything up from the chest?
Yes ☐ No ☐
- (c) Do you ever have a feeling of smothering, unable to take a deep breath, or tightness in your chest?
Yes ☐ No ☐
(i) If yes, do you notice that this occurs on any particular day of the week?
Yes ☐ No ☐
(ii) If yes, what day of the week?
(iii) If yes, do you notice that this occurs at any particular place?
Yes ☐ No ☐
(iv) If yes, do you notice that this is worse after you have returned to work after being off for several days?
Yes ☐ No ☐
- (d) Have you ever noticed any wheezing in your chest?
Yes ☐ No ☐
(i) If yes, is this only with colds or other infections?
Yes ☐ No ☐
(ii) Is this caused by exposure to any kind of dust or other material?
Yes ☐ No ☐
- (iii) If yes, what kind?
- (e) Have you noticed any burning, tearing, or redness of your eyes when you are at work?
Yes ☐ No ☐
If so, explain circumstances:
- (f) Have you noticed any sore or burning throat or itchy or burning nose when you are at work?
Yes ☐ No ☐
If so, explain circumstances:
- (g) Have you noticed any stuffiness or dryness of your nose?
Yes ☐ No ☐
- (h) Do you ever have swelling of the eyelids or face?
Yes ☐ No ☐
- (i) Have you ever been jaundiced?
Yes ☐ No ☐
If yes, was this accompanied by any pain?
Yes ☐ No ☐
- (j) Have you ever had a tendency to bruise easily or bleed excessively?
Yes ☐ No ☐
- (k) Do you have frequent headaches that are not relieved by aspirin or tylenol?
Yes ☐ No ☐
(i) If yes, do they occur at any particular time of the day or week?
Yes ☐ No ☐
(ii) If yes, when do they occur?
- (l) Do you have frequent episodes of nervousness or irritability?
Yes ☐ No ☐
- (m) Do you tend to have trouble concentrating or remembering?
Yes ☐ No ☐
- (n) Do you ever feel dizzy, light-headed, excessively drowsy, or like you have been drugged?
Yes ☐ No ☐
- (o) Does your vision ever become blurred?
Yes ☐ No ☐
- (p) Do you have numbness or tingling of the hands or feet or other parts of your body?
Yes ☐ No ☐
- (q) Have you ever had chronic weakness or fatigue?
Yes ☐ No ☐
- (r) Have you ever had any swelling of your feet or ankles to the point where you could not wear your shoes?
Yes ☐ No ☐
- (s) Are you bothered by heartburn or indigestion?
Yes ☐ No ☐

- (t) Do you ever have itching, dryness, or peeling and scaling of the hands?
Yes ☐ No ☐
- (u) Do you ever have a burning sensation in the hands, or reddening of the skin?
Yes ☐ No ☐
- (v) Do you ever have cracking or bleeding of the skin on your hands?
Yes ☐ No ☐
- (w) Are you under a physician's care?
Yes ☐ No ☐
If yes, for what are you being treated?
- (x) Do you have any physical complaints today?
Yes ☐ No ☐
If yes, explain:
- (y) Do you have other health conditions not covered by these questions?
Yes ☐ No ☐
If yes, explain:

[Statutory Authority: Chapter 49.17 RCW. 88-21-002 (Order 88-23), § 296-62-07548, filed 10/6/88, effective 11/7/88.]

WAC 296-62-076 Methylenedianiline.

[Statutory Authority: Chapter 49.17 RCW. 93-04-111 (Order 92-15), § 296-62-076, filed 2/3/93, effective 3/15/93.]

WAC 296-62-07601 Scope and application. (1) WAC 296-62-076 applies to all occupational exposures to MDA, Chemical Abstracts Service Registry No. 101-77-9, except as provided in subsections (2) through (7) of this section.

(2) Except as provided in subsection (8) of this section and WAC 296-62-07609(5), this section does not apply to the processing, use, and handling of products containing MDA where initial monitoring indicates that the product is not capable of releasing MDA in excess of the action level under the expected conditions of processing, use, and handling which will cause the greatest possible release; and where no "dermal exposure to MDA" can occur.

(3) Except as provided in subsection (8) of this section, WAC 296-62-076 does not apply to the processing, use, and handling of products containing MDA where objective data are reasonably relied upon which demonstrate the product is not capable of releasing MDA under the expected conditions of processing, use, and handling which will cause the greatest possible release; and where no "dermal exposure to MDA" can occur.

(4) WAC 296-62-076 does not apply to the storage, transportation, distribution, or sale of MDA in intact containers sealed in such a manner as to contain the MDA dusts, vapors, or liquids, except for the provisions of WAC 296-62-054, 296-62-07607 and 296-800-170.

(5) WAC 296-62-076 does not apply to the construction industry as defined in WAC 296-155-012(6). (Exposure to MDA in the construction industry is covered by WAC 296-155-173.)

(6) Except as provided in subsection (8) of this section, WAC 296-62-076 does not apply to materials in any form which contain less than 0.1% MDA by weight or volume.

(7) Except as provided in subsection (8) of this section, WAC 296-62-076 does not apply to "finished articles containing MDA."

(8) Where products containing MDA are exempted under subsections (2) through (7) of this section, the employer shall maintain records of the initial monitoring results or objective data supporting that exemption and the basis for the employer's reliance on the data, as provided in the recordkeeping provision of WAC 296-62-07631.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 01-11-038, § 296-62-07601, filed 5/9/01, effective 9/1/01. Statutory Authority: Chapter 49.17 RCW. 93-04-111 (Order 92-15), § 296-62-07601, filed 2/3/93, effective 3/15/93.]

WAC 296-62-07603 Definitions. For the purpose of WAC 296-62-076, the following definitions shall apply:

(1) "Action level" means a concentration of airborne MDA of 5 ppb as an 8-hour time-weighted average.

(2) "Authorized person" means any person specifically authorized by the employer whose duties require the person to enter a regulated area, or any person entering such an area as a designated representative of employees, for the purpose of exercising the right to observe monitoring and measuring procedures under WAC 296-62-07633 of WAC 296-62-076, or any other person authorized by WISHA or regulations issued by WISHA.

(3) "Container" means any barrel, bottle, can, cylinder, drum, reaction vessel, storage tank, commercial packaging, or the like, but does not include piping systems.

(4) "Dermal exposure to MDA" occurs where employees are engaged in the handling, application, or use of mixtures or materials containing MDA, with any of the following nonairborne forms of MDA:

(a) Liquid, powdered, granular, or flaked mixtures containing MDA in concentrations greater than 0.1% by weight or volume; and

(b) Materials other than "finished articles" containing MDA in concentrations greater than 0.1% by weight or volume.

(5) "Director" means the director of the department of labor and industries, or his/her designated representative.

(6) "Emergency" means any occurrence such as, but not limited to, equipment failure, rupture of containers, or failure of control equipment which results in an unexpected and potentially hazardous release of MDA.

(7) "Employee exposure" means exposure to MDA which would occur if the employee were not using respirators or protective work clothing and equipment.

(8) "Finished article containing MDA" is defined as a manufactured item:

(a) Which is formed to a specific shape or design during manufacture;

(b) Which has end use function(s) dependent in whole or part upon its shape or design during end use; and

(c) Where applicable, is an item which is fully cured by virtue of having been subjected to the conditions (temperature, time) necessary to complete the desired chemical reaction.

(9) "4,4' methylenedianiline" or "MDA" means the chemical 4,4'-diaminodiphenylmethane, Chemical Abstract Service Registry number 101-77-9, in the form of a vapor, liquid, or solid. The definition also includes the salts of MDA.

(10) "Regulated areas" means areas where airborne concentrations of MDA exceed or can reasonably be expected to exceed, the permissible exposure limits, or where dermal exposure to MDA can occur.

(11) "STEL" means short-term exposure limit as determined by any 15 minute sample period.

[Statutory Authority: Chapter 49.17 RCW. 93-04-111 (Order 92-15), § 296-62-07603, filed 2/3/93, effective 3/15/93.]

WAC 296-62-07605 Permissible exposure limits (PEL). The employer shall assure that no employee is exposed to an airborne concentration of MDA in excess of ten parts per billion (10 ppb) as an 8-hour time-weighted average or a STEL of 100 ppb.

[Statutory Authority: Chapter 49.17 RCW. 93-04-111 (Order 92-15), § 296-62-07605, filed 2/3/93, effective 3/15/93.]

WAC 296-62-07607 Emergency situations. (1) Written plan.

(a) A written plan for emergency situations shall be developed for each workplace where there is a possibility of an emergency. Appropriate portions of the plan shall be implemented in the event of an emergency.

(b) The plan shall specifically provide that employees engaged in correcting emergency conditions shall be equipped with the appropriate personal protective equipment and clothing as required in WAC 296-62-07615 and 296-62-07617 until the emergency is abated.

(c) The plan shall specifically include provisions for alerting and evacuating affected employees as well as the elements prescribed in chapter 296-24 WAC, Part G-1, "Employee emergency plans and fire prevention plans."

(2) Alerting employees. Where there is the possibility of employee exposure to MDA due to an emergency, means shall be developed to alert promptly those employees who have the potential to be directly exposed. Affected employees not engaged in correcting emergency conditions shall be evacuated immediately in the event that an emergency occurs. Means shall also be developed and implemented for alerting other employees who may be exposed as a result of the emergency.

[Statutory Authority: Chapter 49.17 RCW. 93-04-111 (Order 92-15), § 296-62-07607, filed 2/3/93, effective 3/15/93.]

WAC 296-62-07609 Exposure monitoring. (1) General.

(a) Determinations of employee exposure shall be made from breathing zone air samples that are representative of each employee's exposure to airborne MDA over an 8-hour period. Determination of employee exposure to the STEL shall be made from breathing zone air samples collected over a 15 minute sampling period.

(b) Representative employee exposure shall be determined on the basis of one or more samples representing full

shift exposure for each shift for each job classification in each work area where exposure to MDA may occur.

(c) Where the employer can document that exposure levels are equivalent for similar operations in different work shifts, the employer shall only be required to determine representative employee exposure for that operation during one shift.

(2) Initial monitoring. Each employer who has a workplace or work operation covered by this standard shall perform initial monitoring to determine accurately the airborne concentrations of MDA to which employees may be exposed.

(3) Periodic monitoring and monitoring frequency.

(a) If the monitoring required by subsection (2) of this section reveals employee exposure at or above the action level, but at or below the PELs, the employer shall repeat such representative monitoring for each such employee at least every six months.

(b) If the monitoring required by subsection (2) of this section reveals employee exposure above the PELs, the employer shall repeat such monitoring for each such employee at least every three months.

(c) The employer may alter the monitoring schedule from every three months to every six months for any employee for whom two consecutive measurements taken at least 7 days apart indicate that the employee exposure has decreased to below the TWA but above the action level.

(4) Termination of monitoring.

(a) If the initial monitoring required by subsection (2) of this section reveals employee exposure to be below the action level, the employer may discontinue the monitoring for that employee, except as otherwise required by subsection (5) of this section.

(b) If the periodic monitoring required by subsection (3) of this section reveals that employee exposures, as indicated by at least two consecutive measurements taken at least 7 days apart, are below the action level the employer may discontinue the monitoring for that employee, except as otherwise required by subsection (5) of this section.

(5) Additional monitoring. The employer shall institute the exposure monitoring required under subsections (2) and (3) of this section when there has been a change in production process, chemicals present, control equipment, personnel, or work practices which may result in new or additional exposures to MDA, or when the employer has any reason to suspect a change which may result in new or additional exposures.

(6) Accuracy of monitoring. Monitoring shall be accurate, to a confidence level of 95 percent, to within plus or minus 25 percent for airborne concentrations of MDA.

(7) Employee notification of monitoring results.

(a) The employer shall, within 15 working days after the receipt of the results of any monitoring performed under this standard, notify each employee of these results, in writing, either individually or by posting of results in an appropriate location that is accessible to affected employees.

(b) The written notification required by subdivision (a) of this subsection shall contain the corrective action being taken by the employer to reduce the employee exposure to or below the PELs, wherever the PELs are exceeded.

(8) Visual monitoring. The employer shall make routine inspections of employee hands, face, and forearms poten-

tially exposed to MDA. Other potential dermal exposures reported by the employee must be referred to the appropriate medical personnel for observation. If the employer determines that the employee has been exposed to MDA the employer shall:

- (a) Determine the source of exposure;
- (b) Implement protective measures to correct the hazard; and
- (c) Maintain records of the corrective actions in accordance with WAC 296-62-07631.

[Statutory Authority: Chapter 49.17 RCW. 93-04-111 (Order 92-15), § 296-62-07609, filed 2/3/93, effective 3/15/93.]

WAC 296-62-07611 Regulated areas. (1) Establishment.

(a) Airborne exposures. The employer shall establish regulated areas where airborne concentrations of MDA exceed or can reasonably be expected to exceed, the permissible exposure limits.

(b) Dermal exposures. Where employees are subject to dermal exposure to MDA the employer shall establish those work areas as regulated areas.

(2) Demarcation. Regulated areas shall be demarcated from the rest of the workplace in a manner that minimizes the number of persons potentially exposed.

(3) Access. Access to regulated areas shall be limited to authorized persons.

(4) Personal protective equipment and clothing. Each person entering a regulated area shall be supplied with, and required to use, the appropriate personal protective clothing and equipment in accordance with WAC 296-62-07615 and 296-62-07617.

(5) Prohibited activities. The employer shall ensure that employees do not eat, drink, smoke, chew tobacco or gum, or apply cosmetics in regulated areas.

[Statutory Authority: Chapter 49.17 RCW. 93-04-111 (Order 92-15), § 296-62-07611, filed 2/3/93, effective 3/15/93.]

WAC 296-62-07613 Methods of compliance. (1) Engineering controls and work practices.

(a) The employer shall institute engineering controls and work practices to reduce and maintain employee exposure to MDA at or below the PELs except to the extent that the employer can establish that these controls are not feasible or where the provisions of subdivision (b) of this subsection or WAC 296-62-07615(1) apply.

(b) Wherever the feasible engineering controls and work practices which can be instituted are not sufficient to reduce employee exposure to or below the PELs, the employer shall use them to reduce employee exposure to the lowest levels achievable by these controls and shall supplement them by the use of respiratory protective devices which comply with the requirements of WAC 296-62-07615.

(2) Compliance program.

(a) The employer shall establish and implement a written program to reduce employee exposure to or below the PELs by means of engineering and work practice controls, as required by subsection (1) of this section, and by use of respiratory protection where permitted under WAC 296-62-076. The program shall include a schedule for periodic maintenance

(e.g., leak detection) and shall include the written plan for emergency situations as specified in WAC 296-62-07607.

(b) Upon request this written program shall be furnished for examination and copying to the director, affected employees, and designated employee representatives. The employer shall review and, as necessary, update such plans at least once every 12 months to make certain they reflect the current status of the program.

(3) Employee rotation. Employee rotation shall not be permitted as a means of reducing exposure.

[Statutory Authority: Chapter 49.17 RCW. 93-04-111 (Order 92-15), § 296-62-07613, filed 2/3/93, effective 3/15/93.]

WAC 296-62-07615 Respiratory protection. (1) General. For employees who use respirators required by this section, the employer must provide respirators that comply with the requirements of this subsection. Respirators must be used during:

(a) Periods necessary to install or implement feasible engineering and work-practice controls;

(b) Work operations for which the employer establishes that engineering and work-practice controls are not feasible;

(c) Work operations for which feasible engineering and work-practice controls are not yet sufficient to reduce exposure to or below the PEL;

(d) Emergencies.

(2) Respirator program. The employer must implement a respiratory protection program as required by chapter 296-842 WAC, except WAC 296-842-13005 and 296-842-14005.

(3) Respirator selection.

(a) The employer must select, and ensure that employees use, the appropriate respirator from Table 1 of this section.

Table 1.—Respiratory Protection for MDA

Airborne concentration of MDA or condition of use	Respirator type
a. Less than or equal to 10xPEL	(1) Half-mask respirator with HEPA ¹ cartridge ² .
b. Less than or equal to 50xPEL	(1) Full facepiece respirator with HEPA ¹ cartridge or canister ² .
c. Less than or equal to 1000xPEL	(1) Full facepiece powered air-purifying respirator with HEPA ¹ cartridges ² .
d. Greater than 1000xPEL or	(1) Self-contained breathing unknown concentrations apparatus with full facepiece in positive pressure mode;
	(2) Full facepiece positive pressure demand supplied-air respirator with auxiliary self-contained air supply.
e. Escape	(1) Any full facepiece air-purifying respirator with HEPA ¹ cartridges ² ;
	(2) Any positive pressure or continuous flow self-contained breathing apparatus with full facepiece or hood.
f. Fire fighting	(1) Full facepiece self-contained breathing apparatus in positive pressure demand mode.

Note: Respirators assigned for higher environmental concentrations may be used at lower concentrations.

¹ High efficiency particulate in air filter (HEPA) means a filter that is at least 99.97 percent efficient against mono-dispersed particles of 0.3 micrometers or larger.

² Combination HEPA/organic vapor cartridges shall be used whenever MDA in liquid form or a process requiring heat is used.

(b) Any employee who cannot use a negative-pressure respirator must be given the option of using a positive-pressure respirator, or a supplied-air respirator operated in the continuous-flow or pressure-demand mode.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060, 05-03-093, § 296-62-07615, filed 1/18/05, effective 3/1/05. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050, 99-10-071, § 296-62-07615, filed 5/4/99, effective 9/1/99. Statutory Authority: Chapter 49.17 RCW, 93-04-111 (Order 92-15), § 296-62-07615, filed 2/3/93, effective 3/15/93.]

WAC 296-62-07617 Protective work clothing and equipment. (1) Provision and use. Where employees are subject to dermal exposure to MDA, where liquids containing MDA can be splashed into the eyes, or where airborne concentrations of MDA are in excess of the PEL, the employer shall provide, at no cost to the employee, and ensure that the employee uses, appropriate protective work clothing and equipment which prevent contact with MDA such as, but not limited to:

- (a) Aprons, coveralls, or other full-body work clothing;
- (b) Gloves, head coverings, and foot coverings; and
- (c) Face shields, chemical goggles; or
- (d) Other appropriate protective equipment which comply with WAC 296-800-160.

(2) Removal and storage.

(a) The employer shall ensure that, at the end of their work shift, employees remove MDA-contaminated protective work clothing and equipment that is not routinely removed throughout the day in change rooms provided in accordance with the provisions established for change rooms.

(b) The employer shall ensure that, during their work shift, employees remove all other MDA-contaminated protective work clothing or equipment before leaving a regulated area.

(c) The employer shall ensure that no employee takes MDA-contaminated work clothing or equipment out of the change room, except those employees authorized to do so for the purpose of laundering, maintenance, or disposal.

(d) MDA-contaminated work clothing or equipment shall be placed and stored in closed containers which prevent dispersion of the MDA outside the container.

(e) Containers of MDA-contaminated protective work clothing or equipment which are to be taken out of change rooms or the workplace for cleaning, maintenance, or disposal shall bear labels warning of the hazards of MDA.

(3) Cleaning and replacement.

(a) The employer shall provide the employee with clean protective clothing and equipment. The employer shall ensure that protective work clothing or equipment required by this paragraph is cleaned, laundered, repaired, or replaced at intervals appropriate to maintain its effectiveness.

(b) The employer shall prohibit the removal of MDA from protective work clothing or equipment by blowing, shaking, or any methods which allow MDA to reenter the workplace.

(c) The employer shall ensure that laundering of MDA-contaminated clothing shall be done so as to prevent the release of MDA in the workplace.

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(d) Any employer who gives MDA-contaminated clothing to another person for laundering shall inform such person of the requirement to prevent the release of MDA.

(e) The employer shall inform any person who launders or cleans protective clothing or equipment contaminated with MDA of the potentially harmful effects of exposure.

(f) MDA-contaminated clothing shall be transported in properly labeled, sealed, impermeable bags or containers.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050, 01-11-038, § 296-62-07617, filed 5/9/01, effective 9/1/01. Statutory Authority: Chapter 49.17 RCW, 94-20-057 (Order 94-16), § 296-62-07617, filed 9/30/94, effective 11/20/94; 93-04-111 (Order 92-15), § 296-62-07617, filed 2/3/93, effective 3/15/93.]

WAC 296-62-07619 Hygiene facilities and practices.

(1) Change rooms.

(a) The employer shall provide clean change rooms for employees, who must wear protective clothing, or who must use protective equipment because of their exposure to MDA.

(b) Change rooms must be equipped with separate storage for protective clothing and equipment and for street clothes which prevents MDA contamination of street clothes.

(2) Showers.

(a) The employer shall ensure that employees, who work in areas where there is the potential for exposure resulting from airborne MDA (e.g., particulates or vapors) above the action level, shower at the end of the work shift.

(i) Shower facilities required by this section shall comply with WAC 296-24-12010.

(ii) The employer shall ensure that employees who are required to shower pursuant to the provisions contained herein do not leave the workplace wearing any protective clothing or equipment worn during the work shift.

(b) Where dermal exposure to MDA occurs, the employer shall ensure that materials spilled or deposited on the skin are removed as soon as possible by methods which do not facilitate the dermal absorption of MDA.

(3) Lunch facilities.

(a) Availability and construction.

(i) Whenever food or beverages are consumed at the worksite and employees are exposed to MDA at or above the PEL or are subject to dermal exposure to MDA the employer shall provide readily accessible lunch areas.

(ii) Lunch areas located within the workplace and in areas where there is the potential for airborne exposure to MDA at or above the PEL shall have a positive pressure, temperature controlled, filtered air supply.

(iii) Lunch areas may not be located in areas within the workplace where the potential for dermal exposure to MDA exists.

(b) The employer shall ensure that employees who have been subjected to dermal exposure to MDA or who have been exposed to MDA above the PEL wash their hands and faces with soap and water prior to eating, drinking, smoking, or applying cosmetics.

(c) The employer shall ensure that employees exposed to MDA do not enter lunch facilities with MDA-contaminated protective work clothing or equipment.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050, 01-17-033, § 296-62-07619, filed 8/8/01, effective 9/1/01. Statutory Authority: Chapter 49.17 RCW, 93-04-111 (Order 92-15), § 296-62-07619, filed 2/3/93, effective 3/15/93.]

WAC 296-62-07621 Communication of hazards to employees. (1) Signs and labels.

(a) The employer shall post and maintain legible signs demarcating regulated areas and entrances or accessways to regulated areas that bear the following legend:

DANGER MDA MAY CAUSE CANCER LIVER TOXIN
AUTHORIZED PERSONNEL ONLY
RESPIRATORS AND PROTECTIVE CLOTHING
MAY BE REQUIRED TO BE WORN IN THIS AREA

(b) The employer shall ensure that labels or other appropriate forms of warning are provided for containers of MDA within the workplace. The labels shall comply with the requirements of WAC 296-800-170 and shall include the following legend:

(i) For pure MDA

DANGER CONTAINS MDA MAY CAUSE CANCER LIVER TOXIN

(ii) For mixtures containing MDA

DANGER CONTAINS MDA CONTAINS MATERIALS
WHICH MAY CAUSE CANCER LIVER TOXIN

(2) Material safety data sheets (MSDS).

(a) Employers shall obtain or develop, and shall provide access to their employees, to a material safety data sheet (MSDS) for MDA. In meeting this obligation, employers shall make appropriate use of the information found in Appendices A and B.

(b) Employers who are manufacturers or importers shall:

(i) Comply with subdivision (1)(b) of this section as appropriate; and

(ii) Comply with the requirement in WISHA hazard communication standard, WAC 296-62-054, that they deliver to downstream employers an MSDS for MDA.

(3) Information and training.

(a) The employer shall provide employees with information and training on MDA, in accordance with WAC 296-800-170, at the time of initial assignment and at least annually thereafter.

(b) In addition to the information required under WAC 296-800-170, the employer shall:

(i) Provide an explanation of the contents of WAC 296-62-076, including Appendices A and B, and indicate to employees where a copy of the standard is available;

(ii) Describe the medical surveillance program required under WAC 296-62-07625, and explain the information contained in Appendix C; and

(iii) Describe the medical removal provision required under WAC 296-62-07625.

(4) Access to training materials.

(a) The employer shall make readily available to all affected employees, without cost, all written materials relating to the employee training program, including a copy of this regulation.

(b) The employer shall provide to the director, upon request, all information and training materials relating to the employee information and training program.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 01-11-038, § 296-62-07621, filed 5/9/01, effective 9/1/01. Statutory Authority:

Chapter 49.17 RCW. 93-04-111 (Order 92-15), § 296-62-07621, filed 2/3/93, effective 3/15/93.]

WAC 296-62-07623 Housekeeping. (1) All surfaces shall be maintained as free as practicable of visible accumulations of MDA.

(2) The employer shall institute a program for detecting MDA leaks, spills, and discharges, including regular visual inspections of operations involving liquid or solid MDA.

(3) All leaks shall be repaired and liquid or dust spills cleaned up promptly.

(4) Surfaces contaminated with MDA may not be cleaned by the use of compressed air.

(5) Shoveling, dry sweeping, and other methods of dry clean-up of MDA may be used where HEPA-filtered vacuuming and/or wet cleaning are not feasible or practical.

(6) Waste, scrap, debris, bags, containers, equipment, and clothing contaminated with MDA shall be collected and disposed of in a manner to prevent the reentry of MDA into the workplace.

[Statutory Authority: Chapter 49.17 RCW. 93-04-111 (Order 92-15), § 296-62-07623, filed 2/3/93, effective 3/15/93.]

WAC 296-62-07625 Medical surveillance. (1) General.

(a) The employer shall make available a medical surveillance program for employees exposed to MDA:

(i) Employees exposed at or above the action level for 30 or more days per year;

(ii) Employees who are subject to dermal exposure to MDA for 15 or more days per year;

(iii) Employees who have been exposed in an emergency situation;

(iv) Employees whom the employer, based on results from compliance with WAC 296-62-07609(8), has reason to believe are being dermally exposed; and

(v) Employees who show signs or symptoms of MDA exposure.

(b) The employer shall ensure that all medical examinations and procedures are performed by, or under the supervision of, a licensed physician, at a reasonable time and place, and provided without cost to the employee.

(2) Initial examinations.

(a) Within 150 days of the effective date of this standard, or before the time of initial assignment, the employer shall provide each employee covered by subdivision (1)(a) of this section with a medical examination including the following elements:

(i) A detailed history which includes:

(A) Past work exposure to MDA or any other toxic substances;

(B) A history of drugs, alcohol, tobacco, and medication routinely taken (duration and quantity); and

(C) A history of dermatitis, chemical skin sensitization, or previous hepatic disease.

(ii) A physical examination which includes all routine physical examination parameters, skin examination, and signs of liver disease.

(iii) Laboratory tests including:

(A) Liver function tests; and

(B) Urinalysis.

(iv) Additional tests as necessary in the opinion of the physician.

(b) No initial medical examination is required if adequate records show that the employee has been examined in accordance with the requirements of WAC 296-62-076 within the previous six months prior to the effective date of this standard or prior to the date of initial assignment.

(3) Periodic examinations.

(a) The employer shall provide each employee covered by WAC 296-62-076 with a medical examination at least annually following the initial examination. These periodic examinations shall include at least the following elements:

(i) A brief history regarding any new exposure to potential liver toxins, changes in drug, tobacco, and alcohol intake, and the appearance of physical signs relating to the liver and the skin;

(ii) The appropriate tests and examinations including liver function tests and skin examinations; and

(iii) Appropriate additional tests or examinations as deemed necessary by the physician.

(b) If in the physicians' opinion the results of liver function tests indicate an abnormality, the employee shall be removed from further MDA exposure in accordance with WAC 296-62-07627 and 296-62-07629. Repeat liver function tests shall be conducted on advice of the physician.

(4) Emergency examinations. If the employer determines that the employee has been exposed to a potentially hazardous amount of MDA in an emergency situation as addressed in WAC 296-62-07607, the employer shall provide medical examinations in accordance with subsection (3) of this section. If the results of liver function testing indicate an abnormality, the employee shall be removed in accordance with WAC 296-62-07627 and 296-62-07629. Repeat liver function tests shall be conducted on the advice of the physician. If the results of the tests are normal, tests must be repeated two to three weeks from the initial testing. If the results of the second set of tests are normal and on the advice of the physician, no additional testing is required.

(5) Additional examinations. Where the employee develops signs and symptoms associated with exposure to MDA, the employer shall provide the employee with an additional medical examination including a liver function test. Repeat liver function tests shall be conducted on the advice of the physician. If the results of the tests are normal, tests must be repeated two to three weeks from the initial testing. If the results of the second set of tests are normal and, on the advice of the physician, no additional testing is required.

(6) Multiple physician review mechanism.

(a) If the employer selects the initial physician who conducts any medical examination or consultation provided to an employee under WAC 296-62-076, and the employee has signs or symptoms of occupational exposure to MDA (which could include an abnormal liver function test), and the employee disagrees with the opinion of the examining physician, and this opinion could affect the employee's job status, the employee may designate an appropriate, mutually acceptable second physician:

(i) To review any findings, determinations, or recommendations of the initial physician; and

(ii) To conduct such examinations, consultations, and laboratory tests as the second physician deems necessary to facilitate this review.

(b) The employer shall promptly notify an employee of the right to seek a second medical opinion after each occasion that an initial physician conducts a medical examination or consultation pursuant to WAC 296-62-076. The employer may condition its participation in, and payment for, the multiple physician review mechanism upon the employee doing the following within fifteen days after receipt of the foregoing notification, or receipt of the initial physician's written opinion, whichever is later:

(i) The employee informing the employer that he or she intends to seek a second medical opinion; and

(ii) The employee initiating steps to make an appointment with a second physician.

(c) If the findings, determinations, or recommendations of the second physician differ from those of the initial physician, then the employer and the employee shall assure that efforts are made for the two physicians to resolve any disagreement.

(d) If the two physicians have been unable to resolve quickly their disagreement, then the employer and the employee through their respective physicians shall designate a third physician:

(i) To review any findings, determinations, or recommendations of the prior physicians; and

(ii) To conduct such examinations, consultations, laboratory tests, and discussions with the prior physicians as the third physician deems necessary to resolve the disagreement of the prior physicians.

(e) The employer shall act consistent with the findings, determinations, and recommendations of the third physician, unless the employer and the employee reach an agreement which is otherwise consistent with the recommendations of at least one of the three physicians.

(7) Information provided to the examining and consulting physicians.

(a) The employer shall provide the following information to the examining physician:

(i) A copy of this regulation and its appendices;

(ii) A description of the affected employee's duties as they relate to the employee's potential exposure to MDA;

(iii) The employee's current actual or representative MDA exposure level;

(iv) A description of any personal protective equipment used or to be used; and

(v) Information from previous employment-related medical examinations of the affected employee.

(b) The employer shall provide the foregoing information to a second physician under this section upon request either by the second physician or by the employee.

(8) Physician's written opinion.

(a) For each examination under WAC 296-62-076, the employer shall obtain, and provide the employee with a copy of, the examining physician's written opinion within 15 days of its receipt. The written opinion shall include the following:

(i) The occupationally-pertinent results of the medical examination and tests;

(ii) The physician's opinion concerning whether the employee has any detected medical conditions which would

place the employee at increased risk of material impairment of health from exposure to MDA;

(iii) The physician's recommended limitations upon the employee's exposure to MDA or upon the employee's use of protective clothing or equipment and respirators; and

(iv) A statement that the employee has been informed by the physician of the results of the medical examination and any medical conditions resulting from MDA exposure which require further explanation or treatment.

(b) The written opinion obtained by the employer shall not reveal specific findings or diagnoses unrelated to occupational exposures.

[Statutory Authority: Chapter 49.17 RCW. 93-04-111 (Order 92-15), § 296-62-07625, filed 2/3/93, effective 3/15/93.]

WAC 296-62-07627 Medical removal—Temporary medical removal of an employee. Temporary medical removal of an employee.

(1) Temporary removal resulting from occupational exposure. The employee shall be removed from work environments in which exposure to MDA is at or above the action level or where dermal exposure to MDA may occur, following an initial examination (WAC 296-62-07625(2)), periodic examinations (WAC 296-62-07625(3)), an emergency situation (WAC 296-62-07625(4)), or an additional examination (WAC 296-62-07625(5)) in the following circumstances:

(a) When the employee exhibits signs and/or symptoms indicative of acute exposure to MDA; or

(b) When the examining physician determines that an employee's abnormal liver function tests are not associated with MDA exposure but that the abnormalities may be exacerbated as a result of occupational exposure to MDA.

(c) Temporary removal due to a final medical determination.

(i) The employer shall remove an employee from work environments in which exposure to MDA is at or above the action level or where dermal exposure to MDA may occur, on each occasion that there is a final medical determination or opinion that the employee has a detected medical condition which places the employee at increased risk of material impairment to health from exposure to MDA.

(ii) For the purposes of WAC 296-62-076, the phrase "final medical determination" shall mean the outcome of the physician review mechanism used pursuant to the medical surveillance provisions of this section.

(iii) Where a final medical determination results in any recommended special protective measures for an employee, or limitations on an employee's exposure to MDA, the employer shall implement and act consistent with the recommendation.

(2) Return of the employee to former job status.

(a) The employer shall return an employee to his or her former job status:

(i) When the employee no longer shows signs or symptoms of exposure to MDA or upon the advice of the physician.

(ii) When a subsequent final medical determination results in a medical finding, determination, or opinion that the employee no longer has a detected medical condition which places the employee at increased risk of material impairment to health from exposure to MDA.

(b) For the purposes of this section, the requirement that an employer return an employee to his or her former job status is not intended to expand upon or restrict any rights an employee has or would have had, absent temporary medical removal, to a specific job classification or position under the terms of a collective bargaining agreement.

(3) Removal of other employee special protective measure or limitations. The employer shall remove any limitations placed on an employee, or end any special protective measures provided to an employee, pursuant to a final medical determination, when a subsequent final medical determination indicates that the limitations or special protective measures are no longer necessary.

(4) Employer options pending a final medical determination. Where the physician review mechanism used pursuant to the medical surveillance provisions of WAC 296-62-076, has not yet resulted in a final medical determination with respect to an employee, the employer shall act as follows:

(a) Removal. The employer may remove the employee from exposure to MDA, provide special protective measures to the employee, or place limitations upon the employee, consistent with the medical findings, determinations, or recommendations of any of the physicians who have reviewed the employee's health status.

(b) Return. The employer may return the employee to his or her former job status, and end any special protective measures provided to the employee, consistent with the medical findings, determinations, or recommendations of any of the physicians who have reviewed the employee's health status, with two exceptions.

(i) If the initial removal, special protection, or limitation of the employee resulted from a final medical determination which differed from the findings, determinations, or recommendations of the initial physician; or

(ii) If the employee has been on removal status for the preceding six months as a result of exposure to MDA, then the employer shall await a final medical determination.

[Statutory Authority: Chapter 49.17 RCW. 93-04-111 (Order 92-15), § 296-62-07627, filed 2/3/93, effective 3/15/93.]

WAC 296-62-07629 Medical removal protection benefits. (1) Provisions of medical removal protection benefits. The employer shall provide to an employee up to six months of medical removal protection benefits on each occasion that an employee is removed from exposure to MDA or otherwise limited pursuant to this section.

(2) Definition of medical removal protection benefits. For the purposes of this section, the requirement that an employer provide medical removal protection benefits means that the employer shall maintain the earnings, seniority, and other employment rights and benefits of an employee as though the employee had not been removed from normal exposure to MDA or otherwise limited.

(3) Follow-up medical surveillance during the period of employee removal or limitations. During the period of time that an employee is removed from normal exposure to MDA or otherwise limited, the employer may condition the provision of medical removal protection benefits upon the employee's participation in follow-up medical surveillance made available pursuant to WAC 296-62-076.

(4) Workers' compensation claims. If a removed employee files a claim for workers' compensation payments for an MDA-related disability, then the employer shall continue to provide medical removal protection benefits pending disposition of the claim. To the extent that an award is made to the employee for earnings lost during the period of removal, the employer's medical removal protection obligation shall be reduced by such amount. The employer shall receive no credit for workers' compensation payments received by the employee for treatment-related expenses.

(5) Other credits. The employer's obligation to provide medical removal protection benefits to a removed employee shall be reduced to the extent that the employee receives compensation for earnings lost during the period of removal either from a publicly or employer-funded compensation program, or receives income from non-MDA-related employment with any employer made possible by virtue of the employee's removal.

(6) Employees who do not recover within the 6 months of removal. The employer shall take the following measures with respect to any employee removed from exposure to MDA:

(a) The employer shall make available to the employee a medical examination pursuant to this section to obtain a final medical determination with respect to the employee;

(b) The employer shall assure that the final medical determination obtained indicates whether or not the employee may be returned to his or her former job status, and, if not, what steps should be taken to protect the employee's health;

(c) Where the final medical determination has not yet been obtained, or, once obtained indicates that the employee may not yet be returned to his or her former job status, the employer shall continue to provide medical removal protection benefits to the employee until either the employee is returned to former job status, or a final medical determination is made that the employee is incapable of ever safely returning to his or her former job status; and

(d) Where the employer acts pursuant to a final medical determination which permits the return of the employee to his or her former job status, despite what would otherwise be an abnormal liver function test, later questions concerning removing the employee again shall be decided by a final medical determination. The employer need not automatically remove such an employee pursuant to the MDA removal criteria provided by WAC 296-62-076.

(7) Voluntary removal or restriction of an employee. Where an employer, although not required by WAC 296-62-076 to do so, removes an employee from exposure to MDA or otherwise places limitations on an employee due to the effects of MDA exposure on the employee's medical condition, the employer shall provide medical removal protection benefits to the employee equal to that required by this section.

[Statutory Authority: Chapter 49.17 RCW. 93-04-111 (Order 92-15), § 296-62-07629, filed 2/3/93, effective 3/15/93.]

WAC 296-62-07631 Recordkeeping. (1) Monitoring data for exempted employers.

(a) Where as a result of the initial monitoring the processing, use, or handling of products made from or contain-

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ing MDA are exempted from other requirements of this section under WAC 296-62-07601(2), the employer shall establish and maintain an accurate record of monitoring relied on in support of the exemption.

(b) This record shall include at least the following information:

(i) The product qualifying for exemption;

(ii) The source of the monitoring data (e.g., was monitoring performed by the employer or a private contractor);

(iii) The testing protocol, results of testing, and/or analysis of the material for the release of MDA;

(iv) A description of the operation exempted and how the data support the exemption (e.g., are the monitoring data representative of the conditions at the affected facility); and

(v) Other data relevant to the operations, materials, processing, or employee exposures covered by the exemption.

(c) The employer shall maintain this record for the duration of the employer's reliance upon such objective data.

(2) Objective data for exempted employers.

(a) Where the processing, use, or handling of products made from or containing MDA are exempted from other requirements of WAC 296-62-076 under WAC 296-62-07601, the employer shall establish and maintain an accurate record of objective data relied upon in support of the exemption.

(b) This record shall include at least the following information:

(i) The product qualifying for exemption;

(ii) The source of the objective data;

(iii) The testing protocol, results of testing, and/or analysis of the material for the release of MDA;

(iv) A description of the operation exempted and how the data support the exemption; and

(v) Other data relevant to the operations, materials, processing, or employee exposures covered by the exemption.

(c) The employer shall maintain this record for the duration of the employer's reliance upon such objective data.

(3) Exposure measurements.

(a) The employer shall establish and maintain an accurate record of all measurements required by WAC 296-62-07609, in accordance with Part B of this chapter.

(b) This record shall include:

(i) The dates, number, duration, and results of each of the samples taken, including a description of the procedure used to determine representative employee exposures;

(ii) Identification of the sampling and analytical methods used;

(iii) A description of the type of respiratory protective devices worn, if any; and

(iv) The name, Social Security number, job classification, and exposure levels of the employee monitored and all other employees whose exposure the measurement is intended to represent.

(c) The employer shall maintain this record for at least 30 years, in accordance with Part B of this chapter.

(4) Medical surveillance.

(a) The employer shall establish and maintain an accurate record for each employee subject to medical surveillance required by WAC 296-62-07625, 296-62-07627, and 296-62-07629, in accordance with Part B of this chapter.

(b) This record shall include:

(i) The name, Social Security number, and description of the duties of the employee;

(ii) The employer's copy of the physician's written opinion on the initial, periodic, and any special examinations, including results of medical examination and all tests, opinions, and recommendations;

(iii) Results of any airborne exposure monitoring done for that employee and the representative exposure levels supplied to the physician; and

(iv) Any employee medical complaints related to exposure to MDA.

(c) The employer shall keep, or assure that the examining physician keeps, the following medical records:

(i) A copy of this standard and its appendices, except that the employer may keep one copy of the standard and its appendices for all employees provided the employer references the standard and its appendices in the medical surveillance record of each employee;

(ii) A copy of the information provided to the physician as required by any sections in the regulatory text;

(iii) A description of the laboratory procedures and a copy of any standards or guidelines used to interpret the test results or references to the information;

(iv) A copy of the employee's medical and work history related to exposure to MDA.

(d) The employer shall maintain this record for at least the duration of employment plus 30 years, in accordance with Part B of this chapter.

(5) Medical removals.

(a) The employer shall establish and maintain an accurate record for each employee removed from current exposure to MDA pursuant to WAC 296-62-07625, 296-62-07627, and 296-62-07629.

(b) Each record shall include:

(i) The name and Social Security number of the employee;

(ii) The date of each occasion that the employee was removed from current exposure to MDA as well as the corresponding date on which the employee was returned to his or her former job status;

(iii) A brief explanation of how each removal was or is being accomplished; and

(iv) A statement with respect to each removal indicating the reason for the removal.

(c) The employer shall maintain each medical removal record for at least the duration of an employee's employment plus 30 years.

(6) Availability.

(a) The employer shall assure that records required to be maintained by WAC 296-62-076 shall be made available, upon request, to the director for examination and copying.

(b) Employee exposure monitoring records required by WAC 296-62-076 shall be provided upon request for examination and copying to employees, employee representatives, and the director in accordance with the applicable sections of WAC 296-800-170.

(c) Employee medical records required by this section shall be provided upon request for examination and copying, to the subject employee, to anyone having the specific written consent of the subject employee, and to the director in accordance with Part B of this chapter.

(7) Transfer of records.

(a) The employer shall comply with the requirements involving transfer of records set forth in chapter 296-802 WAC.

(b) If the employer ceases to do business and there is no successor employer to receive and retain the records for the prescribed period, the employer shall notify the director, at least 90 days prior to disposal, and transmit the records to the director if so requested by the director within that period.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060. 04-10-026, § 296-62-07631, filed 4/27/04, effective 8/1/04. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 01-11-038, § 296-62-07631, filed 5/9/01, effective 9/1/01. Statutory Authority: Chapter 49.17 RCW. 93-04-111 (Order 92-15), § 296-62-07631, filed 2/3/93, effective 3/15/93.]

WAC 296-62-07633 Observation of monitoring. (1)

Employee observation. The employer shall provide affected employees, or their designated representatives, an opportunity to observe the measuring or monitoring of employee exposure to MDA conducted pursuant to WAC 296-62-07609.

(2) Observation procedures. When observation of the measuring or monitoring of employee exposure to MDA requires entry into areas where the use of protective clothing and equipment or respirators is required, the employer shall provide the observer with personal protective clothing and equipment or respirators required to be worn by employees working in the area, assure the use of such clothing and equipment or respirators, and require the observer to comply with all other applicable safety and health procedures.

[Statutory Authority: Chapter 49.17 RCW. 93-04-111 (Order 92-15), § 296-62-07633, filed 2/3/93, effective 3/15/93.]

WAC 296-62-07637 Appendices. The information contained in Appendices A, B, C, and D of WAC 296-62-076 is not intended by itself, to create any additional obligations not otherwise imposed by this standard nor detract from any existing obligation. The protocols for respiratory fit testing in Appendix E of WAC 296-62-076 are mandatory.

[Statutory Authority: Chapter 49.17 RCW. 93-04-111 (Order 92-15), § 296-62-07637, filed 2/3/93, effective 3/15/93.]

WAC 296-62-07654 Appendix A to WAC 296-62-076—Substance data sheet, for 4,4'-methylenedianiline.

(1) Substance identification.

(a) Substance: Methylenedianiline (MDA).

(b) Permissible exposure:

(i) Airborne: Ten parts per billion parts of air (10 ppb), time-weighted average (TWA) for an 8-hour workday and an action level of five parts per billion parts of air (5 ppb).

(ii) Dermal: Eye contact and skin contact with MDA are not permitted.

(c) Appearance and odor: White to tan solid; amine odor.

(2) Health hazard data.

(a) Ways in which MDA affects your health. MDA can affect your health if you inhale it, or if it comes in contact with your skin or eyes. MDA is also harmful if you happen to swallow it. Do not get MDA in eyes, on skin, or on clothing.

(b) Effects of overexposure.

(i) Short-term (acute) overexposure: Overexposure to MDA may produce fever, chills, loss of appetite, vomiting, jaundice. Contact may irritate skin, eyes, and mucous membranes. Sensitization may occur.

(ii) Long-term (chronic) exposure. Repeated or prolonged exposure to MDA, even at relatively low concentrations, may cause cancer. In addition, damage to the liver, kidneys, blood, and spleen may occur with long-term exposure.

(iii) Reporting signs and symptoms: You should inform your employer if you develop any signs or symptoms which you suspect are caused by exposure to MDA including yellow staining of the skin.

(3) Protective clothing and equipment.

(a) Respirators. Respirators are required for those operations in which engineering controls or work practice controls are not adequate or feasible to reduce exposure to the permissible limit. If respirators are worn, they must have the joint Mine Safety and Health Administration and National Institute for Occupational Safety and Health (NIOSH) seal of approval, and cartridges or canisters must be replaced as necessary to maintain the effectiveness of the respirator. If you experience difficulty breathing while wearing a respirator, you may request a positive pressure respirator from your employer. You must be thoroughly trained to use the assigned respirator, and the training will be provided by your employer. MDA does not have a detectable odor except at levels well above the permissible exposure limits. Do not depend on odor to warn you when a respirator canister is exhausted. If you can smell MDA while wearing a respirator, proceed immediately to fresh air. If you experience difficulty breathing while wearing a respirator, tell your employer.

(b) Protective clothing. You may be required to wear coveralls, aprons, gloves, face shields, or other appropriate protective clothing to prevent skin contact with MDA. Where protective clothing is required, your employer is required to provide clean garments to you, as necessary, to assure that the clothing protects you adequately. Replace or repair impervious clothing that has developed leaks. MDA should never be allowed to remain on the skin. Clothing and shoes which are not impervious to MDA should not be allowed to become contaminated with MDA, and if they do, the clothing and shoes should be promptly removed and decontaminated. The clothing should be laundered to remove MDA or discarded. Once MDA penetrates shoes or other leather articles, they should not be worn again.

(c) Eye protection. You must wear splashproof safety goggles in areas where liquid MDA may contact your eyes. Contact lenses should not be worn in areas where eye contact with MDA can occur. In addition, you must wear a face shield if your face could be splashed with MDA liquid.

(4) Emergency and first-aid procedures.

(a) Eye and face exposure. If MDA is splashed into the eyes, wash the eyes for at least 15 minutes. See a doctor as soon as possible.

(b) Skin exposure. If MDA is spilled on your clothing or skin, remove the contaminated clothing and wash the exposed skin with large amounts of soap and water immediately. Wash contaminated clothing before you wear it again.

(c) Breathing. If you or any other person breathes in large amounts of MDA, get the exposed person to fresh air at once. Apply artificial respiration if breathing has stopped.

Call for medical assistance or a doctor as soon as possible. Never enter any vessel or confined space where the MDA concentration might be high without proper safety equipment and at least one other person present who will stay outside. A life line should be used.

(d) Swallowing. If MDA has been swallowed and the patient is conscious, do not induce vomiting. Call for medical assistance or a doctor immediately.

(5) Medical requirements. If you are exposed to MDA at a concentration at or above the action level for more than 30 days per year, or exposed to liquid mixtures more than 15 days per year, your employer is required to provide a medical examination, including a medical history and laboratory tests, within 60 days of the effective date of this standard and annually thereafter. These tests shall be provided without cost to you. In addition, if you are accidentally exposed to MDA (either by ingestion, inhalation, or skin/eye contact) under conditions known or suspected to constitute toxic exposure to MDA, your employer is required to make special examinations and tests available to you.

(6) Observation of monitoring. Your employer is required to perform measurements that are representative of your exposure to MDA and you or your designated representative are entitled to observe the monitoring procedure. You are entitled to observe the steps taken in the measurement procedure and to record the results obtained. When the monitoring procedure is taking place in an area where respirators or personal protective clothing and equipment are required to be worn, you and your representative must also be provided with, and must wear, the protective clothing and equipment.

(7) Access to records. You or your representative are entitled to see the records of measurements of your exposure to MDA upon written request to your employer. Your medical examination records can be furnished to your physician or designated representative upon request by you to your employer.

(8) Precautions for safe use, handling, and storage.

(a) Material is combustible. Avoid strong acids and their anhydrides. Avoid strong oxidants. Consult supervisor for disposal requirements.

(b) Emergency clean-up. Wear self-contained breathing apparatus and fully clothe the body in the appropriate personal protective clothing and equipment.

[Statutory Authority: Chapter 49.17 RCW. 93-04-111 (Order 92-15), § 296-62-07654, filed 2/3/93, effective 3/15/93.]

WAC 296-62-07656 Appendix B to WAC 296-62-076—Substance technical guidelines, MDA. (1) Identification.

(a) Substance identification. Synonyms: CAS No. 101-77-9. 4,4'-methylenedianiline; 4,4'-methylenebis(aniline); methylenedianiline; dianilinomethane.

(b) Formula: $C_{13}H_{14}N_2$.

(2) Physical data.

(a) Appearance and odor: White to tan solid; amine odor.

(b) Molecular weight: 198.26.

(c) Boiling point: 398-399 degrees C. at 760 mm Hg.

(d) Melting point: 88-93 degrees C. (190-100 degrees F.).

(e) Vapor pressure: 9 mmHg at 232 degrees C.

- (f) Evaporation rate (n-butyl acetate=1): Negligible.
- (g) Vapor density (Air=1): Not applicable.
- (h) Volatile fraction by weight: Negligible.
- (i) Specific gravity (Water=1): Slight.
- (j) Heat of combustion: -8.40 kcal/g.
- (k) Solubility in water: Slightly soluble in cold water, very soluble in alcohol, benzene, ether, and many organic solvents.
- (3) Fire, explosion, and reactivity hazard data.
 - (a) Flash point: 190 degrees C. (374 degrees F.) Set-aflash closed cup.
 - (b) Flash point: 226 degrees C. (439 degrees F.) Cleveland open cup.
 - (c) Extinguishing media: Water spray; dry chemical; carbon dioxide.
 - (d) Special fire fighting procedures: Wear self-contained breathing apparatus and protective clothing to prevent contact with skin and eyes.
 - (e) Unusual fire and explosion hazards: Fire or excessive heat may cause production of hazardous decomposition products.
- (4) Reactivity data.
 - (a) Stability: Stable.
 - (b) Incompatibility: Strong oxidizers.
 - (c) Hazardous decomposition products: As with any other organic material, combustion may produce carbon monoxide. Oxides of nitrogen may also be present.
 - (d) Hazardous polymerization: Will not occur.
- (5) Spill and leak procedures.
 - (a) Sweep material onto paper and place in fiber carton.
 - (b) Package appropriately for safe feed to an incinerator or dissolve in compatible waste solvents prior to incineration.
 - (c) Dispose of in an approved incinerator equipped with afterburner and scrubber or contract with licensed chemical waste disposal service.
 - (d) Discharge treatment or disposal may be subject to federal, state, or local laws.
 - (e) Wear appropriate personal protective equipment.
 - (6) Special storage and handling precautions.
 - (a) High exposure to MDA can occur when transferring the substance from one container to another. Such operations should be well ventilated and good work practices must be established to avoid spills.
 - (b) Pure MDA is a solid with a low vapor pressure. Grinding or heating operations increase the potential for exposure.
 - (c) Store away from oxidizing materials.
 - (d) Employers shall advise employees of all areas and operations where exposure to MDA could occur.
 - (7) Housekeeping and hygiene facilities.
 - (a) The workplace should be kept clean, orderly, and in a sanitary condition. The employer should institute a leak and spill detection program for operations involving MDA in order to detect sources of fugitive MDA emissions.
 - (b) Adequate washing facilities with hot and cold water are to be provided and maintained in a sanitary condition. Suitable cleansing agents should also be provided to assure the effective removal of MDA from the skin.
 - (8) Common operations. Common operations in which exposure to MDA is likely to occur include the following: Manufacture of MDA; manufacture of methylene diisocya-

nate; curing agent for epoxy resin structures; wire coating operations; and filament winding.

[Statutory Authority: Chapter 49.17 RCW. 93-04-111 (Order 92-15), § 296-62-07656, filed 2/3/93, effective 3/15/93.]

WAC 296-62-07658 Appendix C to WAC 296-62-076—Medical surveillance guidelines for MDA. (1) Route of entry:

Inhalation; skin absorption; ingestion. MDA can be inhaled, absorbed through the skin, or ingested.

(2) Toxicology:

MDA is a suspect carcinogen in humans. There are several reports of liver disease in humans and animals resulting from acute exposure to MDA. A well documented case of an acute cardiomyopathy secondary to exposure to MDA is on record. Numerous human cases of hepatitis secondary to MDA are known. Upon direct contact MDA may also cause damage to the eyes. Dermatitis and skin sensitization have been observed. Almost all forms of acute environmental hepatic injury in humans involve the hepatic parenchyma and produce hepatocellular jaundice. This agent produces intra-hepatic cholestasis. The clinical picture consists of cholestatic jaundice, preceded or accompanied by abdominal pain, fever, and chills. Onset in about 60 percent of all observed cases is abrupt with severe abdominal pain. In about 30 percent of observed cases, the illness presented and evolved more slowly and less dramatically, with only slight abdominal pain. In about 10 percent of the cases only jaundice was evident. The cholestatic nature of the jaundice is evident in the prominence of itching, the histologic predominance of bile stasis, and portal inflammatory infiltration, accompanied by only slight parenchymal injury in most cases, and by the moderately elevated transaminase values. Acute, high doses, however, have been known to cause hepatocellular damage resulting in elevated SGPT, SGOT, alkaline phosphatase, and bilirubin.

Absorption through the skin is rapid. MDA is metabolized and excreted over a 48-hour period. Direct contact may be irritating to the skin, causing dermatitis. Also MDA which is deposited on the skin is not thoroughly removed through washing.

MDA may cause bladder cancer in humans. Animal data supporting this assumption is not available nor is conclusive human data. However, human data collected on workers at a helicopter manufacturing facility where MDA is used suggests a higher incidence of bladder cancer among exposed workers.

(3) Signs and symptoms:

Skin may become yellow from contact with MDA.

Repeated or prolonged contact with MDA may result in recurring dermatitis (red-itchy, cracked skin) and eye irritation. Inhalation, ingestion, or absorption through the skin at high concentrations may result in hepatitis, causing symptoms such as fever and chills, nausea and vomiting, dark urine, anorexia, rash, right upper quadrant pain, and jaundice. Corneal burns may occur when MDA is splashed in the eyes.

(4) Treatment of acute toxic effects/emergency situation:

If MDA gets into the eyes, immediately wash eyes with large amounts of water. If MDA is splashed on the skin, immediately wash contaminated skin with mild soap or detergent. Employee should be removed from exposure and given

proper medical treatment. Medical tests required under the emergency section of the medical surveillance subsection (13)(d) must be conducted.

If the chemical is swallowed do not induce vomiting but remove by gastric lavage.

[Statutory Authority: Chapter 49.17 RCW. 93-04-111 (Order 92-15), § 296-62-07658, filed 2/3/93, effective 3/15/93.]

WAC 296-62-07660 Appendix D to WAC 296-62-076—Sampling and analytical methods for MDA monitoring and measurement procedures. Measurements taken for the purpose of determining employee exposure to MDA are best taken so that the representative average 8-hour exposure may be determined from a single 8-hour sample or two 4-hour samples. Short-time interval samples (or grab samples) may also be used to determine average exposure level if a minimum of five measurements are taken in a random manner over the 8-hour work shift. Random sampling means that any portion of the work shift has the same chance of being sampled as any other. The arithmetic average of all such random samples taken on one work shift is an estimate of an employee's average level of exposure for that work shift. Air samples should be taken in the employee's breathing zone (air that would most nearly represent that inhaled by the employee).

There are a number of methods available for monitoring employee exposures to MDA. The method WISHA currently uses is included below.

The employer, however, has the obligation of selecting any monitoring method which meets the accuracy and precision requirements of the standard under his/her unique field conditions. The standard requires that the method of monitoring must have an accuracy, to a 95 percent confidence level, of not less than plus or minus 25 percent for the select PEL.

WISHA methodology.

Sampling procedure.

Apparatus:

Samples are collected by use of a personal sampling pump that can be calibrated within ± 5 percent of the recommended flow rate with the sampling filter in line.

Samples are collected on 37 mm Gelman type A/E glass fiber filters treated with sulfuric acid. The filters are prepared by soaking each filter with 0.5 mL of 0.26N H_2SO_4 . (0.26 N H_2SO_4 can be prepared by diluting 1.5 mL of 36N H_2SO_4 to 200 mL with deionized water.) The filters are dried in an oven at 100 degrees C. for one hour and then assembled into three-piece 37 mm polystyrene cassettes without backup pads. The front filter is separated from the back filter by a polystyrene spacer. The cassettes are sealed with shrink bands and the ends are plugged with plastic plugs.

After sampling, the filters are carefully removed from the cassettes and individually transferred to small vials containing approximately 2 mL deionized water. The vials must be tightly sealed. The water can be added before or after the filters are transferred. The vials must be sealable and capable of holding at least 7 mL of liquid. Small glass scintillation vials with caps containing Teflon liners are recommended.

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Reagents:

Deionized water is needed for addition to the vials.

Sampling technique:

Immediately before sampling, remove the plastic plugs from the filter cassettes.

Attach the cassette to the sampling pump with flexible tubing and place the cassette in the employee's breathing zone.

After sampling, seal the cassettes with plastic plugs until the filters are transferred to the vials containing deionized water.

At some convenient time within 10 hours of sampling, transfer the sample filters to vials.

Seal the small vials lengthwise.

Submit at least one blank filter with each sample set. Blanks should be handled in the same manner as samples, but no air is drawn through them.

Record sample volumes (in L of air) for each sample, along with any potential interferences.

Retention efficiency:

A retention efficiency study was performed by drawing 100 L of air (80 percent relative humidity) at 1 L/min through sample filters that had been spiked with 0.814 microgram MDA. Instead of using backup pads, blank acid-treated filters were used as backups in each cassette. Upon analysis, the top filters were found to have an average of 91.8 percent of the spiked amount. There was no MDA found on the bottom filters, so the amount lost was probably due to the slight instability of the MDA salt.

Extraction efficiency:

The average extraction efficiency for six filters spiked at the target concentration is 99.6 percent.

The stability of extracted and derivatized samples was verified by reanalyzing the above six samples the next day using fresh standards. The average extraction efficiency for the reanalyzed samples is 98.7 percent.

Recommended air volume and sampling rate:

The recommended air volume is 100 L.

The recommended sampling rate is 1 L/min.

Interferences (sampling):

MDI appears to be a positive interference. It was found that when MDI was spiked onto an acid-treated filter, the MDI converted to MDA after air was drawn through it.

Suspected interferences should be reported to the laboratory with submitted samples.

Safety precautions (sampling):

Attach the sampling equipment to the employees so that it will not interfere with work performance or safety.

Follow all safety procedures that apply to the work area being sampled.

Analytical procedure:

Apparatus: The following are required for analysis.

A GC equipped with an electron capture detector. For this evaluation a Hewlett Packard 5880 Gas Chromatograph equipped with a Nickel 63 High Temperature Electron Capture Detector and a Linearizer was used.

A GC column capable of separating the MDA derivative from the solvent and interferences. A 6 ft X 2 mm ID glass column packed with 3 percent OV-101 coated on 100/120 Gas Chrom Q or a 25 meter DB-1 or DB-5 capillary column is recommended for this evaluation.

A electronic integrator or some other suitable means of measuring peak areas or heights.

Small resealable vials with Teflon-lined caps capable of holding 4 mL.

A dispenser or pipet for toluene capable of delivering 2.0 mL.

Pipets (or repipets with plastic or Teflon tips) capable of delivering 1 mL for the sodium hydroxide and buffer solutions.

A repipet capable of delivering 25 micro-L HFAA.

Syringes for preparation of standards and injection of standards and samples into a GC.

Volumetric flasks and pipets to dilute the pure MDA in preparation of standards.

Disposable pipets to transfer the toluene layers after the samples are extracted.

Reagents:

0.5 NaOH prepared from reagent grade NaOH.

Toluene, pesticide grade. Burdick and Jackson distilled in glass toluene was used.

Heptafluorobutyric acid anhydride (HFAA). HFAA from Pierce Chemical Company was used.

pH 7.0 phosphate buffer, prepared from 136 g potassium dihydrogen phosphate and 1 L deionized water. The pH is adjusted to 7.0 with saturated sodium hydroxide solution.

4,4'-Methylenedianiline (MDA), reagent grade.

Standard preparation:

Concentrated stock standards are prepared by diluting pure MDA with toluene. Analytical standards are prepared by injecting uL amounts of diluted stock standards into vials that contain 2.0 mL toluene.

25 µL HFAA are added to each vial and the vials are capped and shaken for 10 seconds.

After 10 min, 1 mL of buffer is added to each vial.

The vials are recapped and shaken for 10 seconds.

After allowing the layers to separate, aliquots of the toluene (upper) layers are removed with a syringe and analyzed by GC.

Analytical standard concentrations should bracket sample concentrations. Thus, if samples fall out of the range of prepared standards, additional standards must be prepared to ascertain detector response.

Sample preparation:

The sample filters are received in vials containing deionized water.

1 mL of 0.5N NaOH and 2.0 mL toluene are added to each vial.

The vials are recapped and shaken for 10 min.

After allowing the layers to separate, approximately 1 mL aliquots of the toluene (upper) layers are transferred to separate vials with clean disposable pipets.

The toluene layers are treated and analyzed.

Analysis:

GC conditions

Zone temperatures:

Column—220 degrees C.

Injector—235 degrees C.

Detector—335 degrees C.

C Gas flows, N₂ Column—30 mL/min

He Column 0.9 mL/min. (capillary) with 30 mL/min. A₅CH₄ (95/5) makeup gas

Injection volume: 5.0 uL

Column: 6 ft X 1/8 in ID glass, 3% OV-101 on 100/120 Gas Chrom Q or 25 meter x .25 mm DB-1 or DB-5 capillary

Retention time of MDA derivative: 2.5 to 3.5, depending on column and flow

Chromatogram:

Peak areas or heights are measured by an integrator or other suitable means.

A calibration curve is constructed by plotting response (peak areas or heights) of standard injections versus ug of MDA per sample. Sample concentrations must be bracketed by standards.

Interferences (analytical):

Any compound that gives an electron capture detector response and has the same general retention time as the HFAA derivative of MDA is a potential interference. Suspected interferences reported to the laboratory with submitted samples by the industrial hygienist must be considered before samples are derivatized.

GC parameters may be changed to possibly circumvent interferences.

Retention time on a single column is not considered proof of chemical identity. Analyte identity should be confirmed by GC/MS if possible.

Calculations:

The analyte concentration for samples is obtained from the calibration curve in terms of ug MDA per sample. The extraction efficiency is 100 percent. If any MDA is found on the blank, that amount is subtracted from the sample amounts. The air concentrations are calculated using the following formulae: Microgram/m³ = (microgram MDA per sample) (1000)/(L of air sampled) ppb = (microgram/m³) (24.46)/(198.3) = (microgram/m³)(0.1233) where 24.46 is the molar volume at 25 degrees C. and 760 mm Hg.

Safety precautions (analytical):

Avoid skin contact and inhalation of all chemicals.

Restrict the use of all chemicals to a fume hood if possible.

Wear safety glasses and a lab coat at all times while in the lab area.

[Statutory Authority: Chapter 49.17 RCW. 93-04-111 (Order 92-15), § 296-62-07660, filed 2/3/93, effective 3/15/93.]

PART I-1--ASBESTOS, TREMOLITE, ANTHOPHYLLITE, AND ACTINOLITE

WAC 296-62-077 Asbestos, tremolite, anthophyllite, and actinolite.

[Statutory Authority: RCW 49.17.050(2) and 49.17.040. 87-10-008 (Order 87-06), § 296-62-077, filed 4/27/87.]

WAC 296-62-07701 Scope and application. (1) WAC 296-62-07701 through 296-62-07753 applies to all occupational exposures to asbestos in all industries covered by chapter 49.17 RCW, Washington Industrial Safety and Health Act and chapter 49.26 RCW, Health and safety—Asbestos.

(2) This part applies to construction work as defined in WAC 296-155-012 except for work involving asbestos-containing asphalt roof coatings, cements, and mastics. The exception for roofing materials does not apply to asphalt coated asbestos felting and similar built-up roofing.

(3) This part applies to ship repairing, shipbuilding and shipbreaking employments and related employments as defined in WAC 296-304-01001 except for work involving asbestos-containing asphalt roof coatings, cements, and mastics. The exception for roofing materials does not apply to asphalt coated asbestos felting and similar built-up roofing.

[Statutory Authority: RCW 49.17.040, 49.17.050, 49.26.040 and 49.26.130. 99-17-026, § 296-62-07701, filed 8/10/99, effective 11/10/99. Statutory Authority: RCW 49.17.040, [49.17.]050 and [49.17.]060. 97-01-079, § 296-62-07701, filed 12/17/96, effective 3/1/97. Statutory Authority: Chapter 49.17 RCW. 87-24-051 (Order 87-24), § 296-62-07701, filed 11/30/87. Statutory Authority: RCW 49.17.050(2) and 49.17.040. 87-10-008 (Order 87-06), § 296-62-07701, filed 4/27/87.]

WAC 296-62-07703 Definitions. For the purpose of WAC 296-62-07701 through 296-62-07753:

Accredited inspector means any person meeting the accreditation requirements of the Federal Toxic Substance Control Act, Section 206(a)(1) and (3). 15 U.S.C. 2646(a)(1) and (3).

Aggressive method means removal or disturbance of building material by sanding, abrading, grinding or other method that breaks, crumbles, or disintegrates intact ACM.

Amended water means water to which surfactant (wetting agent) has been added to increase the ability of the liquid to penetrate ACM.

Asbestos includes chrysotile, amosite, crocidolite, tremolite asbestos, anthophyllite asbestos, actinolite asbestos, and any of these minerals that have been chemically treated and/or altered.

For purposes of this standard, "asbestos" includes PACM, as defined below.

(2007 Ed.)

Asbestos abatement project means an asbestos project involving three square feet or three linear feet, or more, of asbestos-containing material.

Asbestos-containing material (ACM) means any material containing more than 1% asbestos.

Asbestos project includes the construction, demolition, repair, remodeling, maintenance or renovation of any public or private building or structure, mechanical piping equipment or system involving the demolition, removal, encapsulation, salvage, or disposal of material or outdoor activity releasing or likely to release asbestos fibers into the air.

Authorized person means any person authorized by the employer and required by work duties to be present in regulated areas.

Building/facility/vessel owner means any legal entity or person who owns any public or private building, vessel, structure, facility, or mechanical system or the remnants thereof, including the agent of such person, but does not include individuals who work on asbestos projects in their own single-family residences, no part of which is used for commercial purposes. Also included is any lessee, who exercises control over management and record keeping functions relating to a building, vessel, and/or facility in which activities covered by this standard takes place.

Certified asbestos supervisor means an individual certified by the department under WAC 296-65-012.

Certified asbestos worker means an individual certified by the department under WAC 296-65-010.

Certified industrial hygienist (CIH) means one certified in the practice of industrial hygiene by the American Board of Industrial Hygiene.

Class I asbestos work means activities involving the removal of thermal system insulation or surfacing ACM/PACM.

Class II asbestos work means activities involving the removal of ACM which is not thermal system insulation or surfacing material. This includes, but is not limited to, the removal of asbestos-containing wallboard, floor tile and sheeting, roofing and siding shingles, and construction mastics.

Class III asbestos work means repair and maintenance operations where "ACM," including TSI and surfacing ACM and PACM, may be disturbed.

Class IV asbestos work means maintenance and custodial activities during which employees contact but do not disturb ACM or PACM and activities to clean up dust, waste and debris resulting from Class I, II, and III activities.

Clean room means an uncontaminated room having facilities for the storage of employees' street clothing and uncontaminated materials and equipment.

Closely resemble means that the major workplace conditions which have contributed to the levels of historic asbestos exposure, are no more protective than conditions of the current workplace.

Competent person means, in addition to the definition in WAC 296-62-07728, one who is capable of identifying existing asbestos, hazards in the workplace and selecting the appropriate control strategy for asbestos exposure, who has the authority to take prompt corrective measures to eliminate them as specified in WAC 296-62-07728. The competent person shall be certified as an asbestos supervisor in compli-

ance with WAC 296-65-030(3) and 296-65-012 for Class I and Class II work, and for Class III and Class IV work involving 3 square feet or 3 linear feet or more of asbestos-containing material. For Class III and Class IV work, involving less than 3 square feet or 3 linear feet, the competent person shall be trained in an operations and maintenance (O&M) course which meets the criteria of EPA (40 CFR 763.92 (a)(2)).

Critical barrier means one or more layers of plastic sealed over all openings into a work area or any other similarly placed physical barrier sufficient to prevent airborne asbestos in a work area from migrating to an adjacent area.

Decontamination area means an enclosed area adjacent and connected to the regulated area and consisting of an equipment room, shower area, and clean room, which is used for the decontamination of workers, materials, and equipment contaminated with asbestos.

Demolition means the wrecking or taking out of any load-supporting structural member and any related razing, removing, or stripping of asbestos products. Where feasible, asbestos-containing materials shall be removed from all structures prior to the commencement of any demolition activity as per WAC 296-155-775(9).

Department means the department of labor and industries.

Director means the director of the department of labor and industries or his/her authorized representative.

Director of NIOSH means the Director, National Institute for Occupational Safety and Health, U.S. Department of Health and Human Services, or designee.

Disturb or disturbance refers to activities that disrupt the matrix of ACM or PACM, crumble or pulverize ACM or PACM, or generate visible debris from ACM or PACM. This term includes activities that disrupt the matrix of ACM or PACM, render ACM or PACM friable, or generate visible debris. Disturbance includes cutting away small amounts of ACM or PACM, no greater than the amount that can be contained in one standard size glove bag or waste bag in order to access a building or vessel component. In no event shall the amount of ACM or PACM so disturbed exceed that which can be contained in one glove bag or waste bag which shall not exceed 60 inches in length and width.

Employee exposure means that exposure to airborne asbestos that would occur if the employee were not using respiratory protective equipment.

Equipment room (change room) means a contaminated room located within the decontamination area that is supplied with impermeable bags or containers for the disposal of contaminated protective clothing and equipment.

Fiber means a particulate form of asbestos, five micrometers or longer, with a length-to-diameter ratio of at least three to one.

Glove bag means not more than a 60 x 60 inch impervious plastic bag-like enclosure affixed around an asbestos-containing material, with glove-like appendages through which material and tools may be handled.

High-efficiency particulate air (HEPA) filter means a filter capable of trapping and retaining at least 99.97 percent of all monodispersed particles of 0.3 micrometers mean aerodynamic diameter or larger.

Homogeneous area means an area of surfacing material or thermal system insulation that is uniform in color and texture.

Industrial hygienist means a professional qualified by education, training, and experience to anticipate, recognize, evaluate and develop controls for occupational health hazards.

Intact means that the ACM has not crumbled, been pulverized, or otherwise deteriorated so that the asbestos is no longer likely to be bound with its matrix. Friable ACM that is disturbed, as defined in this part, is presumed to be no longer intact.

Modification for the purpose of WAC 296-62-07712 means a changed or altered procedure, material or component of a control system, which replaces a procedure, material or component of a required system. Omitting a procedure or component, or reducing or diminishing the stringency or strength of a material or component of the control system is not a "modification" for the purposes of WAC 296-62-07712.

Negative initial exposure assessment means a demonstration by the employer (which complies with the criteria in WAC 296-62-07709) that employee exposure during an operation is expected to be consistently below the PELs.

PACM means "presumed asbestos-containing material."

Presumed asbestos-containing material means thermal system insulation and surfacing material found in buildings, vessels, and vessel sections constructed no later than 1980. The designation of a material as "PACM" may be rebutted pursuant to WAC 296-62-07721.

Project designer means a person who has successfully completed the training requirements for an abatement project designer established by 40 U.S.C. 763.90(g).

Regulated area means an area established by the employer to demarcate areas where Class I, II, and III asbestos work is conducted, and any adjoining area where debris and waste from such asbestos work accumulate; and a work area within which airborne concentrations of asbestos, exceed or can reasonably be expected to exceed the permissible exposure limit. Requirements for regulated areas are set out in WAC 296-62-07711.

Removal means all operations where ACM and/or PACM is taken out or stripped from structures or substrates, and includes demolition operations.

Renovation means the modifying of any existing vessel, vessel section, structure, or portion thereof.

Repair means overhauling, rebuilding, reconstructing, or reconditioning of vessels, vessel sections, structures or substrates, including encapsulation or other repair of ACM or PACM attached to vessels, vessel sections, structures or substrates.

Surfacing material means material that is sprayed, troweled-on or otherwise applied to surfaces (such as acoustical plaster on ceilings and fireproofing materials on structural members, or other materials on surfaces for acoustical, fireproofing, and other purposes).

Surfacing ACM means surfacing material which contains more than 1% asbestos.

Thermal system insulation (TSI) means ACM applied to pipes, fittings, boilers, breaching, tanks, ducts, or other structural components to prevent heat loss or gain.

Thermal system insulation ACM is thermal system insulation which contains more than 1% asbestos.

[Statutory Authority: RCW 49.17.040, 49.17.050, 49.26.040 and 49.26.130. 99-17-026, § 296-62-07703, filed 8/10/99, effective 11/10/99. Statutory Authority: RCW 49.17.040, [49.17.]050 and [49.17.]060. 97-01-079, § 296-62-07703, filed 12/17/96, effective 3/1/97. Statutory Authority: Chapter 49.17 RCW. 89-21-018 (Order 89-10), § 296-62-07703, filed 10/10/89, effective 11/24/89; 89-11-035 (Order 89-03), § 296-62-07703, filed 5/15/89, effective 6/30/89; 87-24-051 (Order 87-24), § 296-62-07703, filed 11/30/87. Statutory Authority: RCW 49.17.050(2) and 49.17.040. 87-10-008 (Order 87-06), § 296-62-07703, filed 4/27/87.]

WAC 296-62-07705 Permissible exposure limits (PEL). (1) Time weighted average (TWA). The employer shall ensure that no employee is exposed to an airborne concentration of asbestos in excess of 0.1 fiber per cubic centimeter (0.1 f/cc) of air as an eight-hour time-weighted average (TWA) as determined by the method prescribed in Appendix A of this part, or by an equivalent method recognized by the department.

(2) Excursion limit. The employer shall ensure that no employee is exposed to an airborne concentration of asbestos in excess of 1.0 fiber per cubic centimeter of air (1 f/cc) as averaged over a sampling period of thirty minutes, as determined by the method prescribed in Appendix A of this part, or by an equivalent method recognized by the department.

[Statutory Authority: RCW 49.17.040, [49.17.]050 and [49.17.]060. 97-01-079, § 296-62-07705, filed 12/17/96, effective 3/1/97. Statutory Authority: Chapter 49.17 RCW. 89-11-035 (Order 89-03), § 296-62-07705, filed 5/15/89, effective 6/30/89; 87-24-051 (Order 87-24), § 296-62-07705, filed 11/30/87. Statutory Authority: RCW 49.17.050(2) and 49.17.040. 87-10-008 (Order 87-06), § 296-62-07705, filed 4/27/87.]

WAC 296-62-07706 Multiemployer worksites. (1) On multiemployer worksites, an employer performing work requiring the establishment of a regulated area shall inform other employers on the site of the nature of the employer's work with asbestos and/or PACM, of the existence of and requirements pertaining to regulated areas, and the measures taken to ensure that employees of such other employers are not exposed to asbestos.

(2) Asbestos hazards at a multiemployer worksite shall be abated by the employer who created or controls the source of asbestos contamination. For example, if there is a significant breach of an enclosure containing Class I work, the employer responsible for erecting the enclosure shall repair the breach immediately.

(3) In addition, all employers of employees exposed to asbestos hazards shall comply with applicable protective provisions to protect their employees. For example, if employees working immediately adjacent to a Class I asbestos job are exposed to asbestos due to the inadequate containment of such jobs, their employer shall either remove the employees from the area until the enclosure breach is repaired; or perform an initial exposure assessment pursuant to WAC 296-62-07709.

(4) All employers of employees working adjacent to regulated areas established by another employer on a multiemployer worksite, shall take steps on a daily basis to ascertain the integrity of the enclosure and/or the effectiveness of the control method relied on by the primary asbestos contractor to assure that asbestos fibers do not migrate to such adjacent areas.

(2007 Ed.)

(5) All general contractors on a construction project which includes work covered by this standard shall be deemed to exercise general supervisory authority over the work covered by this standard, even though the general contractor is not qualified to serve as the asbestos "competent person" as defined by WAC 296-62-07703. As supervisor of the entire project, the general contractor shall ascertain whether the asbestos contractor is in compliance with this standard, and shall require such contractor to come into compliance with this standard when necessary.

[Statutory Authority: RCW 49.17.040, [49.17.]050 and [49.17.]060. 97-01-079, § 296-62-07706, filed 12/17/96, effective 3/1/97. Statutory Authority: Chapter 49.17 RCW. 94-16-145, § 296-62-07706, filed 8/3/94, effective 9/12/94; 87-24-051 (Order 87-24), § 296-62-07706, filed 11/30/87.]

WAC 296-62-07709 Exposure assessment and monitoring. (1) General monitoring criteria.

(a) Each employer who has a workplace or work operation where exposure monitoring is required under this part must perform monitoring to determine accurately the airborne concentrations of asbestos to which employees may be exposed.

(b) Determinations of employee exposure must be made from breathing zone air samples that are representative of the eight-hour TWA and thirty minute short-term exposures of each employee.

(c) Representative eight-hour TWA employee exposures must be determined on the basis of one or more samples representing full-shift exposure for each shift for each employee in each job classification in each work area.

(d) Representative thirty minute short-term employee exposures must be determined on the basis of one or more samples representing thirty minute exposures associated with operations that are most likely to produce exposures above the excursion limit for each shift for each job classification in each work area.

(2) Exposure monitoring requirements for all occupational exposures to asbestos in all industries covered by the Washington Industrial Safety and Health Act except construction work, as defined in WAC 296-155-012, and except ship repairing, shipbuilding and shipbreaking employments and related employments as defined in WAC 296-304-01001.

(a) Initial monitoring.

(i) Each employer who has a workplace or work operation covered by this standard, except as provided for in (a)(ii) and (iii) of this subsection, must perform initial monitoring of employees who are, or may reasonably be expected to be exposed to airborne concentrations at or above the TWA permissible exposure limit and/or excursion limit. The initial monitoring must be at the initiation of each asbestos job to accurately determine the airborne concentration of asbestos to which employees may be exposed.

(ii) Where the employer or his/her representative has monitored after March 31, 1992, for the TWA permissible exposure limit and/or excursion limit, and the monitoring satisfies all other requirements of this section, and the monitoring data was obtained during work operations conducted under workplace conditions closely resembling the processes, type of material including percentage of asbestos, control methods, work practices, and environmental conditions used and prevailing in the employer's current opera-

tions, the employer may rely on such earlier monitoring results to satisfy the requirements of (a)(i) of this subsection.

(iii) Where the employer has relied upon objective data that demonstrates that asbestos is not capable of being released in airborne concentrations at or above the TWA permissible exposure limit and/or excursion limit under those work conditions of processing, use, or handling expected to have the greatest potential for releasing asbestos, then no initial monitoring is required.

(b) Monitoring frequency (periodic monitoring) and patterns. After the initial determinations required by subsection (2)(a)(i) of this section, samples must be of such frequency and pattern as to represent with reasonable accuracy the levels of exposure of the employees. Sampling must not be at intervals greater than six months for employees whose exposures may reasonably be foreseen to exceed the TWA permissible exposure limit and/or excursion limit.

(c) Daily monitoring within regulated areas: The employer must conduct daily monitoring that is representative of the exposure of each employee who is assigned to work within a regulated area. Exception: When all employees within a regulated area are equipped with full facepiece supplied-air respirators operated in the pressure-demand mode equipped with either an auxiliary positive pressure self-contained breathing apparatus or a HEPA filter, the employer may dispense with the daily monitoring required by this subsection.

(d) Changes in monitoring frequency. If either the initial or the periodic monitoring required by subsection (2)(a) and (b) of this section statistically indicates that employee exposures are below the TWA permissible exposure limit and/or excursion limit, the employer may discontinue the monitoring for those employees whose exposures are represented by such monitoring.

(e) Additional monitoring. Notwithstanding the provisions of subsection (2)(a)(ii) and (c) of this section, the employer must institute the exposure monitoring required under subsection (2)(a)(i) and (ii) of this section whenever there has been a change in the production, process, control equipment, personnel, or work practices that may result in new or additional exposures above the TWA permissible exposure limit and/or excursion limit, or when the employer has any reason to suspect that a change may result in new or additional exposures above the TWA permissible exposure limit and/or excursion limit.

(3) Exposure assessment monitoring requirements for all construction work as defined in WAC 296-155-012 and for all ship repairing, shipbuilding and shipbreaking employments and related employments as defined in WAC 296-304-01001.

(a) Initial exposure assessment.

(i) Each employer who has a workplace or work operation covered by this standard must ensure that a "competent person" conducts an exposure assessment immediately before or at the initiation of the operation to ascertain expected exposures during that operation or workplace. The assessment must be completed in time to comply with the requirements which are triggered by exposure data or lack of a "negative exposure assessment," and to provide information necessary to assure that all control systems planned are appropriate for that operation and will work properly.

(ii) Basis of initial exposure assessment: Unless a negative exposure assessment has been made according to (b) of this subsection, the initial exposure assessment must, if feasible, be based on monitoring conducted according to (b) of this subsection. The assessment must take into consideration both the monitoring results and all observations, information or calculations which indicate employee exposure to asbestos, including any previous monitoring conducted in the workplace, or of the operations of the employer which indicate the levels of airborne asbestos likely to be encountered on the job. For Class I asbestos work, until the employer conducts exposure monitoring and documents that employees on that job will not be exposed in excess of the PELs, or otherwise makes a negative exposure assessment according to (b) of this subsection, the employer must presume that employees are exposed in excess of the TWA and excursion limit.

(b) Negative exposure assessment: For any one specific asbestos job which will be performed by employees who have been trained in compliance with the standard, the employer may demonstrate that employee exposures will be below the PELs by data which conform to the following criteria:

(i) Objective data demonstrating that the products or material containing asbestos minerals or the activity involving such product or material cannot release airborne fibers in concentrations exceeding the TWA and excursion limit under those work conditions having the greatest potential for releasing asbestos; or

(ii) Where the employer has monitored prior asbestos jobs for the PEL and the excursion limit within 12 months of the current or projected job, the monitoring and analysis were performed in compliance with the asbestos standard in effect; and the data was obtained during work operations conducted under workplace conditions "closely resembling" the processes, type of material including percentage of asbestos, control methods, work practices, and environmental conditions used and prevailing in the employer's current operations, the operations were conducted by employees whose training and experience are no more extensive than that of employees performing the current job, and these data show that under the conditions prevailing and which will prevail in the current workplace there is a high degree of certainty that employee exposures will not exceed the TWA or excursion limit; or

(iii) The results of initial exposure monitoring of the current job made from breathing zone samples that are representative of the 8-hour TWA and 30-minute short-term exposures of each employee covering operations which are most likely during the performance of the entire asbestos job to result in exposures over the PELs.

(c) Periodic monitoring.

(i) Class I and Class II operations. The employer must conduct daily monitoring that is representative of the exposure of each employee who is assigned to work within a regulated area who is performing Class I or II work, unless the employer according to (b) of this subsection, has made a negative exposure assessment for the entire operation.

(ii) All operations under the standard other than Class I and II operations. The employer must conduct periodic monitoring of all work where exposures are expected to exceed a

PEL, at intervals sufficient to document the validity of the exposure prediction.

(iii) Exception. When all employees required to be monitored daily are equipped with supplied-air respirators operated in the pressure demand mode, the employer may dispense with the daily monitoring required by subsection (2)(c) of this section. However, employees performing Class I work using a control method which is not listed in WAC 296-62-07712 or using a modification of a listed control method, must continue to be monitored daily even if they are equipped with supplied-air respirators.

(d) Termination of monitoring. If the periodic monitoring required by (c) of this subsection reveals that employee exposures, as indicated by statistically reliable measurements, are below the permissible exposure limit and excursion limit the employer may discontinue monitoring for those employees whose exposures are represented by such monitoring.

(e) Monitoring outside negative-pressure enclosures: The employer must conduct representative area monitoring of the airborne fiber levels at least every other day at the HEPA machine exhaust and entrance to the decontamination area.

(f) Additional monitoring. Notwithstanding the provisions of (b), (c), and (d) of this subsection, the employer must institute the exposure monitoring required under (c) of this subsection whenever there has been a change in process, control equipment, personnel or work practices that may result in new or additional exposures above the permissible exposure limit and/or excursion limit or when the employer has any reason to suspect that a change may result in new or additional exposures above the permissible exposure limit and/or excursion limit. Such additional monitoring is required regardless of whether a "negative exposure assessment" was previously produced for a specific job.

(g) Preabatement monitoring. Prior to the start of asbestos work, representative area air monitoring must be conducted for comparison to clearance monitoring as required by subsection (3)(h) of this section. Preabatement air monitoring is not required for outdoor work.

(h) Clearance monitoring. Representative area air monitoring must be taken at the completion of the asbestos work. Air sample results must be obtained before removal or reoccupancy of the regulated area. Clearance air monitoring is not required for outdoor asbestos work. The employer must demonstrate by monitoring that the airborne concentration is below:

- The permissible exposure limit; or
- At or below the airborne fiber level existing prior to the start of the asbestos work, whichever level is lower.

(4) Method of monitoring.

(a) All samples taken to satisfy the employee exposure monitoring requirements of this section must be personal samples collected following the procedures specified in WAC 296-62-07735, Appendix A.

(b) Monitoring must be performed by persons having a thorough understanding of monitoring principles and procedures and who can demonstrate proficiency in sampling techniques.

(c) All samples taken to satisfy the monitoring requirements of this section must be evaluated using the WISHA ref-

erence method specified in WAC 296-62-07735, Appendix A, or an equivalent counting method recognized by the department.

(d) If an equivalent method to the WISHA reference method is used, the employer must ensure that the method meets the following criteria:

(i) Replicate exposure data used to establish equivalency are collected in side-by-side field and laboratory comparisons; and

(ii) The comparison indicates that ninety percent of the samples collected in the range 0.5 to 2.0 times the permissible limit have an accuracy range of plus or minus twenty-five percent of the WISHA reference method results at a ninety-five percent confidence level as demonstrated by a statistically valid protocol; and

(iii) The equivalent method is documented and the results of the comparison testing are maintained.

(e) To satisfy the monitoring requirements of this section, employers must use the results of monitoring analysis performed by laboratories which have instituted quality assurance programs that include the elements as prescribed in WAC 296-62-07735, Appendix A.

(5) Employee notification of monitoring results.

(a) The employer must, as soon as possible but no later than within five days for construction and shipyard industries and fifteen working days for other industries, after the receipt of the results of any monitoring performed under the standard, notify the affected employees of these results in writing either individually or by posting of results in an appropriate location that is accessible to affected employees.

(b) The written notification required by (a) of this subsection must contain the corrective action being taken by the employer to reduce employee exposure to or below the TWA and/or excursion exposure limits, wherever monitoring results indicated that the TWA and/or excursion exposure limits had been exceeded.

(6) Observation of monitoring.

(a) The employer must provide affected employees or their designated representatives an opportunity to observe any monitoring of employee exposure to asbestos conducted in accordance with this section.

(b) When observation of the monitoring of employee exposure to asbestos requires entry into an area where the use of protective clothing or equipment is required, the observer must be provided with and be required to use such clothing and equipment and shall comply with all other applicable safety and health procedures.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060, 06-05-027, § 296-62-07709, filed 2/7/06, effective 4/1/06. Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050, and 49.26.130. 00-06-075, § 296-62-07709, filed 3/1/00, effective 4/10/00. Statutory Authority: RCW 49.17.040, 49.17.050, 49.26.040 and 49.26.130. 99-17-026, § 296-62-07709, filed 8/10/99, effective 11/10/99. Statutory Authority: RCW 49.17.040, [49.17].050 and [49.17].060. 97-01-079, § 296-62-07709, filed 12/17/96, effective 3/1/97. Statutory Authority: Chapter 49.17 RCW. 89-11-035 (Order 89-03), § 296-62-07709, filed 5/15/89, effective 6/30/89; 87-24-051 (Order 87-24), § 296-62-07709, filed 11/30/87. Statutory Authority: RCW 49.17.050(2) and 49.17.040. 87-10-008 (Order 87-06), § 296-62-07709, filed 4/27/87.]

WAC 296-62-07711 Regulated areas. (1) General. The employer shall establish a regulated area in work areas where airborne concentrations of asbestos exceed or can reasonably

be expected to exceed the permissible exposure limits prescribed in WAC 296-62-07705. All Class I, II and III asbestos work shall be conducted within regulated areas. All other operations covered by this standard shall be conducted within the regulated area where airborne concentrations of asbestos exceed or can reasonably be expected to exceed permissible exposure limits. Regulated areas shall comply with the requirements of subsections (2), (3), (4), (5), (6), (7), and (8) of this section.

(2) Demarcation. The regulated area shall be demarcated in any manner that minimizes the number of persons within the area and protects persons outside the area from exposure to airborne asbestos. Where critical barriers or negative pressure enclosures are used, they may demarcate the regulated area. Signs shall be provided and displayed pursuant to the requirements of WAC 296-62-07721.

(3) Access. Access to regulated areas shall be limited to authorized persons or to persons authorized by the Washington Industrial Safety and Health Act or regulations issued pursuant thereto.

(4) Provision of respirators. Each person entering a regulated area where employees are required in WAC 296-62-07715(1) to wear respirators shall be supplied with and required to use a respirator, selected in accordance with WAC 296-62-07715(2).

(5) Protective clothing. All persons entering a regulated area shall be supplied with and required to wear protective clothing, selected in accordance with WAC 296-62-07717.

(6) Prohibited activities. The employer shall ensure that employees do not eat, drink, smoke, chew tobacco or gum, or apply cosmetics in the regulated areas.

(7) Permit-required confined space. The employer shall determine if a permit-required confined space hazard exists and shall take any necessary precautions in accordance with chapter 296-62 WAC Part M.

(8) Competent persons. For construction and shipyard work the employer shall ensure that all asbestos work performed within regulated areas is supervised by a competent person, as defined in WAC 296-62-07703. The duties of the competent person are set out in WAC 296-62-07728.

[Statutory Authority: RCW 49.17.040, [49.17.]050 and [49.17.]060. 97-19-014, § 296-62-07711, filed 9/5/97, effective 11/5/97. Statutory Authority: RCW 49.17.040, [49.17.]050 and [49.17.]060. 97-01-079, § 296-62-07711, filed 12/17/96, effective 3/1/97. Statutory Authority: Chapter 49.17 RCW. 95-04-007, § 296-62-07711, filed 1/18/95, effective 3/1/95; 93-19-142 (Order 93-04), § 296-62-07711, filed 9/22/93, effective 11/1/93; 89-11-035 (Order 89-03), § 296-62-07711, filed 5/15/89, effective 6/30/89; 87-24-051 (Order 87-24), § 296-62-07711, filed 11/30/87. Statutory Authority: RCW 49.17.050(2) and 49.17.040. 87-10-008 (Order 87-06), § 296-62-07711, filed 4/27/87.]

WAC 296-62-07712 Requirements for asbestos activities in construction and shipyard work. (1) Methods of compliance, the following engineering controls and work practices of this section must be used for construction work defined in WAC 296-155-012 and for all ship repair defined in WAC 296-304-010.

(2) Engineering controls and work practices for all operations covered by this section. The employer must use the following engineering controls and work practices in all operations covered by this section, regardless of the levels of exposure:

(a) Vacuum cleaners equipped with HEPA filters to collect all debris and dust containing ACM and PACM, except as provided in subsection (10)(b) of this section in the case of roofing material.

(b) Wet methods, or wetting agents, to control employee exposures during asbestos handling, mixing, removal, cutting, application, and cleanup, except where employers demonstrate that the use of wet methods is infeasible due to, for example, the creation of electrical hazards, equipment malfunction, and, in roofing, except as provided in subsection (10)(b) of this section.

(c) Asbestos must be handled, mixed, applied, removed, cut, scored, or otherwise worked in a wet saturated state to prevent the emission of airborne fibers unless the usefulness of the product would be diminished thereby.

(d) Prompt cleanup and disposal of wastes and debris contaminated with asbestos in leak-tight containers except in roofing operations, where the procedures specified in this section apply.

(3) In addition to the requirements of subsection (2) of this section, the employer must use the following control methods to achieve compliance with the TWA permissible exposure limit and excursion limit prescribed by WAC 296-62-07705:

(a) Local exhaust ventilation equipped with HEPA filter dust collection systems;

(b) Enclosure or isolation of processes producing asbestos dust;

(c) Ventilation of the regulated area to move contaminated air away from the breathing zone of employees and toward a filtration or collection device equipped with a HEPA filter;

(d) Use of other work practices and engineering controls that the department can show to be feasible;

(e) Wherever the feasible engineering and work practice controls described above are not sufficient to reduce employee exposure to or below the permissible exposure limit and/or excursion limit prescribed in WAC 296-62-07705, the employer must use them to reduce employee exposure to the lowest levels attainable by these controls and must supplement them by the use of respiratory protection that complies with the requirements of WAC 296-62-07715.

(4) Prohibitions. The following work practices and engineering controls must not be used for work related to asbestos or for work which disturbs ACM or PACM, regardless of measured levels of asbestos exposure or the results of initial exposure assessments:

(a) High-speed abrasive disc saws that are not equipped with point or cut ventilator or enclosures with HEPA filtered exhaust air;

(b) Compressed air used to remove asbestos, or materials containing asbestos, unless the compressed air is used in conjunction with an enclosed ventilation system designed to capture the dust cloud created by the compressed air;

(c) Dry sweeping, shoveling or other dry cleanup of dust and debris containing ACM and PACM;

(d) Employee rotation as a means of reducing employee exposure to asbestos.

(5) Cleanup.

(a) After completion of asbestos work (removal, demolition, and renovation operations), all surfaces in and around the work area must be cleared of any asbestos debris.

(b) Encapsulant must be applied to all areas where asbestos has been removed to ensure binding of any remaining fibers.

(6) Class I requirements. The following engineering controls and work practices and procedures must be used:

(a) All Class I work, including the installation and operation of the control system must be supervised by a competent person as defined in WAC 296-62-07703;

(b) For all Class I jobs involving the removal of more than 25 linear or 10 square feet of thermal system insulation or surfacing material; for all other Class I jobs, where the employer cannot produce a negative exposure assessment according to WAC 296-62-07709(3), or where employees are working in areas adjacent to the regulated area, while the Class I work is being performed, the employer must use one of the following methods to ensure that airborne asbestos does not migrate from the regulated area:

(i) Critical barriers must be placed over all the openings to the regulated area, except where activities are performed outdoors; or

(ii) The employer must use another barrier or isolation method which prevents the migration of airborne asbestos from the regulated area, as verified by perimeter area surveillance during each work shift at each boundary of the regulated area, showing no visible asbestos dust; and perimeter area monitoring showing that clearance levels contained in 40 CFR Part 763, Subpart E, of the EPA Asbestos in Schools Rule are met, or that perimeter area levels, measured by Phase Contrast Microscopy (PCM) are no more than background levels representing the same area before the asbestos work began. The results of such monitoring must be made known to the employer no later than 24 hours from the end of the work shift represented by such monitoring. Exception: For work completed outdoors where employees are not working in areas adjacent to the regulated areas, (a) of this subsection is satisfied when the specific control methods in subsection (7) of this section are used;

(c) For all Class I jobs, HVAC systems must be isolated in the regulated area by sealing with a double layer of 6 mil plastic or the equivalent;

(d) For all Class I jobs, impermeable dropcloths shall be placed on surfaces beneath all removal activity;

(e) For all Class I jobs, all objects within the regulated area must be covered with impermeable dropcloths or plastic sheeting which is secured by duct tape or an equivalent;

(f) For all Class I jobs where the employer cannot produce a negative exposure assessment, or where exposure monitoring shows that a PEL is exceeded, the employer must ventilate the regulated area to move contaminated air away from the breathing zone of employees toward a HEPA filtration or collection device.

(7) Specific control methods for Class I work. In addition, Class I asbestos work must be performed using one or more of the following control methods according to the limitations stated below:

(a) Negative pressure enclosure (NPE) systems: NPE systems may be used where the configuration of the work

area does not make the erection of the enclosure infeasible, with the following specifications and work practices:

(i) Specifications:

(A) The negative pressure enclosure (NPE) may be of any configuration;

(B) At least 4 air changes per hour must be maintained in the NPE;

(C) A minimum of -0.02 column inches of water pressure differential, relative to outside pressure, must be maintained within the NPE as evidenced by manometric measurements;

(D) The NPE must be kept under negative pressure throughout the period of its use; and

(E) Air movement must be directed away from employees performing asbestos work within the enclosure, and toward a HEPA filtration or collection device.

(ii) Work practices:

(A) Before beginning work within the enclosure and at the beginning of each shift, the NPE must be inspected for breaches and smoke-tested for leaks, and any leaks sealed.

(B) Electrical circuits in the enclosure must be deactivated, unless equipped with ground-fault circuit interrupters.

(b) Glove bag systems may be used to remove PACM and/or ACM from straight runs of piping and elbows and other connections with the following specifications and work practices:

(i) Specifications:

(A) Glove bags must be made of 6 mil thick plastic and must be seamless at the bottom.

(B) Glove bags used on elbows and other connections must be designed for that purpose and used without modifications.

(ii) Work practices:

(A) Each glove bag must be installed so that it completely covers the circumference of pipe or other structure where the work is to be done.

(B) Glove bags must be smoke-tested for leaks and any leaks sealed prior to use.

(C) Glove bags may be used only once and may not be moved.

(D) Glove bags must not be used on surfaces whose temperature exceeds 150°F.

(E) Prior to disposal, glove bags must be collapsed by removing air within them using a HEPA vacuum.

(F) Before beginning the operation, loose and friable material adjacent to the glove bag/box operation must be wrapped and sealed in two layers of six mil plastic or otherwise rendered intact.

(G) Where system uses attached waste bag, such bag must be connected to collection bag using hose or other material which must withstand pressure of ACM waste and water without losing its integrity.

(H) Sliding valve or other device must separate waste bag from hose to ensure no exposure when waste bag is disconnected.

(I) At least two persons must perform Class I glove bag removal operations.

(c) Negative pressure glove bag systems. Negative pressure glove bag systems may be used to remove ACM or PACM from piping.

(i) Specifications: In addition to specifications for glove bag systems above, negative pressure glove bag systems must attach HEPA vacuum systems or other devices to bag during removal.

(ii) Work practices:

(A) The employer must comply with the work practices for glove bag systems in this section.

(B) The HEPA vacuum cleaner or other device used during removal must run continually during the operation until it is completed at which time the bag must be collapsed prior to removal of the bag from the pipe.

(C) Where a separate waste bag is used along with a collection bag and discarded after one use, the collection bag may be reused if rinsed clean with amended water before reuse.

(d) Negative pressure glove box systems: Negative pressure glove boxes may be used to remove ACM or PACM from pipe runs with the following specifications and work practices:

(i) Specifications:

(A) Glove boxes must be constructed with rigid sides and made from metal or other material which can withstand the weight of the ACM and PACM and water used during removal.

(B) A negative pressure generator must be used to create negative pressure in the system.

(C) An air filtration unit must be attached to the box.

(D) The box must be fitted with gloved apertures.

(E) An aperture at the base of the box must serve as a bagging outlet for waste ACM and water.

(F) A back-up generator must be present on site.

(G) Waste bags must consist of 6 mil thick plastic double-bagged before they are filled or plastic thicker than 6 mil.

(ii) Work practices:

(A) At least two persons must perform the removal.

(B) The box must be smoke-tested for leaks and any leaks sealed prior to each use.

(C) Loose or damaged ACM adjacent to the box must be wrapped and sealed in two layers of 6 mil plastic prior to the job, or otherwise made intact prior to the job.

(D) A HEPA filtration system must be used to maintain pressure barrier in box.

(e) Water spray process system. A water spray process system may be used for removal of ACM and PACM from cold line piping if, employees carrying out such process have completed a 40-hour separate training course in its use, in addition to training required for employees performing Class I work. The system must meet the following specifications and shall be performed by employees using the following work practices:

(i) Specifications:

(A) Piping must be surrounded on 3 sides by rigid framing.

(B) A 360 degree water spray, delivered through nozzles supplied by a high pressure separate water line, must be formed around the piping.

(C) The spray must collide to form a fine aerosol which provides a liquid barrier between workers and the ACM and PACM.

(ii) Work practices:

(A) The system must be run for at least 10 minutes before removal begins.

(B) All removal must take place within the water barrier.

(C) The system must be operated by at least three persons, one of whom must not perform removal, but must check equipment, and ensure proper operation of the system.

(D) After removal, the ACM and PACM must be bagged while still inside the water barrier.

(f) A small walk-in enclosure which accommodates no more than two persons (mini-enclosure) may be used if the disturbance or removal can be completely contained by the enclosure with the following specifications and work practices:

(i) Specifications:

(A) The fabricated or job-made enclosure must be constructed of 6 mil plastic or equivalent.

(B) The enclosure must be placed under negative pressure by means of a HEPA filtered vacuum or similar ventilation unit.

(C) Change room. A small change room made of 6-mil-thick polyethylene plastic should be contiguous to the mini-enclosure, and is necessary to allow the worker to vacuum off his/her protective coveralls and remove them before leaving the work area. While inside the enclosure, the worker should wear Tyvek disposable coveralls or equivalent and must use the appropriate HEPA-filtered dual cartridge respiratory protection. The advantages of mini-enclosures are that they limit the spread of asbestos contamination, reduce the potential exposure of bystanders and other workers who may be working in adjacent areas, and are quick and easy to install. The disadvantage of mini-enclosures is that they may be too small to contain the equipment necessary to create a negative-pressure within the enclosure; however, the double layer of plastic sheeting will serve to restrict the release of asbestos fibers to the area outside the enclosure.

(ii) Work practices:

(A) Before use, the mini-enclosure must be inspected for leaks and smoke-tested to detect breaches, and any breaches sealed.

(B) Before reuse, the interior must be completely washed with amended water and HEPA-vacuumed.

(C) During use, air movement must be directed away from the employee's breathing zone within the mini-enclosure.

(8) Alternative control methods for Class I work. Class I work may be performed using a control method which is not referenced in subsection (2)(a) through (3)(e) of this section, or which modifies a control method referenced in subsection (2)(a) through (3)(e) of this section, if the following provisions are complied with:

(a) The control method shall enclose, contain or isolate the processes or source of airborne asbestos dust, before it enters the breathing zone of employees.

(b) A certified industrial hygienist or licensed professional engineer who is also qualified as a project designer as defined in WAC 296-62-07703, shall evaluate the work area, the projected work practices and the engineering controls and shall certify in writing that the planned control method is adequate to reduce direct and indirect employee exposure to below the PELs under worst-case conditions of use, and that the planned control method will prevent asbestos contamination.

tion outside the regulated area, as measured by clearance sampling which meets the requirements of EPA's Asbestos in Schools rule issued under AHERA, or perimeter monitoring which meets the criteria in subsection (6)(b)(ii) of this section. Where the TSI or surfacing material to be removed is 25 linear or 10 square feet or less, the evaluation required in subsection (8)(b) of this section may be performed by a competent person.

(c) Before work which involves the removal of more than 25 linear or 10 square feet of thermal system insulation or surfacing material is begun using an alternative method which has been the subject of subsection (2)(a) through (3)(e) of this section required evaluation and certification, the employer shall include a copy of such evaluation and certification with notifications required by WAC 296-65-020, Notification requirements. The submission shall not constitute approval by WISHA.

(d) The evaluation of employee exposure required in WAC 296-62-07712(8) must include and be based on sampling and analytical data representing employee exposure during the use of such method under the worst-case conditions and by employees whose training and experiences are equivalent to employees who are to perform the current job.

(9) Work practices and engineering controls for Class II work.

(a) All Class II work must be supervised by a competent person as defined in WAC 296-62-07703.

(b) For all indoor Class II jobs, where the employer has not produced a negative exposure assessment according to WAC 296-62-07709(3), or where during the job, changed conditions indicate there may be exposure above the PEL or where the employer does not remove the ACM in a substantially intact state, the employer must use one of the following methods to ensure that airborne asbestos does not migrate from the regulated area:

(i) Critical barriers must be placed over all openings to the regulated area; or

(ii) The employer must use another barrier or isolation method which prevents the migration of airborne asbestos from the regulated area, as verified by perimeter area monitoring or clearance monitoring which meets the criteria set out in subsection (6)(b)(ii) of this section.

(c) Impermeable dropcloths must be placed on surfaces beneath all removal activity.

(d) All Class II asbestos work must be performed using the work practices and requirements set out above in subsection (2) of this section.

(10) Additional controls for Class II work. Class II asbestos work must also be performed by complying with the work practices and controls designated for each type of asbestos work to be performed, set out in this paragraph. Where more than one control method may be used for a type of asbestos work, the employer may choose one or a combination of designated control methods. Class II work also may be performed using a method allowed for Class I work, except that glove bags and glove boxes are allowed if they fully enclose the Class II material to be removed.

(a) For removing vinyl and asphalt flooring materials which contain ACM or for which in buildings constructed no later than 1980, the employer has not verified the absence of ACM according to WAC 296-62-07712 (10)(a)(ix). The

employer must ensure that employees comply with the following work practices and that employees are trained in these practices according to WAC 296-62-07722.

(i) Flooring or its backing must not be sanded.

(ii) Vacuums equipped with HEPA filter, disposable dust bag, and metal floor tool (no brush) must be used to clean floors.

(iii) Resilient sheeting must be removed by cutting with wetting of the snip point and wetting during delamination. Rip-up of resilient sheet floor material is prohibited.

(iv) All scraping of residual adhesive and/or backing must be performed using wet methods.

(v) Dry sweeping is prohibited.

(vi) Mechanical chipping is prohibited unless performed in a negative pressure enclosure which meets the requirements of subsection (7)(a) of this section.

(vii) Tiles must be removed intact, unless the employer demonstrates that intact removal is not possible.

(viii) When tiles are heated and can be removed intact, wetting may be omitted.

(ix) Resilient flooring material including associated mastic and backing must be assumed to be asbestos-containing unless an industrial hygienist determines that it is asbestos-free using recognized analytical techniques.

(b) For removing roofing material which contains ACM the employer must ensure that the following work practices are followed:

(i) Roofing material must be removed in an intact state to the extent feasible.

(ii) Wet methods must be used to remove roofing materials that are not intact, or that will be rendered not intact during removal, unless such wet methods are not feasible or will create safety hazards.

(iii) Cutting machines must be continuously misted during use, unless a competent person determines that misting substantially decreases worker safety.

(iv) When removing built-up roofs with asbestos-containing roofing felts and an aggregate surface using a power roof cutter, all dust resulting from the cutting operation must be collected by a HEPA dust collector, or must be HEPA vacuumed by vacuuming along the cut line. When removing built-up roofs with asbestos-containing roofing felts and a smooth surface using a power roof cutter, the dust resulting from the cutting operation must be collected either by a HEPA dust collector or HEPA vacuuming along the cut line, or by gently sweeping and then carefully and completely wiping up the still wet dust and debris left along the cut line. The dust and debris must be immediately bagged or placed in covered containers.

(v) Asbestos-containing material that has been removed from a roof must not be dropped or thrown to the ground. Unless the material is carried or passed to the ground by hand, it must be lowered to the ground via covered, dust-tight chute, crane or hoist:

(A) Any ACM that is not intact must be lowered to the ground as soon as is practicable, but in any event no later than the end of the work shift. While the material remains on the roof it must either be kept wet, placed in an impermeable waste bag, or wrapped in plastic sheeting.

(B) Intact ACM must be lowered to the ground as soon as is practicable, but in any event no later than the end of the work shift.

(vi) Upon being lowered, unwrapped material must be transferred to a closed receptacle in such manner so as to preclude the dispersion of dust.

(vii) Roof level heating and ventilation air intake sources must be isolated or the ventilation system must be shut down.

(viii) Notwithstanding any other provision of this section, removal or repair of sections of intact roofing less than 25 square feet in area does not require use of wet methods or HEPA vacuuming as long as manual methods which do not render the material nonintact are used to remove the material and no visible dust is created by the removal method used. In determining whether a job involves less than 25 square feet, the employer must include all removal and repair work performed on the same roof on the same day.

(c) When removing cementitious asbestos-containing siding and shingles or transite panels containing ACM on building exteriors (other than roofs, where subsection (10)(b) of this section applies) the employer must ensure that the following work practices are followed:

(i) Cutting, abrading or breaking siding, shingles, or transite panels, must be prohibited unless the employer can demonstrate that methods less likely to result in asbestos fiber release cannot be used.

(ii) Each panel or shingle must be sprayed with amended water prior to removal.

(iii) Unwrapped or unbagged panels or shingles must be immediately lowered to the ground via covered dust-tight chute, crane or hoist, or placed in an impervious waste bag or wrapped in plastic sheeting and lowered to the ground no later than the end of the work shift.

(iv) Nails must be cut with flat, sharp instruments.

(d) When removing gaskets containing ACM, the employer must ensure that the following work practices are followed:

(i) If a gasket is visibly deteriorated and unlikely to be removed intact, removal must be undertaken within a glove bag as described in subsection (7)(b) of this section.

(ii) (Reserved.)

(iii) The gasket must be immediately placed in a disposal container.

(iv) Any scraping to remove residue must be performed wet.

(e) When performing any other Class II removal of asbestos-containing material for which specific controls have not been listed in subsection (10) of this section, the employer must ensure that the following work practices are complied with.

(i) The material must be thoroughly wetted with amended water prior to and during its removal.

(ii) The material must be removed in an intact state unless the employer demonstrates that intact removal is not possible.

(iii) Cutting, abrading or breaking the material must be prohibited unless the employer can demonstrate that methods less likely to result in asbestos fiber release are not feasible.

(iv) Asbestos-containing material removed, must be immediately bagged or wrapped, or kept wet until transferred to a closed receptacle, no later than the end of the work shift.

(f) Alternative work practices and controls. Instead of the work practices and controls listed in subsection (10) of this section, the employer may use different or modified engineering and work practice controls if the following provisions are complied with.

(i) The employer must demonstrate by data representing employee exposure during the use of such method under conditions which closely resemble the conditions under which the method is to be used, that employee exposure will not exceed the PELs under any anticipated circumstances.

(ii) A competent person must evaluate the work area, the projected work practices and the engineering controls, and must certify in writing, that the different or modified controls are adequate to reduce direct and indirect employee exposure to below the PELs under all expected conditions of use and that the method meets the requirements of this standard. The evaluation must include and be based on data representing employee exposure during the use of such method under conditions which closely resemble the conditions under which the method is to be used for the current job, and by employees whose training and experience are equivalent to employees who are to perform the current job.

(11) Work practices and engineering controls for Class III asbestos work. Class III asbestos work must be conducted using engineering and work practice controls which minimize the exposure to employees performing the asbestos work and to bystander employees.

(a) The work must be performed using wet methods.

(b) To the extent feasible, the work must be performed using local exhaust ventilation.

(c) Where the disturbance involves drilling, cutting, abrading, sanding, chipping, braking, or sawing of thermal system insulation or surfacing material, the employer must use impermeable dropcloths, and must isolate the operation using mini-enclosures or glove bag systems according to subsection (7) of this section or another isolation method.

(d) Where the employer does not produce a "negative exposure assessment" for a job, or where monitoring results show the PEL has been exceeded, the employer must contain the area using impermeable dropcloths and plastic barriers or their equivalent, or must isolate the operation using a control system listed in and in compliance with subsection (7) of this section.

(e) Employees performing Class III jobs, which involve the disturbance of thermal system insulation or surfacing material, or where the employer does not produce a "negative exposure assessment" or where monitoring results show a PEL has been exceeded, must wear respirators which are selected, used and fitted according to provisions of WAC 296-62-07715.

(12) Class IV asbestos work. Class IV asbestos jobs must be conducted by employees trained according to the asbestos awareness training program set out in WAC 296-62-07722. In addition, all Class IV jobs must be conducted in conformity with the requirements set out in this section, mandating wet methods, HEPA vacuums, and prompt clean up of debris containing ACM and PACM.

(a) Employees cleaning up debris and waste in a regulated area where respirators are required must wear respirators which are selected, used and fitted according to provisions of WAC 296-62-07715.

(b) Employers of employees who clean up waste and debris in, and employers in control of, areas where friable thermal system insulation or surfacing material is accessible, must assume that such waste and debris contain asbestos.

(13) Alternative methods of compliance for installation, removal, repair, and maintenance of certain roofing and pipeline coating materials. Notwithstanding any other provision of this section, an employer who complies with all provisions of subsection (10)(a) and (b) of this section when installing, removing, repairing, or maintaining intact pipeline asphaltic wrap, or roof flashings which contain asbestos fibers encapsulated or coated by bituminous or resinous compounds will be deemed to be in compliance with this section. If an employer does not comply with all provisions of this subsection (13), or if during the course of the job the material does not remain intact, the provisions of subsection (10) of this section apply instead of this subsection (13).

(a) Before work begins and as needed during the job, a competent person who is capable of identifying asbestos hazards in the workplace and selecting the appropriate control strategy for asbestos exposure, and who has the authority to take prompt corrective measures to eliminate such hazards, must conduct an inspection of the worksite and determine that the roofing material is intact and will likely remain intact.

(b) All employees performing work covered by this subsection (13) must be trained in a training program that meets the requirements of WAC 296-62-07722.

(c) The material must not be sanded, abraded, or ground. When manual methods are used, materials must stay intact.

(d) Material that has been removed from a roof must not be dropped or thrown to the ground. Unless the material is carried or passed to the ground by hand, it must be lowered to the ground via covered, dust-tight chute, crane or hoist. All such material must be removed from the roof as soon as is practicable, but in any event no later than the end of the work shift.

(e) Where roofing products which have been labeled as containing asbestos pursuant to WAC 296-62-07721, installed on nonresidential roofs during operations covered by this subsection (13), the employer must notify the building owner of the presence and location of such materials no later than the end of the job.

(f) All removal or disturbance of pipeline asphaltic wrap must be performed using wet methods.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. 06-05-027, § 296-62-07712, filed 2/7/06, effective 4/1/06. Statutory Authority: RCW 49.17.040, 49.17.050, 49.26.040 and 49.26.130. 99-17-026, § 296-62-07712, filed 8/10/99, effective 11/10/99. Statutory Authority: RCW 49.17.040, [49.17.050 and [49.17.060. 97-19-014, § 296-62-07712, filed 9/5/97, effective 11/5/97; 97-01-079, § 296-62-07712, filed 12/17/96, effective 3/1/97. Statutory Authority: Chapter 49.17 RCW. 89-21-018 (Order 89-10), § 296-62-07712, filed 10/10/89, effective 11/24/89; 89-11-035 (Order 89-03), § 296-62-07712, filed 5/15/89, effective 6/30/89; 87-24-051 (Order 87-24), § 296-62-07712, filed 11/30/87.]

WAC 296-62-07713 Methods of compliance for asbestos activities in general industry. (1) Engineering controls and work practices.

(a) The employer must institute engineering controls and work practices to reduce and maintain employee exposure to or below the permissible exposure limits prescribed in WAC

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296-62-07705, except to the extent that such controls are not feasible. Engineering controls and work practices include but are not limited to the following:

(i) Local exhaust ventilation equipped with HEPA filter dust collection systems;

(ii) Vacuum cleaners equipped with HEPA filters;

(iii) Enclosure or isolation of processes producing asbestos dust;

(iv) Use of wet methods, wetting agents, or removal encapsulants to control employee exposures during asbestos handling, mixing, removal, cutting, application, and cleanup;

(v) Prompt disposal of wastes contaminated with asbestos in leak-tight containers; or

(vi) Use of work practices or other engineering controls that the director can show to be feasible.

(b) Wherever the feasible engineering controls and work practices that can be instituted are not sufficient to reduce employee exposure to or below the permissible exposure limits prescribed in WAC 296-62-07705, the employer must use them to reduce employee exposure to the lowest levels achievable by these controls and must supplement them by the use of respiratory protection that complies with the requirements of WAC 296-62-07715.

(c) For the following operations, wherever feasible engineering controls and work practices that can be instituted are not sufficient to reduce the employee exposure to or below the permissible exposure limits prescribed in WAC 296-62-07705, the employer must use them to reduce employee exposure to or below 0.5 fiber per cubic centimeter of air (as an eight-hour time-weighted average) or 2.5 fibers per cubic centimeter of air for 30 minutes (short-term exposure), and must supplement them by the use of any combination of respiratory protection that complies with the requirements of WAC 296-62-07715, work practices and feasible engineering controls that will reduce employee exposure to or below the permissible exposure limits prescribed in WAC 296-62-07705: Coupling cutoff in primary asbestos cement pipe manufacturing; sanding in primary and secondary asbestos cement sheet manufacturing; grinding in primary and secondary friction product manufacturing; carding and spinning in dry textile processes; and grinding and sanding in primary plastics manufacturing.

(d) Local exhaust ventilation. Local exhaust HEPA ventilation and dust collection systems must be designed, constructed, installed, and maintained in accordance with good practices such as those found in the American National Standard Fundamentals Governing the Design and Operation of Local Exhaust Systems, ANSI Z9.2-1979.

(e) Particular tools. All hand-operated and power-operated tools which would produce or release fibers of asbestos so as to expose employees to levels in excess of the exposure limits prescribed in WAC 296-62-07705, such as, but not limited to, saws, scorers, abrasive wheels, and drills, must be provided with local exhaust ventilation systems which comply with (d) of this subsection. High-speed abrasive disc saws that are not equipped with appropriate engineering controls must not be used for work related to asbestos.

(f) Wet methods. Asbestos must be handled, mixed, applied, removed, cut, scored, or otherwise worked in a wet saturated state to prevent the emission of airborne fibers

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unless the usefulness of the product would be diminished thereby.

(g) Particular products and operations. When asbestos cement, mortar, coating, grout, plaster, or similar material containing asbestos is removed from bags, cartons, or other containers in which they are shipped, it must be either wetted, enclosed, or ventilated so as to prevent effectively the release of airborne fibers of asbestos.

(h) Compressed air. Compressed air must not be used to remove asbestos or materials containing asbestos unless the compressed air is used in conjunction with an enclosed ventilation system designed to effectively capture the dust cloud created by the compressed air.

(2) Compliance program.

(a) Where either the time weighted average and/or excursion limit is exceeded, the employer must establish and implement a written program to reduce employee exposure to or below the permissible exposure limits by means of engineering and work practice controls as required by subsection (1) of this section, and by the use of respiratory protection where required or permitted under this section.

(b) Such programs must be reviewed and updated as necessary to reflect significant changes in the status of the employer's compliance program.

(c) Written programs must be submitted upon request for examination and copying to the director, affected employees and designated employee representatives.

(d) The employer must not use employee rotation as a means of compliance with the permissible exposure limits specified in WAC 296-62-07705.

(3) Specific compliance methods for brake and clutch repair:

(a) Engineering controls and work practices for brake and clutch repair and service. During automotive brake and clutch inspection, disassembly, repair and assembly operations, the employer must institute engineering controls and work practices to reduce employee exposure to materials containing asbestos using a negative pressure enclosure/HEPA vacuum system method or low pressure/wet cleaning method which meets the detailed requirements in WAC 296-62-07745, Appendix F. The employer may also comply using an equivalent method which follows written procedures which the employer demonstrates can achieve results equivalent to Method (1) Negative pressure enclosure/HEPA vacuum system method in WAC 296-62-07745, Appendix F. For facilities in which no more than 5 pair of brakes or 5 clutches are inspected, disassembled, repaired, or assembled per week, (4) Wet method in WAC 296-62-07745, Appendix F may be used instead of Method (1).

(b) The employer may also comply by using an equivalent method which follows written procedures, which the employer demonstrates can achieve equivalent exposure reductions as do the two "preferred methods." Such demonstration must include monitoring data conducted under workplace conditions closely resembling the process, type of asbestos containing materials, control method, work practices and environmental conditions which the equivalent method will be used, or objective data, which document that under all reasonably foreseeable conditions of brake and clutch repair applications, the method results in exposure

which are equivalent to the methods in WAC 296-62-07745, Appendix F.

[Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050, and 49.26.130. 00-06-075, § 296-62-07713, filed 3/1/00, effective 4/10/00. Statutory Authority: RCW 49.17.040, 49.17.050, 49.26.040, and 49.26.130. 99-17-026, § 296-62-07713, filed 8/10/99, effective 11/10/99. Statutory Authority: RCW 49.17.040, [49.17.]050 and [49.17.]060. 97-01-079, § 296-62-07713, filed 12/17/96, effective 3/1/97. Statutory Authority: Chapter 49.17 RCW. 90-17-051 (Order 90-10), § 296-62-07713, filed 8/13/90, effective 9/24/90; 89-11-035 (Order 89-03), § 296-62-07713, filed 5/15/89, effective 6/30/89; 87-24-051 (Order 87-24), § 296-62-07713, filed 11/30/87. Statutory Authority: RCW 49.17.050(2) and 49.17.040. 87-10-008 (Order 87-06), § 296-62-07713, filed 4/27/87.]

WAC 296-62-07715 Respiratory protection. (1) General. For employees who use respirators required by WAC 296-62-077 through 296-62-07747, the employer must provide respirators that comply with the requirements of this section. Respirators must be used during:

(a) Periods necessary to install or implement feasible engineering and work-practice controls;

(b) Work operations, such as maintenance and repair activities, for which engineering and work-practice controls are not feasible;

(c) Work operations for which feasible engineering and work-practice controls are not yet sufficient to reduce employee exposure to or below the permissible exposure limits;

(d) Emergencies;

(e) Work operations in all regulated areas, except for construction activities which follow requirements set forth in WAC 296-62-07715 (1)(g);

(f) Work operations whenever employee exposure exceeds the permissible exposure limits;

(g) The following construction activities:

(i) Class I asbestos work;

(ii) Class II work where the ACM is not removed in a substantially intact state;

(iii) Class II and Class III work which is not performed using wet methods, except for removal of ACM from sloped roofs when a negative-exposure assessment has been made and the ACM is removed in an intact state;

(iv) Class II and Class III asbestos work for which a negative-exposure assessment has not been conducted;

(v) Class III work when TSI or surfacing ACM or PACM is being disturbed;

(vi) Class IV work performed within regulated areas where employees who are performing other work are required to wear respirators.

(2) Respirator program.

(a) The employer must implement a respiratory protection program as required by chapter 296-62 WAC, Part E (except WAC 296-62-07130(1) and 296-62-07150 through 296-62-07156).

(b) The employer must provide a tight-fitting, powered, air-purifying respirator instead of any negative-pressure respirators specified in Table 1 of this section when an employee chooses to use this type of respirator and the respirator provides adequate protection to the employee.

(c) The employer must inform any employee required to wear a respirator under this section that the employee may require the employer to provide a tight-fitting, powered, air-

purifying respirator instead of any negative-pressure respirator specified in Table 1 of this section.

(d) No employee must be assigned to tasks requiring the use of respirators if, based on their most recent medical examination, the examining physician determines that the employee will be unable to function normally using a respirator, or that the safety or health of the employee or other employees will be impaired by the use of a respirator. Such employees must be assigned to another job or given the opportunity to transfer to a different position, the duties of which they can perform. If such a transfer position is available, the position must be with the same employer, in the same geographical area, and with the same seniority, status, and rate of pay the employee had just prior to such transfer.

(3) Respirator selection.

(a) The employer must select and provide the appropriate respirator from Table 1 of this section, and ensure that the employee uses the respirator provided.

(b) The employer must provide a half-mask, air-purifying respirator, other than a disposable respirator, that is equipped with a high-efficiency filter when the employee performs:

(i) Class II and III asbestos work and the employer has not conducted a negative-exposure assessment;

(ii) Class III asbestos work when TSI or surfacing ACM or PACM is being disturbed.

TABLE 1—RESPIRATORY PROTECTION FOR ASBESTOS FIBERS

Airborne concentration of asbestos or conditions of use	Required respirator. (See Note a.)
Not in excess of 1 f/cc (10 X PEL), or otherwise as required independent of exposure	Half-mask air-purifying respirator other than a disposable respirator, equipped with high efficiency filters. (See Note b.)
Not in excess of 5 f/cc (50 X PEL)	Full facepiece air-purifying respirator equipped with high efficiency filters.
Not in excess of 10 f/cc (100 X PEL)	Any powered air-purifying respirator equipped with high efficiency filters or any supplied-air respirator operated in continuous flow mode.
Not in excess of 100 f/cc (1,000 X PEL)	Full facepiece supplied-air respirator operated in pressure demand mode.
Greater than 100 f/cc (1,000 X PEL) or unknown concentration	Full facepiece supplied-air respirator operated in pressure demand mode, equipped with an auxiliary positive pressure self-contained breathing apparatus or HEPA filter egress cartridges.

Note: a. Respirators assigned for higher environmental concentrations may be used at lower concentrations.

b. A high-efficiency filter means a filter that is capable of trapping and retaining at least 99.97 percent of all monodispersed particles of 0.3 micrometers mean aerodynamic diameter or larger.

(4) Special respiratory protection requirements.

(a) Unless specifically identified in this subsection, respirator selection for asbestos removal, demolition, and renovation operations shall be in accordance with Table 1 of subsection (3) of this section. The employer shall provide and require to be worn, at no cost to the employee, a full facepiece supplied-air respirator operated in the pressure demand mode equipped with either an auxiliary positive pressure self-contained breathing apparatus or a HEPA filter egress cartridge, to employees engaged in the following asbestos operations:

(i) Inside negative pressure enclosures used for removal, demolition, and renovation of friable asbestos from walls, ceilings, vessels, ventilation ducts, elevator shafts, and other structural members, but does not include pipes or piping systems; or

(ii) Any dry removal of asbestos.

(b) For all Class I work excluded or not specified in (a)(i) and (ii) of this subsection, when a negative-exposure assessment of the area has not been produced, and the exposure assessment of the area indicates the exposure level will not exceed 1 f/cc as an 8-hour time weighted average, employers must provide the employees with one of the following respirators:

(i) A tight-fitting, powered, air-purifying respirator equipped with high-efficiency filters;

(ii) A full facepiece supplied-air respirator operated in the pressure-demand mode equipped with HEPA egress cartridges; or

(iii) A full facepiece supplied-air respirator operated in the pressure-demand mode equipped with an auxiliary positive-pressure self-contained breathing apparatus. A full facepiece supplied-air respirator operated in the pressure-demand mode equipped with an auxiliary positive-pressure self-contained breathing apparatus must be provided under such conditions when the exposure assessment indicates exposure levels above 1 f/cc as an 8-hour time weighted average.

EXCEPTION: In lieu of the supplied-air respirator required by subsection (4) of this section, an employer may provide and require to be worn, at no cost to the employee, a full facepiece supplied-air respirator operated in the continuous flow mode equipped with either an auxiliary positive pressure self-contained breathing apparatus or a back-up HEPA filter egress cartridge where daily and historical personal monitoring data indicates the concentration of asbestos fibers is not reasonably expected to exceed 10 f/cc. The continuous flow respirator shall be operated at a minimum air flow rate of six cubic feet per minute at the facepiece using respirable air supplied as required by chapter 296-62 WAC, Part E.

(5) Respirator fit testing.

(a) For each employee wearing negative pressure respirators, employers shall perform either quantitative or qualitative face fit tests at the time of initial fitting and at least annually thereafter. The qualitative fit tests may be used only for testing the fit of half-mask respirators where they are permitted to be worn.

(b) Any supplied-air respirator facepiece equipped with a back-up HEPA filter egress cartridge shall be quantitatively

fit tested (see WAC 296-62-07160 through 296-62-07162 and 296-62-07201 through 296-62-07248).

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07715, filed 5/4/99, effective 9/1/99. Statutory Authority: RCW 49.17.040, [49.17].050 and [49.17].060. 97-19-014, § 296-62-07715, filed 9/5/97, effective 11/5/97; 97-01-079, § 296-62-07715, filed 12/17/96, effective 3/1/97. Statutory Authority: Chapter 49.17 RCW. 91-03-044 (Order 90-18), § 296-62-07715, filed 1/10/91, effective 2/12/91; 89-11-035 (Order 89-03), § 296-62-07715, filed 5/15/89, effective 6/30/89; 87-24-051 (Order 87-24), § 296-62-07715, filed 11/30/87. Statutory Authority: RCW 49.17.050(2) and 49.17.040. 87-10-008 (Order 87-06), § 296-62-07715, filed 4/27/87.]

WAC 296-62-07717 Protective work clothing and equipment. (1) Provision and use. If an employee is exposed to asbestos above the permissible exposure limits, or where the possibility of eye irritation exists, or for which a required negative exposure assessment is not produced and for any employee performing Class I operations, the employer shall provide at no cost to the employee and require that the employee uses appropriate protective work clothing and equipment such as, but not limited to:

- (a) Coveralls or similar full-body work clothing;
- (b) Gloves, head coverings, and foot coverings; and
- (c) Face shields, vented goggles, or other appropriate protective equipment which complies with WAC 296-800-160.

(2) Removal and storage.

(a) The employer shall ensure that employees remove work clothing contaminated with asbestos only in change rooms provided in accordance with WAC 296-62-07719(1).

(b) The employer shall ensure that no employee takes contaminated work clothing out of the change room, except those employees authorized to do so for the purpose of laundering, maintenance, or disposal.

(c) Contaminated clothing. Contaminated clothing shall be transported in sealed impermeable bags, or other closed, impermeable containers, and be labeled in accordance with WAC 296-62-07721.

(d) Containers of contaminated protective devices or work clothing which are to be taken out of change rooms or the workplace for cleaning, maintenance, or disposal, shall bear labels in accordance with WAC 296-62-07721(6).

(3) Cleaning and replacement.

(a) The employer shall clean, launder, repair, or replace protective clothing and equipment required by this paragraph to maintain their effectiveness. The employer shall provide clean protective clothing and equipment at least weekly to each affected employee.

(b) The employer shall prohibit the removal of asbestos from protective clothing and equipment by blowing or shaking.

(c) Laundering of contaminated clothing shall be done so as to prevent the release of airborne fibers of asbestos in excess of the permissible exposure limits prescribed in WAC 296-62-07705.

(d) Any employer who gives contaminated clothing to another person for laundering shall inform such person of the requirement in (c) of this subsection to effectively prevent the release of airborne fibers of asbestos in excess of the permissible exposure limits.

(e) The employer shall inform any person who launders or cleans protective clothing or equipment contaminated with asbestos of the potentially harmful effects of exposure to asbestos.

(f) Contaminated clothing shall be transported in sealed impermeable bags, or other closed, impermeable containers, and labeled in accordance with WAC 296-62-07721.

(4) Inspection of protective clothing for construction and shipyard work.

(a) The competent person shall examine worksuits worn by employees at least once per workshift for rips or tears that may occur during performance of work.

(b) When rips or tears are detected while an employee is working, rips and tears shall be immediately mended, or the worksuit shall be immediately replaced.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 01-11-038, § 296-62-07717, filed 5/9/01, effective 9/1/01. Statutory Authority: RCW 49.17.040, [49.17].050 and [49.17].060. 97-19-014, § 296-62-07717, filed 9/5/97, effective 11/5/97; 97-01-079, § 296-62-07717, filed 12/17/96, effective 3/1/97. Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-62-07717, filed 7/20/94, effective 9/20/94; 89-11-035 (Order 89-03), § 296-62-07717, filed 5/15/89, effective 6/30/89; 87-24-051 (Order 87-24), § 296-62-07717, filed 11/30/87. Statutory Authority: RCW 49.17.050(2) and 49.17.040. 87-10-008 (Order 87-06), § 296-62-07717, filed 4/27/87.]

WAC 296-62-07719 Hygiene facilities and practices.

(1) Change rooms.

(a) The employer shall provide clean change rooms for employees required to work in regulated areas or required by WAC 296-62-07717(1) to wear protective clothing.

Exception: In lieu of the change area requirement specified in this subsection, the employer may permit employees in Class III and Class IV asbestos work, to clean their protective clothing with a portable HEPA-equipped vacuum before such employees leave the area where maintenance was performed.

(b) The employer shall ensure that change rooms are in accordance with WAC 296-800-230, and are equipped with two separate lockers or storage facilities, so separated as to prevent contamination of the employee's street clothes from his/her protective work clothing and equipment.

(2) Showers.

(a) The employer shall ensure that employees who work in negative pressure enclosures required by WAC 296-62-07712, or who work in areas where their airborne exposure is above the permissible exposure limits prescribed in WAC 296-62-07705, shower at the end of the work shift.

(b) The employer shall provide shower facilities which comply with WAC 296-800-230.

(c) The employer shall ensure that employees who are required to shower pursuant to (a) of this subsection do not leave the workplace wearing any clothing or equipment worn during the work shift.

(3) Special requirements in addition to the other provisions of WAC 296-62-07719 for construction work defined in WAC 296-155-012 and for all shipyard work defined in WAC 296-304-010.

(a) Requirements for employees performing Class I asbestos jobs involving over 25 linear or 10 square feet of TSI or surfacing ACM and PACM.

(i) Decontamination areas: The employer shall establish a decontamination area that is adjacent and connected to the

regulated area for the decontamination of such employees. The decontamination area shall consist of an equipment room, shower area, and clean room in series. The employer shall ensure that employees enter and exit the regulated area through the decontamination area.

(A) Equipment room. The equipment room shall be supplied with impermeable, labeled bags and containers for the containment and disposal of contaminated protective equipment.

(B) Shower area. Shower facilities shall be provided which comply with WAC 296-800-230, unless the employer can demonstrate that they are not feasible. The showers shall be adjacent both to the equipment room and the clean room, unless the employer can demonstrate that this location is not feasible. Where the employer can demonstrate that it is not feasible to locate the shower between the equipment room and the clean room, or where the work is performed outdoors, the employers shall ensure that employees:

(I) Remove asbestos contamination from their worksuits in the equipment room using a HEPA vacuum before proceeding to a shower that is not adjacent to the work area; or

(II) Remove their contaminated worksuits in the equipment room, then don clean worksuits, and proceed to a shower that is not adjacent to the work area.

(C) Clean change room. The clean room shall be equipped with a locker or appropriate storage container for each employee's use.

(ii) Decontamination area entry procedures. The employer shall ensure that employees:

(A) Enter the decontamination area through the clean room;

(B) Remove and deposit street clothing within a locker provided for their use; and

(C) Put on protective clothing and respiratory protection before leaving the clean room.

(D) Before entering the regulated area, the employer shall ensure that employees pass through the equipment room.

(iii) Decontamination area exit procedures. The employer shall ensure that:

(A) Before leaving the regulated area, employees shall remove all gross contamination and debris from their protective clothing;

(B) Employees shall remove their protective clothing in the equipment room and deposit the clothing in labeled impermeable bags or containers;

(C) Employees shall not remove their respirators in the equipment room;

(D) Employees shall shower prior to entering the clean room. When taking a shower, employees shall be fully wetted, including the face and hair, prior to removing the respirators;

(E) After showering, employees shall enter the clean room before changing into street clothes.

(b) Requirements for Class I work involving less than 25 linear or 10 square feet of TSI or surfacing ACM and PACM, and for Class II and Class III asbestos work operations where exposures exceed a PEL or where there is no negative exposure assessment produced before the operation.

(i) The employer shall establish an equipment room or area that is adjacent to the regulated area for the decontami-

nation of employees and their equipment which is contaminated with asbestos which shall consist of an area covered by a impermeable drop cloth on the floor or horizontal working surface.

(ii) The area must be of sufficient size as to accommodate cleaning of equipment and removing personal protective equipment without spreading contamination beyond the area (as determined by visible accumulations).

(iii) Work clothing must be cleaned with a HEPA vacuum before it is removed.

(iv) All equipment and surfaces of containers filled with ACM must be cleaned prior to removing them from the equipment room or area.

(v) The employer shall ensure that employees enter and exit the regulated area through the equipment room or area.

(c) Requirements for Class IV work. Employers shall ensure that employees performing Class IV work within a regulated area comply with hygiene practice required of employees performing work which has a higher classification within that regulated area. Otherwise employers of employees cleaning up debris and material which is TSI or surfacing ACM or identified as PACM shall provide decontamination facilities for such employees which are required by WAC 296-62-07719 (3)(b).

(d) Decontamination area for personnel shall not be used for the transportation of asbestos debris.

(e) Waste load-out procedure. The waste load-out area as required by WAC 296-62-07723 shall be used as an area for final preparation and external decontamination of waste containers, as a short term storage area for bagged waste, and as a port for transporting waste. The employer shall ensure waste containers be free of all gross contaminated material before removal from the negative-pressure enclosure. Gross contamination shall be wiped, scraped off, or washed off containers before they are placed into a two chamber air lock which is adjacent to the negative-pressure enclosure. In the first chamber, the exterior of the waste container shall be decontaminated or placed within a second waste container, and then it shall be moved into the second chamber of the air lock for temporary storage or transferred outside of the regulated area. The second waste container shall not be reused unless thoroughly decontaminated.

(4) Lunchrooms.

(a) The employer shall provide lunchroom facilities for employees who work in areas where their airborne exposure is above the time weighted average and/or excursion limit.

(b) The employer shall ensure that lunchroom facilities have a positive pressure, filtered air supply, and are readily accessible to employees.

(c) The employer shall ensure that employees who work in areas where their airborne exposure is above the time weighted average and/or excursion limit, wash their hands and faces prior to eating, drinking, or smoking.

(d) The employer shall ensure that employees do not enter lunchroom facilities with protective work clothing or equipment unless surface asbestos fibers have been removed from the clothing or equipment by vacuuming or other method that removes dust without causing the asbestos to become airborne.

(5) Smoking in work areas. The employer shall ensure that employees do not smoke in work areas where they are

occupationally exposed to asbestos because of activities in that work area.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060. 03-18-090, § 296-62-07719, filed 9/2/03, effective 11/1/03. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 01-17-033, § 296-62-07719, filed 8/8/01, effective 9/1/01. Statutory Authority: RCW 49.17.040, [49.17].050 and [49.17].060. 97-01-079, § 296-62-07719, filed 12/17/96, effective 3/1/97. Statutory Authority: Chapter 49.17 RCW. 91-03-044 (Order 90-18), § 296-62-07719, filed 1/10/91, effective 2/12/91; 89-11-035 (Order 89-03), § 296-62-07719, filed 5/15/89, effective 6/30/89; 87-24-051 (Order 87-24), § 296-62-07719, filed 11/30/87. Statutory Authority: RCW 49.17.050(2) and 49.17.040. 87-10-008 (Order 87-06), § 296-62-07719, filed 4/27/87.]

WAC 296-62-07721 Communication of hazards to employees. (1) Communication of hazards to employees. General industry requirements.

(a) Introduction. This section applies to the communication of information concerning asbestos hazards in general industry. Asbestos exposure in industry occurs in a wide variety of industrial and commercial settings. Employees who manufacture asbestos-containing products may be exposed to asbestos fibers. Employees who repair and replace automotive brakes and clutches may be exposed to asbestos fibers. In addition, employees engaged in housekeeping activities in industrial facilities with asbestos product manufacturing operations, and in public and commercial buildings with installed asbestos-containing materials may be exposed to asbestos fibers. It should be noted that employees who perform housekeeping activities during and after construction activities are covered by asbestos construction work requirements in WAC 296-62-077. Housekeeping employees, regardless of industry designation, should know whether building components they maintain may expose them to asbestos. Building owners are often the only and/or best source of information concerning the presence of previously installed asbestos-containing building materials. Therefore they, along with employers of potentially exposed employees, are assigned specific information conveying and retention duties under this section.

(b) Installed asbestos-containing material. Employers and building owners are required to treat installed TSI and sprayed-on and troweled-on surfacing materials as ACM for the purposes of this standard. These materials are designated "presumed ACM or PACM," and are defined in WAC 296-62-07703. Asphalt and vinyl flooring installed no later than 1980 also must be treated as asbestos-containing. The employer or building owner may demonstrate that PACM and flooring materials do not contain asbestos by complying with WAC 296-62-07712 (10)(a)(ix).

(c) Duties of employers and building and facility owners.

(i) Building and facility owners must determine the presence, location, and quantity of ACM and/or PACM at the worksite. Employers and building and facility owners must exercise due diligence in complying with these requirements to inform employers and employees about the presence and location of ACM and PACM.

(ii) Before authorizing or allowing any construction, renovation, remodeling, maintenance, repair, or demolition project, an owner or owner's agent must perform, or cause to be performed, a good faith inspection to determine whether materials to be worked on or removed contain asbestos. The

inspection must be documented by a written report maintained on file and made available upon request to the director.

(A) The good faith inspection must be conducted by an accredited inspector.

(B) Such good faith inspection is not required if the owner or owner's agent is reasonably certain that asbestos will not be disturbed by the project or the owner or owner's agent assumes that the suspect material contains asbestos and handles the material in accordance with WAC 296-62-07701 through 296-62-07753.

(iii) The owner or owner's agent must provide, to all contractors submitting a bid to undertake any construction, renovation, remodeling, maintenance, repair, or demolition project, the written statement either of the reasonable certainty of nondisturbance of asbestos or of assumption of the presence of asbestos. Contractors must be provided with the written report before they apply or bid to work.

(iv) Any owner or owner's agent who fails to comply with (c)(ii) and (iii) of this subsection must be subject to a mandatory fine of not less than two hundred fifty dollars for each violation. Each day the violation continues must be considered a separate violation. In addition, any construction, renovation, remodeling, maintenance, repair, or demolition which was started without meeting the requirements of this section must be halted immediately and cannot be resumed before meeting such requirements.

(v) Building and facility owners must inform employers of employees, and employers must inform employees who will perform housekeeping activities in areas which contain ACM and/or PACM of the presence and location of ACM and/or PACM in such areas which may be contacted during such activities.

(vi) Upon written or oral request, building or facility owners must make a copy of the written report required in this section available to the department of labor and industries and the collective bargaining representatives or employee representatives of any employee who may be exposed to any asbestos or asbestos-containing materials. A copy of the written report must be posted conspicuously at the location where employees report to work.

(vii) Building and facility owners must maintain records of all information required to be provided according to this section and/or otherwise known to the building owner concerning the presence, location and quantity of ACM and PACM in the building/facility. Such records must be kept for the duration of ownership and must be transferred to successive owners.

(2) Communication of hazards to employees. Requirements for construction and shipyard employment activities.

(a) Introduction. This section applies to the communication of information concerning asbestos hazards in construction and shipyard employment activities. Most asbestos-related construction and shipyard activities involve previously installed building materials. Building/vessel owners often are the only and/or best sources of information concerning them. Therefore, they, along with employers of potentially exposed employees, are assigned specific information conveying and retention duties under this section. Installed Asbestos Containing Building/Vessel Material: Employers and building/vessel owners must identify TSI and sprayed or troweled on surfacing materials as asbestos-containing unless

the employer, by complying with WAC 296-62-07721(3) determines it is not asbestos containing. Asphalt or vinyl flooring/decking material installed in buildings or vessels no later than 1980 must also be considered as asbestos containing unless the employer/owner, according to WAC 296-62-07712 (10)(a)(ix) determines it is not asbestos containing. If the employer or building/vessel owner has actual knowledge or should have known, through the exercise of due diligence, that materials other than TSI and sprayed-on or troweled-on surfacing materials are asbestos containing, they must be treated as such. When communicating information to employees according to this standard, owners and employers must identify "PACM" as ACM. Additional requirements relating to communication of asbestos work on multiemployer worksites are set out in WAC 296-62-07706.

(b) Duties of building/vessel and facility owners.

(i) Before work subject to this section is begun, building/vessel and facility owners must identify the presence, location and quantity of ACM, and/or PACM at the worksite. All thermal system insulation and sprayed on or troweled on surfacing materials in buildings/vessels or substrates constructed no later than 1980 must be identified as PACM. In addition, resilient flooring/decking material installed no later than 1980 must also be identified as asbestos containing.

(ii) Before authorizing or allowing any construction, renovation, remodeling, maintenance, repair, or demolition project, a building/vessel and facility owner or owner's agent must perform, or cause to be performed, a good faith inspection to determine whether materials to be worked on or removed contain asbestos. The inspection must be documented by a written report maintained on file and made available upon request to the director.

(A) The good faith inspection must be conducted by an accredited inspector.

(B) Such good faith inspection is not required if the building/vessel and facility owner or owner's agent assumes that the suspect material contains asbestos and handles the material in accordance with WAC 296-62-07701 through 296-62-07753 or if the owner or the owner's agent is reasonably certain that asbestos will not be disturbed by the project.

(iii) The building/vessel and facility owner or owner's agent must provide, to all contractors submitting a bid to undertake any construction, renovation, remodeling, maintenance, repair, or demolition project, the written statement either of the reasonable certainty of nondisturbance of asbestos or of assumption of the presence of asbestos. Contractors must be provided the written report before they apply or bid on work.

(iv) Any building/vessel and facility owner or owners agent who fails to comply with WAC 296-62-07721 (2)(b)(ii) and (iii) must be subject to a mandatory fine of not less than two hundred fifty dollars for each violation. Each day the violation continues must be considered a separate violation. In addition, any construction, renovation, remodeling, maintenance, repair, or demolition which was started without meeting the requirements of this section must be halted immediately and cannot be resumed before meeting such requirements.

(v) Upon written or oral request, building/vessel and facility owner or owner's agent must make a copy of the writ-

ten report required in this section available to the department of labor and industries and the collective bargaining representatives or employee representatives of any employee who may be exposed to any asbestos or asbestos-containing materials. A copy of the written report must be posted conspicuously at the location where employees report to work.

(vi) Building/vessel and facility owner or owner's agent must notify in writing the following persons of the presence, location and quantity of ACM or PACM, at worksites in their buildings/facilities/vessels.

(A) Prospective employers applying or bidding for work whose employees reasonably can be expected to work in or adjacent to areas containing such material;

(B) Employees of the owner who will work in or adjacent to areas containing such material;

(C) On multiemployer worksites, all employers of employees who will be performing work within or adjacent to areas containing such materials;

(D) Tenants who will occupy areas containing such materials.

(c) Duties of employers whose employees perform work subject to this standard in or adjacent to areas containing ACM and PACM. Building/vessel and facility owner or owner's agents whose employees perform such work must comply with these provisions to the extent applicable.

(i) Before work subject to this standard is begun, building/vessel and facility owner or owner's agents must determine the presence, location, and quantity of ACM and/or PACM at the worksite according to WAC 296-62-07721 (2)(b).

(ii) Before work under this standard is performed employers of employees who will perform such work must inform the following persons of the location and quantity of ACM and/or PACM present at the worksite and the precautions to be taken to insure that airborne asbestos is confined to the area.

(A) Owners of the building/vessel or facility;

(B) Employees who will perform such work and employers of employees who work and/or will be working in adjacent areas;

(iii) Upon written or oral request, a copy of the written report required in this section must be made available to the department of labor and industries and the collective bargaining representatives or employee representatives of any employee who may be exposed to any asbestos or asbestos-containing materials. A copy of the written report must be posted conspicuously at the location where employees report to work.

(iv) Within 10 days of the completion of such work, the employer whose employees have performed work subject to this standard, must inform the building/vessel or facility owner and employers of employees who will be working in the area of the current location and quantity of PACM and/or ACM remaining in the former regulated area and final monitoring results, if any.

(d) In addition to the above requirements, all employers who discover ACM and/or PACM on a worksite must convey information concerning the presence, location and quantity of such newly discovered ACM and/or PACM to the owner and to other employers of employees working at the worksite, within 24 hours of the discovery.

(e) No contractor may commence any construction, renovation, remodeling, maintenance, repair, or demolition project without receiving a copy of the written response or statement required by WAC 296-62-07721 (2)(b). Any contractor who begins any project without the copy of the written report or statement will be subject to a mandatory fine of not less than two hundred fifty dollars per day. Each day the violation continues will be considered a separate violation.

(3) Criteria to rebut the designation of installed material as PACM.

(a) At any time, an employer and/or building/vessel owner may demonstrate, for purposes of this standard, that PACM does not contain asbestos. Building/vessel owners and/or employers are not required to communicate information about the presence of building material for which such a demonstration according to the requirements of (b) of this subsection has been made. However, in all such cases, the information, data and analysis supporting the determination that PACM does not contain asbestos, must be retained according to WAC 296-62-07727.

(b) An employer or owner may demonstrate that PACM does not contain asbestos by the following:

(i) Having a completed inspection conducted according to the requirements of AHERA (40 CFR Part 763, Subpart E) which demonstrates that the material is not ACM;

(ii) Performing tests of the material containing PACM which demonstrate that no asbestos is present in the material. Such tests must include analysis of bulk samples collected in the manner described in 40 CFR 763.86, Asbestos-containing materials in schools. The tests, evaluation and sample collection must be conducted by an accredited inspector. Analysis of samples must be performed by persons or laboratories with proficiency demonstrated by current successful participation in a nationally recognized testing program such as the National Voluntary Laboratory Accreditation Program (NVLAP) of the National Institute for Standards and Technology (NIST) or the Round Robin for bulk samples administered by the American Industrial Hygiene Association (AIHA), or an equivalent nationally recognized Round Robin testing program.

(4) At the entrance to mechanical rooms/areas in which employees reasonably can be expected to enter and which contain TSI or surfacing ACM and PACM, the building/vessel and facility owner or owner's agent must post signs which identify the material which is present, its location, and appropriate work practices which, if followed, will ensure that ACM and/or PACM will not be disturbed. The employer shall ensure, to the extent feasible, that employees who come in contact with these signs can comprehend them. Means to ensure employee comprehension may include the use of foreign languages, pictographs, graphics, and awareness training.

(5) Warning signs.

(a) Warning signs that demarcate the regulated area must be provided and displayed at each location where a regulated area is required. In addition, warning signs must be posted at all approaches to regulated areas and be posted at such a distance from such a location that an employee may read the signs and take necessary protective steps before entering the area marked by the signs.

(b) The warning signs required by (a) of this subsection must bear the following information:

DANGER
ASBESTOS
CANCER AND LUNG DISEASE HAZARD
AUTHORIZED PERSONNEL ONLY
RESPIRATORS AND PROTECTIVE CLOTHING ARE REQUIRED IN
THIS AREA

(c) The employer shall ensure that employees working in and contiguous to regulated areas comprehend the warning signs required to be posted by (a) of this subsection. Means to ensure employee comprehension may include the use of foreign languages, pictographs, and graphics.

(6) Warning labels.

(a) Warning labels must be affixed to all products containing asbestos including raw materials, mixtures, scrap, waste, debris, and other products containing asbestos fibers, and to their containers including waste containers. Installed asbestos products must contain a visible label, except where such a label would clearly not be feasible.

(b) Labels must be printed in large, bold letters on a contrasting background.

(c) The labels must comply with the requirements of WAC 296-800-170, and must include the following information:

DANGER
CONTAINS ASBESTOS FIBERS
AVOID CREATING DUST
CANCER AND LUNG DISEASE HAZARD
AVOID BREATHING AIRBORNE ASBESTOS FIBERS

(7) The provisions for labels required by subsection (6)(a) of this section or for material safety data sheets required by subsection (8) of this section do not apply where:

(a) Asbestos fibers have been modified by a bonding agent, coating, binder, or other material, provided that the manufacturer can demonstrate that during any reasonably foreseeable use, handling, storage, disposal, processing, or transportation, no airborne concentrations of fibers of asbestos in excess of the excursion limit will be released; or

(b) Asbestos is present in a product in concentrations less than 1.0 percent by weight.

(8) Material safety data sheets. Employers who are manufacturers or importers of asbestos, or asbestos products must comply with the requirements regarding development of material safety data sheets as specified in WAC 296-62-05413, except as provided by subsection (7) of this section.

(9) When a building/vessel owner/or employer identifies previously installed PACM and/or ACM, labels or signs must be affixed or posted so that employees will be notified of what materials contain PACM and/or ACM. The employer must attach such labels in areas where they will clearly be noticed by employees who are likely to be exposed, such as at the entrance to mechanical rooms/areas. Signs required by subsection (5)(a) of this section may be posted in lieu of labels so long as they contain information required for labeling. The employer must ensure, to the extent feasible, that employees who come in contact with these signs can comprehend them. Means to ensure employee comprehension may

include the use of foreign languages, pictographs, graphics, and awareness training.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 01-11-038, § 296-62-07721, filed 5/9/01, effective 9/1/01. Statutory Authority: RCW 49.17.040, 49.17.050, 49.26.040 and 49.26.130. 99-17-026, § 296-62-07721, filed 8/10/99, effective 11/10/99. Statutory Authority: RCW 49.17.040, [49.17].050 and [49.17].060. 97-19-014, § 296-62-07721, filed 9/5/97, effective 11/5/97; 97-01-079, § 296-62-07721, filed 12/17/96, effective 3/1/97. Statutory Authority: Chapter 49.17 RCW. 93-01-005 (Order 92-20), § 296-62-07721, filed 12/2/92, effective 1/15/93; 91-03-044 (Order 90-18), § 296-62-07721, filed 1/10/91, effective 2/12/91; 89-21-018 (Order 89-10), § 296-62-07721, filed 10/10/89, effective 11/24/89; 89-11-035 (Order 89-03), § 296-62-07721, filed 5/15/89, effective 6/30/89; 87-24-051 (Order 87-24), § 296-62-07721, filed 11/30/87. Statutory Authority: RCW 49.17.050(2) and 49.17.040. 87-10-008 (Order 87-06), § 296-62-07721, filed 4/27/87.]

WAC 296-62-07722 Employee information and training. (1) Certification.

(a) Only certified asbestos workers may work on an asbestos project as required in WAC 296-65-010 and 296-65-030.

(b) Only certified asbestos supervisors may supervise asbestos abatement projects as required in WAC 296-65-012 and 296-65-030.

(c) In cases where certification requirements of chapter 296-65 WAC do not apply, all employees must be trained according to the provisions of this section regardless of their exposure levels.

(d) Certification is not required for asbestos work on materials containing less than one percent asbestos.

(2) Training must be provided prior to or at the time of initial assignment, unless the employee has received equivalent training within the previous twelve months, and at least annually thereafter.

(3) Asbestos projects.

(a) Class I work must be considered an asbestos project. Only certified asbestos workers may do this work.

(b) Only certified workers may conduct Class II asbestos work that is considered an asbestos project.

(i) The following Class II asbestos work must be considered asbestos projects:

(A) All Class II asbestos work where critical barriers, equivalent isolation methods, or negative pressure enclosures are required; or

(B) All Class II asbestos work where asbestos containing materials do not stay intact (including removal of vinyl asbestos floor (VAT) or roofing materials by mechanical methods such as chipping, grinding, or sanding).

(ii) The following Class II asbestos work is not considered an asbestos project and is excluded from asbestos worker certification:

(A) All Class II asbestos work involving intact asbestos containing materials (for example, intact roofing materials, bituminous or asphalt pipeline coatings, and intact flooring/decking materials);

(B) All Class II asbestos work of less than one square foot of asbestos containing materials; or

(C) All Class II asbestos work involving asbestos-cement water pipe when the work is done in accordance with training approved by the department through the asbestos certification program (see WAC 296-65-015(4)).

(iii) Asbestos work involving the removal of one square foot or more of intact roofing materials by mechanical sawing or heavy equipment must meet the following requirements:

(A) Only certified asbestos workers may conduct mechanical sawing of intact roofing material;

(B) Noncertified asbestos workers may handle roofing dust, material and debris;

(C) Operators of heavy equipment (such as track hoes with clam shells and excavators) do not need to be certified asbestos workers in the removal or demolition of intact roofing materials.

(c) Only certified asbestos workers may conduct all Class III and Class IV asbestos work that is considered an asbestos project.

(i) The following asbestos work is considered an asbestos project:

(A) All Class III asbestos work where one square foot or more of asbestos containing materials that do not stay intact;

(B) All Class IV asbestos work where one square foot or more of asbestos containing materials that do not stay intact; or

(C) All Class III and Class IV asbestos work with pipe insulation.

(ii) Except for a project involving pipe insulation work, any project involving only Class III or Class IV asbestos work with less than one square foot of asbestos containing materials is not considered an asbestos project.

(4) Training requirements for asbestos work that is not considered an asbestos project or is excluded from asbestos worker certification.

(a) Class II asbestos work.

(i) Employers must provide eight-hours of training to employees who perform asbestos work on one generic category of asbestos containing materials (ACM). When performing asbestos work in more than one category of asbestos containing materials, additional training must be used to supplement the first eight hour training course.

(ii) The training course must include:

- Hands-on training that applies to the category of asbestos containing materials,
- Specific work practices and engineering controls related to the category of asbestos containing materials present as specified in WAC 296-62-07712, and
- All the minimum elements of subsection (5) of this section.

(b) Class III asbestos work (maintenance and custodial work in buildings containing asbestos containing materials).

(i) Employers must provide training with curriculum and training methods equivalent to the 16-hour operations and maintenance course developed by the EPA. (See 40 CFR 763.92 (a)(2).) For those employees whose only affected work is Class II work as described in subsection (4)(a)(i) of this section, employers must meet this 16-hour training requirement or provide training that meets the eight hours Class II requirements in subsection (4)(a) of this section.

(ii) Sixteen hours of training must include:

- Hands-on training in the use of respiratory protection and work practices, and

- All the minimum elements of subsection (5) of this section.

(c) Class IV asbestos work (maintenance and custodial work in buildings containing asbestos-containing materials).

(i) Employers must provide at least two hours of training with curriculum and training methods equivalent to the awareness training course developed by the EPA.

(ii) Training must include:

- Available information concerning the location of PACM, ACM, asbestos-containing flooring materials or flooring materials where the absence of asbestos has not been certified,
- Instruction on how to recognize damaged, deteriorated, and delimitation of asbestos containing building materials, and
- All of the minimum elements of subsection (5) of this section.

(5) The training program must be conducted in a manner which the employee is able to understand. The employer must ensure that each employee is informed of the following:

(a) The health effects associated with asbestos exposure;

(b) The relationship between smoking and exposure to asbestos producing lung cancer;

(c) Methods of recognizing asbestos and quantity, location, manner of use, release (including the requirements of WAC 296-62-07721 (1)(c) and (2)(b) to presume certain building materials contain asbestos), and storage of asbestos and the specific nature of operations which could result in exposure to asbestos;

(d) The engineering controls and work practices associated with the employee's job assignment;

(e) The specific procedures implemented to protect employees from exposure to asbestos, such as appropriate work practices, housekeeping procedures, hygiene facilities, decontamination procedures, emergency and clean-up procedures (including where Class III and IV work is performed, the contents "Managing Asbestos In Place" (EPA 20T-2003, July 1990) or its equivalent in content), personal protective equipment to be used, waste disposal procedures, and any necessary instructions in the use of these controls and procedures;

(f) The purpose, proper use, and limitations of protective clothing;

(g) The purpose and a description of the medical surveillance program required by WAC 296-62-07725;

(h) The content of this standard, including appendices;

(i) The names, addresses and phone numbers of public health organizations which provide information, materials, and/or conduct programs concerning smoking cessation. The employer may distribute the list of such organizations contained in Appendix I, to comply with this requirement;

(j) The requirements for posting signs and affixing labels and the meaning of the required legends for such signs and labels; and

(k) The purpose, proper use, limitations, and other training requirements for respiratory protection as required by chapter 296-842 WAC (see WAC 296-842-11005, 296-842-16005, and 296-842-19005).

(6) The employer must also provide, at no cost to employees who perform housekeeping operations in a facility which contains ACM or PACM, an asbestos awareness train-

ing course to all employees who are or will work in areas where ACM and/or PACM is present who work in buildings containing asbestos-containing materials, which must, at a minimum, contain the following elements:

- Health effects of asbestos,
- Locations of ACM and PACM in the building/facility,
- Recognition of ACM and PACM damage and deterioration,
- Requirements in this standard relating to housekeeping, and
- Proper response to fiber release episodes.

Each such employee must be so trained at least once a year.

(7) Access to information and training materials.

(a) The employer must make a copy of this standard and its appendices readily available without cost to all affected employees.

(b) The employer must provide, upon request, all materials relating to the employee information and training program to the director.

(c) The employer must inform all employees concerning the availability of self-help smoking cessation program material. Upon employee request, the employer must distribute such material, consisting of NIH Publication No. 89-1647, or equivalent self-help material, which is approved or published by a public health organization listed in Appendix I, WAC 296-62-07751.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. 05-03-093, § 296-62-07722, filed 1/18/05, effective 3/1/05. Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050, and 49.26.130. 00-06-075, § 296-62-07722, filed 3/1/00, effective 4/10/00. Statutory Authority: RCW 49.17.040, 49.17.050, 49.26.040 and 49.26.130. 99-17-026, § 296-62-07722, filed 8/10/99, effective 11/10/99. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-07722, filed 5/4/99, effective 9/1/99. Statutory Authority: RCW 49.17.040, [49.17].050 and [49.17].060. 97-01-079, § 296-62-07722, filed 12/17/96, effective 3/1/97.]

WAC 296-62-07723 Housekeeping. (1) All surfaces shall be maintained as free as practicable of accumulations of dusts and waste containing asbestos.

(2) All spills and sudden releases of material containing asbestos shall be cleaned up as soon as possible.

(3) Surfaces contaminated with asbestos may not be cleaned by the use of compressed air.

(4) Vacuuming. HEPA-filtered vacuuming equipment shall be used for vacuuming. The equipment shall be used and emptied in a manner which minimizes the reentry of asbestos into the workplace.

(5) Shoveling, dry sweeping, and dry clean-up of asbestos may be used only where vacuuming and/or wet cleaning are not feasible.

(6) Waste disposal. Waste, scrap, debris, bags, containers, equipment, and clothing contaminated with asbestos consigned for disposal, shall be collected and disposed of in sealed impermeable bags, or other closed, impermeable containers. To avoid breakage, bags shall be at least six mils in thickness and shall not be dragged or slid across rough or abrasive surfaces.

(7) Waste removal. Whenever a negative-pressure enclosure is required by WAC 296-62-07712, the employer whenever feasible, shall establish a waste-load-out area that is

adjacent and connected to the negative-pressure enclosure, constructed of a two chamber air lock, for the decontamination and removal of asbestos debris.

(8) Deterioration. Asbestos and asbestos containing material which has become damaged or deteriorated shall be repaired, enclosed, encapsulated, or removed.

(9) Care of asbestos-containing flooring/decking material.

(a) Sanding of asbestos-containing floor/deck material is prohibited.

(b) Stripping of finishes shall be conducted using low abrasion pads at speeds lower than 300 rpm and wet methods.

(c) Burnishing or dry buffing may be performed only on asbestos-containing flooring/decking which has sufficient finish so that the pad cannot contact the asbestos-containing material.

(d) Dust and debris in an area containing TSI or surfacing ACM/PACM or visibly deteriorated ACM, shall not be dusted or swept dry, or vacuumed without using a HEPA filter.

(10) Waste and debris and accompanying dust in an area containing accessible thermal system insulation or surfacing material or visibly deteriorated ACM:

(a) Shall not be dusted or swept dry, or vacuumed without using a HEPA filter;

(b) Shall be promptly cleaned up and disposed of in leak tight containers.

[Statutory Authority: RCW 49.17.040, [49.17.]050 and [49.17.]060. 97-01-079, § 296-62-07723, filed 12/17/96, effective 3/1/97. Statutory Authority: Chapter 49.17 RCW. 87-24-051 (Order 87-24), § 296-62-07723, filed 11/30/87. Statutory Authority: RCW 49.17.050(2) and 49.17.040. 87-10-008 (Order 87-06), § 296-62-07723, filed 4/27/87.]

WAC 296-62-07725 Medical surveillance. (1) General.

(a) Employees covered. The employer shall institute a medical surveillance program for all employees who are or will be exposed to airborne concentrations of fibers of asbestos at or above the permissible exposure limits. Exception.

Employers in the construction or shipyard industries shall institute a medical surveillance program for all employees who for a combined total of 30 or more days per year are engaged in Class I, II, and III work, or are exposed at or above the permissible exposure limit for combined 30 days or more per year; or who are required by the standard to wear negative pressure respirators. For the purpose of this subsection, any day in which an employee engaged in Class II or III work or a combination thereof for one hour or less (taking into account the entire time spent on the removal operation, including cleanup), and, while doing so adheres to the work practices specified in this standard, shall not be counted.

(b) Examination by a physician.

(i) The employer shall ensure that all medical examinations and procedures are performed by or under the supervision of a licensed physician, and shall be provided without cost to the employee and at a reasonable time and place.

(ii) Persons other than licensed physicians, who administer the pulmonary function testing required by this section, shall complete a training course in spirometry sponsored by an appropriate academic or professional institution.

(2) Preplacement examinations.

(a) Except as provided by WAC 296-62-07725 (1)(a), before an employee is assigned to an occupation exposed to airborne concentrations of asbestos, a preplacement medical examination shall be provided or made available by the employer. Examinations administered using the thirty or more days per year criteria of WAC 296-62-07725 (1)(a) shall be given within ten working days following the thirtieth day of exposure. Examinations must be given prior to assignment of employees to areas where negative-pressure respirators are worn.

(b) All examinations shall include, as a minimum, a medical and work history: A complete physical examination of all systems with special emphasis on the pulmonary, cardiovascular, and gastrointestinal systems; completion of the respiratory disease standardized questionnaire in WAC 296-62-07741, Appendix D, Part 1; a chest roentgenogram (posterior-anterior 14x17 inches); pulmonary function tests to include forced vital capacity (FVC) and forced expiratory volume at 1 second (FEV_{1.0}); and any additional tests deemed appropriate by the examining physician. Interpretation and classification of chest roentgenograms shall be conducted in accordance with WAC 296-62-07743, Appendix E.

(3) Periodic examinations.

(a) Periodic medical examinations shall be made available annually.

(b) The scope of the medical examination shall be in conformance with the protocol established in subsection (2)(b) of this section, except that the frequency of chest roentgenograms shall be conducted in accordance with Table 2 of this section, and the abbreviated standardized questionnaire contained in WAC 296-62-07741, Appendix D, Part 2, shall be administered to the employee.

TABLE 2—FREQUENCY OF CHEST ROENTGENOGRAMS

Years since first exposure		Age of employee	
0 to 10	15 to 35	35+ to 45	45+
.....	Every 5 years	Every 5 years	Every 5 years.
10+	Every 5 years	Every 2 years	Every 1 year.

(c) If the examining physician determines that any of the examinations should be provided more frequently than specified, the employer shall provide such examinations to affected employees at the frequencies specified by the physician.

(4) Termination of employment examinations.

(a) The employer shall provide, or make available, a termination of employment medical examination for any employee who has been exposed to airborne concentrations of fibers of asbestos at or above the permissible exposure limits.

(b) The medical examination shall be in accordance with the requirements of the periodic examinations stipulated in subsection (3) of this section, and shall be given within thirty calendar days before or after the date of termination of employment.

(5) Recent examinations. No medical examination is required of any employee, if adequate records show that the employee has been examined in accordance with subsection (2), (3), or (4) of this section within the past one-year period.

(6) Information provided to the physician. The employer shall provide the following information to the examining physician:

(a) A copy of this standard and Appendices D, E, and H of WAC 296-62-07741, 296-62-07743, and 296-62-07749 respectively.

(b) A description of the affected employee's duties as they relate to the employee's exposure.

(c) The employee's representative exposure level or anticipated exposure level.

(d) A description of any personal protective and respiratory equipment used or to be used.

(e) Information from previous medical examinations of the affected employee that is not otherwise available to the examining physician.

(7) Physician's written opinion.

(a) The employer shall obtain a written opinion from the examining physician. This written opinion shall contain the results of the medical examination and shall include:

(i) The physician's opinion as to whether the employee has any detected medical conditions that would place the employee at an increased risk of material health impairment from exposure to asbestos;

(ii) Any recommended limitations on the employee or upon the use of personal protective equipment such as clothing or respirators;

(iii) A statement that the employee has been informed by the physician of the results of the medical examination and of any medical conditions resulting from asbestos exposure that require further explanation or treatment; and

(iv) A statement that the employee has been informed by the physician of the increased risk of lung cancer attributable to the combined effect of smoking and asbestos exposure.

(b) The employer shall instruct the physician not to reveal in the written opinion given to the employer specific findings or diagnoses unrelated to occupational exposure to asbestos.

(c) The employer shall provide a copy of the physician's written opinion to the affected employee within thirty days from its receipt.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. 06-05-027, § 296-62-07725, filed 2/7/06, effective 4/1/06. Statutory Authority: RCW 49.17.040, [49.17.]050 and [49.17.]060. 97-19-014, § 296-62-07725, filed 9/5/97, effective 11/5/97; 97-01-079, § 296-62-07725, filed 12/17/96, effective 3/1/97. Statutory Authority: Chapter 49.17 RCW. 91-03-044 (Order 90-18), § 296-62-07725, filed 1/10/91, effective 2/12/91; 89-11-035 (Order 89-03), § 296-62-07725, filed 5/15/89, effective 6/30/89; 87-24-051 (Order 87-24), § 296-62-07725, filed 11/30/87. Statutory Authority: RCW 49.17.050(2) and 49.17.040. 87-10-008 (Order 87-06), § 296-62-07725, filed 4/27/87.]

WAC 296-62-07727 Recordkeeping. (1) Exposure measurements.

(a) The employer shall keep an accurate record of all measurements taken to monitor employee exposure to asbestos as prescribed in WAC 296-62-07709.

(b) This record shall include at least the following information:

(i) Name of employer;

(ii) Name of person conducting monitoring;

(iii) The date of measurement;

(iv) Address of operation or activity;

(v) Description of the operation or activity involving exposure to asbestos that is being monitored;

(vi) Personal or area sample;

(vii) Name, Social Security number, and exposure level of the employees whose exposures are represented;

(viii) Type of protective devices worn, if any;

(ix) Pump calibration date and flow rate;

(x) Total volume of air sampled;

(xi) Name and address of analytical laboratory;

(xii) Number, duration, and results (f/cc) of samples taken;

(xiii) Date of analysis; and

(xiv) Sampling and analytical methods used and evidence of their accuracy.

(c) The employer shall maintain this record for the duration of employment plus thirty years, in accordance with chapter 296-802 WAC.

(2) Objective data for exempted operations.

(a) Where the processing, use, or handling of products made from or containing asbestos is exempted from other requirements of this section under WAC 296-62-07709 (2)(a)(iii) and (3)(b)(i), the employer shall establish and maintain an accurate record of objective data reasonably relied upon in support of the exemption.

(b) The record shall include at least the following:

(i) The product qualifying for exemption;

(ii) The source of the objective data;

(iii) The testing protocol, results of testing, and/or analysis of the material for the release of asbestos;

(iv) A description of the operation exempted and how the data support the exemption; and

(v) Other data relevant to the operations, materials, processing, or employee exposures covered by the exemption.

(c) The employer shall maintain this record for the duration of the employer's reliance upon such objective data.

Note: The employer may utilize the services of competent organizations such as industry trade associations and employee associations to maintain the records required by this section.

(3) Medical surveillance.

(a) The employer shall establish and maintain an accurate record for each employee subject to medical surveillance by WAC 296-62-07725 (1)(a), in accordance with chapter 296-802 WAC.

(b) The record shall include at least the following information:

(i) The name and Social Security number of the employee;

(ii) Physician's written opinions;

(iii) Any employee medical complaints related to exposure to asbestos;

(iv) A copy of the information provided to the physician as required by WAC 296-62-07725(6); and

(v) A copy of the employee's medical examination results, including the medical history, questionnaire responses, results of any tests, and physicians recommendations.

(c) The employer shall ensure that this record is maintained for the duration of employment plus thirty years, in accordance with chapter 296-802 WAC.

(4) Training. The employer shall maintain all employee training records for one year beyond the last date of employment of that employee.

(5) Availability.

(a) The employer, upon written request, shall make all records required to be maintained by this section available to the director for examination and copying.

(b) The employer, upon request, shall make any exposure records required by subsection (1) of this section available for examination and copying to affected employees, former employees, designated representatives, and the director, in accordance with chapter 296-802 WAC.

(c) The employer, upon request, shall make employee medical records required by subsection (2) of this section available for examination and copying to the subject employee, to anyone having the specific written consent of the subject employee, and the director, in accordance with chapter 296-802 WAC.

(6) Transfer of records.

(a) The employer shall comply with the requirements concerning transfer of records set forth in chapter 296-802 WAC.

(b) Whenever the employer ceases to do business and there is no successor employer to receive and retain the records for the prescribed period, the employer shall notify the director at least ninety days prior to disposal of records and, upon request, transmit them to the director.

(7) Data to rebut PACM. Where the building owner and employer have relied on data to demonstrate that PACM is not asbestos-containing, such data shall be maintained for as long as they are relied upon to rebut the presumption.

(8) Records of required notifications. Where the building owner has communicated and received information concerning the identification, location and quantity of ACM and PACM, written records of such notifications and their content shall be maintained by the building owner for the duration of ownership and shall be transferred to successive owners of such buildings/facilities.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060. 04-10-026, § 296-62-07727, filed 4/27/04, effective 8/1/04. Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050, and 49.26.130. 00-06-075, § 296-62-07727, filed 3/1/00, effective 4/10/00. Statutory Authority: RCW 49.17.040, [49.17].050 and [49.17].060. 97-01-079, § 296-62-07727, filed 12/17/96, effective 3/1/97. Statutory Authority: Chapter 49.17 RCW. 87-24-051 (Order 87-24), § 296-62-07727, filed 11/30/87. Statutory Authority: RCW 49.17.050(2) and 49.17.040. 87-10-008 (Order 87-06), § 296-62-07727, filed 4/27/87.]

WAC 296-62-07728 Competent person. (1) General. For all construction and shipyard work covered by this standard, the employer must designate a competent person, having the qualifications and authorities for ensuring worker safety and health as required by chapter 296-155 WAC.

(2) Required inspections by the competent person. WAC 296-155-110(9) which requires health and safety prevention programs to provide for frequent and regular inspections on the job sites, materials, and equipment to be made by the competent person, is incorporated.

(3) Additional inspections. In addition, the competent person must make frequent and regular inspections of the job sites in order to perform the duties set out below in this section. For Class I jobs, on-site inspections must be made at

least once during each work shift, and at any time at employee request. For Class II and III jobs, on-site inspections must be made at intervals sufficient to assess whether conditions have changed, and at any reasonable time at employee request.

(4) On all worksites where employees are engaged in Class I or II asbestos work, the competent person designated in accordance with WAC 296-62-07712 must perform or supervise the following duties, as applicable:

(a) Set up the regulated area, enclosure, or other containment;

(b) Ensure (by on-site inspection) the integrity of the enclosure or containment;

(c) Set up procedures to control entry and exit from the enclosure and/or area;

(d) Supervise all employee exposure monitoring required by this section and ensure that it is conducted as required by WAC 296-62-07709;

(e) Ensure that employees working within the enclosure and/or using glovebags wear protective clothing and respirators as required by WAC 296-62-07715 and 296-62-07717;

(f) Ensure through on-site supervision, that employees set up and remove engineering controls, use work practices and personal protective equipment in compliance with all requirements;

(g) Ensure that employees use the hygiene facilities and observe the decontamination procedures specified in WAC 296-62-07719;

(h) Ensure that through on-site inspection engineering controls are functioning properly and employees are using proper work practices; and

(i) Ensure that notification requirements in WAC 296-62-07721 are met.

(5) Training for competent person.

(a) For Class I and II asbestos work the competent person must be trained in all aspects of asbestos removal and handling, including:

- Abatement,
- Installation,
- Removal and handling,
- The contents of this standard,
- The identification of asbestos,
- Removal procedures where appropriate, and
- Other practices for reducing the hazard.

Such training must be the certified asbestos supervisor training specified in WAC 296-65-003, 296-65-012, and 296-65-030.

(b) For Class III and IV asbestos work:

(i) The competent person must be certified as an asbestos supervisor as prescribed in WAC 296-65-012 and 296-65-030 for Class III and IV work involving an asbestos project of 3 square feet or 3 linear feet or more of asbestos containing material.

(ii) For Class III and IV asbestos work involving less than 3 square feet or 3 linear feet of asbestos containing material, the competent person must be trained in:

- Aspects of asbestos handling appropriate for the nature of the work, to include procedures for setting up glove bags and mini-enclosures,
- Practices for reducing asbestos exposures,
- Use of wet methods,

- The contents of this standard, and
 - The identification of asbestos.
- Such training must include successful completion of a course equivalent in curriculum and training method to the 16-hour Operations and Maintenance course developed by EPA for maintenance and custodial workers (see 40 CFR 763.92 (a)(2)) or its equivalent in stringency, content and length.

[Statutory Authority: RCW 49.17.040, 49.17.050, 49.26.040, and 49.26.130. 99-17-026, § 296-62-07728, filed 8/10/99, effective 11/10/99. Statutory Authority: RCW 49.17.040, [49.17.]050 and [49.17.]060. 97-19-014, § 296-62-07728, filed 9/5/97, effective 11/5/97; 97-01-079, § 296-62-07728, filed 12/17/96, effective 3/1/97.]

WAC 296-62-07733 Appendices. (1) Appendices A, D, E, and F to this part are incorporated as part of this section and the contents of these appendices are mandatory.

(2) Appendices B, G, H, I, J and K to this part are informational and are not intended to create any additional obligations not otherwise imposed or to detract from any existing obligations.

[Statutory Authority: RCW 49.17.010, [49.17.]040 and [49.17.]050. 99-10-071, § 296-62-07733, filed 5/4/99, effective 9/1/99. Statutory Authority: RCW 49.17.040, [49.17.]050 and [49.17.]060. 97-01-079, § 296-62-07733, filed 12/17/96, effective 3/1/97. Statutory Authority: Chapter 49.17 RCW. 91-03-044 (Order 90-18), § 296-62-07733, filed 1/10/91, effective 2/12/91; 87-24-051 (Order 87-24), § 296-62-07733, filed 11/30/87. Statutory Authority: RCW 49.17.050(2) and 49.17.040. 87-10-008 (Order 87-06), § 296-62-07733, filed 4/27/87.]

WAC 296-62-07735 Appendix A—WISHA reference method—Mandatory. This mandatory appendix specifies the procedure for analyzing air samples for asbestos, tremolite, anthophyllite, and actinolite and specifies quality control procedures that must be implemented by laboratories performing the analysis. The sampling and analytical methods described below represent the elements of the available monitoring methods (such as Appendix B to this section, the most current version of the WISHA method ID-60, or the most current version of the NIOSH 7400 method) which WISHA considers to be essential to achieve adequate employee exposure monitoring while allowing employers to use methods that are already established within their organizations. All employers who are required to conduct air monitoring under WAC 296-62-07709 are required to utilize analytical laboratories that use this procedure, or an equivalent method, for collecting and analyzing samples.

(1) Sampling and analytical procedure.

(a) The sampling medium for air samples must be mixed cellulose ester filter membranes. These must be designated by the manufacturer as suitable for asbestos, tremolite, anthophyllite, and actinolite counting. See below for rejection of blanks.

(b) The preferred collection device is the 25-mm diameter cassette with an open-faced 50-mm electrically conductive extension cowl. The 37-mm cassette may be used if necessary but only if written justification for the need to use the 37-mm filter cassette accompanies the sample results in the employee's exposure monitoring record. Do not reuse or reload cassettes for asbestos sample collection.

(c) An air flow rate between 0.5 liter/min and 4.0 liters/min must be selected for the 25-mm cassette. If the 37-

mm cassette is used, an air flow rate between 1 liter/min and 4.0 liters/min must be selected.

(d) Where possible, a sufficient air volume for each air sample must be collected to yield between one hundred and one thousand three hundred fibers per square millimeter on the membrane filter. If a filter darkens in appearance or if loose dust is seen on the filter, a second sample must be started.

(e) Ship the samples in a rigid container with sufficient packing material to prevent dislodging the collected fibers. Packing material that has a high electrostatic charge on its surface (e.g., expanded polystyrene) cannot be used because such material can cause loss of fibers to the sides of the cassette.

(f) Calibrate each personal sampling pump before and after use with a representative filter cassette installed between the pump and the calibration devices.

(g) Personal samples must be taken in the "breathing zone" of the employee (i.e., attached to or near the collar or lapel near the worker's face).

(h) Fiber counts must be made by positive phase contrast using a microscope with an 8 to 10 X eyepiece and a 40 to 45 X objective for a total magnification of approximately 400 X and a numerical aperture of 0.65 to 0.75. The microscope shall also be fitted with a green or blue filter.

(i) The microscope must be fitted with a Walton-Beckett eyepiece graticule calibrated for a field diameter of one hundred micrometers (+/-2 micrometers).

(j) The phase-shift detection limit of the microscope must be about 3 degrees measured using the HSE phase shift test slide as outlined below.

(i) Place the test slide on the microscope stage and center it under the phase objective.

(ii) Bring the blocks of grooved lines into focus.

Note: The slide consists of seven sets of grooved lines (ca. 20 grooves to each block) in descending order of visibility from sets one to seven, seven being the least visible. The requirements for asbestos, tremolite, anthophyllite, and actinolite counting are that the microscope optics must resolve the grooved lines in set three completely, although they may appear somewhat faint, and that the grooved lines in sets six and seven must be invisible. Sets four and five must be at least partially visible but may vary slightly in visibility between microscopes. A microscope that fails to meet these requirements has either too low or too high a resolution to be used for asbestos, tremolite, anthophyllite, and actinolite counting.

(iii) If the image deteriorates, clean and adjust the microscope optics. If the problem persists, consult the microscope manufacturer.

(k) Each set of samples taken will include ten percent blanks or a minimum of two blanks. These blanks must come from the same lot as the filters used for sample collection. The field blank results must be averaged and subtracted from the analytical results before reporting. Any samples represented by a blank having a fiber count in excess of the detection limit of the method being used must be rejected.

(l) The samples must be mounted by the acetone/triacetin method or a method with an equivalent index of refraction and similar clarity.

(m) Observe the following counting rules.

(i) Count only fibers equal to or longer than five micrometers. Measure the length of curved fibers along the curve.

(ii) Count all particles as asbestos, tremolite, anthophyllite, and actinolite that have a length-to-width ratio (aspect ratio) of three to one or greater.

(iii) Fibers lying entirely within the boundary of the Walton-Beckett graticule field must receive a count of one. Fibers crossing the boundary once, having one end within the circle, must receive the count of one-half. Do not count any fiber that crosses the graticule boundary more than once. Reject and do not count any other fibers even though they may be visible outside the graticule area.

(iv) Count bundles of fibers as one fiber unless individual fibers can be identified by observing both ends of an individual fiber.

(v) Count enough graticule fields to yield 100 fibers. Count a minimum of 20 fields; stop counting at 100 fields regardless of fiber count.

(n) Blind recounts must be conducted at the rate of ten percent.

(2) Quality control procedures.

(a) Intralaboratory program. Each laboratory and/or each company with more than one microscopist counting slides must establish a statistically designed quality assurance program involving blind recounts and comparisons between microscopists to monitor the variability of counting by each microscopist and between microscopists. In a company with more than one laboratory, the program must include all laboratories and must also evaluate the laboratory-to-laboratory variability.

(b) Interlaboratory program.

(i) Each laboratory analyzing asbestos, tremolite, anthophyllite, and actinolite samples for compliance determination shall implement an interlaboratory quality assurance program that as a minimum includes participation of at least two other independent laboratories. Each laboratory must participate in round robin testing at least once every six months with at least all the other laboratories in its interlaboratory quality assurance group. Each laboratory must submit slides typical of its own work load for use in this program. The round robin shall be designed and results analyzed using appropriate statistical methodology.

(ii) All laboratories should participate in a national sample testing scheme such as the Proficiency Analytical Testing Program (PAT), the Asbestos Registry sponsored by the American Industrial Hygiene Association (AIHA).

(c) All individuals performing asbestos, tremolite, anthophyllite, and actinolite analysis must have taken the NIOSH course for sampling and evaluating airborne asbestos, tremolite, anthophyllite, and actinolite dust or an equivalent course, recognized by the department.

(d) When the use of different microscopes contributes to differences between counters and laboratories, the effect of the different microscope must be evaluated and the microscope must be replaced, as necessary.

(e) Current results of these quality assurance programs must be posted in each laboratory to keep the microscopists informed.

[Statutory Authority: RCW 49.17.040, 49.17.050, 49.26.040 and 49.26.130. 99-17-026, § 296-62-07735, filed 8/10/99, effective 11/10/99. Statutory (2007 Ed.)]

Authority: RCW 49.17.040, [49.17.]050 and [49.17.]060. 97-01-079, § 296-62-07735, filed 12/17/96, effective 3/1/97. Statutory Authority: Chapter 49.17 RCW. 87-24-051 (Order 87-24), § 296-62-07735, filed 11/30/87. Statutory Authority: RCW 49.17.050(2) and 49.17.040. 87-10-008 (Order 87-06), § 296-62-07735, filed 4/27/87.]

WAC 296-62-07737 Appendix B—Detailed procedure for asbestos sampling and analysis—Nonmandatory.

Air

Matrix:

WISHA Permissible Exposure Limits:

Time Weighted Average	0.1 fiber/cc
Excursion Level (30 minutes)	1.0 fiber/cc

Collection Procedure:

A known volume of air is drawn through a 25-mm diameter cassette containing a mixed-cellulose ester filter. The cassette must be equipped with an electrically conductive 50-mm extension cowl. The sampling time and rate are chosen to give a fiber density of between 100 to 1,300 fibers/mm² on the filter.

Recommended Sampling Rate 0.5 to 4.0 liters/minute (L/min)

Recommended Air Volumes:

Minimum	25 L
Maximum	2,400 L

Analytical Procedure: A portion of the sample filter is cleared and prepared for asbestos fiber counting by Phase Contrast Microscopy (PCM) at 400X. Commercial manufacturers and products mentioned in this method are for descriptive use only and do not constitute endorsements by WISHA. Similar products from other sources can be substituted.

Introduction.

This method describes the collection of airborne asbestos fibers using calibrated sampling pumps with mixed-cellulose ester (MCE) filters and analysis by phase contrast microscopy (PCM). Some terms used are unique to this method and are defined below:

Asbestos: A term for naturally occurring fibrous minerals. Asbestos includes chrysotile, crocidolite, amosite (cummingtonite-grunerite asbestos), tremolite asbestos, actinolite asbestos, anthophyllite asbestos, and any of these minerals that have been chemically treated and/or altered. The precise chemical formulation of each species will vary with the location from which it was mined. Nominal compositions are listed:

Chrysotile	Mg ₃ Si ₂ O ₅ (OH) ₄
Crocidolite	Na ₂ Fe ₃ ²⁺ Fe ₂ ³⁺ Si ₈ O ₂₂ (OH) ₂
Amosite	(Mg,Fe) ₇ Si ₈ O ₂₂ (OH) ₂
Tremolite-actinolite	Ca ₂ (Mg,Fe) ₅ Si ₈ O ₂₂ (OH) ₂
Anthophyllite	(Mg,Fe) ₇ Si ₈ O ₂₂ (OH) ₂

Asbestos Fiber: A fiber of asbestos which meets the criteria specified below for a fiber.

Aspect Ratio: The ratio of the length of a fiber to its diameter (e.g. 3:1, 5:1 aspect ratios).

Cleavage Fragments: Mineral particles formed by comminution of minerals, especially those characterized by

parallel sides and a moderate aspect ratio (usually less than 20:1).

Detection Limit: The number of fibers necessary to be 95% certain that the result is greater than zero.

Differential Counting: The term applied to the practice of excluding certain kinds of fibers from the fiber count because they do not appear to be asbestos.

Fiber: A particle that is 5 µm or longer, with a length-to-width ratio of 3 to 1 or longer.

Field: The area within the graticule circle that is superimposed on the microscope image.

Set: The samples which are taken, submitted to the laboratory, analyzed, and for which, interim or final result reports are generated.

Tremolite, Anthophyllite, and Actinolite: The non-asbestos form of these minerals which meet the definition of a fiber. It includes any of these minerals that have been chemically treated and/or altered.

Walton-Beckett Graticule: An eyepiece graticule specifically designed for asbestos fiber counting. It consists of a circle with a projected diameter of 100 ± 2 µm (area of about 0.00785 mm²) with a crosshair having tic-marks at 3-µm intervals in one direction and 5-µm in the orthogonal direction. There are marks around the periphery of the circle to demonstrate the proper sizes and shapes of fibers. The disk is placed in one of the microscope eyepieces so that the design is superimposed on the field of view.

1. History.

(a) Early surveys to determine asbestos exposures were conducted using impinger counts of total dust with the counts expressed as million particles per cubic foot. The British Asbestos Research Council recommended filter membrane counting in 1969. In July 1969, the Bureau of Occupational Safety and Health published a filter membrane method for counting asbestos fibers in the United States. This method was refined by NIOSH and published as P & CAM 239. On May 29, 1971, OSHA specified filter membrane sampling with phase contrast counting for evaluation of asbestos exposures at worksites in the United States. The use of this technique was again required by OSHA in 1986. Phase contrast microscopy has continued to be the method of choice for the measurement of occupational exposure to asbestos.

(b) Principle. Air is drawn through a MCE filter to capture airborne asbestos fibers. A wedge shaped portion of the filter is removed, placed on a glass microscope slide and made transparent. A measured area (field) is viewed by PCM. All the fibers meeting a defined criteria for asbestos are counted and considered a measure of the airborne asbestos concentration.

(c) Advantages and Disadvantages

(i) There are four main advantages of PCM over other methods:

(A) The technique is specific for fibers. Phase contrast is a fiber counting technique which excludes non-fibrous particles from the analysis.

(B) The technique is inexpensive and does not require specialized knowledge to carry out the analysis for total fiber counts.

(C) The analysis is quick and can be performed on-site for rapid determination of air concentrations of asbestos fibers.

(D) The technique has continuity with historical epidemiological studies so that estimates of expected disease can be inferred from long-term determinations of asbestos exposures.

(ii) The main disadvantage of PCM is that it does not positively identify asbestos fibers. Other fibers which are not asbestos may be included in the count unless differential counting is performed. This requires a great deal of experience to adequately differentiate asbestos from non-asbestos fibers. Positive identification of asbestos must be performed by polarized light or electron microscopy techniques. A further disadvantage of PCM is that the smallest visible fibers are about 0.2 µm in diameter while the finest asbestos fibers may be as small as 0.02 µm in diameter. For some exposures, substantially more fibers may be present than are actually counted.

(d) Workplace Exposure. Asbestos is used by the construction industry in such products as shingles, floor tiles, asbestos cement, roofing felts, insulation and acoustical products. Non-construction uses include brakes, clutch facings, paper, paints, plastics, and fabrics. One of the most significant exposures in the workplace is the removal and encapsulation of asbestos in schools, public buildings, and homes. Many workers have the potential to be exposed to asbestos during these operations. About 95% of the asbestos in commercial use in the United States is chrysotile. Crocidolite and amosite make up most of the remainder. Anthophyllite and tremolite or actinolite are likely to be encountered as contaminants in various industrial products.

(e) Physical Properties. Asbestos fiber possesses a high tensile strength along its axis, is chemically inert, non-combustible, and heat resistant. It has a high electrical resistance and good sound absorbing properties. It can be weaved into cables, fabrics or other textiles, and also matted into asbestos papers, felts, or mats.

2. Range and Detection Limit.

(a) The ideal counting range on the filter is 100 to 1,300 fibers/mm². With a Walton-Beckett graticule this range is equivalent to 0.8 to 10 fibers/field. Using NIOSH counting statistics, a count of 0.8 fibers/field would give an approximate coefficient of variation (CV) of 0.13.

(b) The detection limit for this method is 4.0 fibers per 100 fields or 5.5 fibers/mm². This was determined using an equation to estimate the maximum CV possible at a specific concentration (95% confidence) and a Lower Control Limit of zero. The CV value was then used to determine a corresponding concentration from historical CV vs fiber relationships. As an example:

$$\text{Lower Control Limit (95\% Confidence)} = AC - 1.645(CV)(AC)$$

Where:

$$\begin{aligned} AC &= \text{Estimate of the airborne fiber concentration (fibers/cc) Setting the Lower Control Limit} \\ &= 0 \text{ and solving for CV:} \\ 0 &= AC - 1.645(CV)(AC) \\ CV &= 0.61 \end{aligned}$$

This value was compared with CV vs. count curves. The count at which CV = 0.61 for Leidel-Busch counting statistics 8(i) or for an OSHA Salt Lake Technical Center (OSHA-SLTC) CV curve (see Appendix A for further information) was 4.4 fibers or 3.9 fibers per 100 fields, respectively. Although a lower detection limit of 4 fibers per 100 fields is supported by the OSHA-SLTC data, both data sets support the 4.5 fibers per 100 fields value.

3. Method Performance—Precision and Accuracy. Precision is dependent upon the total number of fibers counted and the uniformity of the fiber distribution on the filter. A general rule is to count at least 20 and not more than 100 fields. The count is discontinued when 100 fibers are counted, provided that 20 fields have already been counted. Counting more than 100 fibers results in only a small gain in precision. As the total count drops below 10 fibers, an accelerated loss of precision is noted. At this time, there is no known method to determine the absolute accuracy of the asbestos analysis. Results of samples prepared through the Proficiency Analytical Testing (PAT) Program and analyzed by the OSHA-SLTC showed no significant bias when compared to PAT reference values. The PAT samples were analyzed from 1987 to 1989 (N=36) and the concentration range was from 120 to 1,300 fibers/mm².

4. Interferences. Fibrous substances, if present, may interfere with asbestos analysis. Some common fibers are:

Fiber glass	Perlite veins.
Anhydrite plant fibers gypsum	Some synthetic fibers.
Membrane structures	Sponge spicules and diatoms.
Microorganisms	Wollastonite.

The use of electron microscopy or optical tests such as polarized light, and dispersion staining may be used to differentiate these materials from asbestos when necessary.

5. Sampling.

(a) Equipment.

(i) Sample assembly. Conductive filter holder consisting of a 25-mm diameter, 3-piece cassette having a 50-mm long electrically conductive extension cowl. Backup pad, 25-mm, cellulose. Membrane filter, mixed-cellulose ester (MCE), 25-mm, plain, white, 0.8-to 1.2- μ m pore size.

Notes: (A) DO NOT RE-USE CASSETTES.

(B) Fully conductive cassettes are required to reduce fiber loss to the sides of the cassette due to electrostatic attraction.

(C) Purchase filters which have been selected by the manufacturer for asbestos counting or analyze representative filters for fiber background before use. Discard the filter lot if more than 5 fibers/100 fields are found.

(D) To decrease the possibility of contamination, the sampling system (filter-backup pad-cassette) for asbestos is usually preassembled by the manufacturer.

(ii) Gel bands for sealing cassettes.

(iii) Sampling pump. Each pump must be a battery operated, self-contained unit small enough to be placed on the monitored employee and not interfere with the work being

performed. The pump must be capable of sampling at 2.5 liters per minute (L/min) for the required sampling time.

(iv) Flexible tubing, 6-mm bore.

(v) Pump calibration. Stopwatch and bubble tube/burette or electronic meter.

(b) Sampling Procedure.

(i) Seal the point where the base and cowl of each cassette meet with a gel band or tape.

(ii) Charge the pumps completely before beginning.

(iii) Connect each pump to a calibration cassette with an appropriate length of 6-mm bore plastic tubing. Do not use luer connectors—the type of cassette specified above has built-in adapters.

(iv) Select an appropriate flow rate for the situation being monitored. The sampling flow rate must be between 0.5 and 4.0 L/min for personal sampling and is commonly set between 1 and 2 L/min. Always choose a flow rate that will not produce overloaded filters.

(v) Calibrate each sampling pump before and after sampling with a calibration cassette in-line (Note: This calibration cassette should be from the same lot of cassettes used for sampling). Use a primary standard (e.g. bubble burette) to calibrate each pump. If possible, calibrate at the sampling site.

Note: If sampling site calibration is not possible, environmental influences may affect the flow rate. The extent is dependent on the type of pump used. Consult with the pump manufacturer to determine dependence on environmental influences. If the pump is affected by temperature and pressure changes, use the formula in subsection (10) of this section to calculate the actual flow rate.

(vi) Connect each pump to the base of each sampling cassette with flexible tubing. Remove the end cap of each cassette and take each air sample open face. Assure that each sample cassette is held open side down in the employee's breathing zone during sampling. The distance from the nose/mouth of the employee to the cassette should be about 10 cm. Secure the cassette on the collar or lapel of the employee using spring clips or other similar devices.

(vii) A suggested minimum air volume when sampling to determine TWA compliance is 25 L. For Excursion Limit (30 min sampling time) evaluations, a minimum air volume of 48 L is recommended.

(viii) The most significant problem when sampling for asbestos is overloading the filter with non-asbestos dust. Suggested maximum air sample volumes for specific environments are:

Environment	Air Vol. (L)
Asbestos removal operations (visible dust)	100
Asbestos removal operations (little dust)	240
Office environments	400 to 2,400

Caution: Do not overload the filter with dust. High levels of non-fibrous dust particles may obscure fibers on the filter and lower the count or make counting impossible. If more than about 25 to 30% of the field area is obscured with dust, the result may be biased low. Smaller air volumes may be necessary when there is excessive non-asbestos dust in the air. While sampling, observe the filter with a small flashlight. If there is a visible layer of dust on the filter, stop sampling, remove and seal the cassette, and replace with a new sampling assembly. The total dust loading should not exceed 1 mg.

(ix) Blank samples are used to determine if any contamination has occurred during sample handling. Prepare two blanks for the first 1 to 20 samples. For sets containing greater than 20 samples, prepare blanks as 10% of the samples. Handle blank samples in the same manner as air samples with one exception: Do not draw any air through the blank samples. Open the blank cassette in the place where the sample cassettes are mounted on the employee. Hold it open for about 30 seconds. Close and seal the cassette appropriately. Store blanks for shipment with the sample cassettes.

(x) Immediately after sampling, close and seal each cassette with the base and plastic plugs. Do not touch or puncture the filter membrane as this will invalidate the analysis.

(xi) Attach a seal (OSHA-21 or equivalent) around each cassette in such a way as to secure the end cap plug and base plug. Tape the ends of the seal together since the seal is not long enough to be wrapped end-to-end. Also wrap tape around the cassette at each joint to keep the seal secure.

(c) Sample Shipment.

(i) Send the samples to the laboratory with paperwork requesting asbestos analysis. List any known fibrous interferences present during sampling on the paperwork. Also, note the workplace operation(s) sampled.

(ii) Secure and handle the samples in such that they will not rattle during shipment nor be exposed to static electricity. Do not ship samples in expanded polystyrene peanuts, vermiculite, paper shreds, or excelsior. Tape sample cassettes to sheet bubbles and place in a container that will cushion the samples without rattling.

(iii) To avoid the possibility of sample contamination, always ship bulk samples in separate mailing containers.

6. Analysis.

(a) Safety Precautions.

(i) Acetone is extremely flammable and precautions must be taken not to ignite it. Avoid using large containers or quantities of acetone. Transfer the solvent in a ventilated laboratory hood. Do not use acetone near any open flame. For generation of acetone vapor, use a spark free heat source.

(ii) Any asbestos spills should be cleaned up immediately to prevent dispersal of fibers. Prudence should be exercised to avoid contamination of laboratory facilities or exposure of personnel to asbestos. Asbestos spills should be cleaned up with wet methods and/or a High Efficiency Particulate-Air (HEPA) filtered vacuum.

Caution: Do not use a vacuum without a HEPA filter—It will disperse fine asbestos fibers in the air.

(b) Equipment.

(i) Phase contrast microscope with binocular or trinocular head.

(ii) Widefield or Huygenian 10X eyepieces (NOTE: The eyepiece containing the graticule must be a focusing eyepiece. Use a 40X phase objective with a numerical aperture of 0.65 to 0.75).

(iii) Kohler illumination (if possible) with green or blue filter.

(iv) Walton-Beckett Graticule, type G-22 with 100 ± 2 μ m projected diameter.

(v) Mechanical stage. A rotating mechanical stage is convenient for use with polarized light.

(vi) Phase telescope.

(vii) Stage micrometer with 0.01-mm subdivisions.

(viii) Phase-shift test slide, mark II (Available from PTR optics Ltd., and also McCrone).

(ix) Precleaned glass slides, 25 mm X 75 mm. One end can be frosted for convenience in writing sample numbers, etc., or paste-on labels can be used.

(x) Cover glass #1-1/2.

(xi) Scalpel (#10, curved blade).

(xii) Fine tipped forceps.

(xiii) Aluminum block for clearing filter.

(xiv) Automatic adjustable pipette, 100-to 500- μ L.

(xv) Micropipette, 5 μ L.

(c) Reagents.

(i) Acetone (HPLC grade).

(ii) Triacetin (glycerol triacetate).

(iii) Lacquer or nail polish.

(d) Standard Preparation. A way to prepare standard asbestos samples of known concentration has not been developed. It is possible to prepare replicate samples of nearly equal concentration. This has been performed through the PAT program. These asbestos samples are distributed by the AIHA to participating laboratories. Since only about one-fourth of a 25-mm sample membrane is required for an asbestos count, any PAT sample can serve as a "standard" for replicate counting.

(e) Sample Mounting.

Note: See Safety Precautions in (6)(a) before proceeding. The objective is to produce samples with a smooth (non-grainy) background in a medium with a refractive index of approximately 1.46. The technique below collapses the filter for easier focusing and produces permanent mounts which are useful for quality control and interlaboratory comparison. An aluminum block or similar device is required for sample preparation.

See Safety Precautions in (6)(a) before proceeding. The objective is to produce samples with a smooth (non-grainy) background in a medium with a refractive index of approximately 1.46. The technique below collapses the filter for easier focusing and produces permanent mounts which are useful for quality control and interlaboratory comparison. An aluminum block or similar device is required for sample preparation.

(i) Heat the aluminum block to about 70°C. The hot block should not be used on any surface that can be damaged by either the heat or from exposure to acetone.

(ii) Ensure that the glass slides and cover glasses are free of dust and fibers.

(iii) Remove the top plug to prevent a vacuum when the cassette is opened. Clean the outside of the cassette if necessary. Cut the seal and/or tape on the cassette with a razor blade. Very carefully separate the base from the extension cowl, leaving the filter and backup pad in the base.

(iv) With a rocking motion cut a triangular wedge from the filter using the scalpel. This wedge should be one-sixth to one-fourth of the filter. Grasp the filter wedge with the forceps on the perimeter of the filter which was clamped between the cassette pieces. DO NOT TOUCH the filter with your finger. Place the filter on the glass slide sample side up. Static electricity will usually keep the filter on the slide until it is cleared.

(v) Place the tip of the micropipette containing about 200 μL acetone into the aluminum block. Insert the glass slide into the receiving slot in the aluminum block. Inject the acetone into the block with slow, steady pressure on the plunger while holding the pipette firmly in place. Wait 3 to 5 seconds for the filter to clear, then remove the pipette and slide from the aluminum block.

(vi) Immediately (less than 30 seconds) place 2.5 to 3.5 μL of triacetin on the filter (Note: Waiting longer than 30 seconds will result in increased index of refraction and decreased contrast between the fibers and the preparation. This may also lead to separation of the cover slip from the slide).

(vii) Lower a cover slip gently onto the filter at a slight angle to reduce the possibility of forming air bubbles. If more than 30 seconds have elapsed between acetone exposure and triacetin application, glue the edges of the cover slip to the slide with lacquer or nail polish.

(viii) If clearing is slow, warm the slide for 15 min on a hot plate having a surface temperature of about 50°C to hasten clearing. The top of the hot block can be used if the slide is not heated too long.

(ix) Counting may proceed immediately after clearing and mounting are completed.

(f) Sample Analysis. Completely align the microscope according to the manufacturer's instructions. Then, align the microscope using the following general alignment routine at the beginning of every counting session and more often if necessary.

(i) Alignment.

(A) Clean all optical surfaces. Even a small amount of dirt can significantly degrade the image.

(B) Rough focus the objective on a sample.

(C) Close down the field iris so that it is visible in the field of view. Focus the image of the iris with the condenser focus. Center the image of the iris in the field of view.

(D) Install the phase telescope and focus on the phase rings. Critically center the rings. Misalignment of the rings results in astigmatism which will degrade the image.

(E) Place the phase-shift test slide on the microscope stage and focus on the lines. The analyst must see line set 3 and should see at least parts of 4 and 5 but, not see line set 6 or 6. A microscope/microscopist combination which does not pass this test may not be used.

(ii) Counting Fibers.

(A) Place the prepared sample slide on the mechanical stage of the microscope. Position the center of the wedge under the objective lens and focus upon the sample.

(B) Start counting from one end of the wedge and progress along a radial line to the other end (count in either direction from perimeter to wedge tip). Select fields randomly, without looking into the eyepieces, by slightly advancing the slide in one direction with the mechanical stage control.

(C) Continually scan over a range of focal planes (generally the upper 10 to 15 μm of the filter surface) with the fine focus control during each field count. Spend at least 5 to 15 seconds per field.

(D) Most samples will contain asbestos fibers with fiber diameters less than 1 μ . Look carefully for faint fiber images.

The small diameter fibers will be very hard to see. However, they are an important contribution to the total count.

(E) Count only fibers equal to or longer than 5 μ . Measure the length of curved fibers along the curve.

(F) Count fibers which have a length to width ratio of 3:1 or greater.

(G) Count all the fibers in at least 20 fields. Continue counting until either 100 fibers are counted or 100 fields have been viewed; whichever occurs first. Count all the fibers in the final field.

(H) Fibers lying entirely within the boundary of the Walton-Beckett graticule field receive a count of 1. Fibers crossing the boundary once, having one end within the circle receive a count of 1/2. Do not count any fiber that crosses the graticule boundary more than once. Reject and do not count any other fibers even though they may be visible outside the graticule area. If a fiber touches the circle, it is considered to cross the line.

(I) Count bundles of fibers as one fiber unless individual fibers can be clearly identified and each individual fiber is clearly not connected to another counted fiber.

(J) Record the number of fibers in each field in a consistent way such that filter non-uniformity can be assessed.

(K) Regularly check phase ring alignment.

(L) When an agglomerate (mass of material) covers more than 25% of the field of view, reject the field and select another. Do not include it in the number of fields counted.

(M) Perform a "blind recount" of 1 in every 10 filter wedges (slides). Re-label the slides using a person other than the original counter.

(g) Fiber Identification. As previously mentioned in (1)(c), PCM does not provide positive confirmation of asbestos fibers. Alternate differential counting techniques should be used if discrimination is desirable. Differential counting may include primary discrimination based on morphology, polarized light analysis of fibers, or modification of PCM data by Scanning Electron or Transmission Electron Microscopy. A great deal of experience is required to routinely and correctly perform differential counting. It is discouraged unless it is legally necessary. Then, only if a fiber is obviously not asbestos should it be excluded from the count. Further discussion of this technique can be found in reference 8(j). If there is a question whether a fiber is asbestos or not, follow the rule: "WHEN IN DOUBT, COUNT."

(h) Analytical Recommendations—Quality Control System.

(i) All individuals performing asbestos analysis must have taken the NIOSH course for sampling and evaluating airborne asbestos or an equivalent course.

(ii) Each laboratory engaged in asbestos counting must set up a slide trading arrangement with at least two other laboratories in order to compare performance and eliminate inbreeding of error. The slide exchange occurs at least semi-annually. The round robin results must be posted where all analysts can view individual analyst's results.

(iii) Each laboratory engaged in asbestos counting must participate in the Proficiency Analytical Testing Program, the Asbestos Analyst Registry or equivalent.

(iv) Each analyst must select and count prepared slides from a "slide bank". These are quality assurance counts. The slide bank must be prepared using uniformly distributed sam-

ples taken from the workload. Fiber densities should cover the entire range routinely analyzed by the laboratory. These slides are counted blind by all counters to establish an original standard deviation. This historical distribution is compared with the quality assurance counts. A counter must have 95% of all quality control samples counted within three standard deviations of the historical mean. This count is then integrated into a new historical mean and standard deviation for the slide. The analyses done by the counters to establish the slide bank may be used for an interim quality control program if the data are treated in a proper statistical fashion.

7. Calculations.

(a) Calculate the estimated airborne asbestos fiber concentration on the filter sample using the following formula:

$$AC = \frac{\left[\left(\frac{FB}{FL} \right) - \left(\frac{BFB}{BFL} \right) \right] \times ECA}{1000 \times FR \times T \times MFA}$$

Where:

AC	=	Airborne fiber concentration
FB	=	Total number of fibers greater than 5 µm counted
FL	=	Total number of fields counted on the filter
BFB	=	Total number of fibers greater than 5µm counted in the blank
BFL	=	Total number of fields counted on the blank
ECA	=	Effective collecting area of filter (385 mm ² nominal for a 25-mm filter.)
FR	=	Pump flow rate (L/min)
MFA	=	Microscope count field area (mm ²). This is 0.00785 mm ² for a Walton-Beckett Graticule.
T	=	Sample collection time (min)
1,000	=	Conversion of L to cc

Note: The collection area of a filter is seldom equal to 385 mm². It is appropriate for laboratories to routinely monitor the exact diameter using an inside micrometer. The collection area is calculated according to the formula: Area = $\pi(d/2)^2$

(b) Short-cut Calculation

Since a given analyst always has the same interpupillary distance, the number of fields per filter for a particular analyst will remain constant for a given size filter. The field size for that analyst is constant (i.e. the analyst is using an assigned microscope and is not changing the reticle). For example, if the exposed area of the filter is always 385 mm² and the size of the field is always 0.00785 mm², the number of fields per filter will always be 49,000. In addition it is necessary to convert liters of air to cc. These three constants can then be combined such that ECA/(1,000 X MFA) = 49. The previous equation simplifies to:

$$AC = \frac{\left(\frac{FB}{FL} \right) - \left(\frac{BFB}{BFL} \right) \times 4}{FR \times T}$$

(c) Recount Calculations. As mentioned in step 13 of 6 (f)(ii), a "blind recount" of 10% of the slides is performed. In all cases, differences will be observed between the first and second counts of the same filter wedge. Most of these differences will be due to chance alone, that is, due to the random variability (precision) of the count method. Statistical recount criteria enables one to decide whether observed differences can be explained due to chance alone or are probably due to systematic differences between analysts, microscopes, or other biasing factors. The following recount criterion is for a pair of counts that estimate AC in fibers/cc. The criterion is given at the type-I error level. That is, there is 5% maximum risk that we will reject a pair of counts for the reason that one might be biased, when the large observed difference is really due to chance. Reject a pair of counts if:

$$\left| \sqrt{AC_2} - \sqrt{AC_1} \right| > 2.78 \times \left(\sqrt{AC_{avg}} \right) \times CV_F$$

Where:

AC ₁	=	lower estimated airborne fiber concentration
AC ₂	=	higher estimated airborne fiber concentration
AC _{avg}	=	average of the two concentration estimates
CV _{FB}	=	CV for the average of the two concentration estimates

If a pair of counts are rejected by this criterion then, recount the rest of the filters in the submitted set. Apply the test and reject any other pairs failing the test. Rejection shall include a memo to the industrial hygienist stating that the sample failed a statistical test for homogeneity and the true air concentration may be significantly different than the reported value.

(d) Reporting Results. Report results to the industrial hygienist as fibers/cc. Use two significant figures. If multiple analyses are performed on a sample, an average of the results is to be reported unless any of the results can be rejected for cause.

8. References.

(a) Dreesen, W.C., et al, U.S. Public Health Service: A Study of Asbestosis in the Asbestos Textile Industry, (Public Health Bulletin No. 241), US Treasury Dept., Washington, DC, 1938.

(b) Asbestos Research Council: The Measurement of Airborne Asbestos Dust by the Membrane Filter Method (Technical Note), Asbestos Research Council, Rockdale, Lancashire, Great Britain, 1969.

(c) Bayer, S.G., Zumwalde, R.D., Brown, T.A., Equipment and Procedure for Mounting Millipore Filters and Counting Asbestos Fibers by Phase Contrast Microscopy, Bureau of Occupational Health, U.S. Dept. of Health, Education and Welfare, Cincinnati, OH, 1969.

(d) NIOSH Manual of Analytical Methods, 2nd ed., Vol. 1 (DHEW/NIOSH Pub. No. 77-157-A). National Institute for Occupational Safety and Health, Cincinnati, OH, 1977, pp.239-1-239-21.

(e) Asbestos, Code of Federal Regulations 29 CFR 1910.1001. 1971.

(f) Occupational Exposure to Asbestos, Tremolite, Anthophyllite, and Actinolite. Final Rule, Federal Register 51: 119 (20 June 1986). pp.22612-22790.

(g) Asbestos, Tremolite, Anthophyllite, and Actinolite, Code of Federal Regulations 1910.1001. 1988. pp 711-752.

(h) Criteria for a Recommended Standard—Occupational Exposure to Asbestos (DHEW/NIOSH Pub. No. HSM 72-10267), National Institute for Occupational Safety and Health NIOSH, Cincinnati, OH, 1972. pp. III-1-III-24.

(i) Leidel, N.A., Bayer, S.G., Zumwalde, R.D., Busch, K.A., USPHS/NIOSH Membrane Filter Method for Evaluating Airborne Asbestos Fibers (DHEW/NIOSH Pub. No. 79-127). National Institute for Occupational Safety and Health, Cincinnati, OH, 1979.

(j) Dixon, W.C., Applications of Optical Microscopy in Analysis of Asbestos and Quartz, Analytical Techniques in Occupational Health Chemistry, edited by D.D. Dollberg and A.W. Verstuyft. Wash. D.C.: American Chemical Society, (ACS Symposium Series 120) 1980. pp. 13-41.

9. Quality Control. The OSHA asbestos regulations require each laboratory to establish a quality control program. The following is presented as an example of how the OSHA-SLTC constructed its internal CV curve as part of meeting this requirement. Data for the CV curve shown below is from 395 samples collected during OSHA compliance inspections and analyzed from October 1980 through April 1986. Each sample was counted by 2 to 5 different counters independently of one another. The standard deviation and the CV statistic was calculated for each sample. This data was then plotted on a graph of CV vs. fibers/mm². A least squares regression was performed using the following equation:

$$CV = \text{antilog}_{10}[A(\log_{10}(x))^2 + B(\log_{10}(x)) + C]$$

Where:

x = the number of fibers/mm²

Application of least squares gave:

A = 0.182205

B = -0.973343

C = 0.327499

Using these values, the equation becomes:

$$CV = \text{antilog}_{10}[0.182205(\log_{10}(x))^2 - 0.973343(\log_{10}(x)) + 0.327499]$$

10. Sampling Pump Flow Rate Corrections. This correction is used if a difference greater than 5% in ambient temperature and/or pressure is noted between calibration and sampling sites and the pump does not compensate for the differences.

$$Q_{\text{act}} = Q_{\text{cal}} \times \sqrt{\left(\frac{P_{\text{cal}}}{P_{\text{act}}}\right) \times \left(\frac{T_{\text{act}}}{T_{\text{cal}}}\right)}$$

Where:

Q_{act} = actual flow rate

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Q_{cal} = calibrated flow rate (if a rotameter was used, the rotameter value)

P_{cal} = uncorrected air pressure at calibration

P_{act} = uncorrected air pressure at sampling site

T_{act} = temperature at sampling site (K)

T_{cal} = temperature at calibration (K)

11. Walton-Beckett Graticule

When ordering the Graticule for asbestos counting, specify the exact disc diameter needed to fit the ocular of the microscope and the diameter (mm) of the circular counting area. Instructions for measuring the dimensions necessary are listed:

(a) Insert any available graticule into the focusing eyepiece and focus so that the graticule lines are sharp and clear.

(b) Align the microscope.

(c) Place a stage micrometer on the microscope object stage and focus the microscope on the graduated lines.

(d) Measure the magnified grid length, PL (μm), using the stage micrometer.

(e) Remove the graticule from the microscope and measure its actual grid length, AL (mm). This can be accomplished by using a mechanical stage fitted with verniers, or a jeweler's loupe with a direct reading scale.

(f) Let D = 100 μm. Calculate the circle diameter, d_c (mm), for the Walton-Beckett graticule and specify the diameter when making a purchase:

$$d_c = \frac{AL \times D}{PL}$$

Example: If PL = 108 μm, AL = 2.93 mm and D = 100 μm, then,

$$d_c = (2.93 \times 100)/108 = 2.71 \text{ mm}$$

(g) Each eyepiece-objective-reticle combination on the microscope must be calibrated. Should any of the three be changed (by zoom adjustment, disassembly, replacement, etc.), the combination must be recalibrated. Calibration may change if interpupillary distance is changed. Measure the field diameter, D (acceptable range: 100 ± 2 μm) with a stage micrometer upon receipt of the graticule from the manufacturer. Determine the field area (mm²).

$$\text{Field Area} = \pi(D/2)^2$$

If D = 100 μm = 0.1 mm, then

$$\text{Field Area} = \pi(0.1 \text{ mm}/2)^2 = 0.00785 \text{ mm}^2$$

The Graticule is available from: Graticules Ltd., Morley Road, Tonbridge TN9 1RN, Kent, England (Telephone 011-44-732-359061). Also available from PTR Optics Ltd., 145 Newton Street, Waltham, MA 02154 [telephone (617) 891-6000] or McCrone Accessories and Components, 2506 S. Michigan Ave., Chicago, IL 60616 [phone (312) 842-7100]. The graticule is custom made for each microscope.

BILLING CODE 4510-26-P

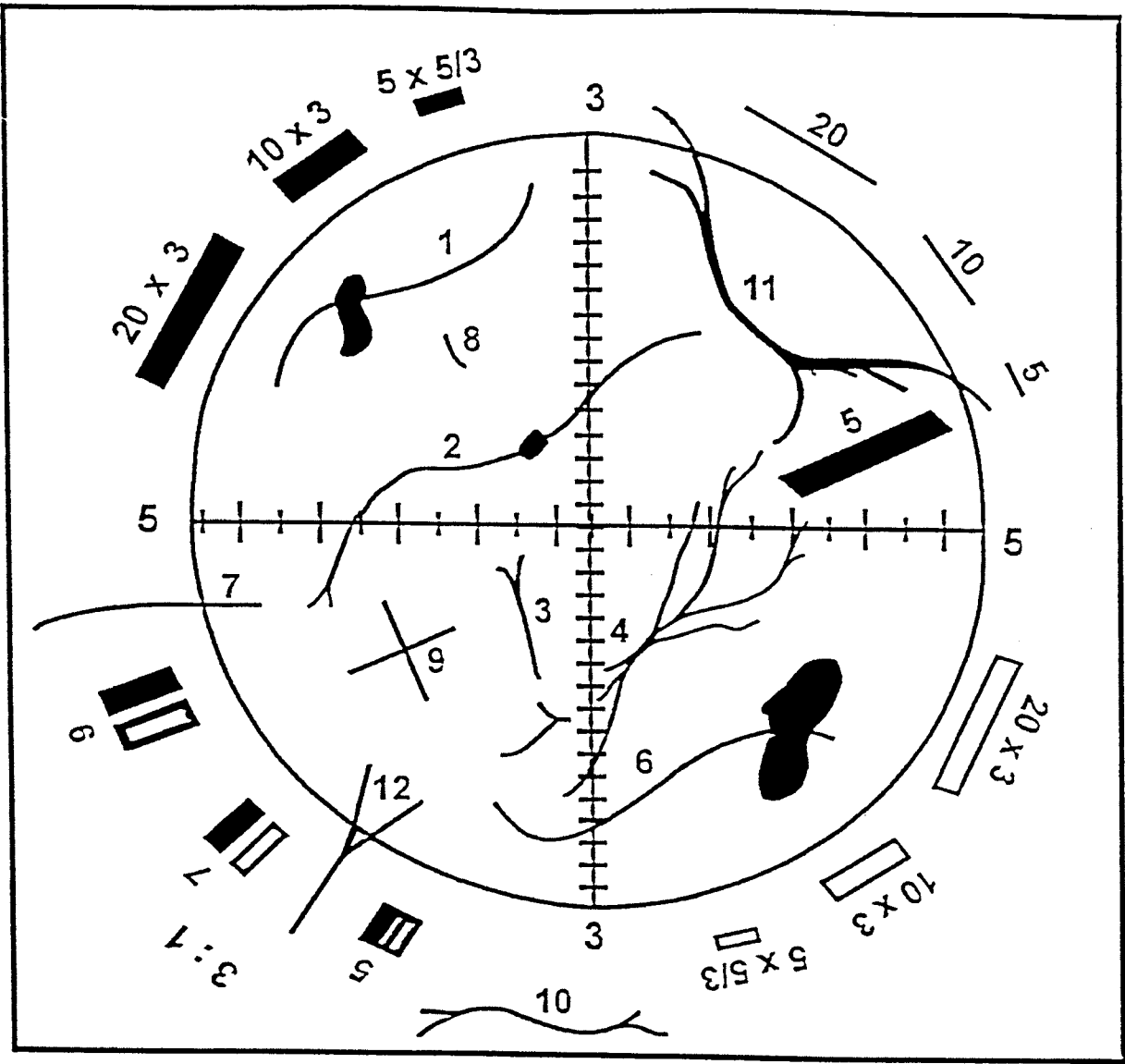


Figure 1: Walton-Beckett Graticule with some explanatory fibers.
Counts for the Fibers in Figure

Structure No.	Count	Explanation
1 to 6	1	Single fibers all contained within the circle.
7	1/2	Fiber crosses circle once.
8	0	Fiber too short.
9	2	Two crossing fibers.
10	0	Fiber outside graticule.
11	0	Fiber crosses graticule twice.
12	1/2	Although split, fiber only crosses once.

[Statutory Authority: RCW 49.17.040, 49.17.050, 49.26.040 and 49.26.130. 99-17-026, § 296-62-07737, filed 8/10/99, effective 11/10/99. Statutory Authority: RCW 49.17.040, [49.17.]050 and [49.17.]060. 97-01-079, § 296-62-07737, filed 12/17/96, effective 3/1/97. Statutory Authority: Chapter 49.17 RCW. 87-24-051 (Order 87-24), § 296-62-07737, filed 11/30/87. Statutory Authority: RCW 49.17.050(2) and 49.17.040. 87-10-008 (Order 87-06), § 296-62-07737, filed 4/27/87.]

Reviser's note: The brackets and enclosed material in the text of the above section occurred in the copy filed by the agency.

WAC 296-62-07741 Appendix D—Medical questionnaires—Mandatory. This mandatory appendix contains the medical questionnaires that must be administered to all employees who are exposed to asbestos, tremolite, antho-

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phyllite, and actinolite, or a combination of these minerals above the permissible exposure limit (0.1 f/cc), and who will therefore be included in their employer's medical surveillance program. Part 1 of the appendix contains the initial

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medical questionnaire, which must be obtained for all new hires who will be covered by the medical surveillance requirements. Part 2 includes the abbreviated periodical medical questionnaire, which must be administered to all employees who are provided periodic medical examinations under the medical surveillance provisions of the standard.

Part 1

INITIAL MEDICAL QUESTIONNAIRE

1.	NAME								
2.	SOCIAL SECURITY #								
		1	2	3	4	5	6	7	8
3.	CLOCK NUMBER								
					10	11	12	13	14
4.	PRESENT OCCUPATION								
5.	PLANT								
6.	ADDRESS								
7.	.....							
									(Zip Code)
8.	TELEPHONE NUMBER								
9.	INTERVIEWER								
10.	DATE								
				16	17	18	19	20	21
11.	Date of birth								
	Month Day Year			22	23	24	25	26	27
12.	Place of birth								
13.	Sex	1. Male	...						
		2. Female	...						
14.	What is your marital status?	1. Single	...	4. Separated/					
		2. Married	...	Divorced	...				
		3. Widowed	...						
15.	Race	1. White	...	4. Hispanic	...				
		2. Black	...	5. Indian	...				
		3. Asian	...	6. Other	...				
16.	What is the highest grade completed in school?								
	(For example 12 years is completion of high school)								

OCCUPATIONAL HISTORY

17 A.	Have you ever worked full time (30 hours per week or more) for 6 months or more?	1. Yes ...	2. No ...
	IF YES TO 17A:		
B.	Have you ever worked for a year or more in any dusty job? Specify job/industry.	1. Yes ...	2. No ...
	Was dust exposure: 1. Mild. ...	3. Does not apply ...	
		Total years worked ...	
C.	Have you ever been exposed to gas or chemical fumes in your work? Specify job/industry	1. Yes ...	2. No ...
	Was exposure: 1. Mild. ...	2. Moderate. ...	3. Severe. ...
D.	What has been your usual occupation or job—the one you have worked at the longest?		
	1. Job occupation		
	2. Number of years employed in this occupation		
	3. Position/job title		
	4. Business, field or industry		

(Record on lines the years in which you have worked in any of these industries, e.g., 1960-1969.)

Have you ever worked:

	YES	NO
E. In a mine?	<input type="checkbox"/>	<input type="checkbox"/>
F. In a quarry?	<input type="checkbox"/>	<input type="checkbox"/>
G. In a foundry?	<input type="checkbox"/>	<input type="checkbox"/>
H. In a pottery?	<input type="checkbox"/>	<input type="checkbox"/>
I. In a cotton, flax or hemp mill?	<input type="checkbox"/>	<input type="checkbox"/>
J. With asbestos?	<input type="checkbox"/>	<input type="checkbox"/>

18. PAST MEDICAL HISTORY

	YES	NO
A. Do you consider yourself to be in good health?	<input type="checkbox"/>	<input type="checkbox"/>
If "NO" state reason		
B. Have you any defect in vision?	<input type="checkbox"/>	<input type="checkbox"/>
If "YES" state nature of defect		

C. Have you any hearing defect?	<input type="checkbox"/>	<input type="checkbox"/>
If "YES" state nature of defect		
D. Are you suffering from or have you ever suffered from:		
a. Epilepsy (or fits, seizures, convulsions)?	<input type="checkbox"/>	<input type="checkbox"/>
b. Rheumatic fever?	<input type="checkbox"/>	<input type="checkbox"/>
c. Kidney disease?	<input type="checkbox"/>	<input type="checkbox"/>
d. Bladder disease?	<input type="checkbox"/>	<input type="checkbox"/>
e. Diabetes?	<input type="checkbox"/>	<input type="checkbox"/>
f. Jaundice	<input type="checkbox"/>	<input type="checkbox"/>

19. CHEST COLDS AND CHEST ILLNESSES

19A. If you get a cold, does it usually go to your chest? (Usually means more than 1/2 the time.)	1. Yes ...	2. No ...
20A. During the past 3 years, have you had any chest illnesses that have kept you off work, indoors at home, or in bed?	1. Yes ...	2. No ...
IF YES TO 20A:		
B. Did you produce phlegm with any of these chest illnesses?	1. Yes ...	2. No ...
C. In the last 3 years, how many such illnesses with (increased) phlegm did you have which lasted a week or more?	3. Does not apply ...	
	Number of illnesses. ...	
	No such illnesses. ...	
21. Did you have any lung trouble before the age of 16?	1. Yes ...	2. No ...
22. Have you ever had any of the following?		
1A. Attacks of bronchitis?	1. Yes ...	2. No ...
IF YES TO 1A:		
B. Was it confirmed by a doctor?	1. Yes ...	2. No ...
C. At what age was your first attack?	3. Does not apply ...	
	Age in years ...	
	Does not apply ...	
2A. Pneumonia? (include broncho-pneumonia)	1. Yes ...	2. No ...
IF YES TO 2A:		
B. Was it confirmed by a doctor?	1. Yes ...	2. No ...
C. At what age did you first have it?	3. Does not apply ...	
	Age in years ...	
	Does not apply ...	
3A. Hay fever?	1. Yes ...	2. No ...
IF YES TO 3A:		
B. Was it confirmed by a doctor?	1. Yes ...	2. No ...
C. At what age did it start?	3. Does not apply ...	
	Age in years ...	
	Does not apply ...	
23A. Have you ever had chronic bronchitis?	1. Yes ...	2. No ...
IF YES TO 23A:		
B. Do you still have it?	1. Yes ...	2. No ...
C. Was it confirmed by a doctor?	3. Does not apply ...	
	Age in years ...	
	Does not apply ...	
24A. Have you ever had emphysema?	1. Yes ...	2. No ...
IF YES TO 24A:		
B. Do you still have it?	1. Yes ...	2. No ...
C. Was it confirmed by a doctor?	3. Does not apply ...	
	Age in years ...	
	Does not apply ...	
25A. Have you ever had asthma?	1. Yes ...	2. No ...
IF YES TO 25A:		
B. Do you still have it?	1. Yes ...	2. No ...
C. Was it confirmed by a doctor?	3. Does not apply ...	
	Age in years ...	
	Does not apply ...	
D. At what age did it start?	Age in years ...	
E. If you no longer have it, at what age did it stop?	Does not apply ...	
26. Have you ever had:		
A. Any other chest illness?	1. Yes ...	2. No ...
If yes, please specify		
B. Any chest operations?	1. Yes ...	2. No ...

- If yes, please specify
- C. Any chest injuries? 1. Yes . . . 2. No . . .
- If yes, please specify
- 27A. Has a doctor ever told you that you had heart trouble? 1. Yes . . . 2. No . . .
- IF YES TO 27A:
- B. Have you ever had treatment for heart trouble in the past 10 years? 1. Yes . . . 2. No . . . 3. Does not apply. . .
- 28A. Has a doctor ever told you that you had high blood pressure? 1. Yes . . . 2. No . . .
- IF YES TO 28A:
- B. Have you had any treatment for high blood pressure (hypertension) in the past 10 years? 1. Yes . . . 2. No . . . 3. Does not apply. . .
29. When did you last have your chest x-rayed? (Year) 25 26 27 28
30. Where did you last have your chest x-rayed (if known)? What was the outcome?

FAMILY HISTORY

31. Were either of your natural parents ever told by a doctor that they had a chronic lung condition such as:

	FATHER			MOTHER		
	1. Yes	2. No	3. Don't Know	1. Yes	2. No	3. Don't Know
A. Chronic Bronchitis?
B. Emphysema?
C. Asthma?
D. Lung cancer?
E. Other chest conditions?
F. Is parent currently alive?
G. Please specify	...	Age if living	...	...	Age if living	...
	...	Age at death	...	...	Age at death	...
	...	Don't Know	...	...	Don't Know	...

- H. Please specify cause of death

COUGH

- 32A. Do you usually have a cough? (Count a cough with first smoke or on first going out of doors. Exclude clearing of throat.) (If no, skip to question 32C.) 1. Yes . . . 2. No . . .
- B. Do you usually cough as much as 4 to 6 times a day 4 or more days out of the week? 1. Yes . . . 2. No . . .
- C. Do you usually cough at all on getting up or first thing in the morning? 1. Yes . . . 2. No . . .
- D. Do you usually cough at all during the rest of the day or at night? 1. Yes . . . 2. No . . .

IF YES TO ANY OF ABOVE (32A, B, C, OR D), ANSWER THE FOLLOWING. IF NO TO ALL, CHECK DOES NOT APPLY AND SKIP TO NEXT PAGE

- E. Do you usually cough like this on most days for 3 consecutive months or more during the year? 1. Yes . . . 2. No . . . 3. Does not apply. . .
- F. For how many years have you had the cough? Number of years. . . Does not apply. . .
- 33A. Do you usually bring up phlegm from your chest? (Count phlegm with the first smoke or on first going out of doors. Exclude phlegm from the nose. Count swallowed phlegm.) (If no, skip to 33C.) 1. Yes . . . 2. No . . .
- B. Do you usually bring up phlegm like this as much as twice a day 4 or more days out of the week? 1. Yes . . . 2. No . . .
- C. Do you usually bring up phlegm at all on getting up or first thing in the morning? 1. Yes . . . 2. No . . .
- D. Do you usually bring up phlegm at all during the rest of the day or at night? 1. Yes . . . 2. No . . .

IF YES TO ANY OF THE ABOVE (33A, B, C, OR D), ANSWER THE FOLLOWING: IF NO TO ALL, CHECK DOES NOT APPLY AND SKIP TO 34A.

- E. Do you bring up phlegm like this on most days for 3 consecutive months or more during the year? 1. Yes . . . 2. No . . . 3. Does not apply. . .
- F. For how many years have you had trouble with phlegm? Number of years. . . Does not apply. . .

EPISODES OF COUGH AND PHLEGM

- 34A. Have you had periods or episodes of (increased*) cough and phlegm lasting for 3 weeks or more each year? *(For persons who usually have cough and/or phlegm.) 1. Yes . . . 2. No . . .

IF YES TO 34A:

- B. For how long have you had at least 1 such episode per year? Number of years. . . Does not apply. . .

WHEEZING

- 35A. Does your chest ever sound wheezy or whistling:
1. When you have a cold? 1. Yes . . . 2. No . . .
2. Occasionally apart from colds? 1. Yes . . . 2. No . . .
3. Most days or nights? 1. Yes . . . 2. No . . .

IF YES TO 1, 2, OR 3 IN 35A:

- B. For how many years has this been present? Number of years. . . Does not apply. . .
- 36A. Have you ever had an attack of wheezing that has made you feel short of breath? 1. Yes . . . 2. No . . .

IF YES TO 36A:

- B. How old were you when you had your first such attack? Age in years . . . Does not apply . . .
- C. Have you had 2 or more such episodes? 1. Yes . . . 2. No . . . 3. Does not apply . . .
- D. Have you ever required medicine or treatment for the(se) attack(s)? 1. Yes . . . 2. No . . . 3. Does not apply . . .

BREATHLESSNESS

37. If disabled from walking by any condition other than heart or lung disease, please describe and proceed to question 39A. Nature of condition(s)
- 38A. Are you troubled by shortness of breath when hurrying on the level or walking up a slight hill? 1. Yes . . . 2. No . . .
- IF YES TO 38A:
- B. Do you have to walk slower than people of your age on the level because of breathlessness? 1. Yes . . . 2. No . . . 3. Does not apply. . .
- C. Do you ever have to stop for breath when walking at your own pace on the level? 1. Yes . . . 2. No . . . 3. Does not apply . . .
- D. Do you ever have to stop for breath after walking about 100 yards (or after a few minutes) on the level? 1. Yes . . . 2. No . . . 3. Does not apply. . .
- E. Are you too breathless to leave the house or breathless on dressing or climbing one flight of stairs? 1. Yes . . . 2. No . . . 3. Does not apply. . .

TOBACCO SMOKING

- 39A. Have you ever smoked cigarettes? (No means less than 20 packs of cigarettes or 12 oz. of tobacco in a lifetime or less than 1 cigarette a day for 1 year.) 1. Yes . . . 2. No . . .
- IF YES TO 39A:
- B. Do you now smoke cigarettes (as of one month ago)? 1. Yes . . . 2. No . . . 3. Does not apply. . .
- C. How old were you when you first started regular cigarette smoking? Age in years . . . Does not apply . . .
- D. If you have stopped smoking cigarettes completely, how old were you when you stopped? Aged stopped . . . Check if still smoking . . . Does not apply . . .
- E. How many cigarettes do you smoke per day now? Cigarettes per day . . . Does not apply . . .

F. On the average of the entire time you smoked, how many cigarettes did you smoke per day?	Cigarettes per day . . . Does not apply . . .	11. What is your marital status? 1. Single . . . 4. Separated/ 2. Married . . . Divorced . . . 3. Widowed . . .
G. Do you or did you inhale the cigarette smoke?	1. Does not apply . . . 2. Not at all . . . 3. Slightly . . . 4. Moderately . . . 5. Deeply . . .	12. OCCUPATIONAL HISTORY
40A. Have you ever smoked a pipe regularly? (Yes means more than 12 ounces of tobacco in a lifetime.)	1. Yes . . . 2. No . . .	12A. In the past year, did you work full time (30 hours per week or more) for 6 months or more? IF YES TO 12A:
IF YES TO 40A:		12B. In the past year, did you work in a dusty job? 1. Yes . . . 2. No . . . 3. Does not apply . . .
FOR PERSONS WHO HAVE EVER SMOKED A PIPE		12C. Was dust exposure: 1. Mild. . . 2. Moderate . . . 3. Severe . . .
B. 1. How old were you when you started to smoke a pipe regularly?	Age . . .	12D. In the past year, were you exposed to gas or chemical fumes in your work? 1. Yes . . . 2. No . . .
2. If you have stopped smoking a pipe completely, how old were you when you stopped?	Age stopped . . . Check if still smoking pipe . . . Does not apply . . .	12E. Was exposure: 1. Mild. . . 2. Moderate . . . 3. Severe . . .
C. On the average over the entire time you smoked a pipe, how much pipe tobacco did you smoke per week?	. . . oz. per week (a standard pouch of tobacco contains 1-1/2 ounces) . . . Does not apply	12F. In the past year, what was your: 1. Job/occupation? . . . 2. Position/job title? . . .
D. How much pipe tobacco are you smoking now?	oz. per week . . . Not currently smoking a pipe . . .	13. RECENT MEDICAL HISTORY
E. Do you or did you inhale the pipe smoke?	1. Never smoked . . . 2. Not at all . . . 3. Slightly . . . 4. Moderately . . . 5. Deeply . . .	13A. Do you consider yourself to be in good health? Yes . . . No . . . If NO, state reason . . .
41A. Have you ever smoked cigars regularly? (Yes means more than 1 cigar a week for a year.)	1. Yes . . . 2. No . . .	13B. In the past year, have you developed: Yes No Epilepsy? . . . Rheumatic fever? . . . Kidney disease? . . . Bladder disease? . . . Diabetes? . . . Jaundice? . . . Cancer? . . .
IF YES TO 41A:		14. CHEST COLDS AND CHEST ILLNESS
FOR PERSONS WHO HAVE EVER SMOKED CIGARS		14A. If you get a cold, does it usually go to your chest? (Usually means more than 1/2 the time.) 1. Yes . . . 2. No . . . 3. Don't get colds . . .
B. 1. How old were you when you started smoking cigars regularly?	Age . . .	15A. During the past year, have you had any chest illnesses that have kept you off work, indoors at home, or in bed? 1. Yes . . . 2. No . . . 3. Does not apply . . .
2. If you have stopped smoking cigars completely, how old were you when you stopped?	Age stopped . . . Check if still smoking cigars . . . Does not apply . . .	IF YES TO 15A:
C. On the average over the entire time you smoked cigars, how many cigars did you smoke per week?	Cigars per week . . . Does not apply . . .	15B. Did you produce phlegm with any of these chest illnesses? 1. Yes . . . 2. No . . . 3. Does not apply . . .
D. How many cigars are you smoking per week now?	Cigars per week . . . Check if not smoking cigars currently . . .	15C. In the past year, how many such illnesses with (increased) phlegm did you have which lasted a week or more?
E. Do you or did you inhale the cigar smoke?	1. Never smoked . . . 2. Not at all . . . 3. Slightly . . . 4. Moderately . . . 5. Deeply . . .	16. RESPIRATORY SYSTEM
Signature Date		In the past year have you had:
		Yes or No Further Comment on Positive Answers
		Asthma . . .
		Bronchitis . . .
		Hay fever . . .
		Other allergies . . .
		Yes or No Further Comment on Positive Answers
		Pneumonia . . .
		Tuberculosis . . .
		Chest Surgery . . .
		Other Lung . . .
		Problems . . .
		Heart disease . . .
		Do you have: Yes or No Further Comment on Positive Answers
		Frequent colds . . .
		Chronic cough . . .
		Shortness of breath when walking or climbing one flight of stairs . . .
		Do you: Wheeze . . .
		Cough up phlegm . . .
		Smoke cigarettes . . . Packs per day . . . How many years . . .
		Date Signature

Part 2

PERIODIC MEDICAL QUESTIONNAIRE

1. NAME

2. SOCIAL SECURITY #

3. CLOCK NUMBER

4. PRESENT OCCUPATION

5. PLANT

6. ADDRESS

7. (Zip Code)

8. TELEPHONE NUMBER

9. INTERVIEWER

10. DATE

[Statutory Authority: RCW 49.17.040, [49.17.]050 and [49.17.]060. 97-01-079, § 296-62-07741, filed 12/17/96, effective 3/1/97. Statutory Authority: Chapter 49.17 RCW. 87-24-051 (Order 87-24), § 296-62-07741, filed 11/30/87. Statutory Authority: RCW 49.17.050(2) and 49.17.040. 87-10-008 (Order 87-06), § 296-62-07741, filed 4/27/87.]

WAC 296-62-07743 Appendix E—Interpretation and classification of chest roentgenograms—Mandatory.

(1) Chest roentgenograms shall be interpreted and classified in accordance with a professionally accepted classification system and recorded on an interpretation form following the format of the CDC/NIOSH (M) 2.8 form. As a minimum, the content within the bold lines of this form (items one through four) shall be included. This form is not to be submitted to NIOSH.

(2) Roentgenograms shall be interpreted and classified only by a B-reader, a board eligible/certified radiologist, or an experienced physician with known expertise in pneumoconioses.

(3) All interpreters, whenever interpreting chest roentgenograms made under this section, shall have immediately available for reference a complete set of the ILO-U/C International Classification of Radiographs for Pneumoconioses, 1980.

[Statutory Authority: Chapter 49.17 RCW. 87-24-051 (Order 87-24), § 296-62-07743, filed 11/30/87. Statutory Authority: RCW 49.17.050(2) and 49.17.040. 87-10-008 (Order 87-06), § 296-62-07743, filed 4/27/87.]

WAC 296-62-07745 Appendix F—Work practices and engineering controls for automotive brake and clutch inspection, disassembly, repair and assembly—Mandatory. This mandatory appendix specifies engineering controls and work practices that must be implemented by the employer during automotive brake and clutch inspection, disassembly, repair, and assembly operations. Proper use of these engineering controls and work practices will reduce employees' asbestos exposure below the permissible exposure level during clutch and brake inspection, disassembly, repair, and assembly operations. The employer shall institute engineering controls and work practices using either the method set forth in (1) or (2) of this appendix, or any other method which the employer can demonstrate to be equivalent in terms of reducing employee exposure to asbestos as defined and which meets the requirements described in (3) of this appendix, for those facilities in which no more than 5 pairs of brakes or 5 clutches are inspected, disassembled, reassembled and/or repaired per week, the method set forth in (4) of this appendix may be used:

(1) Negative pressure enclosure/HEPA vacuum system method.

(a) The brake and clutch inspection, disassembly, repair, and assembly operations shall be enclosed to cover and contain the clutch or brake assembly and to prevent the release of asbestos fibers into the worker's breathing zone.

(b) The enclosure shall be sealed tightly and thoroughly inspected for leaks before work begins on brake and clutch inspection, disassembly, repair and assembly.

(c) The enclosure shall be such that the worker can clearly see the operation and shall provide impermeable sleeves through which the worker can handle the brake and clutch inspection, disassembly, repair and assembly. The

integrity of the sleeves and ports shall be examined before work begins.

(d) A HEPA-filtered vacuum shall be employed to maintain the enclosure under negative pressure throughout the operation. Compressed-air may be used to remove asbestos fibers or particles from the enclosure.

(e) The HEPA vacuum shall be used first to loosen the asbestos containing residue from the brake and clutch parts and then to evacuate the loosened asbestos containing material from the enclosure and capture the material in the vacuum filter.

(f) The vacuum's filter, when full, shall be first wetted with a fine mist of water, then removed and placed immediately in an impermeable container, labeled according to WAC 296-62-07721(6) and disposed of according to WAC 296-62-07723.

(g) Any spills or releases of asbestos containing waste material from inside of the enclosure or vacuum hose or vacuum filter shall be immediately cleaned up and disposed of according to WAC 296-62-07723.

(2) Low pressure/wet cleaning method.

(a) A catch basin shall be placed under the brake assembly, positioned to avoid splashes and spills.

(b) The reservoir shall contain water containing an organic solvent or wetting agent. The flow of liquid shall be controlled such that the brake assembly is gently flooded to prevent the asbestos-containing brake dust from becoming airborne.

(c) The aqueous solution shall be allowed to flow between the brake drum and brake support before the drum is removed.

(d) After removing the brake drum, the wheel hub and back of the brake assembly shall be thoroughly wetted to suppress dust.

(e) The brake support plate, brake shoes and brake components used to attach the brake shoes shall be thoroughly washed before removing the old shoes.

(f) In systems using filters, the filters, when full, shall be first wetted with a fine mist of water, then removed and placed immediately in an impermeable container, labeled according to WAC 296-62-07721(6) and disposed of according to WAC 296-62-07723.

(g) Any spills of asbestos-containing aqueous solution or any asbestos-containing waste material shall be cleaned up immediately and disposed of according to WAC 296-62-07723.

(h) The use of dry brushing during low pressure/wet cleaning operations is prohibited.

(3) Equivalent methods. An equivalent method is one which has sufficient written detail so that it can be reproduced and has been demonstrated that the exposures resulting from the equivalent method are equal to or less than the exposure which would result from the use of the method described in subsection (1) of this appendix. For purposes of making this comparison, the employer shall assume that exposures resulting from the use of the method described in subsection (1) of this appendix shall not exceed 0.016 f/cc, as measured by the WISHA reference method and as averaged over at least 18 personal samples.

(4) Wet method.

(a) A spray bottle, hose nozzle, or other implement capable of delivering a fine mist of water or amended water or other delivery system capable of delivering water at low pressure, shall be used to first thoroughly wet the brake and clutch parts. Brake and clutch components shall then be wiped clean with a cloth.

(b) The cloth shall be placed in an impermeable container, labeled according to WAC 296-62-07721(6) and then disposed of according to WAC 296-62-07723, or the cloth shall be laundered in a way to prevent the release of asbestos fibers in excess of 0.1 fiber per cubic centimeter of air.

(c) Any spills of solvent or any asbestos containing waste material shall be cleaned up immediately according to WAC 296-62-07723.

(d) The use of dry brushing during the wet method operations is prohibited.

[Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050, and 49.26.130. 00-06-075, § 296-62-07745, filed 3/1/00, effective 4/10/00. Statutory Authority: RCW 49.17.040, [49.17].050 and [49.17].060. 97-01-079, § 296-62-07745, filed 12/17/96, effective 3/1/97. Statutory Authority: Chapter 49.17 RCW. 89-11-035 (Order 89-03), § 296-62-07745, filed 5/15/89, effective 6/30/89; 87-24-051 (Order 87-24), § 296-62-07745, filed 11/30/87. Statutory Authority: RCW 49.17.050(2) and 49.17.040. 87-10-008 (Order 87-06), § 296-62-07745, filed 4/27/87.]

WAC 296-62-07747 Appendix G—Substance technical information for asbestos—Nonmandatory. (1) Substance identification.

(a) Substance: "Asbestos" is the name of a class of magnesium-silicate minerals that occur in fibrous form. Minerals that are included in this group are chrysotile, crocidolite, amosite, tremolite asbestos, anthophyllite asbestos, and actinolite asbestos.

(b) Asbestos is used in the manufacture of heat-resistant clothing, automotive brake and clutch linings, and a variety of building materials including floor tiles, roofing felts, ceiling tiles, asbestos-cement pipe and sheet, and fire-resistant drywall. Asbestos is also present in pipe and boiler insulation materials, and in sprayed-on materials located on beams, in crawlspaces, and between walls.

(c) The potential for a product containing asbestos, tremolite, anthophyllite, and actinolite to release breathable fibers depends on its degree of friability. Friable means that the material can be crumbled with hand pressure and is therefore likely to emit fibers. The fibrous or fluffy sprayed-on materials used for fireproofing, insulation, or sound proofing are considered to be friable, and they readily release airborne fibers if disturbed. Materials such as vinyl-asbestos floor tile or roofing felts are considered nonfriable and generally do not emit airborne fibers unless subjected to sanding or sawing operations. Asbestos-cement pipe or sheet can emit airborne fibers if the materials are cut or sawed, or if they are broken during demolition operations.

(d) Permissible exposure: Exposure to airborne asbestos fibers may not exceed 0.1 fiber per cubic centimeter of air (0.1 f/cc) averaged over the eight-hour workday (time weighted average), or 1 fiber per cubic centimeter of air (1 f/cc) during any thirty minute period, (excursion limit).

(2) Health hazard data.

(a) Asbestos can cause disabling respiratory disease and various types of cancers if the fibers are inhaled. Inhaling or

ingesting fibers from contaminated clothing or skin can also result in these diseases. The symptoms of these diseases generally do not appear for twenty or more years after initial exposure.

(b) Exposure to asbestos has been shown to cause lung cancer, mesothelioma, and cancer of the stomach and colon. Mesothelioma is a rear cancer of the thin membrane lining of the chest and abdomen. Symptoms of mesothelioma include shortness of breath, pain in the walls of the chest, and/or abdominal pain.

(3) Respirators and protective clothing.

(a) Respirators: You are required to wear a respirator when performing tasks that result in asbestos exposure that exceeds 0.1 fiber per cubic centimeter of air (0.1 f/cc) as an eight-hour time weighted average and/or 1.0 fiber per cubic centimeter (1 f/cc) during any thirty minute period (excursion limit). These conditions can occur while your employer is in the process of installing engineering controls to reduce asbestos exposure, or where engineering controls are not feasible to reduce asbestos exposure. Air-purifying respirators equipped with a high-efficiency particulate air (HEPA) filter can be used where airborne asbestos fiber concentrations do not exceed 1 f/cc; otherwise, air-supplied, positive-pressure, full facepiece respirators must be used. Disposable respirators or dust masks are not permitted to be used for asbestos work. For effective protection, respirators must fit your face and head snugly. Your employer is required to conduct fit tests when you are first assigned a respirator and every six months thereafter. Respirators should not be loosened or removed in work situations where their use is required.

(b) Protective clothing: You are required to wear protective clothing in work areas where asbestos fiber concentrations exceed the permissible exposure limits to prevent contamination of the skin. Where protective clothing is required, your employer must provide you with clean garments. Unless you are working on a large asbestos removal or demolition project, your employer must also provide a change room and separate lockers for your street clothes and contaminated work clothes. If you are working on a large asbestos removal or demolition project, and where it is feasible to do so, your employer must provide a clean room, shower, and decontamination room contiguous to the work area. When leaving the work area, you must remove contaminated clothing before proceeding to the shower. If the shower is not adjacent to the work area, you must vacuum your clothing before proceeding to the change room and shower. To prevent inhaling fibers in contaminated change rooms and showers, leave your respirator on until you leave the shower and enter the clean change room.

(4) Disposal procedures and cleanup.

(a) Wastes that are generated by processes where asbestos is present include:

(i) Empty asbestos shipping containers.

(ii) Process wastes such as cuttings, trimmings, or reject material.

(iii) Housekeeping waste from sweeping or HEPA vacuuming.

(iv) Asbestos fireproofing or insulating material that is removed from buildings.

(v) Building products that contain asbestos removed during building renovation or demolition.

(vi) Contaminated disposable protective clothing.

(b) Empty shipping bags can be flattened under exhaust hoods and packed into airtight containers for disposal. Empty shipping drums are difficult to clean and should be sealed.

(c) Vacuum bags or disposable paper filters should not be cleaned, but should be sprayed with a fine water mist and placed into a labeled waste container.

(d) Process waste and housekeeping waste should be wetted with water or a mixture of water and surfactant prior to packaging in disposable containers.

(e) Material containing asbestos that is removed from buildings must be disposed of in leaktight 6-mil thick plastic bags, plastic-lined cardboard containers, or plastic-lined metal containers. These wastes, which are removed while wet, should be sealed in containers before they dry out to minimize the release of asbestos fibers during handling.

(5) Access to information.

(a) Each year, your employer is required to inform you of the information contained in this standard and appendices for asbestos. In addition, your employer must instruct you in the proper work practices for handling materials containing asbestos and the correct use of protective equipment.

(b) Your employer is required to determine whether you are being exposed to asbestos. You or your representative has the right to observe employee measurements and to record the results obtained. Your employer is required to inform you of your exposure, and, if you are exposed above the permissible limits, he or she is required to inform you of the actions that are being taken to reduce your exposure to within the permissible limits.

(c) Your employer is required to keep records of your exposures and medical examinations. These exposure records must be kept for at least thirty years. Medical records must be kept for the period of your employment plus thirty years.

(d) Your employer is required to release your exposure and medical records to your physician or designated representative upon your written request.

[Statutory Authority: RCW 49.17.040, [49.17.]050 and [49.17.]060. 97-01-079, § 296-62-07747, filed 12/17/96, effective 3/1/97. Statutory Authority: Chapter 49.17 RCW. 89-11-035 (Order 89-03), § 296-62-07747, filed 5/15/89, effective 6/30/89; 87-24-051 (Order 87-24), § 296-62-07747, filed 11/30/87. Statutory Authority: RCW 49.17.050(2) and 49.17.040. 87-10-008 (Order 87-06), § 296-62-07747, filed 4/27/87.]

WAC 296-62-07749 Appendix H—Medical surveillance guidelines for asbestos—Nonmandatory. (1) Route of entry inhalation, ingestion.

(2) Toxicology.

Clinical evidence of the adverse effects associated with exposure to asbestos is present in the form of several well-conducted epidemiological studies of occupationally exposed workers, family contacts of workers, and persons living near asbestos mines. These studies have shown a definite association between exposure to asbestos and an increased incidence of lung cancer, pleural and peritoneal mesothelioma, gastrointestinal cancer, and asbestosis. The latter is a disabling fibrotic lung disease that is caused only by exposure to asbestos. Exposure to asbestos has also been associated with an increased incidence of esophageal, kidney, laryngeal, pharyngeal, and buccal cavity cancers. As with other known chronic occupational diseases, disease associated with asbes-

tos generally appears about twenty years following the first occurrence of exposure: There are no known acute effects associated with exposure to asbestos.

Epidemiological studies indicate that the risk of lung cancer among exposed workers who smoke cigarettes is greatly increased over the risk of lung cancer among nonexposed smokers or exposed nonsmokers. These studies suggest that cessation of smoking will reduce the risk of lung cancer for a person exposed to asbestos but will not reduce it to the same level of risk as that existing for an exposed worker who has never smoked.

(3) Signs and symptoms of exposure-related disease.

The signs and symptoms of lung cancer or gastrointestinal cancer induced by exposure to asbestos are not unique, except that a chest X ray of an exposed patient with lung cancer may show pleural plaques, pleural calcification, or pleural fibrosis. Symptoms characteristic of mesothelioma include shortness of breath, pain in the walls of the chest, or abdominal pain. Mesothelioma has a much longer latency period compared with lung cancer (forty years versus fifteen to twenty years), and mesothelioma is therefore more likely to be found among workers who were first exposed to asbestos at an early age. Mesothelioma is always fatal.

Asbestosis is pulmonary fibrosis caused by the accumulation of asbestos fibers in the lungs. Symptoms include shortness of breath, coughing, fatigue, and vague feelings of sickness. When the fibrosis worsens, shortness of breath occurs even at rest. The diagnosis of asbestosis is based on a history of exposure to asbestos, the presence of characteristic radiologic changes, endinspiratory crackles (rales), and other clinical features of fibrosing lung disease. Pleural plaques and thickening are observed on X rays taken during the early stages of the disease. Asbestosis is often a progressive disease even in the absence of continued exposure, although this appears to be a highly individualized characteristic. In severe cases, death may be caused by respiratory or cardiac failure.

(4) Surveillance and preventive considerations.

As noted above, exposure to asbestos has been linked to an increased risk of lung cancer, mesothelioma, gastrointestinal cancer, and asbestosis among occupationally exposed workers. Adequate screening tests to determine an employee's potential for developing serious chronic diseases, such as cancer, from exposure to asbestos do not presently exist. However, some tests, particularly chest X rays and pulmonary function tests, may indicate that an employee has been overexposed to asbestos increasing his or her risk of developing exposure-related chronic diseases. It is important for the physician to become familiar with the operating conditions in which occupational exposure to asbestos is likely to occur. This is particularly important in evaluating medical and work histories and in conducting physical examinations. When an active employee has been identified as having been overexposed to asbestos measures taken by the employer to eliminate or mitigate further exposure should also lower the risk of serious long-term consequences.

The employer is required to institute a medical surveillance program for all employees who are or will be exposed to asbestos at or above the permissible exposure limits (0.1 fiber per cubic centimeter of air) for 30 or more days per year and for all employees who are assigned to wear a negative pressure respirator. All examinations and procedures must be

performed by or under the supervision of a licensed physician, at a reasonable time and place, and at no cost to the employee.

Although broad latitude is given to the physician in prescribing specific tests to be included in the medical surveillance program, WISHA requires inclusion of the following elements in the routine examination:

(a) Medical and work histories with special emphasis directed to symptoms of the respiratory system, cardiovascular system, and digestive tract.

(b) Completion of the respiratory disease questionnaire contained in WAC 296-62-07741, Appendix D.

(c) A physical examination including a chest roentgenogram and pulmonary function test that includes measurement of the employee's forced vital capacity (FVC) and forced expiratory volume at one second (FEV₁).

(d) Any laboratory or other test that the examining physician deems by sound medical practice to be necessary.

The employer is required to make the prescribed tests available at least annually to those employees covered; more often than specified if recommended by the examining physician; and upon termination of employment.

The employer is required to provide the physician with the following information: A copy of this standard and appendices; a description of the employee's duties as they relate to asbestos exposure; the employee's representative level of exposure to asbestos; a description of any personal protective and respiratory equipment used; and information from previous medical examinations of the affected employee that is not otherwise available to the physician. Making this information available to the physician will aid in the evaluation of the employee's health in relation to assigned duties and fitness to wear personal protective equipment, if required.

The employer is required to obtain a written opinion from the examining physician containing the results of the medical examination; the physician's opinion as to whether the employee has any detected medical conditions that would place the employee at an increased risk of exposure-related disease; any recommended limitations on the employee or on the use of personal protective equipment; and a statement that the employee has been informed by the physician of the results of the medical examination and of any medical conditions related to asbestos exposure that require further explanation or treatment. This written opinion must not reveal specific findings or diagnoses unrelated to exposure to asbestos and a copy of the opinion must be provided to the affected employee.

[Statutory Authority: RCW 49.17.040, [49.17.]050 and [49.17.]060. 97-01-079, § 296-62-07749, filed 12/17/96, effective 3/1/97. Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-62-07749, filed 7/20/94, effective 9/20/94; 87-24-051 (Order 87-24), § 296-62-07749, filed 11/30/87. Statutory Authority: RCW 49.17.050(2) and 49.17.040. 87-10-008 (Order 87-06), § 296-62-07749, filed 4/27/87.]

WAC 296-62-07751 Appendix I—Work practices and engineering controls for Class I asbestos operations—Nonmandatory. This is a nonmandatory appendix to the asbestos standards for construction and for shipyards. It describes criteria and procedures for erecting and using negative pressure enclosures for Class I Asbestos Work, when

(2007 Ed.)

NPEs are used as an allowable control method to comply with WAC 296-62-07712 (7)(a). Many small and variable details are involved in the erection of a negative pressure enclosure. OSHA and most participants in the rulemaking agreed that only the major, more performance oriented criteria should be made mandatory. These criteria are set out in WAC 296-62-07712. In addition, this appendix includes these mandatory specifications and procedures in its guidelines in order to make this appendix coherent and helpful. The mandatory nature of the criteria which appear in the regulatory text is not changed because they are included in this "nonmandatory" appendix. Similarly, the additional criteria and procedures included as guidelines in the appendix, do not become mandatory because mandatory criteria are also included in these comprehensive guidelines.

In addition, none of the criteria, both mandatory and recommended, are meant to specify or imply the need for use of patented or licensed methods or equipment. Recommended specifications included in this attachment should not discourage the use of creative alternatives which can be shown to reliably achieve the objectives of negative-pressure enclosures.

Requirements included in this appendix, cover general provisions to be followed in all asbestos jobs, provisions which must be followed for all Class I asbestos jobs, and provisions governing the construction and testing of negative pressure enclosures. The first category includes the requirement for use of wet methods, HEPA vacuums, and immediate bagging of waste; Class I work must conform to the following provisions:

- oversight by competent person
- use of critical barriers over all openings to work area
- isolation of HVAC systems
- use of impermeable dropcloths and coverage of all objects within regulated areas

In addition, more specific requirements for NPEs include:

- maintenance of -0.02 inches water gauge within enclosure
- manometric measurements
- air movement away from employees performing removal work
- smoke testing or equivalent for detection of leaks and air direction
- deactivation of electrical circuits, if not provided with ground-fault circuit interrupters.

Planning the Project

The standard requires that an exposure assessment be conducted before the asbestos job is begun WAC 296-62-07709(3). Information needed for that assessment, includes data relating to prior similar jobs, as applied to the specific variables of the current job. The information needed to conduct the assessment will be useful in planning the project, and in complying with any reporting requirements under this standard, when significant changes are being made to a control system listed in the standard, (see WAC 296-62-07719), as well as those of USEPA (40 CFR Part 61, subpart M). Thus, although the standard does not explicitly require the preparation of a written asbestos removal plan, the usual con-

stituents of such a plan, i.e., a description of the enclosure, the equipment, and the procedures to be used throughout the project, must be determined before the enclosure can be erected. The following information should be included in the planning of the system:

- A physical description of the work area;
- A description of the approximate amount of material to be removed;
- A schedule for turning off and sealing existing ventilation systems;
- Personnel hygiene procedures;
- A description of personal protective equipment and clothing to be worn by employees;
- A description of the local exhaust ventilation systems to be used and how they are to be tested;
- A description of work practices to be observed by employees;
- An air monitoring plan;
- A description of the method to be used to transport waste material; and
- The location of the dump site.

Materials and Equipment Necessary for Asbestos Removal

Although individual asbestos removal projects vary in terms of the equipment required to accomplish the removal of the materials, some equipment and materials are common to most asbestos removal operations.

Plastic sheeting used to protect horizontal surfaces, seal HVAC openings or to seal vertical openings and ceilings should have a minimum thickness of 6 mils. Tape or other adhesive used to attach plastic sheeting should be of sufficient adhesive strength to support the weight of the material plus all stresses encountered during the entire duration of the project without becoming detached from the surface.

Other equipment and materials which should be available at the beginning of each project are:

- HEPA Filtered Vacuum is essential for cleaning the work area after the asbestos has been removed. It should have a long hose capable of reaching out-of-the-way places, such as areas above ceiling tiles, behind pipes, etc.
- Portable air ventilation systems installed to provide the negative air pressure and air removal from the enclosure must be equipped with a HEPA filter. The number and capacity of units required to ventilate an enclosure depend on the size of the area to be ventilated. The filters for these systems should be designed in such a manner that they can be replaced when the air flow volume is reduced by the build-up of dust in the filtration material. Pressure monitoring devices with alarms and strip chart recorders attached to each system to indicate the pressure differential and the loss due to dust buildup on the filter are recommended.
- Water sprayers should be used to keep the asbestos material as saturated as possible during removal; the sprayers will provide a fine mist that minimizes the impact of the spray on the material.

- Water used to saturate the asbestos containing material can be amended by adding at least 15 milliliters (½ ounce) of wetting agent in 1 liter (1 pint) of water. An example of a wetting agent is a 50/50 mixture of polyoxyethylene ether and polyoxyethylene polyglycol ester.
- Backup power supplies are recommended, especially for ventilation systems.
- Shower and bath water should be with mixed hot and cold water faucets. Water that has been used to clean personnel or equipment should either be filtered or be collected and discarded as asbestos waste. Soap and shampoo should be provided to aid in removing dust from the workers' skin and hair.
- See WAC 296-62-07715 and 296-62-07717 for appropriate respiratory protection and protective clothing.
- See WAC 296-62-07721 for required signs and labels.

Preparing the Work Area

Disabling HVAC Systems: The power to the heating, ventilation, and air conditioning systems that service the restricted area must be deactivated and locked off. All ducts, grills, access ports, windows and vents must be sealed off with two layers of plastic to prevent entrainment of contaminated air.

Operating HVAC Systems in the Restricted Area: If components of a HVAC system located in the restricted area are connected to a system that will service another zone during the project, the portion of the duct in the restricted area must be sealed and pressurized. Necessary precautions include caulking the duct joints, covering all cracks and openings with two layers of sheeting, and pressurizing the duct throughout the duration of the project by restricting the return air flow. The power to the fan supplying the positive pressure should be locked "on" to prevent pressure loss.

Sealing Elevators: If an elevator shaft is located in the restricted area, it should be either shut down or isolated by sealing with two layers of plastic sheeting. The sheeting should provide enough slack to accommodate the pressure changes in the shaft without breaking the air-tight seal.

Removing Mobile Objects: All movable objects should be cleaned and removed from the work area before an enclosure is constructed unless moving the objects creates a hazard. Mobile objects will be assumed to be contaminated and should be either cleaned with amended water and a HEPA vacuum and then removed from the area or wrapped and then disposed of as hazardous waste.

Cleaning and Sealing Surfaces: After cleaning with water and a HEPA vacuum, surfaces of stationary objects should be covered with two layers of plastic sheeting. The sheeting should be secured with duct tape or an equivalent method to provide a tight seal around the object.

Bagging Waste: In addition to the requirement for immediate bagging of waste for disposal, it is further recommended that the waste material be double-bagged and sealed in plastic bags designed for asbestos disposal. The bags should be stored in a waste storage area that can be controlled by the workers conducting the removal. Filters removed from

air handling units and rubbish removed from the area are to be bagged and handled as hazardous waste.

Constructing the Enclosure

The enclosure should be constructed to provide an airtight seal around ducts and openings into existing ventilation systems and around penetrations for electrical conduits, telephone wires, water lines, drain pipes, etc. Enclosures should be both airtight and watertight except for those openings designed to provide entry and/or air flow control.

Size: An enclosure should be the minimum volume to encompass all of the working surfaces yet allow unencumbered movement by the worker(s), provide unrestricted air flow past the worker(s), and ensure walking surfaces can be kept free of tripping hazards.

Shape: The enclosure may be any shape that optimizes the flow of ventilation air past the worker(s).

Structural Integrity: The walls, ceilings and floors must be supported in such a manner that portions of the enclosure will not fall down during normal use.

Openings: It is not necessary that the structure be airtight; openings may be designed to direct air flow. Such openings should be located at a distance from active removal operations. They should be designed to draw air into the enclosure under all anticipated circumstances. In the event that negative pressure is lost, they should be fitted with either HEPA filters to trap dust or automatic trap doors that prevent dust from escaping the enclosure. Openings for exits should be controlled by an airlock or a vestibule.

Barrier Supports: Frames should be constructed to support all unsupported spans of sheeting.

Sheeting: Walls, barriers, ceilings, and floors should be lined with two layers of plastic sheeting having a thickness of at least 6 mil.

Seams: Seams in the sheeting material should be minimized to reduce the possibilities of accidental rips and tears in the adhesive or connections. All seams in the sheeting should overlap, be staggered and not be located at corners or wall-to-floor joints.

Areas Within an Enclosure: Each enclosure consists of a work area, a decontamination area, and waste storage area. The work area where the asbestos removal operations occur should be separated from both the waste storage area and the contamination control area by physical curtains, doors, and/or airflow patterns that force any airborne contamination back into the work area.

See WAC 296-62-07719 for requirements for hygiene facilities.

During egress from the work area, each worker should step into the equipment room, clean tools and equipment, and remove gross contamination from clothing by wet cleaning and HEPA vacuuming. Before entering the shower area, foot coverings, head coverings, hand coverings, and coveralls are removed and placed in impervious bags for disposal or cleaning. Airline connections from airline respirators with HEPA disconnects and power cables from powered air-purifying respirators (PAPRs) will be disconnected just prior to entering the shower room.

Establishing Negative Pressure Within the Enclosure

Negative Pressure: Air is to be drawn into the enclosure under all anticipated conditions and exhausted through a

HEPA filter for 24 hours a day during the entire duration of the project.

Air Flow Tests: Air flow patterns will be checked before removal operations begin, at least once per operating shift and any time there is a question regarding the integrity of the enclosure. The primary test for air flow is to trace air currents with smoke tubes or other visual methods. Flow checks are made at each opening and at each doorway to demonstrate that air is being drawn into the enclosure and at each worker's position to show that air is being drawn away from the breathing zone.

Monitoring Pressure Within the Enclosure: After the initial air flow patterns have been checked, the static pressure must be monitored within the enclosure. Monitoring may be made using manometers, pressure gauges, or combinations of these devices. It is recommended that they be attached to alarms and strip chart recorders at points identified by the design engineer.

Corrective Actions: If the manometers or pressure gauges demonstrate a reduction in pressure differential below the required level, work should cease and the reason for the change investigated and appropriate changes made. The air flow patterns should be retested before work begins again.

Pressure Differential: The design parameters for static pressure differentials between the inside and outside of enclosures typically range from 0.02 to 0.10 inches of water gauge, depending on conditions. All zones inside the enclosure must have less pressure than the ambient pressure outside of the enclosure (-0.02 inches water gauge differential). Design specifications for the differential vary according to the size, configuration, and shape of the enclosure as well as ambient and mechanical air pressure conditions around the enclosure.

Air Flow Patterns: The flow of air past each worker shall be enhanced by positioning the intakes and exhaust ports to remove contaminated air from the worker's breathing zone, by positioning HEPA vacuum cleaners to draw air from the worker's breathing zone, by forcing relatively uncontaminated air past the worker toward an exhaust port, or by using a combination of methods to reduce the worker's exposure.

Air Handling Unit Exhaust: The exhaust plume from air handling units should be located away from adjacent personnel and intakes for HVAC systems.

Air Flow Volume: The air flow volume (cubic meters per minute) exhausted (removed) from the workplace must exceed the amount of makeup air supplied to the enclosure. The rate of air exhausted from the enclosure should be designed to maintain a negative pressure in the enclosure and air movement past each worker. The volume of air flow removed from the enclosure should replace the volume of the container at every 5 to 15 minutes. Air flow volume will need to be relatively high for large enclosures, enclosures with awkward shapes, enclosures with multiple openings, and operations employing several workers in the enclosure.

Air Flow Velocity: At each opening, the air flow velocity must visibly "drag" air into the enclosure. The velocity of air flow within the enclosure must be adequate to remove airborne contamination from each worker's breathing zone without disturbing the asbestos-containing material on surfaces.

Airlocks: Airlocks are mechanisms on doors and curtains that control the air flow patterns in the doorways. If air flow occurs, the patterns through doorways must be such that the air flows toward the inside of the enclosure. Sometimes vestibules, double doors, or double curtains are used to prevent air movement through the doorways. To use a vestibule, a worker enters a chamber by opening the door or curtain and then closing the entry before opening the exit door or curtain.

Airlocks should be located between the equipment room and shower room, between the shower room and the clean room, and between the waste storage area and the outside of the enclosure. The air flow between adjacent rooms must be checked using smoke tubes or other visual tests to ensure the flow patterns draw air toward the work area without producing eddies.

Monitoring for Airborne Concentrations

In addition to the breathing zone samples taken as outlined in WAC 296-62-07709, samples of air should be taken to demonstrate the integrity of the enclosure, the cleanliness of the clean room and shower area, and the effectiveness of the HEPA filter. If the clean room is shown to be contaminated, the room must be relocated to an uncontaminated area.

Samples taken near the exhaust of portable ventilation systems must be done with care.

General Work Practices

Preventing dust dispersion is the primary means of controlling the spread of asbestos within the enclosure. Whenever practical, the point of removal should be isolated, enclosed, covered, or shielded from the workers in the area. Waste asbestos containing materials must be bagged during or immediately after removal; the material must remain saturated until the waste container is sealed.

Waste material with sharp points or corners must be placed in hard air-tight containers rather than bags.

Whenever possible, large components should be sealed in plastic sheeting and removed intact.

Bags or containers of waste will be moved to the waste holding area, washed, and wrapped in a bag with the appropriate labels.

Cleaning the Work Area

Surfaces within the work area should be kept free of visible dust and debris to the extent feasible. Whenever visible dust appears on surfaces, the surfaces within the enclosure must be cleaned by wiping with a wet sponge, brush, or cloth and then vacuumed with a HEPA vacuum.

All surfaces within the enclosure should be cleaned before the exhaust ventilation system is deactivated and the enclosure is disassembled. An approved encapsulant may be sprayed onto areas after the visible dust has been removed.

[Statutory Authority: RCW 49.17.040, [49.17.]050 and [49.17.]060. 97-01-079, § 296-62-07751, filed 12/17/96, effective 3/1/97. Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-62-07751, filed 7/20/94, effective 9/20/94; 87-24-051 (Order 87-24), § 296-62-07751, filed 11/30/87.]

WAC 296-62-07753 Appendix J—Polarized light microscopy of asbestos—Nonmandatory. Method number: ID-191

Matrix: Bulk

Collection Procedure

[Title 296 WAC—p. 1564]

Collect approximately 1 to 2 grams of each type of material and place into separate 20 mL scintillation vials.

Analytical Procedure

A portion of each separate phase is analyzed by gross examination, phase-polar examination, and central stop dispersion microscopy.

Commercial manufacturers and products mentioned in this method are for descriptive use only and do not constitute endorsements by USDOL-WISHA. Similar products from other sources may be substituted.

(1) Introduction

This method describes the collection and analysis of asbestos bulk materials by light microscopy techniques including phase-polar illumination and central-stop dispersion microscopy. Some terms unique to asbestos analysis are defined below:

Amphibole: A family of minerals whose crystals are formed by long, thin units which have two thin ribbons of double chain silicate with a brucite ribbon in between. The shape of each unit is similar to an "I beam." Minerals important in asbestos analysis include cummingtonite-grunerite, crocidolite, tremolite-actinolite and anthophyllite.

Asbestos: A term for naturally occurring fibrous minerals. Asbestos includes chrysotile, cummingtonite-grunerite asbestos (amosite), anthophyllite asbestos, tremolite asbestos, crocidolite, actinolite asbestos and any of these minerals which have been chemically treated or altered. The precise chemical formulation of each species varies with the location from which it was mined. Nominal compositions are listed:

Chrysotile	$\text{Mg}_3\text{Si}_2\text{O}_5(\text{OH})_4$
Crocidolite (Riebeckite asbestos)	$\text{Na}_2\text{Fe}_3\text{Si}_8\text{O}_{22}(\text{OH})_2$
Cummingtonite-Grunerite asbestos (Amosite)	$(\text{Mg},\text{Fe})_7\text{Si}_8\text{O}_{22}(\text{OH})_2$
Tremolite-Actinolite asbestos	$\text{Ca}_2(\text{Mg},\text{Fe})_5\text{Si}_8\text{O}_{22}(\text{OH})_2$
Anthophyllite asbestos	$(\text{Mg},\text{Fe})_7\text{Si}_8\text{O}_{22}(\text{HO})_2$
<i>Asbestos Fiber:</i>	A fiber of asbestos meeting the criteria for a fiber. (See section (3)(e))
<i>Aspect Ratio:</i>	The ratio of the length of a fiber to its diameter usually defined as "length: width", e.g. 3:1.
<i>Brucite:</i>	A sheet mineral with the composition $\text{mg}(\text{OH})_2$.

Central Stop Dispersion Staining (microscope): This is a dark field microscope technique that images particles using only light refracted by the particle, excluding light that travels through the particle unrefracted. This is usually accomplished with a McCrone objective or other arrangement which places a circular stop with apparent aperture equal to the objective aperture in the back focal plane of the microscope.

Cleavage Fragments: Mineral particles formed by the comminution of minerals, especially those characterized by relatively parallel sides and moderate aspect ratio.

Differential Counting: The term applied to the practice of excluding certain kinds of fibers from a phase contrast asbestos count because they are not asbestos.

Fiber: A particle longer than or equal to 5 microns with a length to width ratio greater than or equal to 3:1. This may

(2007 Ed.)

include cleavage fragments. (See section (3)(e) of this appendix).

Phase Contrast: Contrast obtained in the microscope by causing light scattered by small particles to destructively interfere with unscattered light, thereby enhancing the visibility of very small particles and particles with very low intrinsic contrast.

Phase Contrast Microscope: A microscope configured with a phase mask pair to create phase contrast. The technique which uses this is called Phase Contrast Microscopy (PCM).

Phase-Polar Analysis: This is the use of polarized light in a phase contrast microscope. It is used to see the same size fibers that are visible in air filter analysis. Although fibers finer than 1 micron are visible, analysis of these is inferred from analysis of larger bundles that are usually present.

Phase-Polar Microscope: The phase-polar microscope is a phase contrast microscope which has an analyzer, a polarizer, a first order red plate and a rotating phase condenser all in place so that the polarized light image is enhanced by phase contrast.

Sealing Encapsulant: This is a product which can be applied, preferably by spraying, onto an asbestos surface which will seal the surface so that fibers cannot be released.

Serpentine: A mineral family consisting of minerals with the general composition $Mg_3(Si_2O_5(OH)_4)$ having the magnesium in brucite layer over a silicate layer. Minerals important in asbestos analysis included in this family are chrysotile, lizardite, antigorite.

(a) History

Light microscopy has been used for well over 100 years for the determination of mineral species. This analysis is carried out using specialized polarizing microscopes as well as bright field microscopes. The identification of minerals is an on-going process with many new minerals described each year. The first recorded use of asbestos was in Finland about 2500 B.C. where the material was used in the mud wattle for the wooden huts the people lived in as well as strengthening for pottery. Adverse health aspects of the mineral were noted nearly 2000 years ago when Pliny the Younger wrote about the poor health of slaves in the asbestos mines. Although known to be injurious for centuries, the first modern references to its toxicity were by the British Labor Inspectorate when it banned asbestos dust from the workplace in 1898. Asbestosis cases were described in the literature after the turn of the century. Cancer was first suspected in the mid 1930's and a causal link to mesothelioma was made in 1965. Because of the public concern for worker and public safety with the use of this material, several different types of analysis were applied to the determination of asbestos content. Light microscopy requires a great deal of experience and craft. Attempts were made to apply less subjective methods to the analysis. X-ray diffraction was partially successful in determining the mineral types but was unable to separate out the fibrous portions from the nonfibrous portions. Also, the minimum detection limit for asbestos analysis by X-ray diffraction (XRD) is about 1%. Differential Thermal Analysis (DTA) was no more successful. These provide useful corroborating information when the presence of asbestos has been shown by microscopy; however, neither can determine the difference between fibrous and nonfibrous minerals when

both habits are present. The same is true of Infrared Absorption (IR).

When electron microscopy was applied to asbestos analysis, hundreds of fibers were discovered present too small to be visible in any light microscope. There are two different types of electron microscopes used for asbestos analysis: Scanning Electron Microscope (SEM) and Transmission Electron Microscope (TEM). Scanning Electron Microscopy is useful in identifying minerals. The SEM can provide two of the three pieces of information required to identify fibers by electron microscopy: Morphology and chemistry. The third is structure as determined by Selected Area Electron Diffraction-SAED which is performed in the TEM. Although the resolution of the SEM is sufficient for very fine fibers to be seen, accuracy of chemical analysis that can be performed on the fibers varies with fiber diameter in fibers of less than 0.2 micron diameter. The TEM is a powerful tool to identify fibers too small to be resolved by light microscopy and should be used in conjunction with this method when necessary. The TEM can provide all three pieces of information required for fiber identification. Most fibers thicker than 1 micron can adequately be defined in the light microscope. The light microscope remains as the best instrument for the determination of mineral type. This is because the minerals under investigation were first described analytically with the light microscope. It is inexpensive and gives positive identification for most samples analyzed. Further, when optical techniques are inadequate, there is ample indication that alternative techniques should be used for complete identification of the sample.

(b) Principle

Minerals consist of atoms that may be arranged in random order or in a regular arrangement. Amorphous materials have atoms in random order while crystalline materials have long range order. Many materials are transparent to light, at least for small particles or for thin sections. The properties of these materials can be investigated by the effect that the material has on light passing through it. The six asbestos minerals are all crystalline with particular properties that have been identified and cataloged. These six minerals are anisotropic. They have a regular array of atoms, but the arrangement is not the same in all directions. Each major direction of the crystal presents a different regularity. Light photons travelling in each of these main directions will encounter different electrical neighborhoods, affecting the path and time of travel. The techniques outlined in this method use the fact that light traveling through fibers or crystals in different directions will behave differently, but predictably. The behavior of the light as it travels through a crystal can be measured and compared with known or determined values to identify the mineral species. Usually, Polarized Light Microscopy (PLM) is performed with strain-free objectives on a bright-field microscope platform. This would limit the resolution of the microscope to about 0.4 micron. Because WISHA requires the counting and identification of fibers visible in phase contrast, the phase contrast platform is used to visualize the fibers with the polarizing elements added into the light path. Polarized light methods cannot identify fibers finer than about 1 micron in diameter even though they are visible. The finest fibers are usually identified by inference from the presence of larger, identifiable fiber bundles. When

fibers are present, but not identifiable by light microscopy, use either SEM or TEM to determine the fiber identity.

(c) Advantages and Disadvantages

The advantages of light microscopy are:

(i) Basic identification of the materials was first performed by light microscopy and gross analysis. This provides a large base of published information against which to check analysis and analytical technique.

(ii) The analysis is specific to fibers. The minerals present can exist in asbestiform, fibrous, prismatic, or massive varieties all at the same time. Therefore, bulk methods of analysis such as X-ray diffraction, IR analysis, DTA, etc. are inappropriate where the material is not known to be fibrous.

(iii) The analysis is quick, requires little preparation time, and can be performed on-site if a suitably equipped microscope is available.

The disadvantages are:

(iv) Even using phase-polar illumination, not all the fibers present may be seen. This is a problem for very low asbestos concentrations where agglomerations or large bundles of fibers may not be present to allow identification by inference.

(v) The method requires a great degree of sophistication on the part of the microscopist. An analyst is only as useful as his mental catalog of images. Therefore, a microscopist's accuracy is enhanced by experience. The mineralogical training of the analyst is very important. It is the basis on which subjective decisions are made.

(vi) The method uses only a tiny amount of material for analysis. This may lead to sampling bias and false results (high or low). This is especially true if the sample is severely inhomogeneous.

(vii) Fibers may be bound in a matrix and not distinguishable as fibers so identification cannot be made.

(d) Method Performance

(i) This method can be used for determination of asbestos content from 0 to 100% asbestos. The detection limit has not been adequately determined, although for selected samples, the limit is very low, depending on the number of particles examined. For mostly homogeneous, finely divided samples, with no difficult fibrous interferences, the detection limit is below 1%. For inhomogeneous samples (most samples), the detection limit remains undefined. NIST has conducted proficiency testing of laboratories on a national scale. Although each round is reported statistically with an average, control limits, etc., the results indicate a difficulty in establishing precision especially in the low concentration range. It is suspected that there is significant bias in the low range especially near 1%. EPA tried to remedy this by requiring a mandatory point counting scheme for samples less than 10%. The point counting procedure is tedious, and may introduce significant biases of its own. It has not been incorporated into this method.

(ii) The precision and accuracy of the quantitation tests performed in this method are unknown. Concentrations are easier to determine in commercial products where asbestos was deliberately added because the amount is usually more than a few percent. An analyst's results can be "calibrated" against the known amounts added by the manufacturer. For geological samples, the degree of homogeneity affects the precision.

(iii) The performance of the method is analyst dependent. The analyst must choose carefully and not necessarily randomly the portions for analysis to assure that detection of asbestos occurs when it is present. For this reason, the analyst must have adequate training in sample preparation, and experience in the location and identification of asbestos in samples. This is usually accomplished through substantial on-the-job training as well as formal education in mineralogy and microscopy.

(e) Interferences

Any material which is long, thin, and small enough to be viewed under the microscope can be considered an interference for asbestos. There are literally hundreds of interferences in workplaces. The techniques described in this method are normally sufficient to eliminate the interferences. An analyst's success in eliminating the interferences depends on proper training.

Asbestos minerals belong to two mineral families: The serpentines and the amphiboles. In the serpentine family, the only common fibrous mineral is chrysotile. Occasionally, the mineral antigorite occurs in a fibril habit with morphology similar to the amphiboles. The amphibole minerals consist of a score of different minerals of which only five are regulated by federal standard: Amosite, crocidolite, anthophyllite asbestos, tremolite asbestos and actinolite asbestos. These are the only amphibole minerals that have been commercially exploited for their fibrous properties; however, the rest can and do occur occasionally in asbestiform habit.

In addition to the related mineral interferences, other minerals common in building material may present a problem for some microscopists: Gypsum, anhydrite, brucite, quartz fibers, talc fibers or ribbons, wollastonite, perlite, attapulgite, etc. Other fibrous materials commonly present in workplaces are: Fiberglass, mineral wool, ceramic wool, refractory ceramic fibers, kevlar, nomex, synthetic fibers, graphite or carbon fibers, cellulose (paper or wood) fibers, metal fibers, etc.

Matrix embedding material can sometimes be a negative interference. The analyst may not be able to easily extract the fibers from the matrix in order to use the method. Where possible, remove the matrix before the analysis, taking careful note of the loss of weight. Some common matrix materials are: Vinyl, rubber, tar, paint, plant fiber, cement, and epoxy. A further negative interference is that the asbestos fibers themselves may be either too small to be seen in Phase Contrast Microscopy (PCM) or of a very low fibrous quality, having the appearance of plant fibers. The analyst's ability to deal with these materials increases with experience.

(f) Uses and Occupational Exposure

Asbestos is ubiquitous in the environment. More than 40% of the land area of the United States is composed of minerals which may contain asbestos. Fortunately, the actual formation of great amounts of asbestos is relatively rare. Nonetheless, there are locations in which environmental exposure can be severe such as in the Serpentine Hills of California.

There are thousands of uses for asbestos in industry and the home. Asbestos abatement workers are the most current segment of the population to have occupational exposure to great amounts of asbestos. If the material is undisturbed, there is no exposure. Exposure occurs when the asbestos-containing material is abraded or otherwise disturbed during

maintenance operations or some other activity. Approximately 95% of the asbestos in place in the United States is chrysotile.

Amosite and crocidolite make up nearly all the difference. Tremolite and anthophyllite make up a very small percentage. Tremolite is found in extremely small amounts in certain chrysotile deposits. Actinolite exposure is probably greatest from environmental sources, but has been identified in vermiculite containing, sprayed-on insulating materials which may have been certified as asbestos-free.

(g) Physical and Chemical Properties

The nominal chemical compositions for the asbestos minerals were given in subsection (1). Compared to cleavage fragments of the same minerals, asbestiform fibers possess a high tensile strength along the fiber axis. They are chemically inert, noncombustible, and heat resistant. Except for chrysotile, they are insoluble in Hydrochloric acid (HCl). Chrysotile is slightly soluble in HCl. Asbestos has high electrical resistance and good sound absorbing characteristics. It can be woven into cables, fabrics or other textiles, or matted into papers, felts, and mats.

(h) Toxicology (This Section is for Information Only and Should Not Be Taken as WISHA Policy)

Possible physiologic results of respiratory exposure to asbestos are mesothelioma of the pleura or peritoneum, interstitial fibrosis, asbestosis, pneumoconiosis, or respiratory cancer. The possible consequences of asbestos exposure are detailed in the NIOSH Criteria Document or in the WISHA Asbestos Standards, WAC 296-62-077.

(2) Sampling Procedure

(a) Equipment for Sampling

- (i) Tube or cork borer sampling device
- (ii) Knife
- (iii) 20 mL scintillation vial or similar vial
- (iv) Sealing encapsulant

(b) Safety Precautions

Asbestos is a known carcinogen. Take care when sampling. While in an asbestos-containing atmosphere, a properly selected and fit-tested respirator should be worn. Take samples in a manner to cause the least amount of dust. Follow these general guidelines:

- (i) Do not make unnecessary dust.
- (ii) Take only a small amount (1 to 2 g).
- (iii) Tightly close the sample container.
- (iv) Use encapsulant to seal the spot where the sample was taken, if necessary.

(c) Sampling procedure

Samples of any suspect material should be taken from an inconspicuous place. Where the material is to remain, seal the sampling wound with an encapsulant to eliminate the potential for exposure from the sample site. Microscopy requires only a few milligrams of material. The amount that will fill a 20 mL scintillation vial is more than adequate. Be sure to collect samples from all layers and phases of material. If possible, make separate samples of each different phase of the material. This will aid in determining the actual hazard. DO NOT USE ENVELOPES, PLASTIC OR PAPER BAGS OF ANY KIND TO COLLECT SAMPLES. The use of plastic bags presents a contamination hazard to laboratory personnel and to other samples. When these containers are opened, a bellows effect

blows fibers out of the container onto everything, including the person opening the container.

If a cork-borer type sampler is available, push the tube through the material all the way, so that all layers of material are sampled. Some samplers are intended to be disposable. These should be capped and sent to the laboratory. If a non-disposable cork borer is used, empty the contents into a scintillation vial and send to the laboratory. Vigorously and completely clean the cork borer between samples.

(d) Shipment

Samples packed in glass vials must not touch or they might break in shipment.

(i) Seal the samples with a sample seal over the end to guard against tampering and to identify the sample.

(ii) Package the bulk samples in separate packages from the air samples. They may cross-contaminate each other and will invalidate the results of the air samples.

(iii) Include identifying paperwork with the samples, but not in contact with the suspected asbestos.

(iv) To maintain sample accountability, ship the samples by certified mail, overnight express, or hand carry them to the laboratory.

(3) Analysis

The analysis of asbestos samples can be divided into two major parts: Sample preparation and microscopy. Because of the different asbestos uses that may be encountered by the analyst, each sample may need different preparation steps. The choices are outlined below. There are several different tests that are performed to identify the asbestos species and determine the percentage. They will be explained below.

(a) Safety

(i) Do not create unnecessary dust. Handle the samples in HEPA-filter equipped hoods. If samples are received in bags, envelopes or other inappropriate container, open them only in a hood having a face velocity at or greater than 100 fpm. Transfer a small amount to a scintillation vial and only handle the smaller amount.

(ii) Open samples in a hood, never in the open lab area.

(iii) Index of refraction oils can be toxic. Take care not to get this material on the skin. Wash immediately with soap and water if this happens.

(iv) Samples that have been heated in the muffle furnace or the drying oven may be hot. Handle them with tongs until they are cool enough to handle.

(v) Some of the solvents used, such as THF (tetrahydrofuran), are toxic and should only be handled in an appropriate fume hood and according to instructions given in the Material Safety Data Sheet (MSDS).

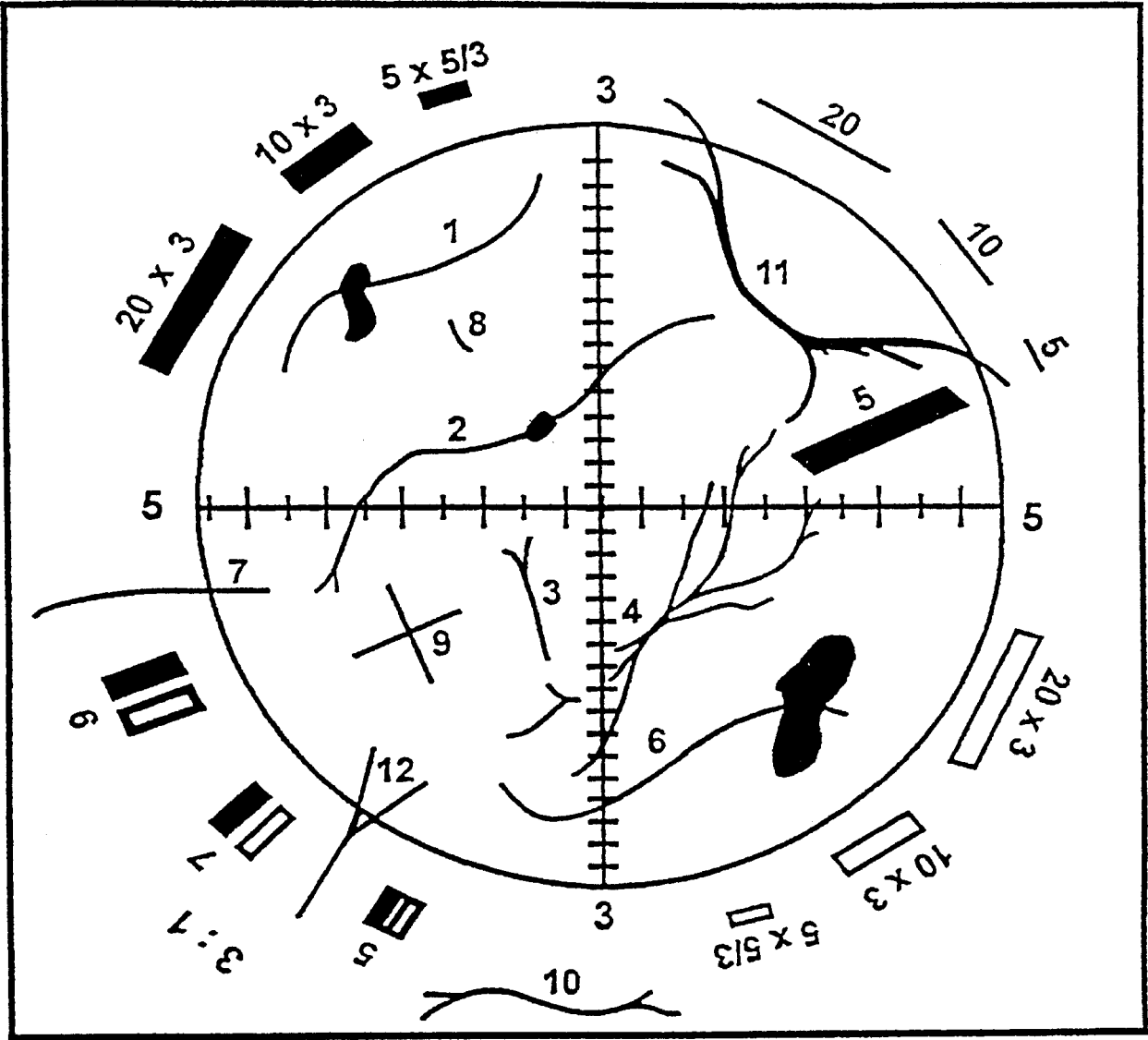


Figure 1: Walton-Beckett Graticule with some explanatory fibers.

Counts for the Fibers in the Figure

Structure No.	Count	Explanation
1 to 6	1	Single fibers all contained within the circle.
7	1/2	Fiber crosses circle once.
8	0	Fiber too short.
9	2	Two crossing fibers.
10	0	Fiber outside graticule.
11	0	Fiber crosses graticule twice.
12	1/2	Although split, fiber only crosses once.

(b) Equipment

(i) Phase contrast microscope with 10x, 16x and 40x objectives, 10x wide-field eyepieces, G-22 Walton-Beckett graticule, Whipple disk, polarizer, analyzer and first order red or gypsum plate, 100 Watt illuminator, rotating position condenser with oversize phase rings, central stop dispersion objective, Kohler illumination and a rotating mechanical stage. (See Figure 1).

- (ii) Stereo microscope with reflected light illumination, transmitted light illumination, polarizer, analyzer and first order red or gypsum plate, and rotating stage.
- (iii) Negative pressure hood for the stereo microscope
- (iv) Muffle furnace capable of 600 degrees C
- (v) Drying oven capable of 50-150 degrees C
- (vi) Aluminum specimen pans
- (vii) Tongs for handling samples in the furnace

(viii) High dispersion index of refraction oils (Special for dispersion staining.)

n=1.550
n=1.585
n=1.590
n=1.605
n=1.620
n=1.670
n=1.680
n=1.690

(ix) A set of index of refraction oils from about n=1.350 to n=2.000 in n=0.005 increments. (Standard for Becke line analysis.)

(x) Glass slides with painted or frosted ends 1 x 3 inches 1mm thick, precleaned.

(xi) Cover Slips 22 x 22 mm, #1 1/2

(xii) Paper clips or dissection needles

(xiii) Hand grinder

(xiv) Scalpel with both #10 and #11 blades

(xv) 0.1 molar HCl

(xvi) Decalcifying solution (Baxter Scientific Products) Ethylenediaminetetraacetic Acid,

(xvii) Tetrasodium....0.7 g/l

Sodium Potassium Tartrate....8.0 mg/liter

Hydrochloric Acid....99.2 g/liter

Sodium Tartrate....0.14 g/liter

Tetrahydrofuran (THF)

(xviii) Hotplate capable of 60 degrees C

(xix) Balance

(xx) Hacksaw blade

(xxi) Ruby mortar and pestle

(c) Sample Pre-Preparation

Sample preparation begins with pre-preparation which may include chemical reduction of the matrix, heating the sample to dryness or heating in the muffle furnace. The end result is a sample which has been reduced to a powder that is sufficiently fine to fit under the cover slip. Analyze different phases of samples separately, e.g., tile and the tile mastic should be analyzed separately as the mastic may contain asbestos while the tile may not.

(i) Wet Samples

Samples with a high water content will not give the proper dispersion colors and must be dried prior to sample mounting. Remove the lid of the scintillation vial, place the bottle in the drying oven and heat at 100 degrees C to dryness (usually about 2 h). Samples which are not submitted to the lab in glass must be removed and placed in glass vials or aluminum weighing pans before placing them in the drying oven.

(ii) Samples With Organic Interference-Muffle Furnace

These may include samples with tar as a matrix, vinyl asbestos tile, or any other organic that can be reduced by heating. Remove the sample from the vial and weigh in a balance to determine the weight of the submitted portion. Place the sample in a muffle furnace at 500 degrees C for 1 to 2 h or until all obvious organic material has been removed. Retrieve, cool and weigh again to determine the weight loss on ignition. This is necessary to determine the asbestos content of the submitted sample, because the analyst will be looking at a reduced sample.

Notes: Heating above 600 degrees C will cause the sample to undergo a structural change which, given sufficient time, will convert the chrysotile to forsterite. Heating even at lower temperatures for 1 to 2 h may have a measurable effect on the optical properties of the minerals. If the analyst is unsure of what to expect, a sample of standard asbestos should be heated to the same temperature for the same length of time so that it can be examined for the proper interpretation.

(iii) Samples With Organic Interference-THF

Vinyl asbestos tile is the most common material treated with this solvent, although, substances containing tar will sometimes yield to this treatment. Select a portion of the material and then grind it up if possible. Weigh the sample and place it in a test tube. Add sufficient THF to dissolve the organic matrix. This is usually about 4 to 5 mL. Remember, THF is highly flammable. Filter the remaining material through a tared silver membrane, dry and weigh to determine how much is left after the solvent extraction. Further process the sample to remove carbonate or mount directly.

(iv) Samples With Carbonate Interference

Carbonate material is often found on fibers and sometimes must be removed in order to perform dispersion microscopy. Weigh out a portion of the material and place it in a test tube. Add a sufficient amount of 0.1 M HCl or decalcifying solution in the tube to react all the carbonate as evidenced by gas formation; i.e., when the gas bubbles stop, add a little more solution. If no more gas forms, the reaction is complete. Filter the material out through a tared silver membrane, dry and weigh to determine the weight lost.

(d) Sample Preparation

Samples must be prepared so that accurate determination can be made of the asbestos type and amount present. The following steps are carried out in the low-flow hood (a low-flow hood has less than 50 fpm flow):

(i) If the sample has large lumps, is hard, or cannot be made to lie under a cover slip, the grain size must be reduced. Place a small amount between two slides and grind the material between them or grind a small amount in a clean mortar and pestle. The choice of whether to use an alumina, ruby, or diamond mortar depends on the hardness of the material. Impact damage can alter the asbestos mineral if too much mechanical shock occurs. (Freezer mills can completely destroy the observable crystallinity of asbestos and should not be used). For some samples, a portion of material can be shaved off with a scalpel, ground off with a hand grinder or hacksaw blade.

The preparation tools should either be disposable or cleaned thoroughly. Use vigorous scrubbing to loosen the fibers during the washing. Rinse the implements with copious amounts of water and air-dry in a dust-free environment.

(ii) If the sample is powder or has been reduced as in (i) above, it is ready to mount. Place a glass slide on a piece of optical tissue and write the identification on the painted or frosted end. Place two drops of index of refraction medium n=1.550 on the slide. (The medium n=1.550 is chosen because it is the matching index for chrysotile.) Dip the end of a clean paper-clip or dissecting needle into the droplet of refraction medium on the slide to moisten it. Then dip the probe into the powder sample. Transfer what sticks on the probe to the slide. The material on the end of the probe should

have a diameter of about 3 mm for a good mount. If the material is very fine, less sample may be appropriate. For nonpowder samples such as fiber mats, forceps should be used to transfer a small amount of material to the slide. Stir the material in the medium on the slide, spreading it out and making the preparation as uniform as possible. Place a cover-slip on the preparation by gently lowering onto the slide and allowing it to fall "trapdoor" fashion on the preparation to push out any bubbles. Press gently on the cover slip to even out the distribution of particulate on the slide. If there is insufficient mounting oil on the slide, one or two drops may be placed near the edge of the coverslip on the slide. Capillary action will draw the necessary amount of liquid into the preparation. Remove excess oil with the point of a laboratory wiper.

Treat at least two different areas of each phase in this fashion. Choose representative areas of the sample. It may be useful to select particular areas or fibers for analysis. This is useful to identify asbestos in severely inhomogeneous samples.

When it is determined that amphiboles may be present, repeat the above process using the appropriate high-disper-

sion oils until an identification is made or all six asbestos minerals have been ruled out. Note that percent determination must be done in the index medium 1.550 because amphiboles tend to disappear in their matching mediums.

(e) Analytical procedure

Note: This method presumes some knowledge of mineralogy and optical petrography.

The analysis consists of three parts: The determination of whether there is asbestos present, what type is present and the determination of how much is present. The general flow of the analysis is:

(i) Gross examination.

(ii) Examination under polarized light on the stereo microscope.

(iii) Examination by phase-polar illumination on the compound phase microscope.

(iv) Determination of species by dispersion stain. Examination by Becke line analysis may also be used; however, this is usually more cumbersome for asbestos determination.

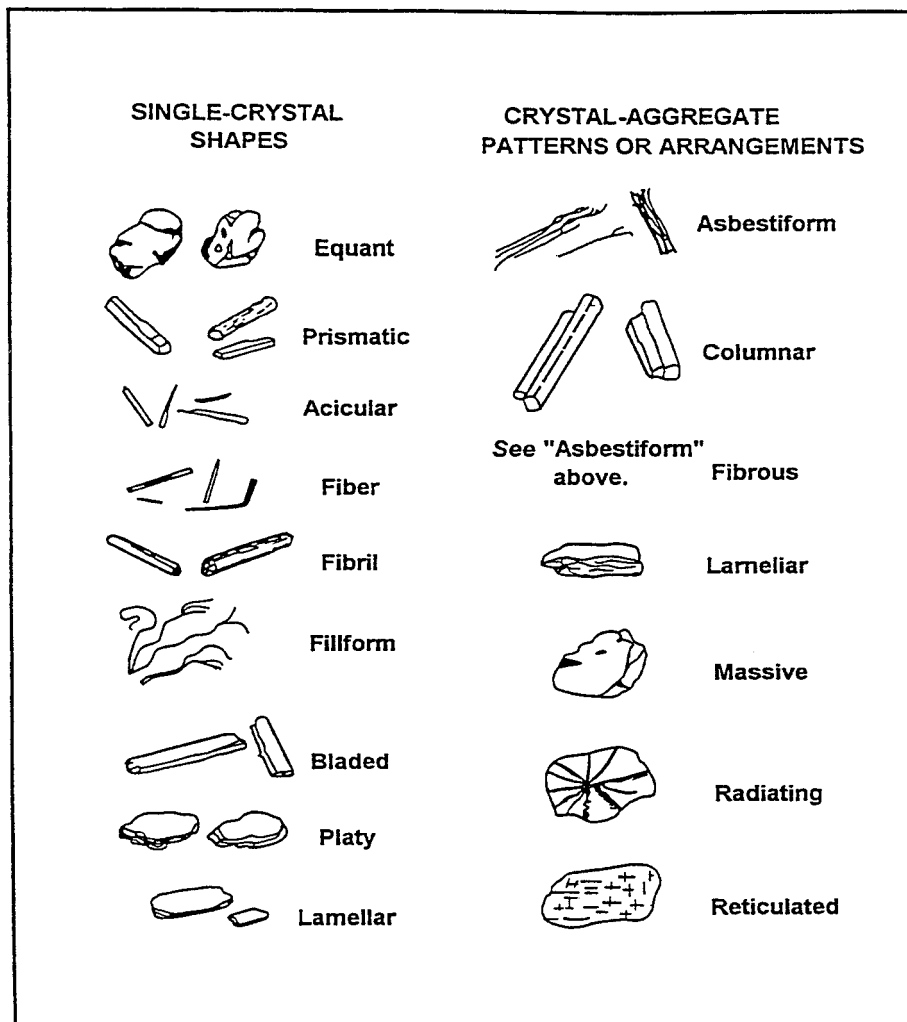


Figure 1. Particle definitions showing mineral growth habits.
From the U.S. Bureau of Mines.

(v) Difficult samples may need to be analyzed by SEM or TEM, or the results from those techniques combined with light microscopy for a definitive identification. Identification of a particle as asbestos requires that it be asbestiform. Description of particles should follow the suggestion of Campbell. (Figure 2)

For the purpose of regulation, the mineral must be one of the six minerals covered and must be in the asbestos growth habit. Large specimen samples of asbestos generally have the gross appearance of wood. Fibers are easily parted from it. Asbestos fibers are very long compared with their widths. The fibers have a very high tensile strength as demonstrated by bending without breaking. Asbestos fibers exist in bundles that are easily parted, show longitudinal fine structure and may be tufted at the ends showing "bundle of sticks" morphology. In the microscope some of these properties may not be observable. Amphiboles do not always show striations along their length even when they are asbestos. Neither will they always show tufting. They generally do not show a curved nature except for very long fibers. Asbestos and asbestiform minerals are usually characterized in groups by extremely high aspect ratios (greater than 100:1). While aspect ratio analysis is useful for characterizing populations of fibers, it cannot be used to identify individual fibers of intermediate to short aspect ratio. Observation of many fibers is often necessary to determine whether a sample consists of "cleavage fragments" or of asbestos fibers.

Most cleavage fragments of the asbestos minerals are easily distinguishable from true asbestos fibers. This is because true cleavage fragments usually have larger diameters than 1 micron. Internal structure of particles larger than this usually shows them to have no internal fibrillar structure. In addition, cleavage fragments of the monoclinic amphiboles show inclined extinction under crossed polars with no compensator. Asbestos fibers usually show extinction at zero degrees or ambiguous extinction if any at all. Morphologically, the larger cleavage fragments are obvious by their blunt or stepped ends showing prismatic habit. Also, they tend to be acicular rather than filiform.

Where the particles are less than 1 micron in diameter and have an aspect ratio greater than or equal to 3:1, it is recommended that the sample be analyzed by SEM or TEM if there is any question whether the fibers are cleavage fragments or asbestiform particles.

Care must be taken when analyzing by electron microscopy because the interferences are different from those in light microscopy and may structurally be very similar to asbestos. The classic interference is between anthophyllite and biopyrbole or intermediate fiber. Use the same morphological clues for electron microscopy as are used for light microscopy, e.g. fibril splitting, internal longitudinal striation, fraying, curvature, etc.

(vi) Gross examination:

Examine the sample, preferably in the glass vial. Determine the presence of any obvious fibrous component. Estimate a percentage based on previous experience and current observation. Determine whether any pre-preparation is necessary. Determine the number of phases present. This step may be carried out or augmented by observation at 6x to 40x under a stereo microscope.

(vii) After performing any necessary pre-preparation, prepare slides of each phase as described above. Two preparations of the same phase in the same index medium can be made side-by-side on the same glass for convenience. Examine with the polarizing stereo microscope. Estimate the percentage of asbestos based on the amount of birefringent fiber present.

(viii) Examine the slides on the phase-polar microscopes at magnifications of 160x and 400x. Note the morphology of the fibers. Long, thin, very straight fibers with little curvature are indicative of fibers from the amphibole family. Curved, wavy fibers are usually indicative of chrysotile. Estimate the percentage of asbestos on the phase-polar microscope under conditions of crossed polars and a gypsum plate. Fibers smaller than 1.0 microns in thickness must be identified by inference to the presence of larger, identifiable fibers and morphology. If no larger fibers are visible, electron microscopy should be performed. At this point, only a tentative identification can be made. Full identification must be made with dispersion microscopy. Details of the tests are included in the appendices.

(ix) Once fibers have been determined to be present, they must be identified. Adjust the microscope for dispersion mode and observe the fibers. The microscope has a rotating stage, one polarizing element, and a system for generating dark-field dispersion microscopy (see subsection (4)(f) of this appendix). Align a fiber with its length parallel to the polarizer and note the color of the Becke lines. Rotate the stage to bring the fiber length perpendicular to the polarizer and note the color. Repeat this process for every fiber or fiber bundle examined. The colors must be consistent with the colors generated by standard asbestos reference materials for a positive identification. In $n=1.550$, amphiboles will generally show a yellow to straw-yellow color indicating that the fiber indices of refraction are higher than the liquid. If long, thin fibers are noted and the colors are yellow, prepare further slides as above in the suggested matching liquids listed below:

Type of asbestos	Index of refraction
Chrysotile	$n=1.550$.
Amosite	$n=1.670$ or 1.680 .
Crocidolite	$n=1.690$.
Anthophyllite	$n=1.605$ and 1.620 .
Tremolite	$n=1.605$ and 1.620 .
Actinolite	$n=1.620$.

Where more than one liquid is suggested, the first is preferred; however, in some cases this liquid will not give good dispersion color. Take care to avoid interferences in the other liquid; e.g., wollastonite in $n=1.620$ will give the same colors as tremolite. In $n=1.605$ wollastonite will appear yellow in all directions. Wollastonite may be determined under crossed polars as it will change from blue to yellow as it is rotated along its fiber axis by tapping on the cover slip. Asbestos minerals will not change in this way.

Determination of the angle of extinction may, when present, aid in the determination of anthophyllite from tremolite. True asbestos fibers usually have 0 degree extinction or ambiguous extinction, while cleavage fragments have more definite extinction.

Continue analysis until both preparations have been examined and all present species of asbestos are identified. If there are no fibers present, or there is less than 0.1% present, end the analysis with the minimum number of slides (2).

(x) Some fibers have a coating on them which makes dispersion microscopy very difficult or impossible. Becke line analysis or electron microscopy may be performed in those cases. Determine the percentage by light microscopy. TEM analysis tends to overestimate the actual percentage present.

(xi) Percentage determination is an estimate of occluded area, tempered by gross observation. Gross observation information is used to make sure that the high magnification microscopy does not greatly over- or under-estimate the amount of fiber present. This part of the analysis requires a great deal of experience. Satisfactory models for asbestos content analysis have not yet been developed, although some models based on metallurgical grain-size determination have found some utility. Estimation is more easily handled in situations where the grain sizes visible at about 160x are about the same and the sample is relatively homogeneous.

View all of the area under the cover slip to make the percentage determination. View the fields while moving the stage, paying attention to the clumps of material. These are not usually the best areas to perform dispersion microscopy because of the interference from other materials. But, they are the areas most likely to represent the accurate percentage in the sample. Small amounts of asbestos require slower scanning and more frequent analysis of individual fields.

Report the area occluded by asbestos as the concentration. This estimate does not generally take into consideration the difference in density of the different species present in the sample. For most samples this is adequate. Simulation studies with similar materials must be carried out to apply microvisual estimation for that purpose and is beyond the scope of this procedure.

(xii) Where successive concentrations have been made by chemical or physical means, the amount reported is the percentage of the material in the "as submitted" or original state. The percentage determined by microscopy is multiplied by the fractions remaining after pre-preparation steps to give the percentage in the original sample. For example:

Step 1. 60% remains after heating at 550 degrees C for 1 h.

Step 2. 30% of the residue of step 1 remains after dissolution of carbonate in 0.1 m HCl.

Step 3. Microvisual estimation determines that 5% of the sample is chrysotile asbestos.

The reported result is:

$R = (\text{Microvisual result in percent}) \times (\text{Fraction remaining after step 2}) \times (\text{Fraction remaining of original sample after step 1})$

$R = (5) \times (.30) \times (.60) = 0.9\%$

(xiii) Report the percent and type of asbestos present. For samples where asbestos was identified, but is less than 1.0%, report "Asbestos present, less than 1.0%." There must have been at least two observed fibers or fiber bundles in the two preparations to be reported as present. For samples where asbestos was not seen, report as "None Detected."

(4) Auxiliary Information

Because of the subjective nature of asbestos analysis, certain concepts and procedures need to be discussed in more

depth. This information will help the analyst understand why some of the procedures are carried out the way they are.

(a) Light

Light is electromagnetic energy. It travels from its source in packets called quanta. It is instructive to consider light as a plane wave. The light has a direction of travel. Perpendicular to this and mutually perpendicular to each other, are two vector components. One is the magnetic vector and the other is the electric vector. We shall only be concerned with the electric vector. In this description, the interaction of the vector and the mineral will describe all the observable phenomena. From a light source such a microscope illuminator, light travels in all different direction from the filament.

In any given direction away from the filament, the electric vector is perpendicular to the direction of travel of a light ray. While perpendicular, its orientation is random about the travel axis. If the electric vectors from all the light rays were lined up by passing the light through a filter that would only let light rays with electric vectors oriented in one direction pass, the light would then be POLARIZED.

Polarized light interacts with matter in the direction of the electric vector. This is the polarization direction. Using this property it is possible to use polarized light to probe different materials and identify them by how they interact with light. The speed of light in a vacuum is a constant at about 2.99×10^8 m/s. When light travels in different materials such as air, water, minerals or oil, it does not travel at this speed. It travels slower. This slowing is a function of both the material through which the light is traveling and the wavelength or frequency of the light. In general, the more dense the material, the slower the light travels. Also, generally, the higher the frequency, the slower the light will travel. The ratio of the speed of light in a vacuum to that in a material is called the index of refraction (n). It is usually measured at 589 nm (the sodium D line). If white light (light containing all the visible wavelengths) travels through a material, rays of longer wavelengths will travel faster than those of shorter wavelengths, this separation is called dispersion. Dispersion is used as an identifier of materials as described in Section (4)(f).

(b) Material Properties

Materials are either amorphous or crystalline. The difference between these two descriptions depends on the positions of the atoms in them. The atoms in amorphous materials are randomly arranged with no long range order. An example of an amorphous material is glass. The atoms in crystalline materials, on the other hand, are in regular arrays and have long range order. Most of the atoms can be found in highly predictable locations. Examples of crystalline material are salt, gold, and the asbestos minerals.

It is beyond the scope of this method to describe the different types of crystalline materials that can be found, or the full description of the classes into which they can fall. However, some general crystallography is provided below to give a foundation to the procedures described.

With the exception of anthophyllite, all the asbestos minerals belong to the monoclinic crystal type. The unit cell is the basic repeating unit of the crystal and for monoclinic crystals can be described as having three unequal sides, two 90 degrees angles and one angle not equal to 90 degrees. The orthorhombic group, of which anthophyllite is a member has three unequal sides and three 90 degrees angles. The unequal

sides are a consequence of the complexity of fitting the different atoms into the unit cell. Although the atoms are in a regular array, that array is not symmetrical in all directions. There is long range order in the three major directions of the crystal. However, the order is different in each of the three directions. This has the effect that the index of refraction is different in each of the three directions. Using polarized light, we can investigate the index of refraction in each of the directions and identify the mineral or material under investigation. The indices alpha, beta, and gamma are used to identify the lowest, middle, and highest index of refraction respectively. The x direction, associated with alpha is called the fast axis. Conversely, the z direction is associated with gamma and is the slow direction. Crocidolite has alpha along the fiber length making it "length-fast." The remainder of the asbestos minerals have the gamma axis along the fiber length. They are called "length-slow." This orientation to fiber length is used to aid in the identification of asbestos.

(c) Polarized Light Technique

Polarized light microscopy as described in this section uses the phase-polar microscope described in Section (3)(b). A phase contrast microscope is fitted with two polarizing elements, one below and one above the sample. The polarizers have their polarization directions at right angles to each other. Depending on the tests performed, there may be a compensator between these two polarizing elements. Light emerging from a polarizing element has its electric vector pointing in the polarization direction of the element. The light will not be subsequently transmitted through a second element set at a right angle to the first element. Unless the light is altered as it passes from one element to the other, there is no transmission of light.

(d) Angle of Extinction

Crystals which have different crystal regularity in two or three main directions are said to be anisotropic. They have a different index of refraction in each of the main directions. When such a crystal is inserted between the crossed polars, the field of view is no longer dark but shows the crystal in color. The color depends on the properties of the crystal. The light acts as if it travels through the crystal along the optical axes. If a crystal optical axis were lined up along one of the polarizing directions (either the polarizer or the analyzer) the light would appear to travel only in that direction, and it would blink out or go dark. The difference in degrees between the fiber direction and the angle at which it blinks out is called the angle of extinction. When this angle can be measured, it is useful in identifying the mineral. The procedure for measuring the angle of extinction is to first identify the polarization direction in the microscope. A commercial alignment slide can be used to establish the polarization directions or use anthophyllite or another suitable mineral. This mineral has a zero degree angle of extinction and will go dark to extinction as it aligns with the polarization directions. When a fiber of anthophyllite has gone to extinction, align the eyepiece reticle or graticule with the fiber so that there is a visual cue as to the direction of polarization in the field of view. Tape or otherwise secure the eyepiece in this position so it will not shift.

After the polarization direction has been identified in the field of view, move the particle of interest to the center of the field of view and align it with the polarization direction. For

fibers, align the fiber along this direction. Note the angular reading of the rotating stage. Looking at the particle, rotate the stage until the fiber goes dark or "blinks out." Again note the reading of the stage. The difference in the first reading and the second is an angle of extinction.

The angle measured may vary as the orientation of the fiber changes about its long axis. Tables of mineralogical data usually report the maximum angle of extinction. Asbestos forming minerals, when they exhibit an angle of extinction, usually do show an angle of extinction close to the reported maximum, or as appropriate depending on the substitution chemistry.

(e) Crossed Polars With Compensator

When the optical axes of a crystal are not lined up along one of the polarizing directions (either the polarizer or the analyzer) part of the light travels along one axis and part travels along the other visible axis. This is characteristic of birefringent materials.

The color depends on the difference of the two visible indices of refraction and the thickness of the crystal. The maximum difference available is the difference between the alpha and the gamma axes. This maximum difference is usually tabulated as the birefringence of the crystal.

For this test, align the fiber at 45 degrees to the polarization directions in order to maximize the contribution to each of the optical axes. The colors seen are called retardation colors. They arise from the recombination of light which has traveled through the two separate directions of the crystal. One of the rays is retarded behind the other since the light in that direction travels slower. On recombination, some of the colors which make up white light are enhanced by constructive interference and some are suppressed by destructive interference. The result is a color dependent on the difference between the indices and the thickness of the crystal. The proper colors, thicknesses, and retardations are shown on a Michel-Levy chart. The three items, retardation, thickness and birefringence are related by the following relationship: Lambda

$$R = t (n_{\gamma} - \alpha)$$

R = retardation, t = crystal thickness in micron, and alpha, gamma = indices of refraction.

Examination of the equation for asbestos minerals reveals that the visible colors for almost all common asbestos minerals and fiber sizes are shades of gray and black. The eye is relatively poor at discriminating different shades of gray. It is very good at discriminating different colors. In order to compensate for the low retardation, a compensator is added to the light train between the polarization elements. The compensator used for this test is a gypsum plate of known thickness and birefringence. Such a compensator when oriented at 45 degrees to the polarizer direction, provides a retardation of 530 nm of the 530 nm wavelength color. This enhances the red color and gives the background a characteristic red to red-magenta color. If this "full-wave" compensator is in place when the asbestos preparation is inserted into the light train, the colors seen on the fibers are quite different. Gypsum, like asbestos has a fast axis and a slow axis. When a fiber is aligned with its fast axis in the same direction as the fast axis of the gypsum plate, the ray vibrating in the slow direction is retarded by both the asbestos and the gypsum. This results in

a higher retardation than would be present for either of the two minerals. The color seen is a second order blue. When the fiber is rotated 90 degrees using the rotating stage, the slow direction of the fiber is now aligned with the fast direction of the gypsum and the fast direction of the fiber is aligned with the slow direction of the gypsum. Thus, one ray vibrates faster in the fast direction of the gypsum, and slower in the slow direction of the fiber; the other ray will vibrate slower in the slow direction of the gypsum and faster in the fast direction of the fiber. In this case, the effect is subtractive and the color seen is a first order yellow. As long as the fiber thickness does not add appreciably to the color, the same basic colors will be seen for all asbestos types except crocidolite. In crocidolite the colors will be weaker, may be in the opposite directions, and will be altered by the blue absorption color natural to crocidolite. Hundreds of other materials will give the same colors as asbestos, and therefore, this test is not definitive for asbestos. The test is useful in discriminating against fiberglass or other amorphous fibers such as some synthetic fibers. Certain synthetic fibers will show retardation colors different than asbestos; however, there are some forms of polyethylene and aramid which will show morphology and retardation colors similar to asbestos minerals. This test must be supplemented with a positive identification test when birefringent fibers are present which can not be excluded by morphology. This test is relatively ineffective for use on fibers less than 1 micron in diameter. For positive confirmation TEM or SEM should be used if no larger bundles or fibers are visible.

(f) Dispersion Staining

Dispersion microscopy or dispersion staining is the method of choice for the identification of asbestos in bulk materials. Becke line analysis is used by some laboratories and yields the same results as does dispersion staining for asbestos and can be used in lieu of dispersion staining. Dispersion staining is performed on the same platform as the phase-polar analysis with the analyzer and compensator removed. One polarizing element remains to define the direction of the light so that the different indices of refraction of the fibers may be separately determined. Dispersion microscopy is a dark-field technique when used for asbestos. Particles are imaged with scattered light. Light which is unscattered is blocked from reaching the eye either by the back field image mask in a McCrone objective or a back field image mask in the phase condenser. The most convenient method is to use the rotating phase condenser to move an oversized phase ring into place. The ideal size for this ring is for the central disk to be just larger than the objective entry aperture as viewed in the back focal plane. The larger the disk, the less scattered light reaches the eye. This will have the effect of diminishing the intensity of dispersion color and will shift the actual color seen. The colors seen vary even on microscopes from the same manufacturer. This is due to the different bands of wavelength exclusion by different mask sizes. The mask may either reside in the condenser or in the objective back focal plane. It is imperative that the analyst determine by experimentation with asbestos standards what the appropriate colors should be for each asbestos type. The colors depend also on the temperature of the preparation and the exact chemistry of the asbestos. Therefore, some slight differences from the standards should be allowed. This is not a

serious problem for commercial asbestos uses. This technique is used for identification of the indices of refraction for fibers by recognition of color. There is no direct numerical readout of the index of refraction. Correlation of color to actual index of refraction is possible by referral to published conversion tables. This is not necessary for the analysis of asbestos. Recognition of appropriate colors along with the proper morphology are deemed sufficient to identify the commercial asbestos minerals. Other techniques including SEM, TEM, and XRD may be required to provide additional information in order to identify other types of asbestos.

Make a preparation in the suspected matching high dispersion oil, e.g., $n = 1.550$ for chrysotile. Perform the preliminary tests to determine whether the fibers are birefringent or not. Take note of the morphological character. Wavy fibers are indicative of chrysotile while long, straight, thin, frayed fibers are indicative of amphibole asbestos. This can aid in the selection of the appropriate matching oil. The microscope is set up and the polarization direction is noted as in Section (4)(d). Align a fiber with the polarization direction. Note the color. This is the color parallel to the polarizer. Then rotate the fiber rotating the stage 90 degrees so that the polarization direction is across the fiber. This is the perpendicular position. Again note the color. Both colors must be consistent with standard asbestos minerals in the correct direction for a positive identification of asbestos. If only one of the colors is correct while the other is not, the identification is not positive. If the colors in both directions are bluish-white, the analyst has chosen a matching index oil which is higher than the correct matching oil, e.g. the analyst has used $n = 1.620$ where chrysotile is present. The next lower oil (Section (3)(e)) should be used to prepare another specimen. If the color in both directions is yellow-white to straw-yellow-white, this indicates that the index of the oil is lower than the index of the fiber, e.g. the preparation is in $n = 1.550$ while anthophyllite is present. Select the next higher oil (Section (3)(e)) and prepare another slide. Continue in this fashion until a positive identification of all asbestos species present has been made or all possible asbestos species have been ruled out by negative results in this test. Certain plant fibers can have similar dispersion colors as asbestos. Take care to note and evaluate the morphology of the fibers or remove the plant fibers in pre-preparation. Coating material on the fibers such as carbonate or vinyl may destroy the dispersion color. Usually, there will be some outcropping of fiber which will show the colors sufficient for identification. When this is not the case, treat the sample as described in Section (3)(c) and then perform dispersion staining. Some samples will yield to Becke line analysis if they are coated or electron microscopy can be used for identification.

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[Statutory Authority: RCW 49.17.040, [49.17.]050 and [49.17.]060. 97-01-079, § 296-62-07753, filed 12/17/96, effective 3/1/97. Statutory Authority: Chapter 49.17 RCW. 89-21-018 (Order 89-10), § 296-62-07753, filed 10/10/89, effective 11/24/89; 87-24-051 (Order 87-24), § 296-62-07753, filed 11/30/87.]

WAC 296-62-07755 Appendix K—Smoking cessation program information for asbestos, tremolite, anthophyllite, and actinolite—Nonmandatory. The following (2007 Ed.)

organizations provide smoking cessation information and program material:

(1) The National Cancer Institute operates a toll-free Cancer Information Service (CIS) with trained personnel to help you. Call 1-800-4-CANCER* to reach the CIS office serving your area, or write: Office of Cancer Communications, National Cancer Institute, National Institutes of Health, Building 31, Room 10A24, Bethesda, Maryland 20892.

(2) American Cancer Society, 3340 Peachtree Road, N.E., Atlanta, Georgia 30062, (404) 320-3333. The American Cancer Society (ACS) is a voluntary organization composed of 58 divisions and 3,100 local units. Through "The Great American Smokeout" in November, the annual Cancer Crusade in April, and numerous educational materials, ACS helps people learn about the health hazards of smoking and become successful ex-smokers.

(3) American Heart Association, 7320 Greenville Avenue, Dallas, Texas 75231, (214) 750-5300. The American Heart Association (AHA) is a voluntary organization with 130,000 members (physicians, scientists, and laypersons) in 55 states and regional groups. AHA produces a variety of publications and audiovisual materials about the effects of smoking on the heart. AHA also has developed a guidebook for incorporating a weight-control component into smoking cessation programs.

(4) American Lung Association, 1740 Broadway, New York, New York 10019, (212) 245-8000. A voluntary organization of 7,500 members (physicians, nurses, and laypersons), the American Lung Association (ALA) conducts numerous public information programs about the health effect of smoking. ALA has 59 state and 85 local units. The organization actively supports legislation and information campaigns for nonsmokers' rights and provides help for smokers who want to quit, for example, through "Freedom From Smoking," a self-help smoking cessation program.

(5) Office on Smoking and Health, United States Department of Health and Human Services, 5600 Fishers Lane, Park Building, Room 110, Rockville, Maryland 20857. The Office on Smoking and Health (OSH) is the Department of Health and Human Services' lead agency in smoking control. OSH has sponsored distribution of publications on smoking-related topics, such as free flyers on relapse after initial quitting, helping a friend or family member quit smoking, the health hazards of smoking, and the effects of parental smoking on teenagers.

*In Hawaii, on Oahu call 524-1234 (call collect from neighboring islands), Spanish-speaking staff members are available during daytime hours to callers from the following areas: California, Florida, Georgia, Illinois, New Jersey (area code 210), New York, and Texas. Consult your local telephone directory for listings of local chapters.

[Statutory Authority: Chapter 49.17 RCW. 91-03-044 (Order 90-18), § 296-62-07755, filed 1/10/91, effective 2/12/91.]

PART I-2—HEXAVALENT CHROMIUM

WAC 296-62-08003 Hexavalent chromium. Scope. This standard applies to occupational exposures to chromium (VI) in all forms and compounds in general industry; con-

struction; shipyards, marine terminals, and longshoring, except:

- Agricultural operations covered by chapter 296-307 WAC, Safety standards for agriculture.
- Exposures that occur in the application of pesticides regulated by the Washington state department of agriculture or another federal government agency (e.g., the treatment of wood with preservatives);
- Exposures to portland cement; or
- Where the employer has objective data demonstrating that a material containing chromium or a specific process, operation, or activity involving chromium cannot release dusts, fumes, or mists of chromium (VI) in concentrations at or above 0.5 (mu)g/m³ as an 8-hour time-weighted average (TWA) under any expected conditions of use.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. 06-16-106, § 296-62-08003, filed 8/1/06, effective 9/1/06.]

WAC 296-62-08005 Definitions. For the purposes of this section the following definitions apply:

Action level means a concentration of airborne chromium (VI) of 2.5 micrograms per cubic meter of air (2.5 (mu)g/m³) calculated as an 8-hour time-weighted average (TWA).

Chromium (VI) (hexavalent chromium or Cr(VI)) means chromium with a valence of positive six, in any form and in any compound.

Emergency means any occurrence that results, or is likely to result, in an uncontrolled release of chromium (VI). If an incidental release of chromium (VI) can be controlled at the time of release by employees in the immediate release area, or by maintenance personnel, it is not an emergency.

Employee exposure means the exposure to airborne chromium (VI) that would occur if the employee were not using a respirator.

High-efficiency particulate air (HEPA) filter means a filter that is at least 99.97 percent efficient in removing mono-dispersed particles of 0.3 micrometers in diameter or larger.

Historical monitoring data means data from chromium (VI) monitoring conducted prior to July 31, 2006, obtained during work operations conducted under workplace conditions closely resembling the processes, types of material, control methods, work practices, and environmental conditions in the employer's current operations.

Objective data means information such as air monitoring data from industry-wide surveys or calculations based on the composition or chemical and physical properties of a substance demonstrating the employee exposure to chromium (VI) associated with a particular product or material or a specific process, operation, or activity. The data must reflect workplace conditions closely resembling the processes, types of material, control methods, work practices, and environmental conditions in the employer's current operations.

Physician or other licensed health care professional (PLHCP) is an individual whose legally permitted scope of practice (i.e., license, registration, or certification) allows him or her to independently provide or be delegated the responsibility to provide some or all of the particular health care services required by WAC 296-62-08023.

[Title 296 WAC—p. 1576]

Regulated area means an area, demarcated by the employer, where an employee's exposure to airborne concentrations of chromium (VI) exceeds, or can reasonably be expected to exceed, the PEL.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. 06-16-106, § 296-62-08005, filed 8/1/06, effective 9/1/06.]

WAC 296-62-08007 Permissible exposure limit (PEL). Permissible exposure limit (PEL). The employer shall ensure that no employee is exposed to an airborne concentration of chromium (VI) in excess of 5 micrograms per cubic meter of air (5 (mu)g/m³), calculated as an 8-hour time-weighted average (TWA).

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. 06-16-106, § 296-62-08007, filed 8/1/06, effective 9/1/06.]

WAC 296-62-08009 Exposure determination. (1) General. Each employer who has a workplace or work operation covered by this section shall determine the 8-hour TWA exposure for each employee exposed to chromium (VI). This determination shall be made in accordance with either subsection (2) or (3) of this section.

(2) Scheduled monitoring option.

(a) The employer shall perform initial monitoring to determine the 8-hour TWA exposure for each employee on the basis of a sufficient number of personal breathing zone air samples to accurately characterize full shift exposure on each shift, for each job classification, in each work area. Where an employer does representative sampling instead of sampling all employees in order to meet this requirement, the employer shall sample the employee(s) expected to have the highest chromium (VI) exposures.

(b) If initial monitoring indicates that employee exposures are below the action level, the employer may discontinue monitoring for those employees whose exposures are represented by such monitoring.

(c) If monitoring reveals employee exposures to be at or above the action level, the employer shall perform periodic monitoring at least every six months.

(d) If monitoring reveals employee exposures to be above the PEL, the employer shall perform periodic monitoring at least every three months.

(e) If periodic monitoring indicates that employee exposures are below the action level, and the result is confirmed by the result of another monitoring taken at least seven days later, the employer may discontinue the monitoring for those employees whose exposures are represented by such monitoring.

(f) The employer shall perform additional monitoring when there has been any change in the production process, raw materials, equipment, personnel, work practices, or control methods that may result in new or additional exposures to chromium (VI), or when the employer has any reason to believe that new or additional exposures have occurred.

(3) Performance-oriented option. The employer shall determine the 8-hour TWA exposure for each employee on the basis of any combination of air monitoring data, historical monitoring data, or objective data sufficient to accurately characterize employee exposure to chromium (VI).

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(4) Employee notification of determination results.

(a) In general industry where the exposure determination indicates that employee exposure exceeds the PEL, within fifteen working days the employer shall either post the results in an appropriate location that is accessible to all affected employees or shall notify each affected employee individually in writing of the results.

(b) In construction and shipyards, marine terminals, and longshoring where the exposure determination indicates that employee exposure exceeds the PEL, as soon as possible but not more than five working days later the employer shall either post the results in an appropriate location that is accessible to all affected employees or shall notify each affected employee individually in writing of the results.

(c) Whenever the exposure determination indicates that employee exposure is above the PEL, the employer shall describe in the written notification the corrective action being taken to reduce employee exposure to or below the PEL.

(5) Accuracy of measurement. Where air monitoring is performed to comply with the requirements of this section, the employer shall use a method of monitoring and analysis that can measure chromium (VI) to within an accuracy of plus or minus twenty-five percent and can produce accurate measurements to within a statistical confidence level of ninety-five percent for airborne concentrations at or above the action level.

(6) Observation of monitoring.

(a) Where air monitoring is performed to comply with the requirements of this section, the employer shall provide affected employees or their designated representatives an opportunity to observe any monitoring of employee exposure to chromium (VI).

(b) When observation of monitoring requires entry into an area where the use of protective clothing or equipment is required, the employer shall provide the observer with clothing and equipment and shall assure that the observer uses such clothing and equipment and complies with all other applicable safety and health procedures.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. 06-16-106, § 296-62-08009, filed 8/1/06, effective 9/1/06.]

WAC 296-62-08011 Regulated areas.

Exemption: This section does not apply to construction, shipyards, marine terminals or longshoring.

(1) Establishment. The employer shall establish a regulated area wherever an employee's exposure to airborne concentrations of chromium (VI) is, or can reasonably be expected to be, in excess of the PEL.

(2) Demarcation. The employer shall ensure that regulated areas are demarcated from the rest of the workplace in a manner that adequately establishes and alerts employees of the boundaries of the regulated area.

(3) Access. The employer shall limit access to regulated areas to:

(a) Persons authorized by the employer and required by work duties to be present in the regulated area;

(b) Any person entering such an area as a designated representative of employees for the purpose of exercising the right to observe monitoring procedures under WAC 296-62-08009;

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(c) Any person authorized by the Washington Industrial Safety and Health Act (WISHA) or regulations issued under it to be in a regulated area.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. 06-16-106, § 296-62-08011, filed 8/1/06, effective 9/1/06.]

WAC 296-62-08013 Methods of compliance. (1) Engineering and work practice controls.

(a) Except as permitted in (c) of this subsection, the employer shall use engineering and work practice controls to reduce and maintain employee exposure to chromium (VI) to or below the PEL unless the employer can demonstrate that such controls are not feasible. Wherever feasible engineering and work practice controls are not sufficient to reduce employee exposure to or below the PEL, the employer shall use them to reduce employee exposure to the lowest levels achievable, and shall supplement them by the use of respiratory protection that complies with the requirements of WAC 296-62-08015.

Exemption: This (b) does not apply to construction, shipyards, marine terminals and longshoring.

(b) Where painting of aircraft or large aircraft parts is performed in the aerospace industry, the employer shall use engineering and work practice controls to reduce and maintain employee exposure to chromium (VI) to or below 25 (mu)g/m³ unless the employer can demonstrate that such controls are not feasible. The employer shall supplement such engineering and work practice controls with the use of respiratory protection that complies with the requirements of WAC 296-62-08015 to achieve the PEL.

(c) Where the employer can demonstrate that a process or task does not result in any employee exposure to chromium (VI) above the PEL for thirty or more days per year (twelve consecutive months), the requirement to implement engineering and work practice controls to achieve the PEL does not apply to that process or task.

(2) Prohibition of rotation. The employer shall not rotate employees to different jobs to achieve compliance with the PEL.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. 06-16-106, § 296-62-08013, filed 8/1/06, effective 9/1/06.]

WAC 296-62-08015 Respiratory protection. (1) General. The employer shall provide respiratory protection for employees during:

(a) Periods necessary to install or implement feasible engineering and work practice controls;

(b) Work operations, such as maintenance and repair activities, for which engineering and work practice controls are not feasible;

(c) Work operations for which an employer has implemented all feasible engineering and work practice controls and such controls are not sufficient to reduce exposures to or below the PEL;

(d) Work operations where employees are exposed above the PEL for fewer than thirty days per year, and the employer has elected not to implement engineering and work practice controls to achieve the PEL; or

(e) Emergencies.

(2) Respiratory protection program. Where respirator use is required by this section, the employer shall institute a respiratory protection program in accordance with chapter 296-842 WAC, Respirators.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. 06-16-106, § 296-62-08015, filed 8/1/06, effective 9/1/06.]

WAC 296-62-08017 Protective work clothing and equipment. (1) Provision and use. Where a hazard is present or is likely to be present from skin or eye contact with chromium (VI), the employer shall provide appropriate personal protective clothing and equipment at no cost to employees, and shall ensure that employees use such clothing and equipment.

(2) Removal and storage.

(a) The employer shall ensure that employees remove all protective clothing and equipment contaminated with chromium (VI) at the end of the work shift or at the completion of their tasks involving chromium (VI) exposure, whichever comes first.

(b) The employer shall ensure that no employee removes chromium (VI) contaminated protective clothing or equipment from the workplace, except for those employees whose job it is to launder, clean, maintain, or dispose of such clothing or equipment.

(c) When contaminated protective clothing or equipment is removed for laundering, cleaning, maintenance, or disposal, the employer shall ensure that it is stored and transported in sealed, impermeable bags or other closed, impermeable containers.

(d) Bags or containers of contaminated protective clothing or equipment that are removed from change rooms for laundering, cleaning, maintenance, or disposal shall be labeled in accordance with the requirements of WAC 296-800-170, Employer chemical hazard communication.

(3) Cleaning and replacement.

(a) The employer shall clean, launder, repair and replace all protective clothing and equipment required by this section as needed to maintain its effectiveness.

(b) The employer shall prohibit the removal of chromium (VI) from protective clothing and equipment by blowing, shaking, or any other means that disperses chromium (VI) into the air or onto an employee's body.

(c) The employer shall inform any person who launders or cleans protective clothing or equipment contaminated with chromium (VI) of the potentially harmful effects of exposure to chromium (VI) and that the clothing and equipment should be laundered or cleaned in a manner that minimizes skin or eye contact with chromium (VI) and effectively prevents the release of airborne chromium (VI) in excess of the PEL.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. 06-16-106, § 296-62-08017, filed 8/1/06, effective 9/1/06.]

WAC 296-62-08019 Hygiene areas and practices. (1) General.

(a) General industry, shipyards, marine terminals and longshoring. Where protective clothing and equipment is required, the employer shall provide change rooms in conformance with WAC 296-800-230, Sanitation and hygiene facilities and procedures. Where skin contact with chromium (VI) occurs, the employer shall provide washing facilities in

conformance with WAC 296-800-230, Sanitation and hygiene facilities and procedures. Eating and drinking areas provided by the employer shall also be in conformance with WAC 296-800-230, Sanitation and hygiene facilities and procedures.

(b) Construction. Where protective clothing and equipment is required, the employer shall provide change rooms in conformance with WAC 296-155-17321, Hygiene facilities and practices. Where skin contact with chromium (VI) occurs, the employer shall provide washing facilities in conformance with WAC 296-155-17321, Hygiene facilities and practices. Eating and drinking areas provided by the employer shall also be in conformance with WAC 296-155-17321, Hygiene facilities and practices.

(2) Change rooms. The employer shall assure that change rooms are equipped with separate storage facilities for protective clothing and equipment and for street clothes, and that these facilities prevent cross-contamination.

(3) Washing facilities.

(a) The employer shall provide readily accessible washing facilities capable of removing chromium (VI) from the skin, and shall ensure that affected employees use these facilities when necessary.

(b) The employer shall ensure that employees who have skin contact with chromium (VI) wash their hands and faces at the end of the work shift and prior to eating, drinking, smoking, chewing tobacco or gum, applying cosmetics, or using the toilet.

(4) Eating and drinking areas.

(a) Whenever the employer allows employees to consume food or beverages at a worksite where chromium (VI) is present, the employer shall ensure that eating and drinking areas and surfaces are maintained as free as practicable of chromium (VI).

(b) The employer shall ensure that employees do not enter eating and drinking areas with protective work clothing or equipment unless surface chromium (VI) has been removed from the clothing and equipment by methods that do not disperse chromium (VI) into the air or onto an employee's body.

(5) Prohibited activities. The employer shall ensure that employees do not eat, drink, smoke, chew tobacco or gum, or apply cosmetics in areas where skin or eye contact with chromium (VI) occurs; or carry the products associated with these activities, or store such products in these areas.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. 06-16-106, § 296-62-08019, filed 8/1/06, effective 9/1/06.]

WAC 296-62-08021 Housekeeping.

Exemption: This section does not apply to construction, shipyards, marine terminals and longshoring.

(1) General. The employer shall ensure that:

(a) All surfaces are maintained as free as practicable of accumulations of chromium (VI).

(b) All spills and releases of chromium (VI) containing material are cleaned up promptly.

(2) Cleaning methods.

(a) The employer shall ensure that surfaces contaminated with chromium (VI) are cleaned by HEPA-filter vacuuming

or other methods that minimize the likelihood of exposure to chromium (VI).

(b) Dry shoveling, dry sweeping, and dry brushing may be used only where HEPA-filtered vacuuming or other methods that minimize the likelihood of exposure to chromium (VI) have been tried and found not to be effective.

(c) The employer shall not allow compressed air to be used to remove chromium (VI) from any surface unless:

(i) The compressed air is used in conjunction with a ventilation system designed to capture the dust cloud created by the compressed air; or

(ii) No alternative method is feasible.

(d) The employer shall ensure that cleaning equipment is handled in a manner that minimizes the reentry of chromium (VI) into the workplace.

(3) Disposal. The employer shall ensure that:

(a) Waste, scrap, debris, and any other materials contaminated with chromium (VI) and consigned for disposal are collected and disposed of in sealed, impermeable bags or other closed, impermeable containers.

(b) Bags or containers of waste, scrap, debris, and any other materials contaminated with chromium (VI) that are consigned for disposal are labeled in accordance with the requirements of WAC 296-800-170, Employer chemical hazard communication.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. 06-16-106, § 296-62-08021, filed 8/1/06, effective 9/1/06.]

WAC 296-62-08023 Medical surveillance. (1) General.

(a) The employer shall make medical surveillance available at no cost to the employee, and at a reasonable time and place, for all employees:

(i) Who are or may be occupationally exposed to chromium (VI) at or above the action level for thirty or more days a year;

(ii) Experiencing signs or symptoms of the adverse health effects associated with chromium (VI) exposure; or

(iii) Exposed in an emergency.

(b) The employer shall assure that all medical examinations and procedures required by this section are performed by or under the supervision of a PLHCP.

(2) Frequency. The employer shall provide a medical examination:

(a) Within thirty days after initial assignment, unless the employee has received a chromium (VI) related medical examination that meets the requirements of this paragraph within the last twelve months;

(b) Annually;

(c) Within thirty days after a PLHCP's written medical opinion recommends an additional examination;

(d) Whenever an employee shows signs or symptoms of the adverse health effects associated with chromium (VI) exposure;

(e) Within thirty days after exposure during an emergency which results in an uncontrolled release of chromium (VI); or

(f) At the termination of employment, unless the last examination that satisfied the requirements of WAC 296-62-08023, Medical surveillance was less than six months prior to the date of termination.

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(3) Contents of examination. A medical examination consists of:

(a) A medical and work history, with emphasis on: Past, present, and anticipated future exposure to chromium (VI); any history of respiratory system dysfunction; any history of asthma, dermatitis, skin ulceration, or nasal septum perforation; and smoking status and history;

(b) A physical examination of the skin and respiratory tract; and

(c) Any additional tests deemed appropriate by the examining PLHCP.

(4) Information provided to the PLHCP. The employer shall ensure that the examining PLHCP has a copy of this standard, and shall provide the following information:

(a) A description of the affected employee's former, current, and anticipated duties as they relate to the employee's occupational exposure to chromium (VI);

(b) The employee's former, current, and anticipated levels of occupational exposure to chromium (VI);

(c) A description of any personal protective equipment used or to be used by the employee, including when and for how long the employee has used that equipment; and

(d) Information from records of employment-related medical examinations previously provided to the affected employee, currently within the control of the employer.

(5) PLHCP's written medical opinion.

(a) The employer shall obtain a written medical opinion from the PLHCP, within thirty days for each medical examination performed on each employee, which contains:

(i) The PLHCP's opinion as to whether the employee has any detected medical condition(s) that would place the employee at increased risk of material impairment to health from further exposure to chromium (VI);

(ii) Any recommended limitations upon the employee's exposure to chromium (VI) or upon the use of personal protective equipment such as respirators;

(iii) A statement that the PLHCP has explained to the employee the results of the medical examination, including any medical conditions related to chromium (VI) exposure that require further evaluation or treatment, and any special provisions for use of protective clothing or equipment.

(b) The PLHCP shall not reveal to the employer specific findings or diagnoses unrelated to occupational exposure to chromium (VI).

(c) The employer shall provide a copy of the PLHCP's written medical opinion to the examined employee within two weeks after receiving it.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. 06-16-106, § 296-62-08023, filed 8/1/06, effective 9/1/06.]

WAC 296-62-08025 Communication of chromium (VI) hazards to employees. (1) General. In addition to the requirements of WAC 296-800-170, Employer chemical hazard communication, employers shall comply with the following requirements.

(2) Employee information and training.

(a) The employer shall ensure that each employee can demonstrate knowledge of at least the following:

(i) The contents of this section; and

(ii) The purpose and a description of the medical surveillance program required by (a)(i) of this subsection.

[Title 296 WAC—p. 1579]

(b) The employer shall make a copy of this section readily available without cost to all affected employees.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. 06-16-106, § 296-62-08025, filed 8/1/06, effective 9/1/06.]

WAC 296-62-08027 Recordkeeping. (1) Air monitoring data.

(a) The employer shall maintain an accurate record of all air monitoring conducted to comply with the requirements of this section.

(b) This record shall include at least the following information:

- (i) The date of measurement for each sample taken;
- (ii) The operation involving exposure to chromium (VI) that is being monitored;
- (iii) Sampling and analytical methods used and evidence of their accuracy;
- (iv) Number, duration, and the results of samples taken;
- (v) Type of personal protective equipment, such as respirators worn; and

(vi) Name, Social Security number, and job classification of all employees represented by the monitoring, indicating which employees were actually monitored.

(c) The employer shall ensure that exposure records are maintained and made available in accordance with chapter 296-802 WAC, Employee medical and exposure records.

(2) Historical monitoring data.

(a) Where the employer has relied on historical monitoring data to determine exposure to chromium (VI), the employer shall establish and maintain an accurate record of the historical monitoring data relied upon.

(b) The record shall include information that reflects the following conditions:

- (i) The data were collected using methods that meet the accuracy requirements of WAC 296-62-08009(5);
- (ii) The processes and work practices that were in use when the historical monitoring data were obtained are essentially the same as those to be used during the job for which exposure is being determined;
- (iii) The characteristics of the chromium (VI) containing material being handled when the historical monitoring data were obtained are the same as those on the job for which exposure is being determined;

(iv) Environmental conditions prevailing when the historical monitoring data were obtained are the same as those on the job for which exposure is being determined; and

(v) Other data relevant to the operations, materials, processing, or employee exposures covered by the exception.

(c) The employer shall ensure that historical exposure records are maintained and made available in accordance with chapter 296-802 WAC, Employee medical and exposure records.

(3) Objective data.

(a) The employer shall maintain an accurate record of all objective data relied upon to comply with the requirements of this section.

(b) This record shall include at least the following information:

- (i) The chromium (VI) containing material in question;
- (ii) The source of the objective data;

(iii) The testing protocol and results of testing, or analysis of the material for the release of chromium (VI);

(iv) A description of the process, operation, or activity and how the data support the determination; and

(v) Other data relevant to the process, operation, activity, material, or employee exposures.

(c) The employer shall ensure that objective data are maintained and made available in accordance with chapter 296-802 WAC, Employee medical and exposure records.

(4) Medical surveillance.

(a) The employer shall establish and maintain an accurate record for each employee covered by medical surveillance under WAC 296-62-08023, Medical surveillance.

(b) The record shall include the following information about the employee:

- (i) Name and Social Security number;
- (ii) A copy of the PLHCP's written opinions;
- (iii) A copy of the information provided to the PLHCP as required by WAC 296-62-08023(4).

(c) The employer shall ensure that medical records are maintained and made available in accordance with chapter 296-802 WAC, Employee medical and exposure records.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. 06-16-106, § 296-62-08027, filed 8/1/06, effective 9/1/06.]

WAC 296-62-08029 Dates. (1) For employers with twenty or more employees, all obligations of this section, except engineering controls required by WAC 296-62-08013, commence November 27, 2006.

(2) For employers with nineteen or fewer employees, all obligations of this section, except engineering controls required by WAC 296-62-08013, commence May 30, 2007.

(3) For all employers, engineering controls required by WAC 296-62-08013 shall be implemented no later than May 31, 2010.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. 06-16-106, § 296-62-08029, filed 8/1/06, effective 9/1/06.]

PART J—BIOLOGICAL AGENTS

Note: The bloodborne pathogen rules for general industry have been moved to chapter 296-823 WAC.

Part J-1—PHYSICAL AGENTS

WAC 296-62-090 Physical agents.

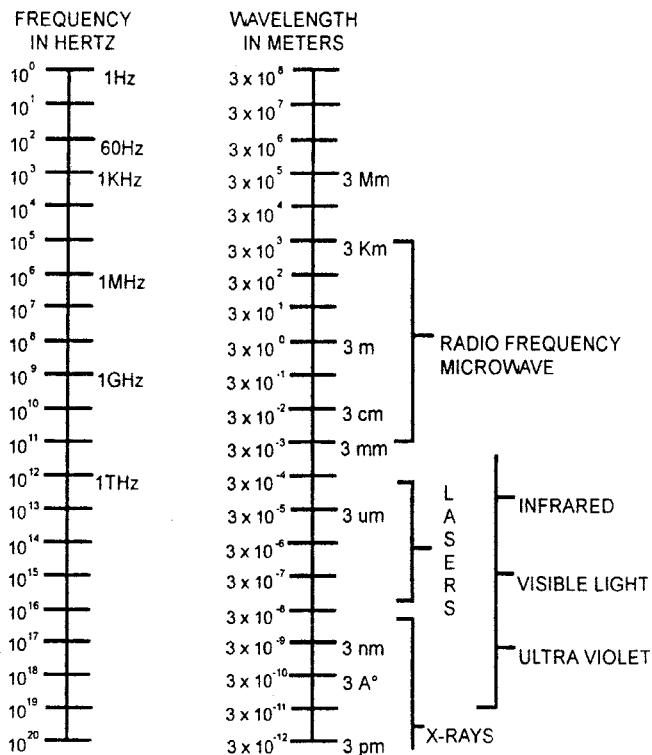
[Order 73-3, § 296-62-090, filed 5/7/73; Order 70-8, § 296-62-090, filed 7/31/70, effective 9/1/70; Rule 9.010, effective 8/1/63.]

WAC 296-62-09001 Definitions. (1) "Physical agents" shall mean, but are not limited to: Illumination, ionizing radiation, nonionizing radiation, pressure, vibration, temperature and humidity, and noise.

(2) "Nonionizing radiation" as related to industrial sources, means electromagnetic radiation within the spectral range of approximately 200 nanometers to 3 kilometers including ultraviolet, visible, infrared and radiofrequency/microwave radiation. The electromagnetic spectrum is shown graphically in Figure 1 below.

ELECTROMAGNETIC SPECTRUM

Figure 1



(3) Pressure is a barometric force. Positive pressure would be that above 14.7 lbs. per square inch absolute and negative pressure would be that below 14.7 lbs. per square inch absolute. 14.7 lbs. per square inch equals 760 mm. mercury.

(4) "Vibration" means rapid movement to and fro or oscillating movement.

(5) "Noise" means unwanted sound or loud discordant or disagreeable sound or sounds.

(6) "Temperature" means the degree of hotness or coldness measured by use of a thermometer.

(7) "Radiant heat" means infrared radiation emitted from hot surfaces.

(8) "Relative humidity" means the percent of moisture in the air compared to the maximum amount of moisture the air could contain at the same temperature.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 01-17-033, § 296-62-09001, filed 8/8/01, effective 9/1/01. Statutory Authority: RCW 49.17.040 and 49.17.050. 85-01-022 (Order 84-24), § 296-62-09001, filed 12/11/84; Order 73-3, § 296-62-09001, filed 5/7/73.]

WAC 296-62-09004 Ionizing radiation. (1) Definitions applicable to this section.

Note: Definitions also appear in some subsections.

(a) "Radiation" includes alpha rays, beta rays, gamma rays, X rays, neutrons, high-speed electrons, high-speed protons, and other atomic particles; but such term does not include sound or radio waves, or visible light, or infrared or ultraviolet light.

(2007 Ed.)

(b) "Radioactive material" means any material which emits, by spontaneous nuclear disintegration, corpuscular or electromagnetic emanations.

(c) "Restricted area" means any area access to which is controlled by the employer for purposes of protection of individuals from exposure to radiation or radioactive materials.

(d) "Unrestricted area" means any area access to which is not controlled by the employer for purposes of protection of individuals from exposure to radiation or radioactive materials.

(e) "Dose" means the quantity of ionizing radiation absorbed, per unit of mass, by the body or by any portion of the body. When the provisions in this section specify a dose during a period of time, the dose is the total quantity of radiation absorbed, per unit of mass, by the body or by any portion of the body during such period of time. Several different units of dose are in current use. Definitions of units used in this section are set forth in subdivisions (f) and (g) of this subdivision.

(f) "Rad" means a measure of the dose of any ionizing radiation to body tissues in terms of the energy absorbed per unit of mass of the tissue. One rad is the dose corresponding to the absorption of 100 ergs per gram of tissue (1 millirad (mrad) = 0.001 rad).

(g) "Rem" means a measure of the dose of any ionizing radiation to body tissue in terms of its estimated biological effect relative to a dose of 1 roentgen (r) of X rays (1 millirem (mrem) = 0.001 rem). The relation of the rem to other dose units depends upon the biological effect under consideration and upon the conditions for irradiation. Each of the following is considered to be equivalent to a dose of 1 rem:

- (i) A dose of 1 roentgen due to x- or gamma radiation;
- (ii) A dose of 1 rad due to x-, gamma, or beta radiation;
- (iii) A dose of 0.1 rad due to neutrons or high energy protons;

(iv) A dose of 0.05 rad due to particles heavier than protons and with sufficient energy to reach the lens of the eye;

(v) If it is more convenient to measure the neutron flux, or equivalent, than to determine the neutron dose in rads, as provided in item (iii) of this subdivision, 1 rem of neutron radiation may, for purposes of the provisions in this section be assumed to be equivalent to 14 million neutrons per square centimeter incident upon the body; or, if there is sufficient information to estimate with reasonable accuracy the approximate distribution in energy of the neutrons, the incident number of neutrons per square centimeter equivalent to 1 rem may be estimated from the following table:

Neutron Flux Dose Equivalents

Neutron energy (million electron volts (Mev))	Number of neutrons per square centimeter equivalent to a dose of 1 rem (neutrons/cm ²)	Average flux to deliver 100 millirem in 40 hours (neutrons/cm ² per sec.)
Thermal	970 X 10 ⁶	670
0.0001	720 X 10 ⁶	500
0.005	820 X 10 ⁶	570
0.02	400 X 10 ⁶	280
0.1	120 X 10 ⁶	80

Neutron Flux Dose Equivalents

Neutron energy (million electron volts (Mev))	Number of neutrons per square centimeter equivalent to a dose of 1 rem (neutrons/cm ²)	Average flux to deliver 100 millirem in 40 hours (neutrons/cm ² per sec.)
0.5.....	43 X 10 ⁶	30
1.0.....	26 X 10 ⁶	18
2.5.....	29 X 10 ⁶	20
5.0.....	26 X 10 ⁶	18
7.5.....	24 X 10 ⁶	17
10.....	24 X 10 ⁶	17
10 to 30.....	14 X 10 ⁶	10

(h) For determining exposures to X- or gamma rays up to 3 Mev., the dose limits specified in this section may be assumed to be equivalent to the "air dose." For the purpose of this section "air dose" means that the dose is measured by a properly calibrated appropriate instrument in air at or near the body surface in the region of the highest dosage rate.

(i) "Curie" means a unit of measurement of radioactivity. One curie (Ci) is that quantity of radioactive material which decays at the rate of 2.2×10^{12} disintegrations per minute (dpm).

(i) One millicurie (mCi) = 10^{-3} Ci

(ii) One microcurie (uCi) = 10^{-6} Ci

(iii) One nanocurie (nCi) = 10^{-9} Ci

(iv) One picocurie (pCi) = 10^{-12} Ci

(2) Nuclear Regulatory Commission licensees—NRC contractors operating NRC plants and facilities.

(a) Any employer who possesses or uses source material, byproduct material, or special nuclear material, as defined in the Atomic Energy Act of 1954, as amended, under a license issued by the Nuclear Regulatory Commission and in accordance with the requirements of chapter 402-24 WAC shall be deemed to be in compliance with the requirements of this section with respect to such possession and use.

(b) NRC contractors operating NRC plants and facilities: Any employer who possesses or uses source material, byproduct material, special nuclear material, or other radiation sources under a contract with the Nuclear Regulatory Commission for the operation of NRC plants and facilities and in accordance with the standards, procedures, and other requirements for radiation protection established by the commission for such contract pursuant to the Atomic Energy Act of 1954 as amended (42 U.S.C. 2011 et seq.) shall be deemed to be in compliance with the requirements of this section with respect to such possession and use.

(c) State licensees or registrants:

(i) Atomic Energy Act sources. Any employer who possesses or uses source material, byproduct material, or special nuclear material, as defined in the Atomic Energy Act of 1954, as amended (42 U.S.C. 2011 et seq.), and has registered such sources with the state shall be deemed to be in compliance with the radiation requirements of this section, insofar as his possession and use of such material is concerned.

(ii) Other sources. Any employer who possesses or uses radiation sources other than source material, byproduct material, or special nuclear material, as defined in the Atomic

Energy Act of 1954, as amended (42 U.S.C. 2011 et seq.), and has registered such sources with the state shall be deemed to be in compliance with the radiation requirements of this section insofar as his possession and use of such material is concerned.

(3) Exposure of individuals to radiation in restricted areas.

(a) Except as provided in subdivision (b) of this subsection, no employer shall possess, use, or transfer sources of ionizing radiation in such a manner as to cause any individual in a restricted area to receive in any period of one calendar quarter from sources in the employer's possession or control a dose in excess of the limits specified in the following table:

**Rems per
Calendar
Quarter**

EXPOSURE IN RESTRICTED AREAS

Whole body: Head and trunk; active blood-forming organs; lens of eyes;

or gonads 1 1/4

Hand and forearms; feet and ankles 18 3/4

Skin of whole body. 7 1/2

(b) An employer may permit an individual in a restricted area to receive doses to the whole body greater than those permitted under subdivision (a) of this subsection, so long as:

(i) During any calendar quarter the dose to the whole body shall not exceed 3 rems; and

(ii) The dose to the whole body, when added to the accumulated occupational dose to the whole body, shall not exceed 5 (N-18) rems, where "N" equals the individual's age in years at his last birthday; and

(iii) The employer maintains adequate past and current exposure records which show that the addition of such a dose will not cause the individual to exceed the amount authorized in this subdivision. As used in this subdivision "Dose to the whole body" shall be deemed to include any dose to the whole body, gonad, active blood-forming organs, head and trunk, or lens of the eye.

(c) No employer shall permit any employee who is under 18 years of age to receive in any period of one calendar quarter a dose in excess of 10 percent of the limits specified in the preceding table entitled "exposure in restricted areas."

(d) "Calendar quarter" means any 3-month period determined as follows:

(i) The first period of any year may begin on any date in January: Provided, That the second, third and fourth periods accordingly begin on the same date in April, July, and October, respectively, and that the fourth period extends into January of the succeeding year, if necessary to complete a 3-month quarter. During the first year of use of this method of determination, the first period for that year shall also include any additional days in January preceding the starting date for the first period; or

(ii) The first period in a calendar year of 13 complete, consecutive calendar weeks; the second period in a calendar year of 13 complete consecutive weeks; the third period in a calendar year of 13 complete, consecutive calendar weeks; the fourth period in a calendar year of 13 complete, consecutive calendar weeks. If at the end of a calendar year there are any days not falling within a complete calendar week of that

year, such days shall be included within the last complete calendar week of that year. If at the beginning of any calendar year there are days not falling within a complete calendar week of that year, such days shall be included within the last complete calendar week of the previous year; or

(iii) The four periods in a calendar year may consist of the first 14 complete, consecutive calendar weeks; the next 12 complete, consecutive calendar weeks, the next 14 complete, consecutive calendar weeks, and the last 12 complete, consecutive calendar weeks. If at the end of a calendar year there are any days not falling within a complete calendar week of that year, such days shall be included (for purposes of this section) within the last complete calendar week of the year. If at the beginning of any calendar year there are days not falling within a complete calendar week of that year, such days shall be included (for purposes of this section) within the last complete week of the previous year.

(e) No employer shall change the method used by him to determine calendar quarters except at the beginning of a calendar year.

(4) Exposure to airborne radioactive material.

(a) No employer shall possess, use or transport radioactive material in such a manner as to cause any employee, within a restricted area, to be exposed to airborne radioactive material in an average concentration in excess of the limits specified in Table I of WAC 402-24-220, Appendix A. The limits given in Table I are for exposure to the concentrations specified for 40 hours in any workweek of 7 consecutive days. In any such period where the number of hours of exposure is less than 40 the limits specified in the table may be increased proportionately. In any such period where the number of hours of exposure is greater than 40, the limits specified in the table shall be decreased proportionately.

(b) No employer shall possess, use, or transfer radioactive material in such a manner as to cause any individual within a restricted area, who is under 18 years of age, to be exposed to airborne radioactive material in an average concentration in excess of the limits specified in Table II of WAC 402-24-220, Appendix A. For purposes of this subdivision, concentrations may be averaged over periods not greater than 1 week.

(c) "Exposed" as used in this subdivision means that the individual is present in an airborne concentration. No allowance shall be made for the use of protective clothing or equipment, or particle size.

(5) Precautionary procedures and personal monitoring.

(a) Every employer shall make such surveys as may be necessary for him to comply with the provisions in this section. "Survey" means an evaluation of the radiation hazards incident to the production, use, release, disposal, or presence of radioactive materials or other sources of radiation under a specific set of conditions. When appropriate, such evaluation includes a physical survey of the location of materials and equipment, and measurements of levels of radiation or concentrations of radioactive material present.

(b) Every employer shall supply appropriate personnel monitoring equipment, such as film badges, pocket chambers, pocket dosimeters, or film rings, to, and shall require the use of such equipment by:

(i) Each employee who enters a restricted area under such circumstances that he receives, or is likely to receive, a

dose in any calendar quarter in excess of 25 percent of the applicable value specified in subsection (3)(a) of this section; and

(ii) Each employee under 18 years of age who enters a restricted area under such circumstances that he receives, or is likely to receive a dose in any calendar quarter in excess of 5 percent of the applicable value specified in subsection (3)(a) of this section; and

(iii) Each employee who enters a high radiation area.

(c) As used in this section:

(i) "Personnel monitoring equipment" means devices designed to be worn or carried by an individual for the purpose of measuring the dose received (e.g., film badges, pocket chambers, pocket dosimeters, film rings, etc.);

(ii) "Radiation area" means any area, accessible to personnel, in which there exists radiation at such levels that a major portion of the body could receive in any 1 hour a dose in excess of 5 millirem, or in any 5 consecutive days a dose in excess of 100 millirem; and

(iii) "High radiation area" means any area, accessible to personnel, in which there exists radiation at such levels that a major portion of the body could receive in any one hour a dose in excess of 100 millirem.

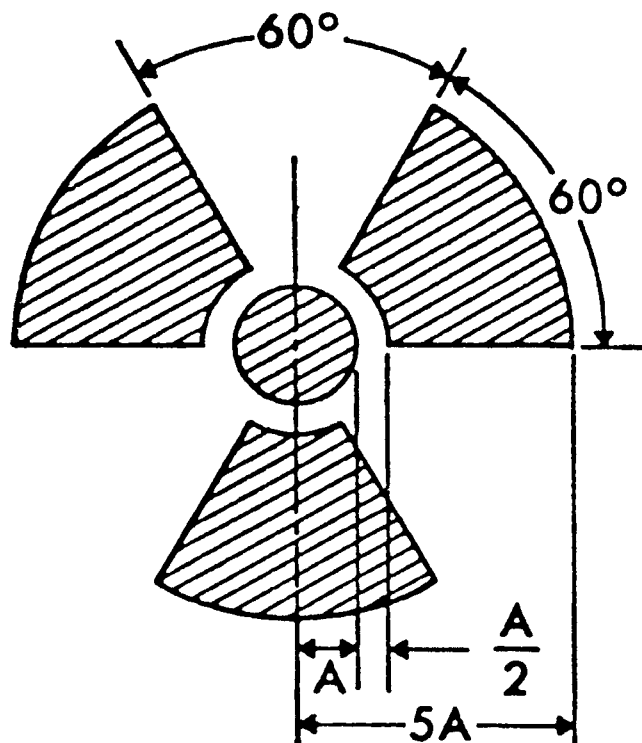
(6) Caution signs, labels and signals.

(a) General.

(i) Symbols prescribed by this subsection shall use the conventional radiation caution colors (magenta or purple on yellow background). The symbol prescribed by this subsection is the conventional three-bladed design:

RADIATION SYMBOL

1. Cross-hatched area is to be magenta or purple.
2. Background is to be yellow.



(ii) In addition to the contents of signs and labels prescribed in this subsection, employers may provide on or near such signs and labels any additional information which may be appropriate in aiding individuals to minimize exposure to radiation or to radioactive material.

(b) Radiation area. Each radiation area shall be conspicuously posted with a sign or signs bearing the radiation caution symbol described in subdivision (a) of this subsection and the words:

CAUTION
RADIATION AREA

(c) High radiation area.

(i) Each high radiation area shall be conspicuously posted with a sign or signs bearing the radiation caution symbol and the words:

CAUTION
HIGH RADIATION AREA

(ii) Each high radiation area shall be equipped with a control device which shall either cause the level of radiation to be reduced below that at which an individual might receive a dose of 100 millirems in 1 hour upon entry into the area or shall energize a conspicuous visible or audible alarm signal in such a manner that the individual entering and the employer or a supervisor of the activity are made aware of the entry. In the case of a high radiation area established for a period of 30 days or less, such control device is not required.

(d) Airborne radioactivity area.

(i) As used in the provisions of this section, "airborne radioactivity area" means:

(A) Any room, enclosure, or operating area in which airborne radioactive materials, composed wholly or partly of radioactive material, exist in concentrations in excess of the amounts specified in column 1 of Table I of WAC 402-24-220, Appendix A.

(B) Any room, enclosure, or operating area in which airborne radioactive materials exist in concentrations which, averaged over the number of hours in any week during which individuals are in the area, exceed 25 percent of the amounts specified in column 1 of Table I of WAC 402-24-220, Appendix A.

(ii) Each airborne radioactivity area shall be conspicuously posted with a sign or signs bearing the radiation caution symbol described in subdivision (a) of this subsection and the words:

CAUTION
AIRBORNE RADIOACTIVITY AREA

(e) Additional requirements.

(i) Each area or room in which radioactive material is used or stored and which contains any radioactive material (other than natural uranium or thorium) in any amount exceeding 10 times the quantity of such material specified in WAC 402-24-230, Appendix B shall be conspicuously posted with a sign or signs bearing the radiation caution symbol described in subdivision (a) of this subsection and the words:

CAUTION
RADIOACTIVE MATERIALS

(ii) Each area or room in which natural uranium or thorium is used or stored in an amount exceeding 100 times the quantity of such material specified in chapter 402-24 WAC shall be conspicuously posted with a sign or signs bearing the radiation caution symbol described in subdivision (a) of this subsection and the words:

CAUTION
RADIOACTIVE MATERIALS

(f) Containers.

(i) Each container in which is transported, stored, or used a quantity of any radioactive material (other than natural uranium or thorium) greater than the quantity of such material specified in WAC 402-24-230, Appendix B shall bear a durable, clearly visible label bearing the radiation caution symbol described in subdivision (a) of this subsection and the words:

CAUTION
RADIOACTIVE MATERIALS

(ii) Each container in which natural uranium or thorium is transported, stored, or used in a quantity greater than 10 times the quantity specified in WAC 402-24-230, Appendix B shall bear a durable, clearly visible label bearing the radiation caution symbol described in subdivision (a) of this subsection and the words:

CAUTION
RADIOACTIVE MATERIALS

(iii) Notwithstanding the provisions of items (i) and (ii) of this subdivision a label shall not be required:

(A) If the concentration of the material in the container does not exceed that specified in column 2 of Table I of WAC 402-24-220, Appendix A.

(B) For laboratory containers, such as beakers, flasks, and test tubes, used transiently in laboratory procedures, when the user is present.

(iv) Where containers are used for storage, the labels required in this subdivision shall state also the quantities and kinds of radioactive materials in the containers and the date of measurement of the quantities.

(7) Immediate evacuation warning signal.

(a) Signal characteristics.

(i) The signal shall be a midfrequency complex sound wave amplitude modulated at a subsonic frequency. The complex sound wave in free space shall have a fundamental frequency f_1 between 450 and 500 hertz (Hz) modulated at a subsonic rate between 4 and 5 hertz.

(ii) The signal generator shall not be less than 75 decibels at every location where an individual may be present whose immediate, rapid, and complete evacuation is essential.

(iii) A sufficient number of signal units shall be installed such that the requirements of item (i) of this subdivision are met at every location where an individual may be present whose immediate, rapid, and complete evacuation is essential.

(iv) The signal shall be unique in the plant or facility in which it is installed.

(v) The minimum duration of the signal shall be sufficient to insure that all affected persons hear the signal.

(vi) The signal-generating system shall respond automatically to an initiating event without requiring any human action to sound the signal.

(b) Design objectives.

(i) The signal-generating system shall be designed to incorporate components which enable the system to produce the desired signal each time it is activated within one-half second of activation.

(ii) The signal-generating system shall be provided with an automatically activated secondary power supply which is adequate to simultaneously power all emergency equipment to which it is connected, if operation during power failure is necessary, except in those systems using batteries as the primary source of power.

(iii) All components of the signal-generating system shall be located to provide maximum practicable protection against damage in case of fire, explosion, corrosive atmosphere, or other environmental extremes consistent with adequate system performance.

(iv) The signal-generating system shall be designed with the minimum number of components necessary to make it function as intended, and should utilize components which do not require frequent servicing such as lubrication or cleaning.

(v) Where several activating devices feed activating information to a central signal generator, failure of any activating device shall not render the signal-generator system inoperable to activating information from the remaining devices.

(vi) The signal-generating system shall be designed to enhance the probability that alarm occurs only when immediate evacuation is warranted. The number of false alarms shall not be so great that the signal will come to be disregarded and shall be low enough to minimize personal injuries or excessive property damage that might result from such evacuation.

(c) Testing.

(i) Initial tests, inspections, and checks of the signal-generating system shall be made to verify that the fabrication and installation were made in accordance with design plans and specifications and to develop a thorough knowledge of the performance of the system and all components under normal and hostile conditions.

(ii) Once the system has been placed in service, periodic tests, inspections, and checks shall be made to minimize the possibility of malfunction.

(iii) Following significant alterations or revisions to the system, tests and checks similar to the initial installation tests shall be made.

(iv) Tests shall be designed to minimize hazards while conducting the tests.

(v) Prior to normal operation the signal-generating system shall be checked physically and functionally to assure reliability and to demonstrate accuracy and performance. Specific tests shall include:

(A) All power sources.

(B) Calibration and calibration stability.

(C) Trip levels and stability.

(D) Continuity of function with loss and return of required services such as AC or DC power, air pressure, etc.

(E) All indicators.

(F) Trouble indicator circuits and signals, where used.

(G) Air pressure (if used).

(H) Determine that sound level of the signal is within the limit of item (a)(ii) of this subsection at all points that require immediate evacuation.

(vi) In addition to the initial startup and operating tests, periodic scheduled performance tests and status checks must be made to insure that the system is at all times operating within design limits and capable of the required response. Specific periodic tests or checks or both shall include:

(A) Adequacy of signal activation device.

(B) All power sources.

(C) Function of all alarm circuits and trouble indicator circuits including trip levels.

(D) Air pressure (if used).

(E) Function of entire system including operation without power where required.

(F) Complete operational tests including sounding of the signal and determination that sound levels are adequate.

(vii) Periodic tests shall be scheduled on the basis of need, experience, difficulty, and disruption of operations. The entire system should be operationally tested at least quarterly.

(viii) All employees whose work may necessitate their presence in an area covered by the signal shall be made familiar with the actual sound of the signal—preferably as it sounds at their work location. Before placing the system into operation, all employees normally working in the area shall be made acquainted with the signal by actual demonstration at their work locations.

(8) Exceptions from posting requirements. Notwithstanding the provisions of subsection (6) of this section:

(a) A room or area is not required to be posted with a caution sign because of the presence of a sealed source, provided the radiation level 12 inches from the surface of the source container or housing does not exceed 5 millirem per hour.

(b) Rooms or other areas in onsite medical facilities are not required to be posted with caution signs because of the presence of patients containing radioactive material, provided that there are personnel in attendance who shall take the precautions necessary to prevent the exposure of any individual to radiation or radioactive material in excess of the limits established in the provisions of this section.

(c) Caution signs are not required to be posted at areas or rooms containing radioactive materials for periods of less than 8 hours: Provided, That

(i) The materials are constantly attended during such periods by an individual who shall take the precautions necessary to prevent the exposure of any individual to radiation or radioactive materials in excess of the limits established in the provisions of this section; and

(ii) Such area or room is subject to the employer's control.

(9) Exemptions for radioactive materials packaged for shipment. Radioactive materials packaged and labeled in accordance with regulations of the Department of Transportation published in 49 CFR Chapter I, are exempt from the

labeling and posting requirements of this section during shipment, provided that the inside containers are labeled in accordance with the provisions of subsection (6) of this section.

(10) Instruction of personnel, posting.

(a) Employers regulated by the Nuclear Regulatory Commission shall be governed by 10 CFR Part 20 standards. Employers conducting business in Washington state shall be governed by the requirements of the laws and regulations of the state. All other employers shall be regulated by the following:

(b) All individuals working in or frequenting any portion of a radiation area shall be informed of the occurrence of radioactive materials or of radiation in such portions of the radiation area; shall be instructed in the safety problems associated with exposure to such materials or radiation and in precautions or devices to minimize exposure; shall be instructed in the applicable provisions of this section for the protection of employees from exposure to radiation or radioactive materials; and shall be advised of reports of radiation exposure which employees may request pursuant to the regulations in this section.

(c) Each employer to whom this section applies shall post a current copy of its provisions and a copy of the operating procedures applicable to the work conspicuously in such locations as to insure that employees working in or frequenting radiation areas will observe these documents on the way to and from their place of employment, or shall keep such documents available for examination of employees upon request.

(11) Storage of radioactive materials. Radioactive materials stored in a nonradiation area shall be secured against unauthorized removal from the place of storage.

(12) Waste disposal. No employer shall dispose of radioactive material except as provided for in WAC 402-24-130.

(13) Notification of incidents.

(a) Immediate notification. Each employer shall immediately notify the industrial hygiene section, division of industrial safety and health for employees not protected by the Nuclear Regulatory Commission by means of 10 CFR Part 20; subsection (2)(b) of this section by telephone or telegraph of any incident involving radiation which may have caused or threatens to cause:

(i) Exposure of the whole body of any individual to 25 rems or more of radiation; exposure of the skin of the whole body of any individual to 150 rems or more of radiation; or exposure of the feet, ankles, hands, or forearms of any individual to 375 rems or more of radiation; or

(ii) The release of radioactive material in concentrations which, if averaged over a period of 24 hours, would exceed 5,000 times the limit specified for such materials in Table II of WAC 402-24-220, Appendix A.

(iii) A loss of 1 working week or more of the operation of any facilities affected; or

(iv) Damage to property in excess of \$100,000.

(b) Twenty-four hour notification. Each employer shall within 24 hours following its occurrence notify the industrial hygiene section, division of industrial safety and health, for employees not protected by the Nuclear Regulatory Commission by means of 10 CFR Part 20; subsection (2)(b) of this section, by telephone or telegraph of any incident involving radiation which may have caused or threatens to cause:

(i) Exposure of the whole body of any individual to 5 rems or more of radiation; exposure of the skin of the whole body of any individual to 30 rems or more of radiation; or exposure of the feet, ankles, hands, or forearms to 75 rems or more of radiation; or

(ii) A loss of 1 day or more of the operation of any facilities; or

(iii) Damage to property in excess of \$10,000.

(14) Reports of overexposure and excessive levels and concentrations.

(a) In addition to any notification required by subsection (13) of this section each employer shall make a report in writing within 30 days to the industrial hygiene section division of industrial safety and health, for employees not protected by the Nuclear Regulatory Commission by means of 10 CFR Part 20; or under subsection (2)(b) of this section, of each exposure of an individual to radiation or concentrations of radioactive material in excess of any applicable limit in this section. Each report required under this subdivision shall describe the extent of exposure of persons to radiation or to radioactive material; levels of radiation and concentration of radioactive material involved, the cause of the exposure, levels of concentrations; and corrective steps taken or planned to assure against a recurrence.

(b) In any case where an employer is required pursuant to the provisions of this subsection to report to the industrial hygiene section, division of industrial safety and health, any exposure of an individual to radiation or to concentrations of radioactive material, the employer shall also notify such individual of the nature and extent of exposure. Such notice shall be in writing and shall contain the following statement: "You should preserve this report for future reference."

(15) Records.

(a) Every employer shall maintain records of the radiation exposure of all employees for whom personnel monitoring is required under subsection (5) of this section and advise each of his employees of his individual exposure on at least an annual basis.

(b) Every employer shall maintain records in the same units used in tables in subsection (2) of this section and WAC 402-24-220, Appendix A.

(16) Disclosure to former employee of individual employee's record.

(a) At the request of a former employee an employer shall furnish to the employee a report of the employee's exposure to radiation as shown in records maintained by the employer pursuant to subdivision (15)(a) of this section. Such report shall be furnished within 30 days from the time the request is made, and shall cover each calendar quarter of the individual's employment involving exposure to radiation or such lesser period as may be requested by the employee. The report shall also include the results of any calculations and analysis of radioactive material deposited in the body of the employee. The report shall be in writing and contain the following statement: "You should preserve this report for future reference."

(b) The former employee's request should include appropriate identifying data, such as social security number and dates and locations of employment.

(17) (Reserved)

(18) Radiation standards for mining.

(a) For the purpose of this subsection, a "working level" is defined as any combination of radon daughters in 1 liter of air which will result in the ultimate emission of 1.3×10^5 million electron volts of potential alpha energy. The numerical value of the "working level" is derived from the alpha energy released by the total decay of short-lived radon daughter products in equilibrium with 100 picocuries of radon 222 per liter of air. A working level month is defined as the exposure received by a worker breathing air at one working level concentration for 4-1/3 weeks of 40 hours each.

(b) Occupational exposure to radon daughters in mines shall be controlled so that no individual will receive an exposure of more than 2 working level months in any calendar quarter and no more than 4 working level months in any calendar year. Actual exposures shall be kept as far below these values as practicable.

(c)(i) For uranium mines, records of environmental concentrations in the occupied parts of the mine, and of the time spent in each area by each person involved in an underground work shall be established and maintained. These records shall be in sufficient detail to permit calculations of the exposures, in units of working level months, of the individuals and shall be available for inspection by the industrial hygiene section, division of safety and health or their authorized representatives.

(ii) For other than uranium mines and for surface workers in all mines, item (i) of this subdivision will be applicable: Provided, however, That if no environmental sample shows a concentration greater than 0.33 working level in any occupied part of the mine, the maintenance of individual occupancy records and the calculation of individual exposures will not be required.

(d)(i) At the request of an employee (or former employee) a report of the employee's exposure to radiation as shown in records maintained by the employer pursuant to subdivision (c) of this subsection shall be furnished to him. The report shall be in writing and contain the following statement:

"This report is furnished to you under the provisions of the state of Washington, Ionizing Radiation Safety and Health Standards (chapter 296-62 WAC). You should preserve this report for future reference."

(ii) The former employee's request should include appropriate identifying data, such as Social Security number and dates and locations of employment. See tables in WAC 402-24-220, Appendix A and 402-24-230, Appendix B.

[Statutory Authority: RCW 49.17.040 and 49.17.050. 85-01-022 (Order 84-24), § 296-62-09004, filed 12/11/84; Order 75-15, § 296-62-09004, filed 4/18/75.]

WAC 296-62-09005 Nonionizing radiation. (1) Introduction. Employees shall be protected from exposure to hazardous levels of nonionizing radiation. Health standards have been established for ultraviolet, radiofrequency/microwave, and laser radiations which shall be used to promote a healthful working environment. These standards refer to levels of nonionizing radiation and represent conditions under which it is believed that nearly all workers may be repeatedly exposed day after day without adverse effects. They are based on the best available information from experimental studies. Because of the wide variations in individual susceptibility,

exposure of an occasional individual at, or even below, the permissible limit, may result in discomfort, aggravation of a preexisting condition, or physiological damage.

(a) Permissible exposure limits (PELs) refer to a time weighted average (TWA) of exposure for an 8-hour work day within a 40-hour workweek. Exceptions are those limits which are given a ceiling value.

(b) These PELs should be interpreted and applied only by technically qualified persons.

(c) Ceiling value. There are nonionizing radiations which produce physiological responses from short intense exposure and the PELs for these radiations are more appropriately based on this particular hazard. Nonionizing radiations with this type of hazard are best controlled by a ceiling value which is a maximum level of exposure which shall not be exceeded.

(2) The employer shall establish and maintain a program for the control and monitoring of nonionizing radiation hazards. This program shall provide employees adequate supervision, training, facilities, equipment, and supplies, for the control and assessment of nonionizing radiation hazards.

(3) Radiofrequency/microwave radiation permissible exposure limits.

(a) Definition: "Partial body exposure" means the case in which only the hands and forearms or the feet and legs below the knee are exposed.

(b) Warning symbol.

(i) The warning symbol for radiofrequency/microwave radiation shall consist of a red isosceles triangle above an inverted black isosceles triangle, separated and outlined by an aluminum color border. The words "Warning - Radiofrequency/microwave radiation hazard" shall appear in the upper triangle. See Figure 1.

(ii) All areas where entry may result in an exposure to radiofrequency/microwave radiation in excess of the PEL shall have a warning symbol prominently displayed at their entrance.

(iii) American National Standard Safety Color Code for Marking Physical Hazards and the Identification of Certain Equipment, Z53.1-1953, shall be used for color specification. All lettering and the border shall be of aluminum color.

(iv) The inclusion and choice of warning information or precautionary instructions is at the discretion of the user. If such information is included it shall appear in the lower triangle of the warning symbol.



1. Place handling and mounting instructions on reverse side.
2. D = Scaling Unit.
3. Lettering: Ratio of letter height to thickness of letter lines.
Upper triangle: 5 to 1 Large
6 to 1 Medium
Lower triangle: 4 to 1 Small
6 to 1 Medium
4. Symbol is square, triangles are right-angle isosceles.

Figure 1

Radiofrequency/Microwave Radiation Hazard Warning Symbol

(i) Table I gives the PELs in terms of the mean squared electric (E^2) and magnetic (H^2) field strengths and in terms of the equivalent plane-wave free-space power density, as a function of frequency.

(ii) The average exposure for any 6 minute (0.1 hour) period shall not exceed the PEL.

(iii) Measurements shall be made at distances of 5 cm or greater from any object.

(iv) For mixed or broadband fields at a number of frequencies for which there are different PELs, the fraction of the PEL incurred within each frequency interval shall be determined and the sum of these fractions shall not exceed unity.

(v) PELs given in Table I for frequencies between 300 kHz and 1 GHz may be exceeded for partial body exposures if the output power of the radiating device is 7 watts or less.

Table I. Radiofrequency/Microwave Radiation Permissible Exposure Limits (PELs).

Frequency(f)	Power Density*	Electric Field Strength Squared*	Magnetic Field Strength Squared*
	mW/cm ²	V ² /m ²	A ² /m ²
0.3 to 3 MHz	100	400,000	2.5
3 to 30 MHz	900/f ²	4000(900/f ²)	0.025(900/f ²)
30 to 300 MHz	1.0	4000	0.025
300 to 1500 MHz	f/300	4000(f/300)	0.025(f/300)
1.5 to 100 GHz	5.0	20,000	0.125

Note: f = frequency (MHz)

*Ceiling value

(4) Laser radiation permissible exposure limits.

(a) Definitions.

(i) "Diffuse reflection" means a change of the spatial distribution of a beam of radiation when it is reflected in many directions by a surface or medium.

(ii) "Specular reflection" means a mirrorlike reflection.

(iii) "Accessible radiation" means laser radiation to which human access is possible.

(b) All lasers and laser systems shall be classified in accordance with the Federal Laser Product Performance Standards (21 CFR 1040.10) or, if manufactured prior to August 2, 1976, in accordance with ANSI Z136.1-1980.

(i) Class I. Laser systems that are considered to be incapable of producing damaging radiation levels and are thereby exempt from control measures. This is a no hazard category.

(ii) Class II. Visible wavelength laser systems that have a low hazard potential because of the expected aversion response. There is some possibility of injury if stared at. This is a low hazard category.

(iii) Class III. Laser systems in which intrabeam viewing of the direct beam or specular reflections of the beam may be hazardous. This class is further subdivided into IIIa and IIIb. This is a moderate hazard category.

(iv) Class IV. Laser systems whose direct or diffusely reflected radiation may be hazardous and where the beam may constitute a fire hazard. Class IV systems require the use of controls that prevent exposure of the eye and skin to specular or diffuse reflections of the beam. This is a high hazard category.

(c) Warning signs and classification labels shall be prepared in accordance with 21 CFR 1040.10 when classifying lasers and laser systems, and ANSI Z136.1 - 1980 when using

(c) These PELs refer to radiofrequency/microwave radiation exposures in the frequency range of 300 kHz to 100 GHz. Based on current knowledge, it is believed that workers may be exposed at these PELs without adverse health effects.

classified lasers and laser systems. All signs and labels shall be conspicuously displayed.

(i) The signal word "CAUTION" shall be used with all signs and labels associated with Class II and Class IIIa lasers and laser systems.

(ii) The signal word "DANGER" shall be used with all signs and labels associated with Class IIIb and Class IV lasers and laser systems.

(d) Personal protective equipment shall be provided at no cost to the employee and shall be worn whenever operational conditions or maintenance of lasers may result in a potentially hazardous exposure.

(i) Protective eyewear shall be specifically designed for protection against radiation of the wavelength and radiant energy of the laser or laser system. Ocular exposure shall not exceed the recommendations of ANSI Z136.1 - 1980.

(ii) For Class IV lasers and laser systems protective eyewear shall be worn for all operational conditions or maintenance which may result in exposures to laser radiation.

(e) Engineering controls shall be used whenever feasible to reduce the accessible radiation levels for Class IV lasers and laser systems to a lower classification level. These controls may include, but are not limited to: Protective housings, interlocks, optical system attenuators, enclosed beam paths, remote controls, beam stops, and emission delays with audible warnings.

(f) All employees who may be exposed to laser radiation shall receive laser safety training. The training shall ensure that the employees are knowledgeable of the potential hazards and control measures for the laser equipment in use.

(5) Ultraviolet radiation.

(a) These permissible exposure limits refer to ultraviolet radiation in the spectral region between 200 and 400 nanometer (nm) and represent conditions under which it is believed that nearly all workers may be repeatedly exposed without adverse effect. These values for exposure of the eye or the skin apply to ultraviolet radiation from arcs, gas, and vapor discharges, and incandescent sources, but do not apply to ultraviolet lasers or solar radiation. These levels should not be used for determining exposure of photosensitive individuals to ultraviolet radiation. These values shall be used in the control of exposure to continuous sources where the exposure relation shall not be less than 0.1 sec.

(b) The permissible exposure limit for occupational exposure to ultraviolet radiation incident upon skin or eye where irradiance values are known and exposure time is controlled are as follows:

(i) For the near ultraviolet spectral region (320 to 400 nanometer (nm)), total irradiance incident upon the unprotected skin or eye shall not exceed 1.0 milliwatt/sq. centimeter for periods greater than 10^3 seconds (approximately 16 minutes) and for exposure times less than 10^3 seconds shall not exceed one Joule/sq. centimeter.

(ii) For the actinic ultraviolet spectral region (200 - 315 nm), radiant exposure incident upon the unprotected skin or eye shall not exceed the values given in Table 4 within an 8-hour period.

(iii) To determine the effective irradiance of a broadband source weighted against the peak of the spectral effectiveness curve (270 nanometer (nm)), the following weighting formula shall be used.

$$E_{\text{eff}} = \sum (E\text{-}\lambda) (S\text{-}\lambda) (\Delta\text{-}\lambda)$$

Where:

E_{eff}	=	effective irradiance relative to a monochromatic source at 270nm
E- λ	=	spectral irradiance in Watts/sq. centimeter/nanometer.
S- λ	=	relative spectral effectiveness (unitless)
$\Delta\text{-}\lambda$	=	band width in nanometers

(iv) Permissible exposure time in seconds for exposure to actinic ultraviolet radiation incident upon the unprotected skin or eye may be computed by dividing 0.003 Joules/sq. centimeter by E_{eff} in Watts/sq. centimeter. The exposure time may also be determined using Table 5 which provides exposure times corresponding to effective irradiances in $\mu\text{W}/\text{cm}^2$.

TABLE 4

Wavelength nanometer	PEL millijoules/sq. centimeters	Relative Spectral Effectiveness S λ
200	100	0.03
210	40	0.075
220	25	0.12
230	16	0.19
240	10	0.30
250	7.0	0.43
254	6.0	0.5
260	4.6	0.65
270	3.0	1.0
280	3.4	0.88
290	4.7	0.64
300	10	0.30
305	50	0.06
310	200	0.015
315	1000	0.003

TABLE 5

Duration of Exposure Per Day	Effective Irradiance E_{eff} ($\mu\text{W}/\text{cm}^2$)
8 hrs.	0.1
4 hrs.	0.2
2 hrs.	0.4
1 hr.	0.8
1/2 hr.	1.7
15 min.	3.3
10 min.	5
5 min.	10
1 min.	50
30 sec.	100
10 sec.	300
1 sec.	3,000
0.5 sec.	6,000
0.1 sec.	30,000

TABLE 6

Densities and Transmissions (in Percent); also Tolerances in Densities and Transmissions of Various Shades of Glasses for Protection Against Injurious Rays
(Shades 3 to 8, inclusive, are for use in goggles, shades 10 to 14, inclusive, for welder's helmets and face shields)

TABLE 6

[CODIFICATION NOTE: The graphic presentation of this table has been varied slightly in order that it would fall within the printing specifications for the Washington Administrative Code. In the following table, the original table had columns relating to (1) "Optical Density" which is now "Part 1," (2) "Total Visible Luminous Transmittance" and "Maximum total Infrared" which are now "Part 2," (3) "Maximum Ultraviolet Transmission" which is now "Part 3," and (4) "Recommended Uses" which is now "Part 4." These columns were all positioned side by side. In the new WAC format these are split up into four separate tables.]

TABLE 6—Part 1
Optical Density

Shade No.	Minimum [C]O.D.	Standard O.D.	Maximum O.D.
3.0	.64	.857	1.06
4.0	1.07	1.286	1.49
5.0	1.50	1.714	1.92
6.0	1.93	2.143	2.35
7.0	2.36	2.572	2.78
8	2.79	3.000	3.21
9	3.22	3.429	3.63
10	3.64	3.857	4.06
11	4.07	4.286	4.49
12	4.50	4.715	4.92
13	4.93	5.143	5.35
14	5.36	5.571	5.78

TABLE 6—Part 2

Total Visible Luminous Transmittance				Maximum Total Infrared
Shade No.	Maximum %	Standard %	Minimum %	%
3.0	22.9	13.9	8.70	9.0
4.0	8.51	5.18	3.24	5.0
5.0	3.16	1.93	1.20	2.5
6.0	1.18	.72	.45	1.5
7.0	.44	.27	.17	1.3
8	.162	.100	.062	1.0
9	.060	.037	.023	.8
10	.0229	.0139	.0087	.6
11	.0085	.0052	.0033	.5
12	.0032	.0019	.0012	.5
13	.00118	.00072	.00045	.4
14	.00044	.00027	.00017	.3

TABLE 6—Part 3
Maximum Ultraviolet Transmission

Shade No.	313mu %	334mu %	365mu %	405mu %
3.0	.2	.2	.5	1.0
4.0	.2	.2	.5	1.0
5.0	.2	.2	.2	.5
6.0	.1	.1	.1	.5
7.0	.1	.1	.1	.5
8	.1	.1	.1	.5
9	.1	.1	.1	.5
10	.1	.1	.1	.5
11	.05	.05	.05	.1
12	.05	.05	.05	.1
13	.05	.05	.05	.1
14	.05	.05	.05	.1

TABLE 6—Part 4

Shade No.	Recommended Uses
3.0	Glare of reflected sunlight from snow, water, sand, etc., stray light from cutting and welding metal pouring and work around furnaces and foundries.
4.0	
5.0	Light acetylene cutting and welding; light electric spot welding.
6.0	
7.0	Acetylene cutting and medium welding; arc welding up to 30 amperes.
8	
9	Heavy acetylene welding; arc cutting and welding between 30 and 75 amperes.
10	
11	Arc cutting and welding between 75 and 200 amperes.
12	
13	Arc cutting and welding between 200 and 400 amperes.
14	Arc cutting and welding above 400 amperes.

- American Standard Safety Code for the Protection of Heads, Eyes, and Respiratory Organs.
- Standard density is defined as the logarithms (base 10) of the reciprocal of the transmission. Shade number is determined by the density according to the relations:

Shade number = $7/3$ density + 1 with tolerances as given in the table.

Note: Safety glasses are available with lenses which protect the eyes against ultraviolet radiation.

[Statutory Authority: Chapter 49.17 RCW and RCW 49.17.040, [49.17].050 and [49.17].060. 92-22-067 (Order 92-06), § 296-62-09005, filed 10/30/92, effective 12/8/92. Statutory Authority: RCW 49.17.040 and 49.17.050. 85-01-022 (Order 84-24), § 296-62-09005, filed 12/11/84. Statutory Authority: RCW 49.17.040. 80-16-029 (Order 80-22), § 296-62-09005, filed 10/31/80. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 80-11-010 (Order 80-14), § 296-62-09005, filed 8/8/80; Order 73-3, § 296-62-09005, filed 5/7/73.]

Reviser's note: RCW 34.05.395 requires the use of underlining and deletion marks to indicate amendments to existing rules, and deems ineffectual changes not filed by the agency in this manner. The bracketed material in the above section does not appear to conform to the statutory requirement.

WAC 296-62-09007 Pressure. (1) Employees exposed to pressures above normal atmospheric pressure which may produce physiological injury shall adhere to decompression schedules or other tables as are or may be adopted by the department of labor and industries: for example, state of Washington "safety standards for compressed air work" and "safety standards for commercial diving operations." The employer shall provide and supervise the use of decompression equipment and schedules in accordance with applicable requirements.

(2) If no specific requirements prevail for an unusual condition, a plan based on the recommendations of professionally qualified advisors, experienced with hazards associated with such exposures, shall be followed by both the employer and employee.

[Statutory Authority: Chapter 49.17 RCW. 91-11-070 (Order 91-01), § 296-62-09007, filed 5/20/91, effective 6/20/91; Order 73-3, § 296-62-09007, filed 5/7/73.]

WAC 296-62-09009 Vibration. Reasonable precautions shall be taken to protect workmen against the hazardous effects of unavoidable exposure to vibrations.

[Order 73-3, § 296-62-09009, filed 5/7/73.]

WAC 296-62-09013 Temperature, radiant heat, or temperature-humidity combinations. (1) Workmen subjected to temperature extremes, radiant heat, humidity, or air velocity combinations which, over a period of time, are likely to produce physiological responses which are harmful shall be afforded protection by use of adequate controls, methods or procedures, or protective clothing. This shall not be construed to apply to normal occupations under atmospheric conditions which may be expected in the area except that special provisions which are required by other regulations for certain areas or occupations shall prevail.

[Order 73-3, § 296-62-09013, filed 5/7/73.]

PART K—HEARING CONSERVATION

Note: The hearing conservation rules for general industry have been moved to chapter 296-817 WAC. The hearing conservation rules for the agriculture industry have been moved to chapter 296-307 WAC, part Y-7.

PART L—ATMOSPHERES AND VENTILATION

WAC 296-62-100 Oxygen deficient atmospheres. (1) Definition. A lack of sufficient oxygen is deemed to exist if the atmosphere at sea level has less than 19.5% oxygen by volume or has a partial pressure of oxygen of 148 millimeters of mercury (mm. Hg) or less. This may deviate when working at higher elevations and should be determined for an individual location. Factors such as acclimatization, physical conditions of the persons involved, etc., must be considered for such circumstances and conditions.

(2) Entering areas with possible oxygen deficient atmospheres. Workers entering any area where a lack of sufficient oxygen is probable shall be supplied with and shall use approved equipment (for specific requirements see applicable provisions of chapter 296-62 WAC) capable of providing safe respirable air, or prior to entry and at all times when workers are in such areas a sufficient supply of safe, respirable air shall be provided. All workers so exposed shall be under constant observation. If the oxygen content is unknown or may change during occupation, tests shall be required prior to and during occupation of questionable areas.

[Statutory Authority: Chapter 49.17 RCW. 91-24-017 (Order 91-07), § 296-62-100, filed 11/22/91, effective 12/24/91. RCW 49.17.040, 49.17.050, and 49.17.240. 81-16-015 (Order 81-20), § 296-62-100, filed 7/27/81; Order 73-3, § 296-62-100, filed 5/7/73; Order 70-8, § 296-62-100, filed 7/31/70, effective 9/1/70; Rule 10.010, effective 8/1/63.]

WAC 296-62-110 Ventilation.

[Order 73-3, § 296-62-110, filed 5/7/73; Order 70-8, § 296-62-110, filed 7/31/70, effective 9/1/70; Rules 11.010-11.030, effective 8/1/63.]

WAC 296-62-11001 Definition. Ventilation shall mean the provision, circulation or exhausting of air into or from an area or space.

(2007 Ed.)

(1) "Local exhaust ventilation" shall mean the mechanical removal of contaminated air from the point where the contaminant is being generated or liberated.

(2) "Dilution ventilation" means inducing and mixing uncontaminated air with contaminated air in such quantities that the resultant mixture in the breathing zone will not exceed the permissible exposure limit (PEL) specified for any contaminant.

(3) "Exhaust ventilation" means the general movement of air out of the area or permit-required confined space by mechanical or natural means.

(4) "Tempered makeup air" means air which has been conditioned by changing its heat content to obtain a specific desired temperature.

[Statutory Authority: Chapter 49.17 RCW. 95-04-007, § 296-62-11001, filed 1/18/95, effective 3/1/95. Statutory Authority: RCW 49.17.040, 49.17.050, 49.17.240, chapters 42.30 and 43.22 RCW. 80-17-014 (Order 80-20), § 296-62-11001, filed 11/13/80; Order 73-3, § 296-62-11001, filed 5/7/73.]

WAC 296-62-11003 Ventilation guide. In addition to those mandatory controls as set forth in WAC 296-62-11015 through 296-62-11021, the Industrial Ventilation Manual of Recommended Practices as compiled and approved by the American Conference of Governmental Industrial Hygienists, applicable ANSI Standard or other National Consensus Standards recommended by the federal government, should be used as a guide for ventilation requirements.

[Order 73-3, § 296-62-11003, filed 5/7/73.]

WAC 296-62-11005 Adequate system. Adequate ventilation systems shall be installed as needed to control concentrations of airborne contaminants below applicable threshold limit values.

[Order 73-3, § 296-62-11005, filed 5/7/73.]

WAC 296-62-11007 Exhaust. Exhaust from ventilation systems shall discharge in such a manner that the contaminated air being exhausted will not present a health hazard to any workman or reenter buildings in harmful amounts.

[Order 73-3, § 296-62-11007, filed 5/7/73.]

WAC 296-62-11009 Make-up air quantity. Make-up air shall be of ample quantity to replace the exhausted air and shall be tempered when necessary.

[Order 73-3, § 296-62-11009, filed 5/7/73.]

WAC 296-62-11011 Design and operation. Ventilation systems shall be designed and operated in such a manner that employees will not be subjected to excessive air velocities.

[Statutory Authority: Chapter 49.17 RCW. 91-11-070 (Order 91-01), § 296-62-11011, filed 5/20/91, effective 6/20/91; Order 73-3, § 296-62-11011, filed 5/7/73.]

WAC 296-62-11013 Compatibility of systems. Make-up air systems shall be designed and operated in such a manner that they will not interfere with the effectiveness of the exhaust air system.

[Order 73-3, § 296-62-11013, filed 5/7/73.]

WAC 296-62-11015 Abrasive blasting. Abrasive blasting is covered in chapter 296-818 WAC, Abrasive blasting.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060, 06-12-074, § 296-62-11015, filed 6/6/06, effective 9/1/06. Statutory Authority: RCW 49.17.040, [49.17.050 and [49.17.060, 98-02-006, § 296-62-11015, filed 12/26/97, effective 3/1/98. Statutory Authority: Chapter 49.17 RCW. 91-24-017 (Order 91-07), § 296-62-11015, filed 11/22/91, effective 12/24/91. RCW 49.17.040, 49.17.050, and 49.17.240. 81-16-015 (Order 81-20), § 296-62-11015, filed 7/27/81; 80-11-010 (Order 80-14), § 296-62-11015, filed 8/8/80; Order 73-3, § 296-62-11015, filed 5/7/73.]

WAC 296-62-11017 Grinding, polishing, and buffing operations. (1) Definitions.

(a) "Abrasive cutting-off wheels" means organic-bonded wheels, the thickness of which is not more than one forty-eighth of their diameter for those up to, and including, 20 inches in diameter, and not more than one-sixteenth of their diameter for those larger than 20 inches in diameter, used for a multitude of operations variously known as cutting, cutting off, grooving, slotting, coping, jointing, and the like. The wheels may be "solid" consisting of organic-bonded abrasive material throughout, "steel centered" consisting of a steel disc with a rim of organic-bonded material moulded around the periphery or of the "inserted tooth" type consisting of a steel disc with organic-bonded abrasive teeth or inserts mechanically secured around the periphery.

(b) "Belts" means all power-driven, flexible, coated bands used for grinding, polishing, or buffing purposes.

(c) "Branch pipe" means the part of an exhaust system piping that is connected directly to the hood or enclosure.

(d) "Cradle" means a movable fixture, upon which the part to be ground or polished is placed.

(e) "Disc wheels" means all power-driven rotatable discs faces with abrasive materials, artificial or natural, and used for grinding or polishing on the side of the assembled disc.

(f) "Entry loss" means the loss in static pressure caused by air flowing into a duct or hood. It is usually expressed in inches of water gauge.

(g) "Exhaust system" means a system consisting of branch pipes connected to hoods of enclosures, one or more header pipes, an exhaust fan, means for separating solid contaminants from the air flowing in the system, and a discharge stack to outside.

(h) "Grinding wheels" means all power-driven rotatable grinding or abrasive wheels, except disc wheels as defined in this standard, consisting of abrasive particles held together by artificial or natural bonds and used for peripheral grinding.

(i) "Header pipe (main pipe)" means a pipe into which one or more branch pipes enter and which connects such branch pipes to the remainder of the exhaust system.

(j) "Hoods and enclosures" means the partial or complete enclosure around the wheel or disc through which air enters an exhaust system during operation.

(k) "Horizontal double-spindle disc grinder" means a grinding machine carrying two power-driven, rotatable, coaxial, horizontal spindles upon the inside ends of which are mounted abrasive disc wheels for grinding two surfaces simultaneously.

(l) "Horizontal single-spindle disc grinder" means a grinding machine carrying an abrasive disc wheel upon one

or both ends of a power-driven, rotatable single horizontal spindle.

(m) "Polishing and buffing wheels" means all power-driven rotatable wheels composed all or in part of textile fabrics, wood, felt, leather, paper, and may be coated with abrasives on the periphery of the wheel for purposes of polishing, buffing, and light grinding.

(n) "Portable grinder" means any power-driven rotatable grinding, polishing, or buffing wheel mounted in such manner that it may be manually manipulated.

(o) "Scratch brush wheels" means all power-driven rotatable wheels made from wire or bristles, and used for scratch cleaning and brushing purposes.

(p) "Swing-frame grinder" means any power-driven rotatable grinding, polishing, or buffing wheel mounted in such a manner that the wheel with its supporting framework can be manipulated over stationary objects.

(q) "Velocity pressure (vp)" means the kinetic pressure in the direction of flow necessary to cause a fluid at rest to flow at a given velocity. It is usually expressed in inches of water gauge.

(r) "Vertical spindle disc grinder" means a grinding machine having a vertical, rotatable power-driven spindle carrying a horizontal abrasive disc wheel.

(2) Application.

(a) Every establishment performing dry grinding, dry polishing, or buffing shall provide suitable hood or enclosures that are connected to exhaust systems.

(b) Such exhaust systems shall be operated continuously whenever such operations are carried on, and be capable of preventing contaminants from entering the breathing zone.

(3) Hood and branch pipe requirements.

(a) Hoods connected to exhaust systems shall be used, and such hoods shall be designed, located, and placed so that the dust or dirt particles shall fall or be projected into the hoods in the direction of the air flow. No wheels, discs, straps, or belts shall be operated in such manner and in such direction as to cause the dust and dirt particles to be thrown into the operator's breathing zone.

(b) Grinding wheels on floor stands, pedestals, benches, and special-purpose grinding machines and abrasive cutting-off wheels shall have not less than the minimum exhaust volumes shown in Table 8 with a recommended minimum duct velocity of 4,500 feet per minute in the branch and 3,500 feet per minute in the main. The entry losses from all hoods except the vertical-spindle disc grinder hood, shall equal 0.65 velocity pressure for a straight takeoff and 0.45 velocity pressure for a tapered takeoff. The entry loss for the vertical-spindle disc grinder hood is shown in Figure 3. (See Fig. 3 following this section.)

TABLE 8
GRINDING AND ABRASIVE CUTTING-OFF WHEELS

Wheel diameter (inches)	Wheel width (inches)	Minimum exhaust volume (feet ³ /min.)
To 9	1 1/2	220
Over 9 to 16	2	390
Over 16 to 19	3	500
Over 19 to 24	4	610
Over 24 to 30	5	880
Over 30 to 36	6	1,200

For any wheel wider than wheel diameter shown in Table 8, increase the exhaust volume by the ratio of the new width to the width shown.

Example:

If wheel width = 4 1/2 inches, then
 $\frac{4.5}{4} \times 610 = 686$ (rounded to 690).

(c) Scratch-brush wheels and all buffing and polishing wheels mounted on floor stands, pedestals, benches, or special-purpose machines shall have not less than the minimum exhaust volume shown in Table 9.

TABLE 9

BUFFING AND POLISHING WHEELS

Wheel diameter (inches)	Wheel width (inches)	Minimum exhaust volume (feet ³ /min.)
To 9	2	300
Over 9 to 16	3	500
Over 16 to 19	4	610
Over 19 to 24	5	740
Over 24 to 30	6	1,040
Over 30 to 36	6	1,200

(d) Grinding wheels or discs for horizontal single-spindle disc grinders shall be hooded to collect the dust or dirt generated by the grinding operation and the hoods shall be connected to branch pipes having exhaust volumes as shown in Table 10.

TABLE 10

HORIZONTAL SINGLE-SPINDLE DISC GRINDER

Disc diameter (inches)	Exhaust volume (feet ³ /min.)
Up to 12	220
Over 12 to 19	390
Over 19 to 30	610
Over 30 to 36	880

(e) Grinding wheels or discs for horizontal double-spindle disc grinders shall have a hood enclosing the grinding chamber and the hood shall be connected to one or more branch pipes having exhaust volumes as shown in Table 11.

TABLE 11

**HORIZONTAL DOUBLE-SPINDLE
DISC GRINDER**

Disc diameter (inches)	Exhaust volume (feet ³ /min.)
Up to 19	610
Over 19 to 25	880
Over 25 to 30	1,200
Over 30 to 53	1,770
Over 53 to 72	6,280

(f) Grinding wheels or discs for vertical single-spindle disc grinders shall be encircled with hoods to remove the dust generated in the operation. The hoods shall be connected to one or more branch pipes having exhaust volumes as shown in Table 12.

TABLE 12
VERTICAL SPINDLE DISC GRINDER

Disc diameter (inches)	One-half or more of disc covered		Disc not covered	
	Num- ber ¹	Exhaust feet ³ /min.	Num- ber ¹	Exhaust feet ³ /min.
Up to 20	1	500	2	780
Over 20 to 30	2	780	2	1,480
Over 30 to 53	2	1,770	4	3,530
Over 53 to 72	2	3,140	5	6,010

¹Number of exhaust outlets around periphery of hood, or equal distribution provided by other means.

(g) Grinding and polishing belts shall be provided with hoods to remove dust and dirt generated in the operations and the hoods shall be connected to branch pipes having exhaust volumes as shown in Table 13.

TABLE 13

GRINDING AND POLISHING BELTS

Belts width (inches)	Exhaust volume (feet ³ /min.)
Up to 3	220
Over 3 to 5	300
Over 5 to 7	390
Over 7 to 9	500
Over 9 to 11	610
Over 11 to 13	740

(h) Cradles and swing-frame grinders. Where cradles are used for handling the parts to be ground, polished, or buffed, requiring large partial enclosures to house the complete operation, a minimum average air velocity of 150 feet per minute shall be maintained over the entire opening of the enclosure. Swing-frame grinders shall also be exhausted in the same manner as provided for cradles. (See Fig. 5 following this section.)

(i) Where the work is outside the hood, air volumes must be increased as shown in American Standard Fundamentals Governing the Design and Operation of Local Exhaust Systems, Z9.2-1960 (Section 4, Exhaust Hoods).

(4) Exhaust systems.

(a) Exhaust systems for grinding, polishing, and buffing operations should be designed in accordance with American Standard Fundamentals Governing the Design and Operation of Local Exhaust Systems, Z9.2-1960.

(b) Exhaust systems for grinding, polishing, and buffing operations shall be tested in the manner described in American Standard Fundamentals Governing the Design and Operation of Local Exhaust Systems, Z9.2-1960.

(c) All exhaust systems shall be provided with suitable dust collectors.

(5) Hood and enclosure design.

(a)(i) It is the dual function of grinding and abrasive cutting-off wheel hoods to protect the operator from the hazards of bursting wheels as well as to provide a means for the removal of dust and dirt generated. All hoods shall be not less in structural strength than specified in the American National Standard Code for the Use, Care, and Protection of Abrasive Wheels, B7.1-1970.

(ii) For grinding machines for which no standard hoods are available, hoods meeting the requirements of (5)(a)(i) above shall be developed and so located so as to comply with the requirements of this section.

(b) Exhaust hoods for floor stands, pedestals, and bench grinders shall be designed in accordance with Figure 4. (See Fig. 4 following this section.) The adjustable tongue shown in the figure shall be kept in working order and shall be adjusted within one-fourth inch of the wheel periphery at all times.

(c) Swing-frame grinders shall be provided with exhaust booths as indicated in Figure 5. (See Fig. 5 following this section.)

(d) Portable grinding operations, whenever the nature of the work permits, shall be conducted within a partial enclosure. The opening in the enclosure shall be no larger than is actually required in the operation and an average face air velocity of not less than 200 feet per minute shall be maintained.

(e) Hoods for polishing and buffing and scratch-brush wheels shall be constructed to conform as closely to Figure 6 as the nature of the work will permit. (See Fig. 6 following this section.)

(f) Cradle grinding and polishing operations shall be performed within a partial enclosure similar to Figure 7. (See Fig. 7 following this section.) The operator shall be positioned outside the working face of the opening of the enclosure. The face opening of the enclosure should not be any greater in area than that actually required for the performance of the operation and the average air velocity into the working face of the enclosure shall not be less than 150 feet per minute.

(g) Hoods for horizontal single-spindle disc grinders shall be constructed to conform as closely as possible to the hood shown in Figure 8. (See Fig. 8 following this section.) It is essential that there be a space between the back of the wheel and the hood, and a space around the periphery of the wheel of at least 1 inch in order to permit the suction to act around the wheel periphery. The opening on the side of the disc shall be no larger than is required for the grinding operation, but must never be less than twice the area of the branch outlet.

(h) Horizontal double-spindle disc grinders shall have a hood encircling the wheels and grinding chamber similar to that illustrated in Figure 9. (See Fig. 9 following this section.)

The openings for passing the work into the grinding chamber should be kept as small as possible, but must never be less than twice the area of the branch outlets.

(i) Vertical-spindle disc grinders shall be encircled with a hood so constructed that the heavy dust is drawn off a surface of the disc and the lighter dust exhausted through a continuous slot at the top of the hood as shown in Figure 3. (See Fig. 3 following this section.)

(j) Grinding and polishing belt hoods shall be constructed as close to the operation as possible. The hood should extend almost to the belts, and 1-inch wide openings should be provided on either side. Figure 10 shows a typical hood for a belt operation. (See Fig. 10 following this section.)

(6) Scope. This paragraph, prescribes the use of exhaust hood enclosures and systems in removing dust, dirt, fumes, and gases generated through the grinding, polishing, or buffing of ferrous and nonferrous metals.

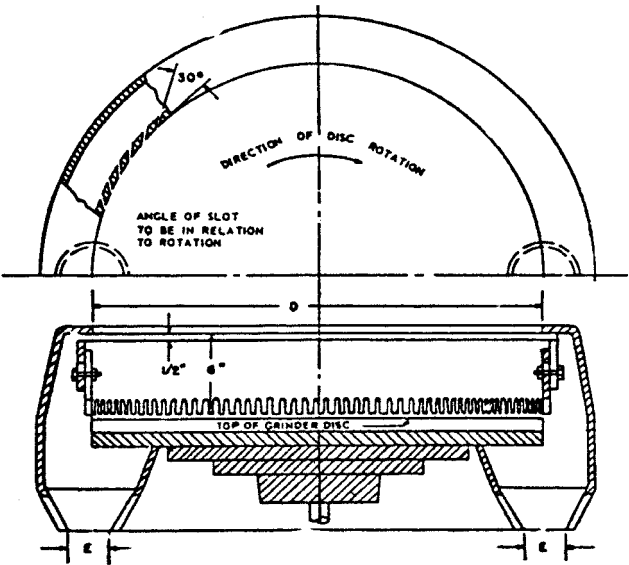


Fig. 3
Vertical Spindle Disc Grinder Exhaust
Hood and Branch Pipe Connections

Dia D. Inches		Exhaust E		Volume Exhausted at 4,500 ft/min ft³/min	Note
Min.	Max	No. Pipes	Dia		
	20	1	4 1/2	500	When one-half or more of the disc can be hooded, use exhaust ducts as shown at the left.
Over 20	30	2	4	780	
Over 30	72	2	6	1,770	
Over 53	72	2	8	3,140	
	20	2	4	780	When no hood can be used over disc, use exhaust ducts as shown at left.
Over 20	30	2	5 1/2	1,480	
Over 30	53	4	6	3,530	
Over 53	72	5	7	6,010	

Entry loss = 1.0 slot velocity pressure + 0.5 branch velocity pressure

Minimum slot velocity = 2,000 ft/min - 1/2-inch slot width

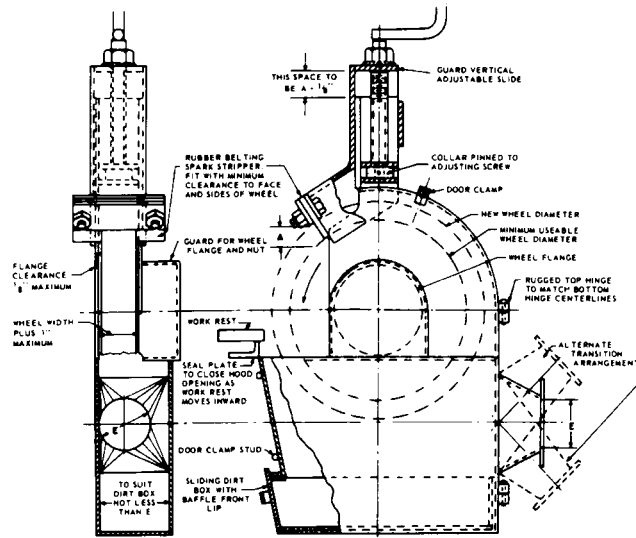


Fig. 4
Standard Grinder Hood

Wheel Dimension			Exhaust Outlet Inches E	Volume of Air at 4,500 ft/min
Diameter, Inches		Width, Inches		
Min = d	Max = D	Max	E	
	9	1 1/2	3	220
Over 9	16	2	4	390
Over 16	19	3	4 1/2	500
Over 19	24	4	5	610
Over 24	30	5	6	880
Over 30	36	6	7	1,200

Entry loss = 0.45 velocity pressure for tapered takeoff
0.65 velocity pressure for straight takeoff

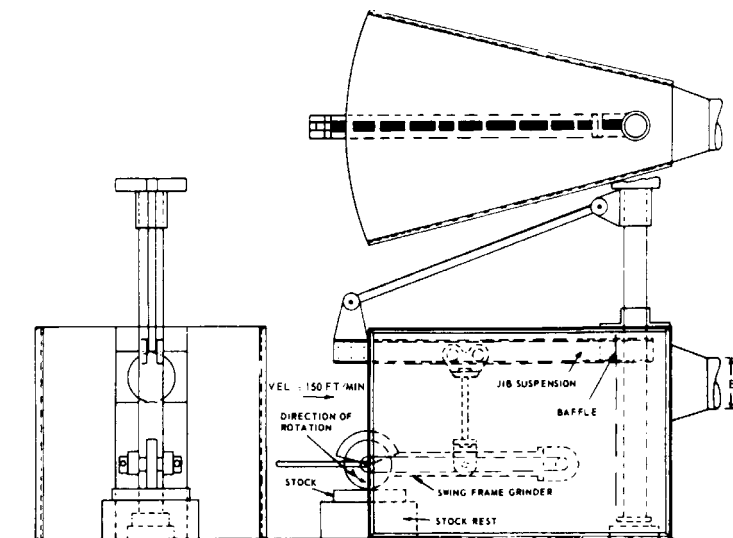


Fig. 5

A Method of Applying an Exhaust Enclosure to Swing-Frame Grinders
Note: Baffle to reduce front opening as much as possible

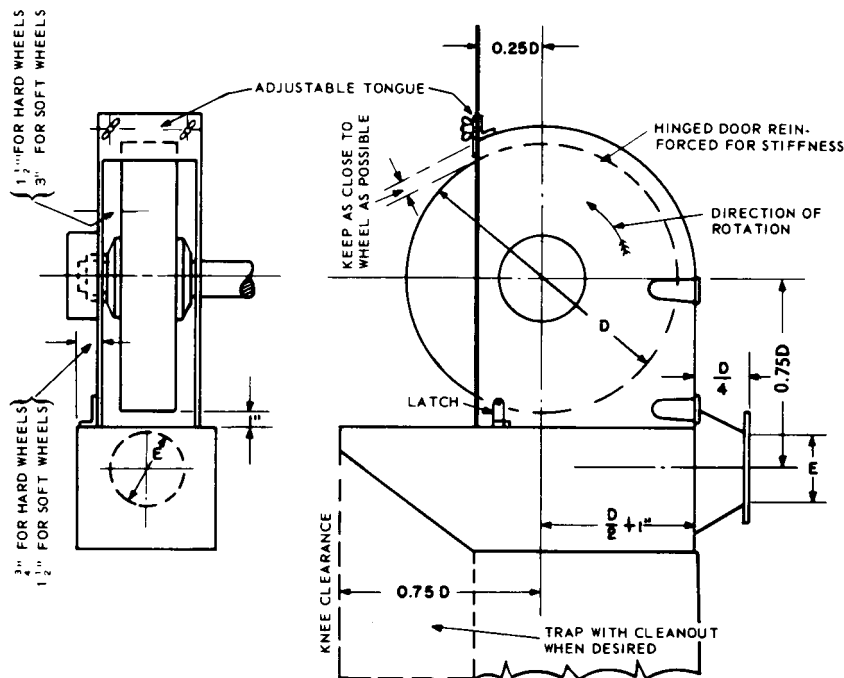


Fig. 6
Standard Buffing and Polishing Hood

Wheel Dimension, Inches			Exhaust Outlet Inches	Volume of Air at 4,500 ft/min
Diameter		Width		
Min = d	Max = D	Max	E	
	9	2	3 1/2	300
Over 9	16	3	4	500
Over 16	19	4	5	610
Over 19	24	5	5 1/2	740
Over 24	30	6	6 1/2	1,040
Over 30	36	6	7	1,200

Entry loss = 0.45 velocity pressure for tapered takeoff
0.65 velocity pressure for straight takeoff

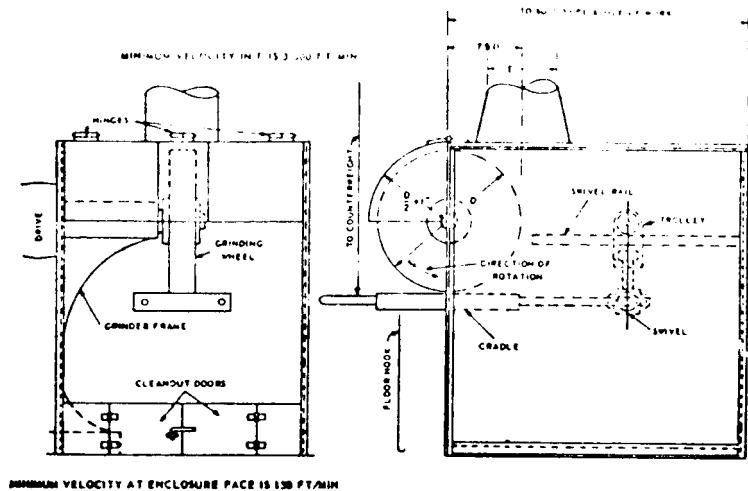


Fig. 7
Cradle Polishing or Grinding Enclosure
Entry loss = 0.45 velocity pressure for tapered takeoff

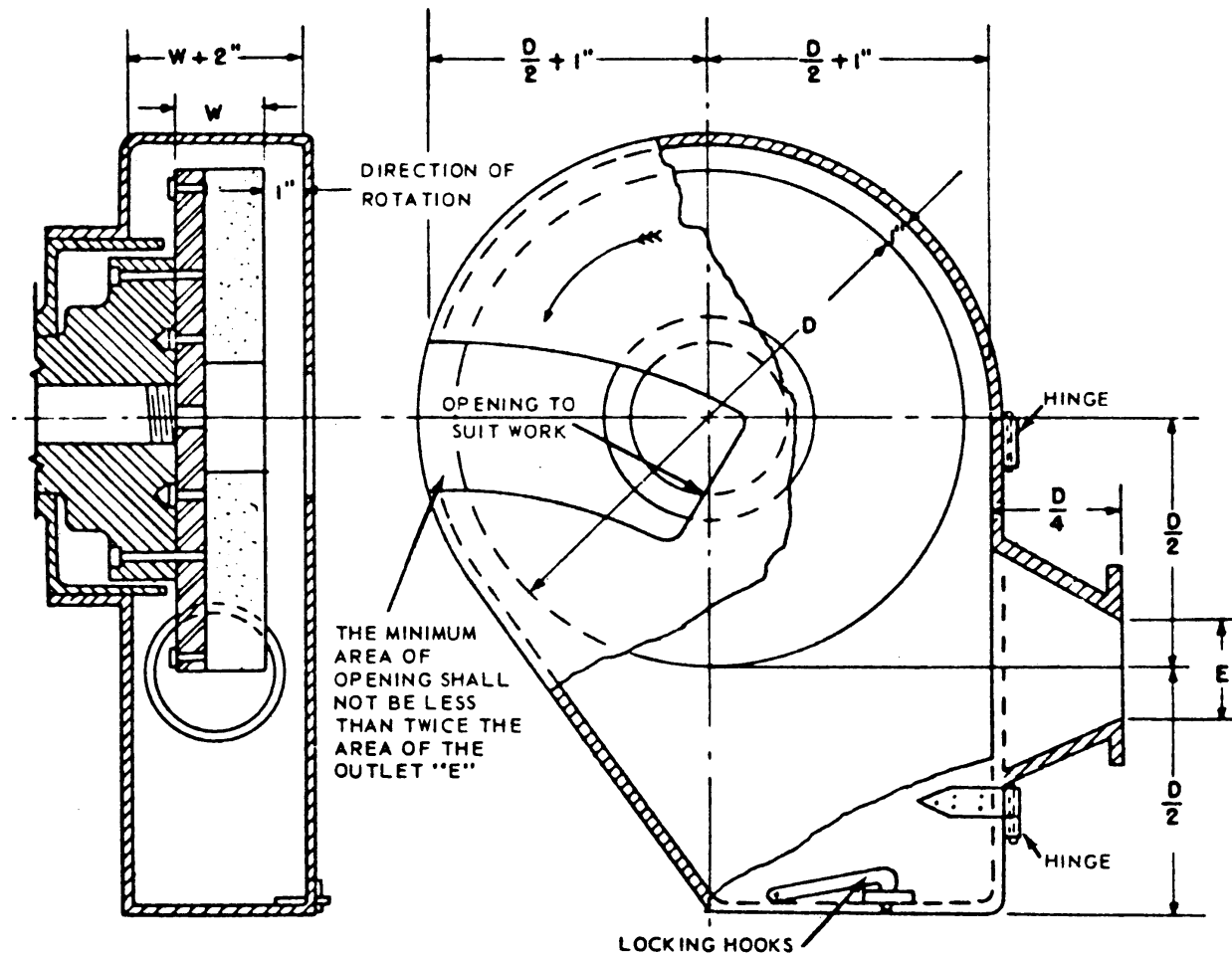


Fig. 8
Horizontal Single-Spindle Disc Grinder
Exhaust Hood and Branch Pipe Connection

Dia. D. Inches		Exhaust E	Volume Exhausted at 4,500 ft/min ft ³ /min
Min	Max	Dia. Inches	
	12	3	220
Over 12	19	4	390
Over 19	30	5	610
Over 30	36	6	880

Note: If grinding wheels are used for disc grinding purposes, hoods must conform to structural strength and materials as described in 9.1.

Entry loss = 0.45 velocity pressure for tapered takeoff

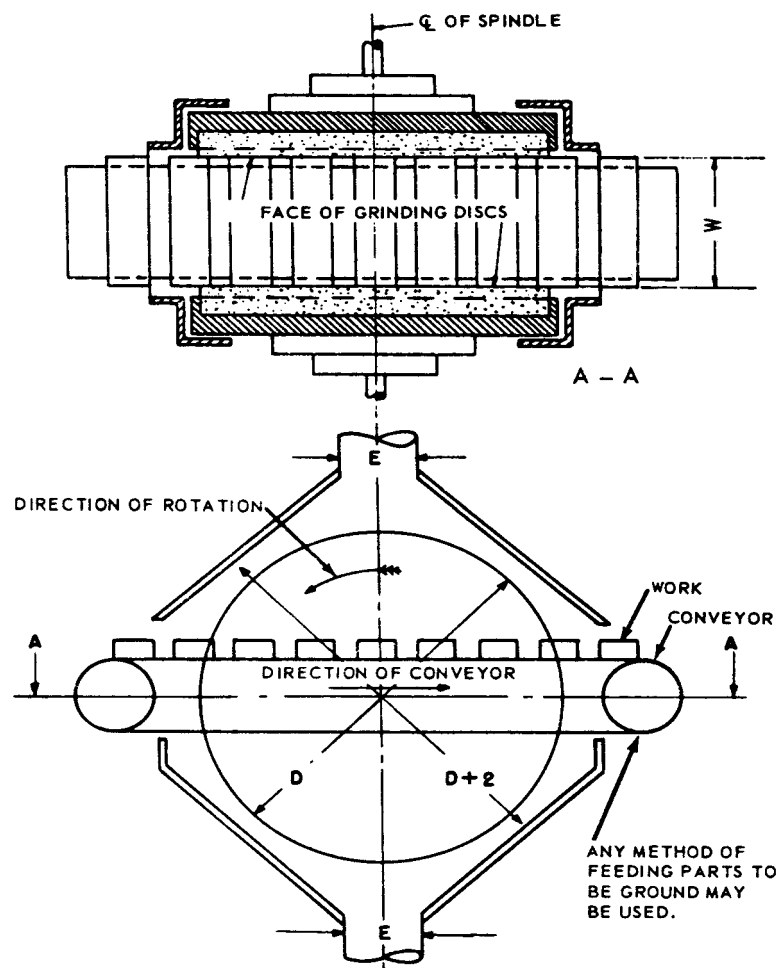


Fig. 9
Horizontal Double-Spindle Disc Grinder
Exhaust Hood and Branch Pipe Connection

Disc Dia. Inches		Exhaust E		Volume Exhausted at 4,500 ft/min ft ³ /min	Note
Min.	Max	No. Pipes	Dia		
	19	1	5	610	When width "W" permits, exhaust ducts should be as near heaviest grinding as possible.
Over 19	25	1	6	880	
Over 25	30	1	7	1,200	
Over 30	53	2	6	1,770	
Over 53	72	4	8	6,280	

Entry loss = 0.45 velocity pressure for tapered takeoff

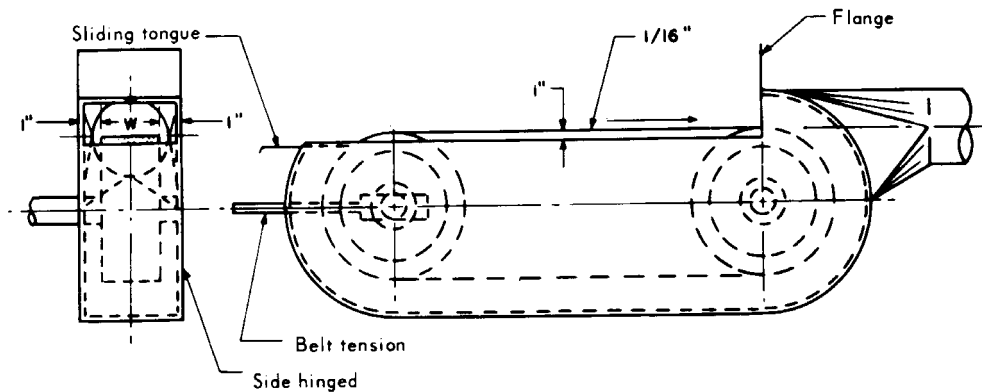


Fig. 10

A Typical Hood for a Belt Operation

Belt Width w. Inches	Exhaust Volume. ft ³ /min
up to 3	220
3 to 5	300
5 to 7	390
7 to 9	500
9 to 11	610
11 to 13	740

Minimum duct velocity = 4,500 ft./min. branch.
3,500 ft./min. main.

Entry loss = 0.45 velocity pressure for tapered takeoff
0.65 velocity pressure for straight takeoff

[Order 73-3, § 296-62-11017 and diagrams, filed 5/7/73.]

WAC 296-62-11019 Spray-finishing operations. (1) Definitions.

(a) "Spray-finishing operations" means employment of methods wherein organic or inorganic materials are utilized in dispersed form from deposit on surfaces to be coated, treated or cleaned. Such methods of deposit may involve either automatic, manual, or electrostatic deposition but do not include metal spraying or metallizing, dipping, flow coating, roller coating, tumbling, centrifuging, or spray washing and degreasing as conducted in self-contained washing and degreasing machines or systems.

(b) "Spray booth" spray booths are defined and described in WAC 296-24-370 through 296-24-37007. (See sections 103, 104, and 105 of the Standard for Spray Finishing Using Flammable and Combustible Materials, NFPA No. 33-1969.)

(c) "Spray room" means a room in which spray-finishing operations not conducted in a spray booth are performed separately from other areas.

(d) "Minimum maintained velocity" means the velocity of air movement which must be maintained in order to meet minimum specified requirements for health and safety.

(2) Location and application. Spray booths or spray rooms are to be used to enclose or confine all operations. Spray-finishing operations shall be located as provided in sections 201 through 206 of the Standard for Spray Finishing Using Flammable and Combustible Materials, NFPA No. 33-1969.

(3) Design and construction of spray booths.

(a) Spray booths shall be designed and constructed in accordance with WAC 296-24-370 through 296-24-37007

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(see sections 301-304 and 306-310 of the Standard for Spray Finishing Using Flammable and Combustible Materials, NFPA No. 33-1969), for general construction specifications.

Note: For a more detailed discussion of fundamentals relating to this subject, see ANSI Z9.2-1960.

(i) Lights, motors, electrical equipment and other sources of ignition shall conform to the requirements of WAC 296-24-370. (See section 310 and chapter 4 of the Standard for Spray Finishing Using Flammable and Combustible Materials, NFPA No. 33-1969.)

(ii) In no case shall combustible material be used in the construction of a spray booth and supply or exhaust duct connected to it.

(b) Unobstructed walkways shall not be less than 6 1/2 feet high and shall be maintained clear of obstruction from any work location in the booth to a booth exit or open booth front. In booths where the open front is the only exit, such exits shall be not less than 3 feet wide. In booths having multiple exits, such exits shall not be less than 2 feet wide, provided that the maximum distance from the work location to the exit is 25 feet or less. Where booth exits are provided with doors, such doors shall open outward from the booth.

(c) Baffles, distribution plates, and dry-type overspray collectors shall conform to the requirements of WAC 296-24-370. (See sections 304 and 305 of the Standard for Spray Finishing Using Flammable and Combustible Materials, NFPA No. 33-1969.)

(i) Overspray filters shall be installed and maintained in accordance with the requirements of WAC 296-24-370, (See section 305 of the Standard for Spray Finishing Using Flammable and Combustible Materials, NFPA No. 33-1969), and shall only be in a location easily accessible for inspection, cleaning, or replacement.

(ii) Where effective means, independent of the overspray filters are installed which will result in design air distribution across the booth cross section, it is permissible to operate the booth without the filters in place.

(d)(i) For wet or water-wash spray booths, the water-chamber enclosure, within which intimate contact of contaminated air and cleaning water or other cleaning medium is maintained, if made of steel, shall be 18 gauge or heavier and adequately protected against corrosion.

(ii) Chambers may include scrubber spray nozzles, headers, troughs, or other devices. Chambers shall be provided with adequate means for creating and maintaining scrubbing action for removal of particulate matter from the exhaust air stream.

(e) Collecting tanks shall be of welded steel construction or other suitable noncombustible material. If pits are used as collecting tanks, they shall be concrete, masonry, or other material having similar properties.

(i) Tanks shall be provided with weirs, skimmer plates, or screens to prevent sludge and floating paint from entering the pump suction box. Means for automatically maintaining the proper water level shall also be provided. Fresh water inlets shall not be submerged. They shall terminate at least one pipe diameter above the safety overflow level of the tank.

(ii) Tanks shall be so constructed as to discourage accumulation of hazardous deposits.

(f) Pump manifolds, risers, and headers shall be adequately sized to insure sufficient water flow to provide efficient operation of the water chamber.

(4) Design and construction of spray rooms.

(a) Spray rooms, including floors, shall be constructed of masonry, concrete, or other noncombustible material.

(b) Spray rooms shall have noncombustible fire doors and shutters.

(c) Spray rooms shall be adequately ventilated so that the atmosphere in the breathing zone of the operator shall be maintained in accordance with the requirements of (6)(b) of this section.

(d) Spray rooms used for production spray-finishing operations shall conform to the requirements of spray booths.

(5) Ventilation.

(a) Ventilation shall be provided in accordance with provisions of WAC 296-24-370, (See chapter 5 of the Standard for Spray Finishing Using Flammable or Combustible Materials, NFPA No. 33-1969), and in accordance with the following:

(i) Where a fan plenum is used to equalize or control the distribution of exhaust air movement through the booth, it shall be of sufficient strength or rigidity to withstand the differential air pressure or other superficially imposed loads for which the equipment is designed and also to facilitate cleaning. Construction specifications shall be at least equivalent to those of (5)(c) of this section.

(ii) All fan ratings shall be in accordance with Air Moving and Conditioning Association Standard Test Code for Testing Air Moving Devices, Bulletin 210, April 1962.

(b) Inlet or supply ductwork used to transport makeup air to spray booths or surrounding areas shall be constructed of noncombustible materials.

(i) If negative pressure exists within inlet ductwork, all seams and joints shall be sealed if there is a possibility of infiltration of harmful quantities of noxious gases, fumes, or mists from areas through which ductwork passes.

(ii) Inlet ductwork shall be sized in accordance with volume flow requirements and provide design air requirements at the spray booth.

(iii) Inlet ductwork shall be so supported throughout its length to sustain at least its own weight plus any negative pressure which is exerted upon it under normal operating conditions.

(c) Ducts shall be so constructed as to provide structural strength and stability at least equivalent to sheet steel of not less than the following thickness:

DIAMETER OR GREATER DIMENSION	(U.S. gauge)
Up to 8 inches inclusive	No. 24
Over 8 inches to 18 inches inclusive	No. 22
Over 18 inches to 30 inches inclusive	No. 20
Over 30 inches	No. 18

(i) Exhaust ductwork shall be adequately supported throughout its length to sustain its weight plus any normal accumulation in interior during normal operating conditions and any negative pressure exerted upon it.

(ii) Exhaust ductwork shall be sized in accordance with good design practice which shall include consideration of fan capacity, length of duct, number of turns and elbows, variation in size, volume, and character of materials being exhausted. See American National Standard Z9.2-1960 for further details and explanation concerning elements of design.

(iii) Longitudinal joints in sheet steel ductwork shall be either lock-seamed, riveted, or welded. For other than steel construction, equivalent securing of joints shall be provided.

(iv) Circumferential joints in ductwork shall be substantially fastened together and lapped in the direction of airflow. At least every fourth joint shall be provided with connecting flanges, bolted together or of equivalent fastening security.

(v) Inspection or clean-out doors shall be provided for every 9 to 12 feet of running length for ducts up to 12 inches in diameter, but the distance between clean-out doors may be greater for larger pipes. (See 8.3.21 of American National Standard Z9.1-1960.) A clean-out door or doors shall be provided for servicing the fan, and where necessary, a drain shall be provided.

(vi) Where ductwork passes through a combustible roof or wall, the roof or wall shall be protected at the point of penetration by open space or fire-resistive material between the duct and the roof or wall. When ducts pass through fire-walls, they shall be provided with automatic fire dampers on both sides of the wall, except that three-eighth-inch steel plates may be used in lieu of automatic fire dampers for ducts not exceeding 18 inches in diameter.

(vii) Ductwork used for ventilating any process covered in this standard shall not be connected to ducts ventilating any other process or any chimney or flue used for conveying any products of combustion.

(6) Velocity and air flow requirements.

(a) Except where a spray booth has an adequate air replacement system, the velocity of air into all openings of a spray booth shall be not less than that specified in Table 14 for the operating conditions specified. An adequate air replacement system is one which introduces replacement air upstream or above the object being sprayed and is so designed that the velocity of air in the booth cross section is not less than that specified in Table 14 when measured upstream or above the object being sprayed.

TABLE 14
MINIMUM MAINTAINED VELOCITIES
INTO SPRAY BOOTHS

Operating Airflow conditions for object completely inside booth	Crossdraft f.p.m.	Velocities, f.p.m.	
		Design	Range
Electrostatic and automatic airless operation contained in booth without operator.	Negligible	50 large booth	50-75
		100 small booth	75-125
Air-operated guns, manual or automatic	Up to 50	100 large booth	75-125
		150 small booth	125-175
Air-operated guns, manual or automatic	Up to 100	150 large booth	125-175
		200 small booth	150-250

Notes: (1) Attention is invited to the fact that the effectiveness of the spray booth is dependent upon the relationship of the depth of the booth to its height and width.
(2) Crossdrafts can be eliminated through proper design and such design should be sought. Crossdrafts in excess of 100 fpm (feet per minute) should not be permitted.
(3) Excessive air pressures result in loss of both efficiency and material waste in addition to creating a backlash that may carry overspray and fumes into adjacent work areas.
(4) Booths should be designed with velocity shown in the column headed "Design." However, booths operating with velocities shown in the column headed "Range" are in compliance with this standard.

(b) In addition to the requirements in (6)(a) of this section the total air volume exhausted through a spray booth shall be such as to dilute solvent vapor to at least 25 percent of the lower explosive limit of the solvent being sprayed. An example of the method of calculating this volume is given below.

Example: To determine the lower explosive limits of the most common solvents used in spray finishing, see Table 15. Column 1 gives the number of cubic feet of vapor per gallon of solvent and column 2 gives the lower explosive limit (LEL) in percentage by volume of air. Note that the quantity of solvent will be diminished by the quantity of solids and nonflammable contained in the finish.

To determine the volume of air in cubic feet necessary to dilute the vapor from 1 gallon of solvent to 25 percent of the lower explosive limit, apply the following formula:

$$\text{Dilution volume required per gallon of solvent} = \frac{4 (100\text{-LEL}) (\text{cubic feet of vapor per gallon})}{\text{LEL}}$$

Using toluene as the solvent.

(1) LEL of toluene from Table 15, column 2, is 1.4 percent.

(2) Cubic feet of vapor per gallon from Table 15, column 1, is 30.4 cubic feet per gallon.

$$(3) \text{ Dilution volume required} = \frac{4 (100-1.4) 30.4}{1.4} = 8,564 \text{ cubic feet.}$$

(4) To convert to cubic feet per minute of required ventilation, multiply the dilution volume required per gallon of solvent by the number of gallons of solvent evaporated per minute.

TABLE 15
LOWER EXPLOSIVE LIMIT OF SOME
COMMONLY USED SOLVENTS

Solvent	Cubic feet of vapor per gallon of liquid at 70°F.	Lower explosive limit in percent by volume of air at 70°F.
	Column 1	Column 2
Acetone	44.0	2.6
Amyl Acetate (iso)	21.6	1.0 ¹
Amyl Alcohol (n)	29.6	1.2
Amyl Alcohol (iso)	29.6	1.2
Benzene	36.8	1.4 ¹
Butyl Acetate (n)	24.8	1.7
Butyl Alcohol (n)	35.2	1.4
Butyl Cellosolve	24.8	1.1
Cellosolve	33.6	1.8
Cellosolve Acetate	23.2	1.7
Cyclohexanone	31.2	1.1 ¹
1,1 Dichloroethylene	42.4	5.6
1,2 Dichloroethylene	42.4	9.7
Ethyl Acetate	32.8	2.5
Ethyl Alcohol	55.2	4.3
Ethyl Lactate	28.0	1.5 ¹
Methyl Acetate	40.0	3.1
Methyl Alcohol	80.8	7.3
Methyl Cellosolve	40.8	2.5
Methyl Ethyl Ketone	36.0	1.8
Methyl n-Propyl Ketone	30.4	1.5
Naphtha (VM&P) (76° Naphtha)	22.4	0.9
Naphtha (100° Flash) Safety Solvent-Stoddard Solvent	23.2	1.1
Propyl Acetate (n)	27.2	2.0
Propyl Acetate (iso)	28.0	1.8
Propyl Alcohol (n)	44.8	2.1
Propyl Alcohol (iso)	44.0	2.0
Toluene	30.4	1.4
Turpentine	20.8	0.8
Xylene (o)	26.4	1.0

¹ At 212°F.

(c)(i) When an operator is in a booth downstream of the object being sprayed, an air-supplied respirator or other type of respirator certified by NIOSH under 42 CFR part 84 for the material being sprayed should be used by the operator.

(ii) Where downdraft booths are provided with doors, such doors shall be closed when spray painting.

(7) Make-up air.

(a) Clean fresh air, free of contamination from adjacent industrial exhaust systems, chimneys, stacks, or vents, shall be supplied to a spray booth or room in quantities equal to the volume of air exhausted through the spray booth.

(b) Where a spray booth or room receives make-up air through self-closing doors, dampers, or louvers, they shall be fully open at all times when the booth or room is in use for spraying. The velocity of air through such doors, dampers, or louvers shall not exceed 200 feet per minute. If the fan characteristics are such that the required air flow through the

booth will be provided, higher velocities through the doors, dampers, or louvers may be used.

(c)(i) Where the air supply to a spray booth or room is filtered, the fan static pressure shall be calculated on the assumption that the filters are dirty to the extent that they require cleaning or replacement.

(ii) The rating of filters shall be governed by test data supplied by the manufacturer of the filter. A pressure gauge shall be installed to show the pressure drop across the filters. This gauge shall be marked to show the pressure drop at which the filters require cleaning or replacement. Filters shall be replaced or cleaned whenever the pressure drop across them becomes excessive or whenever the air flow through the face of the booth falls below that specified in Table 14.

(d)(i) Means of heating make-up air to any spray booth or room, before or at the time spraying is normally performed, shall be provided in all places where the outdoor temperature may be expected to remain below 55° F. for appreciable periods of time during the operation of the booth except where adequate and safe means of radiant heating for all operating personnel affected is provided. The replacement air during the heating seasons shall be maintained at not less than 65° F. at the point of entry into the spray booth or spray room. When otherwise unheated make-up air would be at a temperature of more than 10° F. below room temperature, its temperature shall be regulated as provided in section 3.6 of ANSI Z9.2-1960.

(ii) As an alternative to an air replacement system complying with the preceding section, general heating of the building in which the spray room or booth is located may be employed provided that all occupied parts of the building are maintained at not less than 65° F. when the exhaust system is in operation or the general heating system supplemented by other sources of heat may be employed to meet this requirement.

(iii) No means of heating make-up air shall be located in a spray booth.

(iv) Where make-up air is heated by coal or oil, the products of combustion shall not be allowed to mix with the make-up air, and the products of combustion shall be conducted outside the building through a flue terminating at a point remote from all points where make-up air enters the building.

(v) Where make-up air is heated by gas, and the products of combustion are not mixed with the make-up air but are conducted through an independent flue to a point outside the building remote from all points where make-up air enters the building, it is not necessary to comply with (7)(d)(vi) of this section.

(vi) Where make-up air to any manually operated spray booth or room is heated by gas and the products of combustion are allowed to mix with the supply air, the following precautions must be taken:

(A) The gas must have a distinctive and strong enough odor to warn workmen in a spray booth or room of its presence if in an unburned state in the make-up air.

(B) The maximum rate of gas supply to the make-up air heater burners must not exceed that which would yield in excess of 200 p.p.m. (parts per million) of carbon monoxide or 2,000 p.p.m. of total combustible gases in the mixture if

the unburned gas upon the occurrence of flame failure were mixed with all of the make-up air supplied.

(C) A fan must be provided to deliver the mixture of heated air and products of combustion from the plenum chamber housing the gas burners to the spray booth or room.

(8) Scope. Spray booths or spray rooms are to be used to enclose or confine all spray finishing operations covered by this paragraph. This paragraph does not apply to the spraying of the exteriors of buildings, fixed tanks, or similar structures, nor to small portable spraying apparatus not used repeatedly in the same location.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-11019, filed 5/4/99, effective 9/1/99. Statutory Authority: RCW 49.17.040, 49.17.050, and 49.17.240. 81-16-015 (Order 81-20), § 296-62-11019, filed 7/27/81; Order 73-3, § 296-62-11019, filed 5/7/73.]

PART M—CONFINED SPACES

Note: The confined spaces rules for general industry have been moved to chapter 296-809 WAC. The confined spaces rules for the agriculture industry have been moved to chapter 296-307 WAC, part Y-8.

PART N—COTTON DUST

WAC 296-62-14533 Cotton dust. (1) Scope and application.

(a) This section, in its entirety, applies to the control of employee exposure to cotton dust in all workplaces where employees engage in yarn manufacturing, engage in slashing and weaving operations, or work in waste houses for textile operations.

(b) This section does not apply to the handling or processing of woven or knitted materials; to maritime operations covered by chapters 296-56 and 296-304 WAC; to harvesting or ginning of cotton; or to the construction industry.

(c) Only subsection (8) Medical surveillance, subsection (11)(b) Medical surveillance, subsection (11)(c) Availability, subsection (11)(d) Transfer of records, and Appendices B, C, and D of this section apply in all work places where employees exposed to cotton dust engage in cottonseed processing or waste processing operations.

(d) This section applies to yarn manufacturing and slashing and weaving operations exclusively using washed cotton (as defined by subsection (14) of this section) only to the extent specified by subsection (14) of this section.

(e) This section, in its entirety, applies to the control of all employees exposure to the cotton dust generated in the preparation of washed cotton from opening until the cotton is thoroughly wetted.

(f) This section does not apply to knitting, classing or warehousing operations except that employers with these operations, if requested by WISHA, shall grant WISHA access to their employees and workplaces for exposure monitoring and medical examinations for purposes of a health study to be performed by WISHA on a sampling basis.

(2) Definitions applicable to this section:

(a) "Blow down" - the cleaning of equipment and surfaces with compressed air.

(b) "Blow off" - the use of compressed air for cleaning of short duration and usually for a specific machine or any portion of a machine.

(c) "Cotton dust" - dust present in the air during the handling or processing of cotton, which may contain a mixture of many substances including ground-up plant matter, fiber, bacteria, fungi, soil, pesticides, noncotton plant matter and other contaminants which may have accumulated with the cotton during the growing, harvesting and subsequent processing or storage periods. Any dust present during the handling and processing of cotton through the weaving or knitting of fabrics, and dust present in other operations or manufacturing processes using raw or waste cotton fibers or cotton fiber byproducts from textile mills are considered cotton dust within this definition. Lubricating oil mist associated with weaving operations is not considered cotton dust.

(d) "Director" - the director of labor and industries or his authorized representative.

(e) "Equivalent instrument" - a cotton dust sampling device that meets the vertical elutriator equivalency requirements as described in subsection (4)(a)(iii) of this section.

(f) "Lint-free respirable cotton dust" - particles of cotton dust of approximately 15 microns or less aerodynamic equivalent diameter.

(g) "Vertical elutriator cotton dust sampler" or "vertical elutriator" - a dust sampler which has a particle size cut-off at approximately 15 microns aerodynamic equivalent diameter when operating at the flow rate of 7.4 ± 0.2 liters per minute.

(h) "Waste processing" - waste recycling (sorting, blending, cleaning and willowing) and garnetting.

(i) "Yarn manufacturing" - all textile mill operations from opening to, but not including, slashing and weaving.

(3) Permissible exposure limits and action levels.

(a) Permissible exposure limits (PEL).

(i) The employer shall assure that no employee who is exposed to cotton dust in yarn manufacturing and cotton washing operations is exposed to airborne concentrations of lint-free respirable cotton dust greater than $200 \mu\text{g}/\text{m}^3$ mean concentration, averaged over an eight-hour period, as measured by a vertical elutriator or an equivalent instrument.

(ii) The employer shall assure that no employee who is exposed to cotton dust in textile mill waste house operations or is exposed in yarn manufacturing to dust from "lower grade washed cotton" as defined in subsection (14)(e) of this section is exposed to airborne concentrations of lint-free respirable cotton dust greater than $500 \mu\text{g}/\text{m}^3$ mean concentration, averaged over an eight-hour period, as measured by a vertical elutriator or an equivalent instrument.

(iii) The employer shall assure that no employee who is exposed to cotton dust in the textile processes known as slashing and weaving is exposed to airborne concentrations of lint-free respirable cotton dust greater than $750 \mu\text{g}/\text{m}^3$ mean concentration, averaged over an eight-hour period, as measured by a vertical elutriator or an equivalent instrument.

(b) Action levels.

(i) The action level for yarn manufacturing and cotton washing operations is an airborne concentration of lint-free respirable cotton dust of $100 \mu\text{g}/\text{m}^3$ mean concentration, averaged over an eight-hour period, as measured by a vertical elutriator or an equivalent instrument.

(ii) The action level for waste houses for textile operations is an airborne concentration of lint-free respirable cotton dust of $250 \mu\text{g}/\text{m}^3$ mean concentration, averaged over an

eight-hour period, as measured by a vertical elutriator or an equivalent instrument.

(iii) The action level for the textile processes known as slashing and weaving is an airborne concentration of lint-free respirable cotton dust of $375 \mu\text{g}/\text{m}^3$ mean concentration, averaged over an eight-hour period, as measured by a vertical elutriator or an equivalent instrument.

(4) Exposure monitoring and measurement.

(a) General.

(i) For the purposes of this section, employee exposure is that exposure which would occur if the employee were not using a respirator.

(ii) The sampling device to be used shall be either the vertical elutriator cotton dust sampler or an equivalent instrument.

(iii) If an alternative to the vertical elutriator cotton dust sampler is used, the employer shall establish equivalency by demonstrating that the alternative sampling devices:

(A) It collects respirable particulates in the same range as the vertical elutriator (approximately 15 microns);

(B) Replicate exposure data used to establish equivalency are collected in side-by-side field and laboratory comparisons; and

(C) A minimum of 100 samples over the range of 0.5 to 2 times the permissible exposure limit are collected, and ninety percent of these samples have an accuracy range of plus or minus twenty-five percent of the vertical elutriator reading with a ninety-five percent confidence level as demonstrated by a statistically valid protocol. (An acceptable protocol for demonstrating equivalency is described in Appendix E of this section.)

(iv) WISHA will issue a written opinion stating that an instrument is equivalent to a vertical elutriator cotton dust sampler if:

(A) A manufacturer or employer requests an opinion in writing and supplies the following information:

(I) Sufficient test data to demonstrate that the instrument meets the requirements specified in this paragraph and the protocol specified in Appendix E of this section;

(II) Any other relevant information about the instrument and its testing requested by WISHA; and

(III) A certification by the manufacturer or employer that the information supplied is accurate, and

(B) If WISHA finds, based on information submitted about the instrument, that the instrument meets the requirements for equivalency specified by this subsection.

(b) Initial monitoring. Each employer who has a place of employment within the scope of subsections (1)(a), (d) or (e) of this section shall conduct monitoring by obtaining measurements which are representative of the exposure of all employees to airborne concentrations of lint-free respirable cotton dust over an eight-hour period. The sampling program shall include at least one determination during each shift for each work area.

(c) Periodic monitoring.

(i) If the initial monitoring required by (4)(b) of this section or any subsequent monitoring reveals employee exposure to be at or below the permissible exposure limit, the employer shall repeat the monitoring for those employees at least annually.

(ii) If the initial monitoring required by (4)(b) of this section or any subsequent monitoring reveals employee exposure to be above the PEL, the employer shall repeat the monitoring for those employees at least every six months.

(iii) Whenever there has been a production, process, or control change which may result in new or additional exposure to cotton dust, or whenever the employer has any other reason to suspect an increase in employee exposure, the employer shall repeat the monitoring and measurements for those employees affected by the change or increase.

(d) Employee notification.

(i) Within twenty working days after the receipt of monitoring results, the employer shall notify each employee in writing of the exposure measurements which represent that employee's exposure.

(ii) Whenever the results indicate that the employee's exposure exceeds the applicable permissible exposure limit specified in subsection (3) of this section, the employer shall include in the written notice a statement that the permissible exposure limit was exceeded and a description of the corrective action taken to reduce exposure below the permissible exposure limit.

(5) Methods of compliance.

(a) Engineering and work practice controls. The employer shall institute engineering and work practice controls to reduce and maintain employee exposure to cotton dust at or below the permissible exposure limit specified in subsection (3) of this section, except to the extent that the employer can establish that such controls are not feasible.

(b) Whenever feasible engineering and work practice controls are not sufficient to reduce employee exposure to or below the permissible exposure limit, the employer shall nonetheless institute these controls to immediately reduce exposure to the lowest feasible level, and shall supplement these controls with the use of respirators which shall comply with the provisions of subsection (6) of this section.

(c) Compliance program.

(i) Where the most recent exposure monitoring data indicates that any employee is exposed to cotton dust levels greater than the permissible exposure limit, the employer shall establish and implement a written program sufficient to reduce exposures to or below the permissible exposure limit solely by means of engineering controls and work practices as required by (a) of this subsection.

(ii) The written program shall include at least the following:

(A) A description of each operation or process resulting in employee exposure to cotton dust;

(B) Engineering plans and other studies used to determine the controls for each process;

(C) A report of the technology considered in meeting the permissible exposure limit;

(D) Monitoring data obtained in accordance with subsection (4) of this section;

(E) A detailed schedule for development and implementation of engineering and work practice controls, including exposure levels projected to be achieved by such controls;

(F) Work practice program; and

(G) Other relevant information.

(iii) The employer's schedule as set forth in the compliance program, shall project completion of the implementa-

tion of the compliance program no later than March 27, 1984 or as soon as possible if monitoring after March 27, 1984 reveals exposures over the PEL, except as provided in (13)(b)(ii)(B) of this section.

(iv) The employer shall complete the steps set forth in his program by the dates in the schedule.

(v) Written programs shall be submitted, upon request, to the director, and shall be available at the worksite for examination and copying by the director, and any affected employee or their designated representatives.

(vi) The written programs required under subsection (5)(c) of this section shall be revised and updated at least every six months to reflect the current status of the program and current exposure levels.

(d) Mechanical ventilation. When mechanical ventilation is used to control exposure, measurements which demonstrate the effectiveness of the system to control exposure, such as capture velocity, duct velocity, or static pressure shall be made at reasonable intervals.

(6) Use of respirators.

(a) General. For employees who are required to use respirators by this section, the employer must provide respirators that comply with the requirements of this section. Respirators must be used during:

(i) Periods necessary to install or implement feasible engineering controls and work-practice controls;

(ii) Maintenance and repair activities for which engineering and work-practice controls are not feasible;

(iii) Work operations for which feasible engineering and work-practice controls are not yet sufficient to reduce employee exposure to or below the permissible exposure limits;

(iv) Work operations specified under subsection (7)(a) of this section;

(v) Periods for which an employee requests a respirator.

(b) Respirator program.

(i) The employer must implement a respiratory protection program as required by chapter 296-842 WAC, except WAC 296-842-13005 and 296-842-14005.

(ii) Whenever a physician determines that an employee who works in an area in which the cotton-dust concentration exceeds the PEL is unable to use a respirator, including a powered air-purifying respirator, the employee must be given the opportunity to transfer to an available position, or to a position that becomes available later, that has a cotton-dust concentration at or below the PEL. The employer must ensure that such employees retain their current wage rate or other benefits as a result of the transfer.

(c) Respirator selection.

(i) The employer must select the appropriate respirator from Table 1 of this section.

TABLE - 1

Cotton dust concentration	Required respirator
Not greater than—	
(a) 5 x the applicable permissible exposure limit (PEL).	A disposable respirator with a particulate filter.

TABLE - 1

Cotton dust concentration	Required respirator
(b) 10 x the applicable PEL.	A quarter or half-mask respirator, other than a disposable respirator, equipped with particulate filters.
(c) 100 x the applicable PEL.	A full facepiece respirator equipped with high-efficiency particulate filters.
(d) Greater than 100 x the applicable PEL.	A powered air-purifying respirator equipped with high-efficiency particulate filters.

Notes

1. A disposable respirator means the filter element is an inseparable part of the respirator.
2. Any respirators permitted at higher environmental concentrations can be used at lower concentrations.
3. Self-contained breathing apparatus are not required respirators but are permitted respirators.
4. Supplied air respirators are not required but are permitted under the following conditions: Cotton dust concentration not greater than 10X the PEL—Any supplied air respirator; not greater than 100X the PEL—Any supplied air respirator with full facepiece, helmet or hood; greater than 100X the PEL—A supplied air respirator operated in positive pressure mode.

(ii) Whenever respirators are required by this section for cotton-dust concentrations that do not exceed the applicable permissible exposure limit by a multiple of 100 (100x), the employer must, when requested by an employee, provide a powered air-purifying respirator with a high-efficiency particulate filter instead of the respirator specified in (a), (b), or (c) of Table 1 of this section.

(7) Work practices. Each employer shall, regardless of the level of employee exposure, immediately establish and implement a written program of work practices which shall minimize cotton dust exposure. The following shall be included where applicable:

(a) Compressed air "blow down" cleaning shall be prohibited, where alternative means are feasible. Where compressed air is used for cleaning, the employees performing the "blow down" or "blow off" shall wear suitable respirators. Employees whose presence is not required to perform "blow down" or "blow off" shall be required to leave the area affected by the "blow down" or "blow off" during this cleaning operation.

(b) Cleaning of clothing or floors with compressed air shall be prohibited.

(c) Floor sweeping shall be performed with a vacuum or with methods designed to minimize dispersal of dust.

(d) In areas where employees are exposed to concentrations of cotton dust greater than the permissible exposure limit, cotton and cotton waste shall be stacked, sorted, baled, dumped, removed or otherwise handled by mechanical means, except where the employer can show that it is infeasible to do so. Where infeasible, the method used for handling cotton and cotton waste shall be the method which reduces exposure to the lowest level feasible.

(8) Medical surveillance.

(a) General.

(i) Each employer covered by the standard shall institute a program of medical surveillance for all employees exposed to cotton dust.

(ii) The employer shall assure that all medical examinations and procedures are performed by or under the supervision of a licensed physician and are provided without cost to the employee.

(iii) Persons other than licensed physicians, who administer the pulmonary function testing required by this section shall have completed a NIOSH approved training course in spirometry.

(b) Initial examinations. The employer shall provide medical surveillance to each employee who is or may be exposed to cotton dust. For new employees' this examination shall be provided prior to initial assignment. The medical surveillance shall include at least the following:

(i) A medical history;

(ii) The standardized questionnaire contained in WAC 296-62-14537; and

(iii) A pulmonary function measurement, including a determination of forced vital capacity (FVC) and forced expiratory volume in one second (FEV₁), the FEV₁/FVC ratio, and the percentage that the measured values of FEV₁ and FVC differ from the predicted values, using the standard tables in WAC 296-62-14539. These determinations shall be made for each employee before the employee enters the workplace on the first day of the work week, preceded by at least thirty-five hours of no exposure to cotton dust. The tests shall be repeated during the shift, no less than four hours and no more than ten hours after the beginning of the work shift; and, in any event, no more than one hour after cessation of exposure. Such exposure shall be typical of the employee's usual workplace exposure. The predicted FEV₁ and FVC for blacks shall be multiplied by 0.85 to adjust for ethnic differences.

(iv) Based upon the questionnaire results, each employee shall be graded according to Schilling's byssinosis classification system.

(c) Periodic examinations.

(i) The employer shall provide at least annual medical surveillance for all employees exposed to cotton dust above the action level in yarn manufacturing, slashing and weaving, cotton washing and waste house operations. The employer shall provide medical surveillance at least every two years for all employees exposed to cotton dust at or below the action level, for all employees exposed to cotton dust from washed cotton (except from washed cotton defined in subsection (9)(c) of this section), and for all employees exposed to cotton dust in cottonseed processing and waste processing operations. Periodic medical surveillance shall include at least an update of the medical history, standardized questionnaire (Appendix B-111), Schilling byssinosis grade, and the pulmonary function measurements in (b)(iii) of this subsection.

(ii) Medical surveillance as required in (c)(i) of this subsection shall be provided every six months for all employees in the following categories:

(A) An FEV₁ of greater than eighty percent of the predicted value, but with an FEV₁ decrement of five percent or 200 ml. on a first working day;

(B) An FEV₁ of less than eighty percent of the predicted value; or

(C) Where, in the opinion of the physician, any significant change in questionnaire findings, pulmonary function results, or other diagnostic tests have occurred.

(iii) An employee whose FEV₁ is less than sixty percent of the predicted value shall be referred to a physician for a detailed pulmonary examination.

(iv) A comparison shall be made between the current examination results and those of previous examinations and a determination made by the physician as to whether there has been a significant change.

(d) Information provided to the physician. The employer shall provide the following information to the examining physician:

(i) A copy of this regulation and its appendices;

(ii) A description of the affected employee's duties as they relate to the employee's exposure;

(iii) The employee's exposure level or anticipated exposure level;

(iv) A description of any personal protective equipment used or to be used; and

(v) Information from previous medical examinations of the affected employee which is not readily available to the examining physician.

(e) Physician's written opinion.

(i) The employer shall obtain and furnish the employee with a copy of a written opinion from the examining physician containing the following:

(A) The results of the medical examination and tests including the FEV₁, FVC, and FEV₁/FVC ratio;

(B) The physician's opinion as to whether the employee has any detected medical conditions which would place the employee at increased risk of material impairment of the employee's health from exposure to cotton dust;

(C) The physician's recommended limitations upon the employee's exposure to cotton dust or upon the employee's use of respirators including a determination of whether an employee can wear a negative pressure respirator, and where the employee cannot, a determination of the employee's ability to wear a powered air purifying respirator; and

(D) A statement that the employee has been informed by the physician of the results of the medical examination and any medical conditions which require further examination or treatment.

(ii) The written opinion obtained by the employer shall not reveal specific findings or diagnoses unrelated to occupational exposure.

(9) Employee education and training.

(a) Training program.

(i) The employer shall provide a training program for all employees exposed to cotton dust and shall assure that each employee is informed of the following:

(A) The acute and long term health hazards associated with exposure to cotton dust;

(B) The names and descriptions of jobs and processes which could result in exposure to cotton dust at or above the PEL.

(C) The measures, including work practices required by subsection (7) of this section, necessary to protect the employee from exposures in excess of the permissible exposure limit;

(D) The purpose, proper use, limitations, and other training requirements for respiratory protection as required by subsection (6) of this section and chapter 296-842 WAC (see WAC 296-842-11005, 296-842-16005 and 296-842-19005);

(E) The purpose for and a description of the medical surveillance program required by subsection (8) of this section and other information which will aid exposed employees in understanding the hazards of cotton dust exposure; and

(F) The contents of this standard and its appendices.

(ii) The training program shall be provided prior to initial assignment and shall be repeated annually for each employee exposed to cotton dust, when job assignments or work processes change and when employee performance indicates a need for retraining.

(b) Access to training materials.

(i) Each employer shall post a copy of this section with its appendices in a public location at the workplace, and shall, upon request, make copies available to employees.

(ii) The employer shall provide all materials relating to the employee training and information program to the director upon request.

(10) Signs. The employer shall post the following warning sign in each work area where the permissible exposure limit for cotton dust is exceeded:

WARNING

COTTON DUST WORK AREA

MAY CAUSE ACUTE OR DELAYED LUNG INJURY

(BYSSINOSIS)

RESPIRATORS REQUIRED IN THIS AREA

(11) Recordkeeping.

(a) Exposure measurements.

(i) The employer shall establish and maintain an accurate record of all measurements required by subsection (4) of this section.

(ii) The record shall include:

(A) A log containing the items listed in WAC 296-62-14535 (4)(a), and the dates, number, duration, and results of each of the samples taken, including a description of the procedure used to determine representative employee exposures;

(B) The type of protective devices worn, if any, and length of time worn; and

(C) The names, social security number, job classifications, and exposure levels of employees whose exposure the measurement is intended to represent.

(iii) The employer shall maintain this record for at least twenty years.

(b) Medical surveillance.

(i) The employer shall establish and maintain an accurate medical record for each employee subject to medical surveillance required by subsection (8) of this section.

(ii) The record shall include:

(A) The name and social security number and description of the duties of the employee;

(B) A copy of the medical examination results including the medical history, questionnaire response, results of all tests, and the physician's recommendation;

(C) A copy of the physician's written opinion;

(D) Any employee medical complaints related to exposure to cotton dust;

(E) A copy of this standard and its appendices, except that the employer may keep one copy of the standard and the appendices for all employees, provided that he references the standard and appendices in the medical surveillance record of each employee; and

(F) A copy of the information provided to the physician as required by subsection (8)(d) of this section.

(iii) The employer shall maintain this record for at least twenty years.

(c) Availability.

(i) The employer shall make all records required to be maintained by subsection (11) of this section available to the director for examination and copying.

(ii) Employee exposure measurement records and employee medical records required by this subsection shall be provided upon request to employees, designated representatives, and the assistant director in accordance with chapter 296-802 WAC.

(d) Transfer of records.

(i) Whenever the employer ceases to do business, the successor employer shall receive and retain all records required to be maintained by subsection (11) of this section.

(ii) Whenever the employer ceases to do business, and there is no successor employer to receive and retain the records for the prescribed period, these records shall be transmitted to the director.

(iii) At the expiration of the retention period for the records required to be maintained by this section, the employer shall notify the director at least three months prior to the disposal of such records and shall transmit those records to the director if he requests them within that period.

(iv) The employer shall also comply with any additional requirements involving transfer of records set forth in chapter 296-802 WAC.

(12) Observation of monitoring.

(a) The employer shall provide affected employees or their designated representatives an opportunity to observe any measuring or monitoring of employee exposure to cotton dust conducted pursuant to subsection (4) of this section.

(b) Whenever observation of the measuring or monitoring of employee exposure to cotton dust requires entry into an area where the use of personal protective equipment is required, the employer shall provide the observer with and assure the use of such equipment and shall require the observer to comply with all other applicable safety and health procedures.

(c) Without interfering with the measurement, observers shall be entitled to:

(i) An explanation of the measurement procedures;

(ii) An opportunity to observe all steps related to the measurement of airborne concentrations of cotton dust performed at the place of exposure; and

(iii) An opportunity to record the results obtained.

(13) Washed cotton.

(a) Exemptions. Cotton, after it has been washed by the processes described in this section is exempt from all or parts of this section as specified if the requirements of this section are met.

(b) Initial requirements.

(i) In order for an employer to qualify as exempt or partially exempt from this standard for operations using washed

cotton, the employer must demonstrate that the cotton was washed in a facility which is open to inspection by the director and the employer must provide sufficient accurate documentary evidence to demonstrate that the washing methods utilized meet the requirements of this section.

(ii) An employer who handles or processes cotton which has been washed in a facility not under the employer's control and claims an exemption or partial exemption under this paragraph, must obtain from the cotton washer and make available at the worksite, to the director, or his designated representative, to any affected employee, or to their designated representative the following:

(A) A certification by the washer of the cotton of the grade of cotton, the type of washing process, and that the batch meets the requirements of this section:

(B) Sufficient accurate documentation by the washer of the cotton grades and washing process; and

(C) An authorization by the washer that the director may inspect the washer's washing facilities and documentation of the process.

(c) Medical and dyed cotton. Medical grade (USP) cotton, cotton that has been scoured, bleached and dyed, and mercerized yarn shall be exempt from all provisions of this standard.

(d) Higher grade washed cotton. The handling or processing of cotton classed as "low middling light spotted or better" (color grade 52 or better and leaf grade code 5 or better according to the 1993 USDA classification system) shall be exempt from all provisions of the standard except requirements of subsection (8) of this section, medical surveillance; subsection (11)(b) through (d) of this section, recordkeeping-medical records, and Appendices B, C, and D of this section, if they have been washed on one of the following systems:

(i) On a continuous batt system or a rayon rinse system including the following conditions:

(A) With water;

(B) At a temperature of no less than 60°C;

(C) With a water-to-fiber ratio of no less than 40:1; and

(D) With the bacterial levels in the wash water controlled to limit bacterial contamination of the cotton.

(ii) On a batch kier washing system including the following conditions:

(A) With water;

(B) With cotton fiber mechanically opened and thoroughly pretreated before forming the cake;

(C) For low-temperature processing, at a temperature of no less than 60°C with a water-to-fiber ratio of no less than 40:1; or, for high-temperature processing, at a temperature of no less than 93°C with a water-to-fiber ratio of no less than 15:1;

(D) With a minimum of one wash cycle followed by two rinse cycles for each batch, using fresh water in each cycle; and

(E) With bacterial levels in the wash water controlled to limit bacterial contamination of the cotton.

(e) Lower grade washed cotton. The handling and processing of cotton of grades lower than "low middling light spotted," that has been washed as specified in (d) of this subsection and has also been bleached, shall be exempt from all provisions of the standard except the requirements of subsec-

tion (3)(a) Permissible exposure limits, subsection (4) Exposure monitoring and measurement, subsection (8) Medical surveillance, subsection (11) Recordkeeping, and Appendices B, C and D of this section.

(f) Mixed grades of washed cotton. If more than one grade of washed cotton is being handled or processed together, the requirements of the grade with the most stringent exposure limit, medical and monitoring requirements shall be followed.

(14) Appendices.

(a) Appendix B (B-I, B-II and B-III), WAC 296-62-14537, Appendix C, WAC 296-62-14539 and Appendix D, WAC 296-62-14541 are incorporated as part of this chapter and the contents of these appendices are mandatory.

(b) Appendix A of this chapter, WAC 296-62-14535 contains information which is not intended to create any additional obligations not otherwise imposed or to detract from any existing obligations.

(c) Appendix E of this chapter is a protocol which may be followed in the validation of alternative measuring devices as equivalent to the vertical elutriator cotton dust sampler. Other protocols may be used if it is demonstrated that they are statistically valid, meet the requirements in subsection (4)(a)(iii) of this section, and are appropriate for demonstrating equivalency.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. 05-03-093, § 296-62-14533, filed 1/18/05, effective 3/1/05; 04-10-026, § 296-62-14533, filed 4/27/04, effective 8/1/04. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 01-19-065, § 296-62-14533, filed 9/18/01, effective 11/1/01; 99-10-071, § 296-62-14533, filed 5/4/99, effective 9/1/99. Statutory Authority: Chapter 49.17 RCW. 87-24-051 (Order 87-24), § 296-62-14533, filed 11/30/87. Statutory Authority: RCW 49.17.040 and 49.17.050. 86-16-009 (Order 86-28), § 296-62-14533, filed 7/25/86; 82-03-023 (Order 82-1), § 296-62-14533, filed 1/15/82. Statutory Authority: 49.17.040, 49.17.050, and 49.17.240. 81-16-015 (Order 81-20), § 296-62-14533, filed 7/27/81. Statutory Authority: RCW 49.17.040, 49.17.050, 49.17.240, chapters 42.30 and 43.22 RCW. 80-17-014 (Order 80-20), § 296-62-14533, filed 11/13/80.]

WAC 296-62-14535 Appendix A—Air sampling and analytical procedures for determining concentrations of cotton dust. (1) Sampling locations. The sampling procedures must be designed so that samples of the actual dust concentrations are collected accurately and consistently and reflect the concentrations of dust at the place and time of sampling. Sufficient number of six-hour area samples in each distinct work area of the plant should be collected at locations which provide representative samples of air to which the worker is exposed. In order to avoid filter overloading, sampling time may be shortened when sampling in dusty areas. Samples in each work area should be gathered simultaneously or sequentially during a normal operating period. The daily time-weighted average (TWA) exposure of each worker can then be determined by using the following formula:

$$\frac{\text{Summation of hours spent in each location and the dust concentration in that location.}}{\text{Total hours exposed}}$$

A time-weighted average concentration should be computed for each worker and properly logged and maintained on file for review.

(2) Sampling equipment.

(a) Sampler. The instrument selected for monitoring is the Lumsden-Lynch vertical elutriator. It should operate at a flow rate of 7.4 ± 0.2 liters/minute. The samplers should be cleaned prior to sampling. The pumps should be monitored during sampling.

(b) Filter holder. A three-piece cassette constructed of polystyrene designed to hold a 37-mm diameter filter should be used. Care must be exercised to insure that an adequate seal exists between elements of the cassette.

(c) Filters and support pads. The membrane filters used should be polyvinyl chloride with a 5-um pore size and 37-mm diameter. A support pad, commonly called a backup pad, should be used under the filter membrane in the field monitor cassette.

(d) Balance. A balance sensitive to 10 micrograms should be used.

(3) Instrument calibration procedure. Samplers shall be calibrated when first received from the factory, after repair, and after receiving any abuse. The samplers should be calibrated in the laboratory both before they are used in the field and after they have been used to collect a large number of field samples. The primary standard, such as a spirometer or other standard calibrating instruments such as a wet test meter or a large bubble meter or dry gas meter, should be used. Instructions for calibration with the wet test meter follow. If another calibration device is selected, equivalent procedures should be used:

(a) Level wet test meter. Check the water level which should just touch the calibration point at the left side of the meter. If water level is low, add water 1-2°F. warmer than room temperature of till point. Run the meter for thirty minutes before calibration;

(b) Place the polyvinyl chloride membrane filter in the filter cassette;

(c) Assemble the calibration sampling train;

(d) Connect the wet test meter to the train.

The pointer on the meter should run clockwise and a pressure drop of not more than 1.0 inch of water indicated. If the pressure drop is greater than 1.0, disconnect and check the system;

(e) Operate the system for ten minutes before starting the calibration;

(f) Check the vacuum gauge on the pump to insure that the pressure drop across the orifice exceeds seventeen inches of mercury;

(g) Record the following on calibration data sheets:

(i) Wet test meter reading, start and finish;

(ii) Elapsed time, start and finish (at least two minutes);

(iii) Pressure drop at manometer;

(iv) Air temperature;

(v) Barometric pressure; and

(vi) Limiting orifice number.

(h) Calculate the flow rate and compare against the flow of 7.4 ± 0.2 liters/minute. If flow is between these limits, perform calibration again, average results, and record orifice number and flow rate. If flow is not within these limits, discard or modify orifice and repeat procedure;

(i) Record the name of the person performing the calibration, the date, serial number of the wet test meter, and the number of the critical orifices being calibrated.

(4) Sampling procedure.

(a) Sampling data sheets should include a log of:

(i) The date of the sample collection;

(ii) The time of sampling;

(iii) The location of the sampler;

(iv) The sampler serial number;

(v) The cassette number;

(vi) The time of starting and stopping the sampling and the duration of sampling;

(vii) The weight of the filter before and after sampling;

(viii) The weight of dust collected (corrected for controls);

(ix) The dust concentration measured;

(x) Other pertinent information; and

(xi) Name of person taking sample.

(b) Assembly of filter cassette should be as follows:

(i) Loosely assemble three-piece cassette;

(ii) Number cassette;

(iii) Place absorbent pad in cassette;

(iv) Weigh filter to an accuracy of 10 µg;

(v) Place filter in cassette;

(vi) Record weight of filter in log, using cassette number for identification;

(vii) Fully assemble cassette, using pressure to force parts tightly together;

(viii) Install plugs top and bottom;

(ix) Put shrink band on cassette, covering joint between center and bottom parts of cassette; and

(x) Set cassette aside until shrink band dries thoroughly.

(c) Sampling collection should be performed as follows:

(i) Clean lint out of the motor and elutriator;

(ii) Install vertical elutriator in sampling locations specified above with inlet 4-1/2 to 5-1/2 feet from floor (breathing zone height);

(iii) Remove top section of cassette;

(iv) Install cassette in ferrule of elutriator;

(v) Tape cassette to ferrule with masking tape or similar material for air-tight seal;

(vi) Remove bottom plug of cassette and attach hose containing critical orifice;

(vii) Start elutriator pump and check to see if gauge reads above 17 in. of Hg vacuum;

(viii) Record starting time, cassette number, and sampler number;

(ix) At end of sampling period stop pump and record time; and

(x) Controls with each batch of samples collected, two additional filter cassettes should be subjected to exactly the same handling as the samples, except that they are not opened. These control filters should be weighed in the same manner as the sample filters.

Any difference in weight in the control filters would indicate that the procedure for handling sample filters may not be adequate and should be evaluated to ascertain the cause of the difference, whether and what necessary corrections must be made, and whether additional samples must be collected.

(d) Shipping. The cassette with samples should be collected, along with the appropriate number of blanks, and shipped to the analytical laboratory in a suitable container to prevent damage in transit.

(e) Weighing of the sample should be achieved as follows:

(i) Remove shrink band;

(ii) Remove top and middle sections of cassette and bottom plug;

(iii) Remove filter from cassette and weigh to an accuracy of 10 µg; and

(iv) Record weight in log against original weight.

(f) Calculation of volume of air sampled should be determined as follows:

(i) From starting and stopping times of sampling period, determine length of time in minutes of sampling period; and

(ii) Multiply sampling time in minutes by flow rate of critical orifice in liters per minute and divide by 1000 to find air quantity in cubic meters.

(g) Calculation of dust concentrations should be made as follows:

(i) Subtract weight of clean filter from dirty filter and apply control correction to find actual weight of sample. Record this weight (in µg) in log; and

(ii) Divide mass of sample in µg by air volume in cubic meters to find dust concentration in µg/m. Record in log.

[Statutory Authority: RCW 49.17.040, 49.17.050, 49.17.240, chapters 42.30 and 43.22 RCW. 80-17-014 (Order 80-20), § 296-62-14535, filed 11/13/80.]

WAC 296-62-14537 Appendix B-I through B-III—Respiratory questionnaire.

APPENDIX B-I
Respiratory Questionnaire

A. IDENTIFICATION DATA

PLANT _____ SOCIAL SECURITY NO. _____
DAY MONTH YEAR
(figures) (last 2 digits)NAME _____ DATE OF INTERVIEW _____
(Surname)_____
(First Names) DATE OF BIRTH _____
M F

ADDRESS _____ AGE _____ (8,9) SEX _____ (10)

RACE

W	N	IND.	OTHER
---	---	------	-------

 (11)

INTERVIEWER: 1 2 3 4 5 6 7 8 (12)

WORK SHIFT: 1st _____ 2nd _____ 3rd _____ (13) STANDING HEIGHT _____ (14,15)

PRESENT WORK AREA _____ WEIGHT _____ (16,18)

If working in more than one specified work area, X area where most of the work shift is spent. If "other," but spending 25% of the work shift in one of the specified work areas, classify in that work area. If carding department employee, check area within that department where most of the work shift is spent (if in doubt, check "throughout"). For work areas such as spinning and weaving where many work rooms may be involved, be sure to check the specific work room to which the employee is assigned – if he works in more than one work room within a department classify as 7 (all) for that department.

	Workroom Number	(19) Open	(20) Pick	(21) Area	(21) Card #1	(22) #2	(23) Spin	(24) Wind	(25) Twist	(26) Spool	(27) Warp	(28) Slash	(29) Weave	(30) Other
AT RISK (cotton & cotton blend)	1			Cards										
	2			Draw										
	3			Comb										
	4			Rove										
	5			Thru Out										
	6													
	7 (all)													
Control (synthe- tic & wool)	8													
Ex-Work- er (cotton)	9													

Use actual wording of each question. Put X in appropriate square after each question. When in doubt record 'No'.
When no square, circle appropriate answer.

B. COUGH

(on getting up)†

Do you usually cough first thing in the morning? _____ Yes _____ No _____ (31)

(Count a cough with first smoke or on "first going out of doors."
Exclude clearing throat or a single cough.)

Do you usually cough during the day or at night? _____ Yes _____ No _____ (32)

(Ignore an occasional cough.)

If 'Yes' to either question (31-32):

Do you cough like this on most days for as much as three months a year? _____ Yes _____ No _____ (33)

Do you cough on any particular day of the week? _____ Yes _____ No _____ (34)

(1) (2) (3) (4) (5) (6) (7)

If 'Yes': Which day? Mon. Tues. Wed. Thur. Fri. Sat. Sun. _____ (35)

C. PHLEGM or alternative word to suit local custom.

(on getting up)†

Do you usually bring up any phlegm from your chest first thing in the morning? (Count phlegm with the first smoke or on "first going out of doors." Exclude phlegm from the nose. Count swallowed phlegm.) _____ Yes _____ No _____ (36)

Do you usually bring up any phlegm from your chest during the day or at night? (Accept twice or more.) _____ Yes _____ No _____ (37)

If 'Yes' to either question (36) or (37):

Do you bring up phlegm like this on most days for as much as three months each year? _____ Yes _____ No _____ (38)

If 'Yes' to question (33) or (38):

(cough) (1) ☐ 2 years or less (39)

How long have you had this phlegm? (2) ☐ More than 2 years-9 years

(Write in number of years) (3) ☐ 10-19 years

(4) ☐ 20+ years

†These words are for subjects who work at night

D. CHEST ILLNESSES

In the past three years, have you had a period of (increased) †cough and phlegm lasting for 3 weeks or more? (1) ☐ No (40)

(2) ☐ Yes, only one period

(3) ☐ Yes, two or more periods

†For subjects who usually have phlegm

During the past 3 years have you had any chest illness which has kept you off work, indoors at home or in bed? (For as long as one week, flu?) _____ Yes _____ No _____ (41)

If 'Yes' to (41): Did you bring up (more) phlegm than usual in any of these illnesses? _____ Yes _____ No _____ (42)

If 'Yes' to (42): During the past three years have you had: Only one such illness with increased phlegm? (1) ☐ (43)More than one such illness: (2) ☐ (44)

Br. Grade _____

E. TIGHTNESS

Does your chest ever feel tight or your breathing become difficult? _____ Yes _____ No _____ (45)

Is your chest tight or your breathing difficult on any particular day of the week? (after a week or 10 days away from the mill) _____ Yes _____ No _____ (46)

If 'Yes': Which day? Mon. (1) (3) Tues. (4) Wed. (5) Thur. (6) Fri. (7) Sat. (8) Sun. (47)

Sometimes

Always

If 'Yes' Monday: At what time on Monday does your chest feel tight or your breathing difficult? 1 ☐ Before entering the mill (48)2 ☐ After entering the mill

(Ask only if NO to Question (45).)

In the past, has your chest ever been tight or your breathing difficult on any particular day of the week? _____ Yes _____ No _____ (49)

If 'Yes': Which day? Mon. (1) (3) Tues. (4) Wed. (5) Thur. (6) Fri. (7) Sat. (8) Sun. (50)

Sometimes

Always

F. BREATHLESSNESSIf disabled from walking by any condition other than heart or lung disease put "X" here and leave questions (52-60) unasked. ☐ (51)

Are you ever troubled by shortness of breath, when hurrying on the level or walking up a slight hill? _____ Yes _____ No _____ (52)

If 'No', grade is 1. If 'Yes' proceed to next question

Do you get short of breath walking with other people at an ordinary pace on the level? _____ Yes _____ No _____ (53)

If 'No', grade is 2. If 'Yes', proceed to next question

Do you have to stop for breath when walking at your own pace on the level? _____ Yes _____ No _____ (54)

If 'No', grade is 3. If 'Yes', proceed to next question

Are you short of breath on washing or dressing? _____ Yes _____ No _____ (55)

If 'No', grade is 4. If 'Yes', grade is 5.

Dyspnea Grd. _____ (56)

ON MONDAYS:

Are you ever troubled by shortness of breath, when hurrying on the level or walking up a slight hill? _____ Yes _____ No _____ (57)

If 'No', grade is 1. If 'Yes', proceed to next question

Do you get short of breath walking with other people at an ordinary pace on the level? _____ Yes _____ No _____ (58)

If 'No', grade is 2. If 'Yes', proceed to next question

Do you have to stop for breath when walking at your own pace on the level? _____ Yes _____ No _____ (59)

If 'No', grade is 3. If 'Yes', proceed to next question

Are you short of breath on washing or dressing? _____ Yes _____ No _____ (60)

If 'No', grade is 4. If 'Yes', grade is 5

B. Grd. _____ (61)

G. OTHER ILLNESSES AND ALLERGY HISTORY

Do you have a heart condition for which you are under a doctor's care? _____ Yes _____ No _____ (62)

Have you ever had asthma? _____ Yes _____ No _____ (63)

If 'Yes', did it begin (1) ☐ Before age 30(2) ☐ After age 30

If 'Yes' before 30, did you have asthma before ever going to work in a textile mill? _____ Yes _____ No _____ (64)

Have you ever had hay fever or other allergies (other than above)? _____ Yes _____ No _____ (65)

H. TOBACCO SMOKING*

Do you smoke?

Record 'Yes' if regular smoker up to one month ago. (Cigarettes, cigar or pipe) _____ Yes _____ No _____ (66)

If 'No' to (63)

Have you ever smoked? (Cigarettes, cigars, pipe. Record 'No' if subject has never smoked as much as one cigarette a day, or 1 oz. of tobacco a month, for as long as one year.) _____ Yes _____ No _____ (67)

If 'Yes' to (63) or (64), what have you smoked and for how many years? (Write in specific number of years in the appropriate square)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	
Years	(<5)	(5-9)	(10-14)	(15-19)	(20-24)	(25-29)	(30-34)	(35-39)	(>40)	
Cigarettes										(68)
Pipe										(69)
Cigars										(70)

If cigarettes, how many packs per day? (Write in number of cigarettes)

- (1) ☐ less than 1/2 pack (71)
 (2) ☐ 1/2 pack, but less than 1 pack
 (3) ☐ 1 pack, but less than 1 1/2 packs
 (4) ☐ 1-1/2 packs or more

Number of pack years: _____ (72, 73)

If an ex smoker (cigarettes, cigar or pipe), how long since you stopped? _____ (74)
(Write in number of years)

- (1) ☐ 0-1 year
 (2) ☐ 1-4 years
 (3) ☐ 5-9 years
 (4) ☐ 10+ years

*Have you changed your smoking habits since last interview? If yes, specify what changes.

I. OCCUPATIONAL HISTORY**

Have you ever worked in: A foundry? (As long as one year) _____ Yes _____ No _____ (75)

Stone or mineral mining, quarrying or processing? (As long as one year) _____ Yes _____ No _____ (76)

Asbestos milling or processing? (Ever) _____ Yes _____ No _____ (77)

Other dusts, fumes or smoke? If yes, specify. _____ Yes _____ No _____ (78)

Type of exposure _____

Length of exposure _____

**Ask only on first interview.

At what age did you first go to work in a textile mill? (Write in specific age in appropriate square)

(1)	(2)	(3)	(4)	(5)	(6)
<20	20-24	25-29	30-34	35-39	40+

When you first worked in a textile mill, did you work with (1) ☐ Cotton or cotton blend (79)(2) ☐ Synthetic or wool (80)

APPENDIX B-II
Respiratory Questionnaire for Nontextile Workers for the Cotton Industry

Identification No.
Interviewer Code

Location
Date of Interview

A. IDENTIFICATION

1. NAME (Last) (First) (Middle Initial)		3. PHONE NUMBER AREA CODE () NO.	4. SOCIAL SECURITY # (optional see below) <div style="border: 1px solid black; height: 15px; width: 100%; margin-top: 5px;"></div>
2. CURRENT ADDRESS (Number, Street, or Rural Route, City or Town, County, State, Zip Code)		5. BIRTHDATE (Mo., Day, Yr.)	6. AGE LAST BIRTHDAY
		7. SEX 1 <input type="checkbox"/> Male 2 <input type="checkbox"/> Female	
		8. ETHNIC GROUP OR ANCESTRY 1. <input type="checkbox"/> White, not of Hispanic Origin 2. <input type="checkbox"/> Black, not of Hispanic Origin 3. <input type="checkbox"/> Hispanic 4. <input type="checkbox"/> American Indian or Alaskan Native 5. <input type="checkbox"/> Asian or Pacific Islander 6. <input type="checkbox"/> Other: _____	
9. STANDING HEIGHT _____ (cm)	10. WEIGHT _____	11. WORK SHIFT 1st <input type="checkbox"/> 2nd <input type="checkbox"/> 3rd <input type="checkbox"/>	
12. PRESENT WORK AREA Please indicate primary assigned work area and percent of time spent at that site. If at other locations, please indicate and note percent of time for each.			
PRIMARY WORK AREA			
SPECIFIC JOB			
13. APPROPRIATE INDUSTRY 1 <input type="checkbox"/> Garnetting 3 <input type="checkbox"/> Cotton Warehouse 5 <input type="checkbox"/> Cotton Classification 2 <input type="checkbox"/> Cottonseed Oil Mill 4 <input type="checkbox"/> Utilization 6 <input type="checkbox"/> Cotton Ginning			

(Furnishing your Social Security number is voluntary. Your refusal to provide this number will not affect any right, benefit, or privilege to which you would be entitled if you did provide your Social Security number. Your Social Security number is being requested since it will permit use in future determinations in statistical research studies.)

Complete the following table showing the entire work history of the individual from present to initial employment. Sporadic, part-time periods of employment, each of no significant duration, should be grouped if possible.

[illegible]

C. SYMPTOMS

Use actual wording of each question. Put X in appropriate square after each question. When in doubt record "No".

COUGH

1. Do you usually cough first thing in the morning?
(on getting up)* 1 ☐ Yes 2 ☐ No
(Count a cough with first smoke or on
"first going out of doors". Exclude
clearing throat or a single cough.)

2. Do you usually cough during the day or at night? 1 ☐ Yes 2 ☐ No
(Ignore an occasional cough.)

If YES to either question 1 or 2:

3. Do you cough like this on most days for as much as
three months a year? 1 ☐ Yes 2 ☐ No 9 ☐ NA
4. Do you cough on any particular day of the week? 1 ☐ Yes 2 ☐ No

If YES:

5. Which day? Mon. Tue. Wed. Thur. Fri. Sat. Sun. _____

PHLEGM

6. Do you usually bring up any phlegm from your
chest first thing in the morning? (on getting
up)* 1 ☐ Yes 2 ☐ No
(Count phlegm with the first smoke or on
"first going out of doors." Exclude phlegm
from the nose. Count swallowed phlegm.)

7. Do you usually bring up any phlegm from your
chest during the day or at night? 1 ☐ Yes 2 ☐ No
(Accept twice or more.)

If YES to either question 6 or 7:

8. Do you bring up phlegm like this on most days
for as much as three months each year? 1 ☐ Yes 2 ☐ No

If YES to question 3 or 8:

9. How long have you had this phlegm? (cough)
(Write in number of years) (1) ☐ 2 years or less
(2) ☐ More than 2 years - 9 years
(3) ☐ 10-19 years
(4) ☐ 20+ years

*These words are for subjects who work at night

CHEST ILLNESS

10. In the past three years, have you had a period of (increased) cough and phlegm lasting for 3 weeks or more?

(1) ☐ No
 (2) ☐ Yes, only one period
 (3) ☐ Yes, two or more periods

For subjects who usually have phlegm:

11. During the past 3 years have you had any chest illness which has kept you off work, indoors at home or in bed? (For as long as one week, flu?)

1 ☐ Yes 2 ☐ No

If YES to 11:

12. Did you bring up (more) phlegm than usual in any of these illnesses?

1 ☐ Yes 2 ☐ No

If YES to 12: During the past three years have you had:

13. Only one such illness with increased phlegm?

1 ☐ Yes 2 ☐ No

14. More than one such illness:

1 ☐ Yes 2 ☐ No

Br. Brade _____

TIGHTNESS

15. Does your chest ever feel tight or your breathing become difficult?

1 ☐ Yes 2 ☐ No

16. Is your chest tight or your breathing difficult on any particular day of the week? (after a week or 10 days away from the mill)

1 ☐ Yes 2 ☐ No

17. If YES, Which day? Mon. (1) Sometimes (3) Tues. (2) Always (4) Wed. (5) Thur. (6) Fri. (7) Sat. (8) Sun.

18. If YES Monday: At what time on Monday does your chest feel tight or your breathing difficult?

☐ Before entering mill

☐ After entering mill

(ASK ONLY IF NO TO QUESTION 15)

19. In the past, has your chest ever been tight or your breathing difficult on any particular day of the week?

1 ☐ Yes 2 ☐ No

20. If YES, Which day? Mon. (1) Sometimes (3) Tues. (2) Always (4) Wed. (5) Thur. (6) Fri. (7) Sat. (8) Sun.

BREATHLESSNESS

21. If disabled from walking by any condition other than heart or lung disease put "X" in the space and leave questions (22-30) unasked. ☐

22. Are you ever troubled by shortness of breath, when hurrying on the level or walking up a slight hill?

1 ☐ Yes 2 ☐ No

If NO, grade is 1. If YES, proceed to next question

23. Do you get short of breath walking with other people at an ordinary pace on the level?

1 ☐ Yes 2 ☐ No

If NO, grade is 2. If YES, proceed to next question

24. Do you have to stop for breath when walking at your own pace on the level?

1 ☐ Yes 2 ☐ No

If NO, grade is 3. If YES, proceed to next question

25. Are you short of breath on washing or dressing?

1 ☐ Yes 2 ☐ No

If NO, grade is 4. If YES, grade is 5.

26.

Dyspnea Grd. _____

ON MONDAYS:

27. Are you ever troubled by shortness of breath, when hurrying on the level or walking up a slight hill?

1 ☐ Yes 2 ☐ No

If NO, grade is 1. If YES, proceed to next question

28. Do you get short of breath walking with other people at an ordinary pace on the level?

1 ☐ Yes 2 ☐ No

If NO, grade is 2. If YES, proceed to next question

29. Do you have to stop for breath when walking at your own pace on the level?

1 ☐ Yes 2 ☐ No

If NO, grade is 3. If YES, proceed to next question

30. Are you short of breath on washing or dressing?

1 ☐ Yes 2 ☐ No

If NO, grade is 4. If YES, grade is 5

31.

B. Grd. _____

OTHER ILLNESSES AND ALLERGY HISTORY

32. Do you have a heart condition for which you are under a doctor's care?

1 ☐ Yes 2 ☐ No

OTHER ILLNESSES AND ALLERGY HISTORY CONTINUED:

33. Have you ever had asthma? 1 ☐ Yes 2 ☐ No

If yes, did it begin: (1) Before age 30 ☐

(2) After age 30 ☐

34. If yes before 30: did you have asthma before ever going to work in a textile mill? 1 ☐ Yes 2 ☐ No

35. Have you ever had hay fever or other allergies (other than above)? 1 ☐ Yes 2 ☐ No

TOBACCO SMOKING

36. Do you smoke? 1 ☐ Yes 2 ☐ No
Record Yes if regular smoker up to one month ago. (Cigarettes, cigar or pipe)

If NO to (33).

37. Have you ever smoked? (Cigarettes, cigars, pipe. Record NO if subject has never smoked as much as one cigarette a day, or 1 oz. of tobacco a month, for as long as one year.) 1 ☐ Yes 2 ☐ No

If Yes to (33) or (34); what have you smoked for how many years? (Write in specific number of years in the appropriate square)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Years	(<5)	(5-9)	(10-14)	(15-19)	(20-24)	(25-29)	(30-34)	(35-39)	(>40)
38. Cigarettes									
39. Pipe									
40. Cigars									

41. If cigarettes, how many packs per day? Write in number of cigarettes _____
☐ Less than 1/2 pack
☐ 1/2 pack, but less than 1 pack
☐ 1 pack, but less than 1 1/2 packs
☐ 1-1/2 packs or more

42. Number of pack years: _____

43. If an ex-smoker (cigarettes, cigar or pipe), how long since you stopped? (Write in number of years.) _____
☐ 0-1 year
☐ 1-4 years
☐ 5-9 years
☐ 10+ years

OCCUPATIONAL HISTORY

Have you ever worked in:

44. A foundry? (As long as one year) 1 ☐ Yes 2 ☐ No
45. Stone or mineral mining, quarrying or processing? (As long as one year) 1 ☐ Yes 2 ☐ No
46. Asbestos milling or processing? (Ever) 1 ☐ Yes 2 ☐ No
47. Cotton or cotton blend mill? (For controls only) 1 ☐ Yes 2 ☐ No
48. Other dusts, fumes or smoke? If yes, specify. 1 ☐ Yes 2 ☐ No

Type of exposure _____

Length of exposure _____

APPENDIX B-III
Abbreviated Respiratory Questionnaire

A. IDENTIFICATION DATA

PLANT _____ SOCIAL SECURITY NO. _____
DAY MONTH YEAR
(figures) (last 2 digits)

NAME _____ DATE OF INTERVIEW _____
(Surname)

_____ DATE OF BIRTH _____
(First Names) M F

ADDRESS _____ AGE _____ (8,9) SEX _____ (10)

_____ RACE ☐ W ☐ N ☐ IND. ☐ OTHER (11)

INTERVIEWER: 1 2 3 4 5 6 7 8 (12)

WORK SHIFT: 1st _____ 2nd _____ 3rd _____ (13) STANDING HEIGHT _____ (14,15)

PRESENT WORK AREA _____ WEIGHT _____ (16,18)

If working in more than one specified work area, X area where most of the work shift is spent. If "other," but spending 25% of the work shift in one of the specified work areas, classify in that work area. If carding department employee, check area within that department where most of the work shift is spent (if in doubt, check "throughout"). For work areas such as spinning and weaving where many work rooms may be involved, be sure to check the specific work room to which the employee is assigned — if he works in more than one work room within a department classify as 7 (all) for _____ department.

	Workroom Number	(19) Open	(20) Pick	Area	(21) Card #1	(22) #2	(23) Spin	(24) Wind	(25) Twist	(26) Spool	(27) Warp	(28) Slesh	(29) Weave	(30)
AT RISK (cotton & cotton blend)	1			Cards										
	2			Draw										
	3			Comb										
	4			Rove										
	5			Thru Out										
	6													
	7 (all)													
Control (synthe- tic & wool)	8													
Ex-Work- er (cotton)	9													

Use actual wording of each question. Put X in appropriate square after each question. When in doubt record No. When no square, circle appropriate answer.

B. COUGH

(on getting up)†

Do you usually cough first thing in the morning? _____ Yes _____ No _____ (31)

(Count a cough with first smoke or on "first going out of doors."
Exclude clearing throat or a single cough.)

Do you usually cough during the day or at night? _____ Yes _____ No _____ (32)

(Ignore an occasional cough.)

If 'Yes' to either question (31-32):

Do you cough like this on most days for as much as three months each year? _____ Yes _____ No _____ (33)

Do you cough on any particular day of the week? _____ Yes _____ No _____ (34)

(1) (2) (3) (4) (5) (6) (7)

If 'Yes': Which day? Mon. Tues. Wed. Thurs. Fri. Sat. Sun. _____ (35)

C. PHLEGM or alternative word to suit local custom.

(on getting up)†

Do you usually bring up any phlegm from your chest first thing in the morning? (Count phlegm with the first smoke or on "first going out of doors." Exclude phlegm from the nose. Count swallowed phlegm.) _____ Yes _____ No _____ (36)

Do you usually bring up any phlegm from your chest during the day or at night? (Accept twice or more.) _____ Yes _____ No _____ (37)

If 'Yes' to either question (36) or (37):

Do you bring up phlegm like this on most days for as much as three months each year? _____ Yes _____ No _____ (38)

If 'Yes' to question (33) or (38):

How long have you had this (cough)
phlegm? (Write in number of years)

- (1) ☐ 2 years or less
 (2) ☐ More than 2 years-9 years
 (3) ☐ 10-19 years
 (4) ☐ 20+ years

†These words are for subjects who work at night

D. TIGHTNESS

Does your chest ever feel tight or your breathing become difficult? _____ Yes _____ No _____ (39)

Is your chest tight or your breathing difficult on any particular day of the week? (after a week or 10 days away from the mill) _____ Yes _____ No _____ (40)

If 'Yes': Which day? Mon. (1) Tues. (2) Wed. (3) Thurs. (4) Fri. (5) Sat. (6) Sun. (7) (8) (41)
 Sometimes Always

If 'Yes' Monday: At what time on Monday does your chest feel tight or your breathing difficult? 1 ☐ Before entering the mill (42)
 2 ☐ After entering the mill

(Ask only if NO to Question (45))

In the past, has your chest ever been tight or your breathing difficult on any particular day of the week? _____ Yes _____ No _____ (43)

If 'Yes': Which day? Mon. (1) Tues. (2) Wed. (3) Thurs. (4) Fri. (5) Sat. (6) Sun. (7) (8) (44)
 Sometimes Always

E. TOBACCO SMOKING

*Have you changed your smoking habits since last interview? If yes specify what changes.

[Statutory Authority: Chapter 49.17 RCW. 87-24-051 (Order 87-24), § 296-62-14537, filed 11/30/87.]

WAC 296-62-14539 Appendix C—Spirometry prediction tables for normal males and females.

APPENDIX C--Spirometry Prediction Tables for Normal Males and Females

TABLE 1. PREDICTED FVC FOR MALES (KNUDSON, ET AL., AM. REV. RESPIR. DIS. 1976, 113, 587.)

AGE	17	19	21	23	25	27	29	31	33	35	37	39	41	43	45	47	49	51	53	55	57	59	61	63	65
HT	17	19	21	23	25	27	29	31	33	35	37	39	41	43	45	47	49	51	53	55	57	59	61	63	65
60.0	3.44	3.59	3.75	3.91	3.72	3.66	3.61	3.55	3.49	3.43	3.37	3.32	3.26	3.20	3.14	3.08	3.03	2.97	2.91	2.85	2.79	2.74	2.68	2.62	2.56
60.5	3.50	3.66	3.81	3.97	3.80	3.75	3.69	3.63	3.57	3.51	3.46	3.40	3.34	3.28	3.22	3.17	3.11	3.05	2.99	2.93	2.88	2.82	2.76	2.70	2.64
61.0	3.56	3.72	3.88	4.03	3.89	3.83	3.77	3.71	3.66	3.60	3.54	3.48	3.42	3.37	3.31	3.25	3.19	3.13	3.08	3.02	2.96	2.90	2.84	2.79	2.73
61.5	3.63	3.78	3.94	4.10	3.97	3.91	3.85	3.80	3.74	3.68	3.62	3.56	3.51	3.45	3.39	3.33	3.27	3.22	3.16	3.10	3.04	2.98	2.93	2.87	2.81
62.0	3.69	3.85	4.00	4.16	4.05	3.99	3.94	3.88	3.82	3.76	3.70	3.65	3.59	3.53	3.47	3.41	3.36	3.30	3.24	3.18	3.12	3.07	3.01	2.95	2.89
62.5	3.76	3.91	4.07	4.22	4.13	4.08	4.02	3.96	3.90	3.84	3.79	3.73	3.67	3.61	3.55	3.50	3.44	3.38	3.32	3.26	3.21	3.15	3.09	3.03	2.97
63.0	3.82	3.97	4.13	4.29	4.22	4.16	4.10	4.04	3.99	3.93	3.87	3.81	3.75	3.70	3.64	3.58	3.52	3.46	3.41	3.35	3.29	3.23	3.17	3.12	3.06
63.5	3.88	4.04	4.19	4.35	4.30	4.24	4.18	4.13	4.07	4.01	3.95	3.89	3.84	3.78	3.72	3.66	3.60	3.55	3.49	3.43	3.37	3.31	3.26	3.20	3.14
64.0	3.95	4.10	4.26	4.41	4.38	4.32	4.27	4.21	4.15	4.09	4.03	3.98	3.92	3.86	3.80	3.74	3.69	3.63	3.57	3.51	3.45	3.40	3.34	3.28	3.22
64.5	4.01	4.17	4.32	4.48	4.46	4.41	4.35	4.29	4.23	4.17	4.12	4.06	4.00	3.94	3.88	3.83	3.77	3.71	3.65	3.59	3.54	3.48	3.42	3.36	3.30
65.0	4.07	4.23	4.39	4.54	4.55	4.49	4.43	4.37	4.32	4.26	4.20	4.14	4.08	4.03	3.97	3.91	3.85	3.79	3.74	3.68	3.62	3.56	3.50	3.45	3.39
65.5	4.14	4.29	4.45	4.60	4.63	4.57	4.51	4.46	4.40	4.34	4.28	4.22	4.17	4.11	4.05	3.99	3.93	3.88	3.82	3.76	3.70	3.64	3.59	3.53	3.47
66.0	4.20	4.36	4.51	4.67	4.71	4.65	4.60	4.54	4.48	4.42	4.36	4.31	4.25	4.19	4.13	4.07	4.02	3.96	3.90	3.84	3.78	3.73	3.67	3.61	3.55
66.5	4.26	4.42	4.58	4.73	4.80	4.74	4.68	4.62	4.56	4.51	4.45	4.39	4.33	4.27	4.22	4.16	4.10	4.04	3.98	3.93	3.87	3.81	3.75	3.69	3.64
67.0	4.33	4.48	4.64	4.80	4.88	4.82	4.76	4.70	4.65	4.59	4.53	4.47	4.41	4.36	4.30	4.24	4.18	4.12	4.07	4.01	3.95	3.89	3.83	3.78	3.72
67.5	4.39	4.55	4.70	4.86	4.96	4.90	4.84	4.79	4.73	4.67	4.61	4.55	4.50	4.44	4.38	4.32	4.26	4.21	4.15	4.09	4.03	3.97	3.92	3.86	3.80
68.0	4.45	4.61	4.77	4.92	5.04	4.98	4.93	4.87	4.81	4.75	4.69	4.64	4.58	4.52	4.46	4.40	4.35	4.29	4.23	4.17	4.11	4.06	4.00	3.94	3.88
68.5	4.52	4.67	4.83	4.99	5.13	5.07	5.01	4.95	4.89	4.84	4.78	4.72	4.66	4.60	4.55	4.49	4.43	4.37	4.31	4.26	4.20	4.14	4.08	4.02	3.97
69.0	4.58	4.74	4.89	5.05	5.21	5.15	5.09	5.03	4.98	4.92	4.86	4.80	4.74	4.69	4.63	4.57	4.51	4.45	4.40	4.34	4.28	4.22	4.16	4.11	4.05
69.5	4.64	4.80	4.96	5.11	5.29	5.23	5.17	5.12	5.06	5.00	4.94	4.88	4.83	4.77	4.71	4.65	4.59	4.54	4.48	4.42	4.36	4.30	4.25	4.19	4.13
70.0	4.71	4.86	5.02	5.18	5.37	5.32	5.26	5.20	5.14	5.08	5.02	4.97	4.91	4.85	4.79	4.74	4.68	4.62	4.56	4.50	4.44	4.39	4.33	4.27	4.21
70.5	4.77	4.93	5.08	5.24	5.46	5.40	5.34	5.28	5.22	5.17	5.11	5.05	4.99	4.93	4.88	4.82	4.76	4.70	4.64	4.59	4.53	4.47	4.41	4.35	4.30
71.0	4.83	4.99	5.15	5.30	5.54	5.48	5.42	5.36	5.31	5.25	5.19	5.13	5.07	5.02	4.96	4.90	4.84	4.78	4.73	4.67	4.61	4.55	4.49	4.44	4.38
71.5	4.90	5.05	5.21	5.37	5.62	5.56	5.50	5.45	5.39	5.33	5.27	5.21	5.16	5.10	5.04	4.98	4.92	4.87	4.81	4.75	4.69	4.63	4.58	4.52	4.46
72.0	4.96	5.12	5.27	5.43	5.70	5.65	5.59	5.53	5.47	5.41	5.36	5.30	5.24	5.18	5.12	5.07	5.01	4.95	4.89	4.83	4.78	4.72	4.66	4.60	4.54
72.5	5.03	5.18	5.34	5.49	5.79	5.73	5.67	5.61	5.55	5.50	5.44	5.38	5.32	5.26	5.21	5.15	5.09	5.03	4.97	4.92	4.86	4.80	4.74	4.68	4.63
73.0	5.09	5.24	5.40	5.56	5.87	5.81	5.75	5.69	5.64	5.58	5.52	5.46	5.40	5.35	5.29	5.23	5.17	5.11	5.06	5.00	4.94	4.88	4.82	4.77	4.71
73.5	5.15	5.31	5.46	5.62	5.95	5.89	5.83	5.78	5.72	5.66	5.60	5.54	5.49	5.43	5.37	5.31	5.25	5.20	5.14	5.08	5.02	4.96	4.91	4.85	4.79
74.0	5.22	5.37	5.53	5.68	6.03	5.98	5.92	5.86	5.80	5.74	5.69	5.63	5.57	5.51	5.45	5.40	5.34	5.28	5.22	5.16	5.11	5.05	4.99	4.93	4.87
74.5	5.28	5.44	5.59	5.75	6.12	6.06	6.00	5.94	5.88	5.83	5.77	5.71	5.65	5.59	5.54	5.48	5.42	5.36	5.30	5.25	5.19	5.13	5.07	5.01	4.96
75.0	5.34	5.50	5.65	5.81	6.20	6.14	6.08	6.02	5.97	5.91	5.85	5.79	5.73	5.68	5.62	5.56	5.50	5.44	5.39	5.33	5.27	5.21	5.15	5.10	5.04
75.5	5.41	5.56	5.72	5.87	6.28	6.22	6.17	6.11	6.05	5.99	5.93	5.88	5.82	5.76	5.70	5.64	5.59	5.53	5.47	5.41	5.35	5.30	5.24	5.18	5.12
76.0	5.47	5.63	5.78	5.94	6.36	6.31	6.25	6.19	6.13	6.07	6.02	5.96	5.90	5.84	5.78	5.73	5.67	5.61	5.55	5.49	5.44	5.38	5.32	5.26	5.20
76.5	5.53	5.69	5.85	6.00	6.45	6.39	6.33	6.27	6.21	6.16	6.10	6.04	5.98	5.92	5.87	5.81	5.75	5.69	5.63	5.58	5.52	5.46	5.40	5.34	5.29
77.0	5.60	5.75	5.91	6.06	6.53	6.47	6.41	6.35	6.30	6.24	6.18	6.12	6.06	6.01	5.95	5.89	5.83	5.77	5.72	5.66	5.60	5.54	5.48	5.43	5.37
77.5	5.66	5.82	5.97	6.13	6.61	6.55	6.50	6.44	6.38	6.32	6.26	6.21	6.15	6.09	6.03	5.97	5.92	5.86	5.80	5.74	5.68	5.63	5.57	5.51	5.45
78.0	5.72	5.88	6.04	6.19	6.69	6.64	6.58	6.52	6.46	6.40	6.35	6.29	6.23	6.17	6.11	6.06	6.00	5.94	5.88	5.82	5.77	5.71	5.65	5.59	5.53
78.5	5.79	5.94	6.10	6.26	6.78	6.72	6.66	6.60	6.54	6.49	6.43	6.37	6.31	6.25	6.20	6.14	6.08	6.02	5.96	5.91	5.85	5.79	5.73	5.67	5.62
79.0	5.85	6.01	6.16	6.32	6.86	6.80	6.74	6.68	6.63	6.57	6.51	6.45	6.39	6.34	6.28	6.22	6.16	6.10	6.05	5.99	5.93	5.87	5.81	5.76	5.70
79.5	5.91	6.07	6.23	6.38	6.94	6.88	6.83	6.77	6.71	6.65	6.59	6.54	6.48	6.42	6.36	6.30	6.25	6.19	6.14	6.07	6.01	5.96	5.90	5.84	5.78
80.0	5.98	6.13	6.29	6.45	7.02	6.97	6.91	6.85	6.79	6.73	6.68	6.62	6.56	6.50	6.44	6.39	6.33	6.27	6.21	6.15	6.10	6.04	5.98	5.92	5.86
80.5	6.04	6.20	6.35	6.51	7.11	7.05	6.99	6.93	6.87	6.82	6.76	6.70	6.64	6.58	6.53	6.47	6.41	6.35	6.29	6.24	6.18	6.12	6.06	6.00	5.95
81.0	6.10	6.26	6.42	6.57	7.19	7.13	7.07	7.02	6.96	6.90	6.84	6.78	6.73	6.67	6.61	6.55	6.49	6.44	6.38	6.32	6.26	6.20	6.15	6.09	6.03
81.5	6.17	6.32	6.48	6.64	7.27	7.21	7.16	7.10	7.04	6.98	6.92	6.87	6.81	6.75	6.69	6.63	6.58	6.52	6.46	6.40	6.34	6.29	6.23	6.17	6.11
82.0	6.23	6.39	6.54	6.70	7.35	7.30	7.24	7.18	7.12	7.06	7.01	6.95	6.89	6.83	6.77	6.72	6.66	6.60	6.54	6.48	6.43	6.37	6.31	6.25	6.19
82.5	6.30	6.45	6.61	6.76	7.44	7.38	7.32	7.26	7.20	7.15	7.09	7.03	6.97	6.91	6.86	6.80	6.74	6.68	6.62	6.57	6.51	6.45	6.39	6.33	6.28
83.0	6.36	6.51	6.67	6.83	7.52	7.46	7.40	7.35	7.29	7.23	7.17	7.11	7.06	7.00	6.94	6.88	6.82	6.77	6.71	6.65	6.59	6.53	6.48	6.42	6.36
83.5	6.42	6.58	6.73	6.89	7.60	7.54	7.49	7.43	7.37	7.31	7.25	7.20	7.14	7.08	7.02	6.96	6.91	6.85	6.79	6.73	6.67	6.62	6.56	6.50	6.44
84.0	6.49	6.64	6.80	6.95	7.68	7.63	7.57	7.51	7.45	7.39	7.34	7.28	7.22	7.16	7.10	7.05	6.99	6.93	6.87	6.81	6.76	6.70	6.64	6.58	6.52

TABLE 2. PREDICTED FEV₁ FOR MALES (KNUDSON, ET AL: AM. REV. RESPIR. DIS. 1976, 113, 587.)

AGE	17	19	21	23	25	27	29	31	33	35	37	39	41	43	45	47	49	51	53	55	57	59	61	63	65
60.0	2.97	3.06	3.15	3.24	3.05	2.99	2.94	2.88	2.83	2.78	2.72	2.67	2.61	2.56	2.51	2.45	2.40	2.34	2.29	2.24	2.18	2.13	2.07	2.02	1.97
60.5	3.03	3.12	3.21	3.30	3.11	3.06	3.00	2.95	2.90	2.84	2.79	2.73	2.68	2.63	2.57	2.52	2.46	2.41	2.36	2.30	2.25	2.19	2.14	2.09	2.03
61.0	3.08	3.17	3.26	3.35	3.18	3.12	3.07	3.02	2.96	2.91	2.85	2.80	2.75	2.69	2.64	2.58	2.53	2.48	2.42	2.37	2.31	2.26	2.21	2.15	2.10
61.5	3.14	3.23	3.32	3.41	3.24	3.19	3.14	3.08	3.03	2.97	2.92	2.87	2.81	2.76	2.70	2.65	2.60	2.54	2.49	2.43	2.38	2.33	2.27	2.22	2.16
62.0	3.20	3.29	3.38	3.47	3.31	3.26	3.20	3.15	3.09	3.04	2.99	2.93	2.88	2.82	2.77	2.72	2.66	2.61	2.55	2.50	2.45	2.39	2.34	2.28	2.23
62.5	3.26	3.35	3.44	3.53	3.38	3.32	3.27	3.22	3.16	3.11	3.05	3.00	2.95	2.89	2.84	2.78	2.73	2.68	2.62	2.57	2.51	2.46	2.41	2.35	2.30
63.0	3.32	3.41	3.50	3.59	3.44	3.39	3.34	3.28	3.23	3.17	3.12	3.07	3.01	2.96	2.90	2.85	2.80	2.74	2.69	2.63	2.58	2.53	2.47	2.42	2.36
63.5	3.38	3.47	3.56	3.65	3.51	3.46	3.40	3.35	3.29	3.24	3.19	3.13	3.08	3.02	2.97	2.92	2.86	2.81	2.75	2.70	2.65	2.59	2.54	2.48	2.43
64.0	3.43	3.52	3.61	3.70	3.58	3.52	3.47	3.41	3.36	3.31	3.25	3.20	3.14	3.09	3.04	2.98	2.93	2.87	2.82	2.77	2.71	2.66	2.60	2.55	2.50
64.5	3.49	3.58	3.67	3.76	3.64	3.59	3.53	3.48	3.43	3.37	3.32	3.26	3.21	3.16	3.10	3.05	2.99	2.94	2.89	2.83	2.78	2.72	2.67	2.62	2.56
65.0	3.55	3.64	3.73	3.82	3.71	3.65	3.60	3.55	3.49	3.44	3.38	3.33	3.28	3.22	3.17	3.11	3.06	3.01	2.95	2.90	2.84	2.79	2.74	2.68	2.63
65.5	3.61	3.70	3.79	3.88	3.77	3.72	3.67	3.61	3.56	3.50	3.45	3.40	3.34	3.29	3.23	3.18	3.13	3.07	3.02	2.96	2.91	2.86	2.80	2.75	2.69
66.0	3.67	3.76	3.85	3.94	3.84	3.79	3.73	3.68	3.62	3.57	3.52	3.46	3.41	3.35	3.30	3.25	3.19	3.14	3.08	3.03	2.98	2.92	2.87	2.81	2.76
66.5	3.73	3.82	3.91	4.00	3.91	3.85	3.80	3.74	3.69	3.64	3.58	3.53	3.47	3.42	3.37	3.31	3.26	3.20	3.15	3.10	3.04	2.99	2.93	2.88	2.83
67.0	3.79	3.88	3.97	4.06	3.97	3.92	3.86	3.81	3.76	3.70	3.65	3.59	3.54	3.49	3.43	3.38	3.32	3.27	3.22	3.16	3.11	3.05	3.00	2.95	2.89
67.5	3.84	3.93	4.02	4.11	4.04	3.98	3.93	3.88	3.82	3.77	3.71	3.66	3.61	3.55	3.50	3.44	3.39	3.34	3.28	3.23	3.17	3.12	3.07	3.01	2.96
68.0	3.90	3.99	4.08	4.17	4.10	4.05	4.00	3.94	3.89	3.83	3.78	3.73	3.67	3.62	3.56	3.51	3.46	3.40	3.35	3.29	3.24	3.19	3.13	3.08	3.02
68.5	3.96	4.05	4.14	4.23	4.17	4.12	4.06	4.01	3.95	3.90	3.85	3.79	3.74	3.68	3.63	3.58	3.52	3.47	3.41	3.36	3.31	3.25	3.20	3.14	3.09
69.0	4.02	4.11	4.20	4.29	4.24	4.18	4.13	4.07	4.02	3.97	3.91	3.86	3.80	3.75	3.70	3.64	3.59	3.53	3.48	3.43	3.37	3.32	3.26	3.21	3.16
69.5	4.08	4.17	4.26	4.35	4.30	4.25	4.19	4.14	4.09	4.03	3.98	3.92	3.87	3.82	3.76	3.71	3.65	3.60	3.55	3.49	3.44	3.38	3.33	3.28	3.22
70.0	4.14	4.23	4.32	4.41	4.37	4.31	4.26	4.21	4.15	4.10	4.04	3.99	3.94	3.88	3.83	3.77	3.72	3.67	3.61	3.56	3.50	3.45	3.40	3.34	3.29
70.5	4.19	4.28	4.37	4.46	4.43	4.38	4.33	4.27	4.22	4.16	4.11	4.06	4.00	3.95	3.89	3.84	3.79	3.73	3.68	3.62	3.57	3.52	3.46	3.41	3.35
71.0	4.25	4.34	4.43	4.52	4.50	4.45	4.39	4.34	4.28	4.23	4.18	4.12	4.07	4.01	3.96	3.91	3.85	3.80	3.74	3.69	3.64	3.58	3.53	3.47	3.42
71.5	4.31	4.40	4.49	4.58	4.57	4.51	4.46	4.40	4.35	4.30	4.24	4.19	4.13	4.08	4.03	3.97	3.92	3.86	3.81	3.76	3.70	3.65	3.59	3.54	3.49
72.0	4.37	4.46	4.55	4.64	4.63	4.58	4.52	4.47	4.42	4.36	4.31	4.25	4.20	4.15	4.09	4.04	3.98	3.93	3.88	3.82	3.77	3.71	3.66	3.61	3.55
72.5	4.43	4.52	4.61	4.70	4.70	4.64	4.59	4.54	4.48	4.43	4.37	4.32	4.27	4.21	4.16	4.10	4.05	4.00	3.94	3.89	3.83	3.78	3.73	3.67	3.62
73.0	4.49	4.58	4.67	4.76	4.76	4.71	4.66	4.60	4.55	4.49	4.44	4.39	4.33	4.28	4.22	4.17	4.12	4.06	4.01	3.95	3.90	3.85	3.79	3.74	3.68
73.5	4.54	4.63	4.72	4.81	4.83	4.78	4.72	4.67	4.61	4.56	4.51	4.45	4.40	4.34	4.29	4.24	4.18	4.13	4.07	4.02	3.97	3.91	3.86	3.80	3.75
74.0	4.60	4.69	4.78	4.87	4.90	4.84	4.79	4.73	4.68	4.63	4.57	4.52	4.46	4.41	4.36	4.30	4.25	4.19	4.14	4.09	4.03	3.98	3.92	3.87	3.82
74.5	4.66	4.75	4.84	4.93	4.96	4.91	4.85	4.80	4.75	4.69	4.64	4.58	4.53	4.48	4.42	4.37	4.31	4.26	4.21	4.15	4.10	4.04	3.99	3.94	3.88
75.0	4.72	4.81	4.90	4.99	5.03	4.97	4.92	4.87	4.81	4.76	4.70	4.65	4.60	4.54	4.49	4.43	4.38	4.33	4.27	4.22	4.16	4.11	4.06	4.00	3.95
75.5	4.78	4.87	4.96	5.05	5.09	5.04	4.99	4.93	4.88	4.82	4.77	4.72	4.66	4.61	4.55	4.50	4.45	4.39	4.34	4.28	4.23	4.18	4.12	4.07	4.01
76.0	4.84	4.93	5.02	5.11	5.16	5.11	5.05	5.00	4.94	4.89	4.84	4.78	4.73	4.67	4.62	4.57	4.51	4.46	4.40	4.35	4.30	4.24	4.19	4.13	4.08
76.5	4.90	4.99	5.08	5.17	5.23	5.17	5.12	5.06	5.01	4.96	4.90	4.85	4.79	4.74	4.69	4.63	4.58	4.52	4.47	4.42	4.36	4.31	4.25	4.20	4.15
77.0	4.95	5.04	5.13	5.22	5.29	5.24	5.18	5.13	5.08	5.02	4.97	4.91	4.86	4.81	4.75	4.70	4.64	4.59	4.54	4.48	4.43	4.37	4.32	4.27	4.21
77.5	5.01	5.10	5.19	5.28	5.36	5.30	5.25	5.20	5.14	5.09	5.03	4.98	4.93	4.87	4.82	4.76	4.71	4.66	4.60	4.55	4.49	4.44	4.39	4.33	4.28
78.0	5.07	5.16	5.25	5.34	5.42	5.37	5.32	5.26	5.21	5.15	5.10	5.05	4.99	4.94	4.88	4.83	4.78	4.72	4.67	4.61	4.56	4.51	4.45	4.40	4.34
78.5	5.13	5.22	5.31	5.40	5.49	5.44	5.38	5.33	5.27	5.22	5.17	5.11	5.06	5.00	4.95	4.90	4.84	4.79	4.73	4.68	4.63	4.57	4.52	4.46	4.41
79.0	5.19	5.28	5.37	5.46	5.56	5.50	5.45	5.39	5.34	5.29	5.23	5.18	5.12	5.07	5.02	4.96	4.91	4.85	4.80	4.75	4.69	4.64	4.58	4.53	4.48
79.5	5.25	5.34	5.43	5.52	5.62	5.57	5.51	5.46	5.41	5.35	5.30	5.24	5.19	5.14	5.08	5.03	4.97	4.92	4.87	4.81	4.76	4.70	4.65	4.60	4.54
80.0	5.30	5.39	5.48	5.57	5.69	5.63	5.58	5.53	5.47	5.42	5.36	5.31	5.26	5.20	5.15	5.09	5.04	4.99	4.93	4.88	4.82	4.77	4.72	4.66	4.61
80.5	5.36	5.45	5.54	5.63	5.75	5.70	5.65	5.59	5.54	5.48	5.43	5.38	5.32	5.27	5.21	5.16	5.11	5.05	5.00	4.94	4.89	4.84	4.78	4.73	4.67
81.0	5.42	5.51	5.60	5.69	5.82	5.77	5.71	5.66	5.60	5.55	5.50	5.44	5.39	5.33	5.28	5.23	5.17	5.12	5.06	5.01	4.96	4.90	4.85	4.79	4.74
81.5	5.48	5.57	5.66	5.75	5.89	5.83	5.78	5.72	5.67	5.62	5.56	5.51	5.45	5.40	5.35	5.29	5.24	5.18	5.13	5.08	5.02	4.97	4.91	4.86	4.81
82.0	5.54	5.63	5.72	5.81	5.95	5.90	5.84	5.79	5.74	5.68	5.63	5.57	5.52	5.47	5.41	5.36	5.30	5.25	5.20	5.14	5.09	5.03	4.98	4.93	4.87
82.5	5.60	5.69	5.78	5.87	6.02	5.96	5.91	5.86	5.80	5.75	5.69	5.64	5.59	5.53	5.48	5.42	5.37	5.32	5.26	5.21	5.15	5.10	5.05	4.99	4.94
83.0	5.65	5.74	5.83	5.92	6.08	6.03	5.98	5.92	5.87	5.81	5.76	5.71	5.65	5.60	5.54	5.49	5.44	5.38	5.33	5.27	5.22	5.17	5.11	5.06	5.00
83.5	5.71	5.80	5.90	5.98	6.15	6.10	6.04	5.99	5.93	5.88	5.83	5.77	5.72	5.66	5.61	5.56	5.50	5.45	5.39	5.34	5.29	5.23	5.18	5.12	5.07
84.0	5.77	5.86	5.95	6.04	6.22	6.16	6.11	6.05	6.00	5.95	5.89	5.84	5.78	5.73	5.68	5.62	5.57	5.51	5.46	5.41	5.35	5.30	5.24	5.19	5.14
84.5	5.83	5.92	6.01	6.10	6.28	6.23	6.17	6.12	6.07	6.01	5.96	5.90	5.85	5.80	5.74	5.69	5.63	5.58	5.53	5.47	5.42	5.36	5.31	5.26	5.20
85.0	5.89	5.98	6.07	6.16	6.36																				

TABLE 3. PREDICTED FVC FOR FEMALES (KNUDSON, ET AL.: AM. REV. RESPIR. DIS. 1976, 113, 587.)

AGE	17	19	21	23	25	27	29	31	33	35	37	39	41	43	45	47	49	51	53	55	57	59	61	63	65
52.0	2.45	2.64	2.65	2.61	2.56	2.52	2.47	2.43	2.39	2.34	2.30	2.25	2.21	2.17	2.12	2.08	2.03	1.99	1.95	1.90	1.86	1.81	1.77	1.73	1.68
52.5	2.50	2.68	2.70	2.65	2.61	2.57	2.52	2.48	2.43	2.39	2.35	2.30	2.26	2.21	2.17	2.13	2.08	2.04	1.99	1.95	1.91	1.86	1.82	1.77	1.73
53.0	2.54	2.72	2.74	2.70	2.66	2.61	2.57	2.52	2.48	2.44	2.39	2.35	2.30	2.26	2.22	2.17	2.13	2.08	2.04	2.00	1.95	1.91	1.86	1.82	1.78
53.5	2.58	2.76	2.79	2.75	2.70	2.66	2.62	2.57	2.53	2.48	2.44	2.40	2.35	2.31	2.26	2.22	2.18	2.13	2.09	2.04	2.00	1.96	1.91	1.87	1.82
54.0	2.62	2.81	2.84	2.79	2.75	2.71	2.66	2.62	2.57	2.53	2.49	2.44	2.40	2.35	2.31	2.27	2.22	2.18	2.13	2.09	2.05	2.00	1.96	1.91	1.87
54.5	2.66	2.85	2.89	2.84	2.80	2.75	2.71	2.67	2.62	2.58	2.53	2.49	2.45	2.40	2.36	2.31	2.27	2.23	2.18	2.14	2.09	2.05	2.01	1.96	1.92
55.0	2.71	2.89	2.93	2.89	2.84	2.80	2.76	2.71	2.67	2.62	2.58	2.54	2.49	2.45	2.40	2.36	2.32	2.27	2.23	2.18	2.14	2.10	2.05	2.01	1.96
55.5	2.75	2.93	2.98	2.94	2.89	2.85	2.80	2.76	2.72	2.67	2.63	2.58	2.54	2.50	2.45	2.41	2.36	2.32	2.28	2.23	2.19	2.14	2.10	2.06	2.01
56.0	2.79	2.97	3.03	2.98	2.94	2.89	2.85	2.81	2.76	2.72	2.67	2.63	2.59	2.54	2.50	2.45	2.41	2.37	2.32	2.28	2.23	2.19	2.15	2.10	2.06
56.5	2.83	3.01	3.07	3.03	2.99	2.94	2.90	2.85	2.81	2.77	2.72	2.68	2.63	2.59	2.55	2.50	2.46	2.41	2.37	2.33	2.28	2.24	2.19	2.15	2.11
57.0	2.87	3.06	3.12	3.08	3.03	2.99	2.94	2.90	2.86	2.81	2.77	2.72	2.68	2.64	2.59	2.55	2.50	2.46	2.42	2.37	2.33	2.28	2.24	2.20	2.16
57.5	2.91	3.10	3.17	3.12	3.08	3.04	2.99	2.95	2.90	2.86	2.82	2.77	2.73	2.68	2.64	2.60	2.55	2.51	2.46	2.42	2.38	2.33	2.29	2.24	2.20
58.0	2.96	3.14	3.21	3.17	3.13	3.08	3.04	2.99	2.95	2.91	2.86	2.82	2.77	2.73	2.69	2.64	2.60	2.55	2.51	2.47	2.42	2.38	2.33	2.29	2.25
58.5	3.00	3.18	3.26	3.22	3.17	3.13	3.09	3.04	3.00	2.95	2.91	2.87	2.82	2.78	2.73	2.69	2.65	2.60	2.56	2.51	2.47	2.43	2.38	2.34	2.29
59.0	3.04	3.22	3.31	3.26	3.22	3.18	3.13	3.09	3.04	3.00	2.96	2.91	2.87	2.82	2.78	2.74	2.69	2.65	2.60	2.56	2.52	2.47	2.43	2.38	2.34
59.5	3.08	3.27	3.36	3.31	3.27	3.22	3.18	3.14	3.09	3.05	3.00	2.96	2.92	2.87	2.83	2.78	2.74	2.70	2.65	2.61	2.56	2.52	2.48	2.43	2.39
60.0	3.12	3.31	3.40	3.36	3.31	3.27	3.23	3.18	3.14	3.09	3.05	3.01	2.96	2.92	2.87	2.83	2.79	2.74	2.70	2.65	2.61	2.57	2.52	2.48	2.43
60.5	3.17	3.35	3.45	3.41	3.36	3.32	3.27	3.23	3.19	3.14	3.10	3.05	3.01	2.97	2.92	2.88	2.83	2.79	2.75	2.70	2.66	2.61	2.57	2.53	2.48
61.0	3.21	3.39	3.50	3.45	3.41	3.36	3.32	3.28	3.23	3.19	3.14	3.10	3.06	3.01	2.97	2.92	2.88	2.84	2.79	2.75	2.70	2.66	2.62	2.57	2.53
61.5	3.25	3.43	3.54	3.50	3.46	3.41	3.37	3.32	3.28	3.24	3.19	3.15	3.10	3.06	3.02	2.97	2.93	2.88	2.84	2.80	2.75	2.71	2.66	2.62	2.58
62.0	3.29	3.48	3.59	3.55	3.50	3.46	3.41	3.37	3.33	3.28	3.24	3.19	3.15	3.11	3.06	3.02	2.97	2.93	2.89	2.84	2.80	2.75	2.71	2.67	2.62
62.5	3.33	3.52	3.64	3.59	3.55	3.51	3.46	3.42	3.37	3.33	3.29	3.24	3.20	3.15	3.11	3.07	3.02	2.98	2.93	2.89	2.85	2.80	2.76	2.71	2.67
63.0	3.38	3.56	3.68	3.64	3.60	3.55	3.51	3.46	3.42	3.38	3.33	3.29	3.24	3.20	3.16	3.11	3.07	3.02	2.98	2.94	2.89	2.85	2.80	2.76	2.72
63.5	3.42	3.60	3.73	3.69	3.64	3.60	3.56	3.51	3.47	3.42	3.38	3.34	3.29	3.25	3.20	3.16	3.12	3.07	3.03	2.98	2.94	2.90	2.85	2.81	2.76
64.0	3.46	3.64	3.78	3.73	3.69	3.65	3.60	3.56	3.51	3.47	3.43	3.38	3.34	3.29	3.25	3.21	3.16	3.12	3.07	3.03	2.99	2.94	2.90	2.85	2.81
64.5	3.50	3.69	3.83	3.78	3.74	3.69	3.65	3.61	3.56	3.52	3.47	3.43	3.39	3.34	3.30	3.25	3.21	3.17	3.12	3.08	3.03	2.99	2.95	2.90	2.86
65.0	3.54	3.73	3.87	3.83	3.78	3.74	3.70	3.65	3.61	3.56	3.52	3.48	3.43	3.39	3.34	3.30	3.26	3.21	3.17	3.12	3.08	3.04	2.99	2.95	2.90
65.5	3.59	3.77	3.92	3.88	3.83	3.79	3.74	3.70	3.66	3.61	3.57	3.52	3.48	3.44	3.39	3.35	3.30	3.26	3.22	3.17	3.13	3.08	3.04	3.00	2.95
66.0	3.63	3.81	3.97	3.92	3.88	3.83	3.79	3.75	3.70	3.66	3.61	3.57	3.53	3.48	3.44	3.39	3.35	3.31	3.26	3.22	3.17	3.13	3.09	3.04	3.00
66.5	3.67	3.85	4.01	3.97	3.93	3.88	3.84	3.79	3.75	3.71	3.66	3.62	3.57	3.53	3.49	3.44	3.40	3.35	3.31	3.27	3.22	3.18	3.13	3.09	3.05
67.0	3.71	3.89	4.06	4.02	3.97	3.93	3.88	3.84	3.80	3.75	3.71	3.66	3.62	3.58	3.53	3.49	3.44	3.40	3.36	3.31	3.27	3.22	3.18	3.14	3.09
67.5	3.75	3.94	4.11	4.06	4.02	3.98	3.93	3.89	3.84	3.80	3.76	3.71	3.67	3.62	3.58	3.54	3.49	3.45	3.40	3.36	3.32	3.27	3.23	3.18	3.14
68.0	3.79	3.98	4.15	4.11	4.07	4.02	3.98	3.93	3.89	3.85	3.80	3.76	3.71	3.67	3.63	3.58	3.54	3.49	3.45	3.40	3.36	3.32	3.27	3.23	3.19
68.5	3.84	4.02	4.20	4.16	4.11	4.07	4.03	3.98	3.94	3.89	3.85	3.81	3.76	3.72	3.67	3.63	3.59	3.54	3.50	3.45	3.41	3.37	3.32	3.28	3.23
69.0	3.88	4.06	4.25	4.20	4.16	4.12	4.07	4.03	3.98	3.94	3.90	3.85	3.81	3.76	3.72	3.68	3.63	3.59	3.54	3.50	3.46	3.41	3.37	3.32	3.28
69.5	3.92	4.10	4.30	4.25	4.21	4.16	4.12	4.08	4.03	3.99	3.94	3.90	3.86	3.81	3.77	3.72	3.68	3.64	3.59	3.55	3.50	3.46	3.42	3.37	3.33
70.0	3.96	4.15	4.34	4.30	4.25	4.21	4.17	4.12	4.08	4.03	3.99	3.95	3.90	3.86	3.81	3.77	3.73	3.68	3.64	3.59	3.55	3.51	3.46	3.42	3.37
70.5	4.00	4.19	4.39	4.35	4.30	4.26	4.21	4.17	4.13	4.08	4.04	3.99	3.95	3.91	3.86	3.82	3.77	3.73	3.69	3.64	3.60	3.55	3.51	3.47	3.42
71.0	4.05	4.23	4.44	4.39	4.35	4.30	4.26	4.22	4.17	4.13	4.08	4.04	4.00	3.95	3.91	3.86	3.82	3.78	3.73	3.69	3.64	3.60	3.56	3.51	3.47
71.5	4.09	4.27	4.48	4.44	4.40	4.35	4.31	4.26	4.22	4.18	4.13	4.09	4.04	4.00	3.96	3.91	3.87	3.82	3.78	3.74	3.69	3.65	3.60	3.56	3.52
72.0	4.13	4.31	4.53	4.49	4.44	4.40	4.35	4.31	4.27	4.22	4.18	4.13	4.09	4.05	4.00	3.96	3.91	3.87	3.83	3.78	3.74	3.69	3.65	3.61	3.56
72.5	4.17	4.36	4.58	4.53	4.49	4.45	4.40	4.36	4.31	4.27	4.23	4.18	4.14	4.09	4.05	4.01	3.96	3.92	3.88	3.83	3.79	3.74	3.70	3.66	3.62
73.0	4.21	4.40	4.62	4.58	4.54	4.49	4.45	4.40	4.36	4.32	4.27	4.23	4.18	4.14	4.10	4.05	4.01	3.96	3.92	3.88	3.84	3.79	3.75	3.70	3.66
73.5	4.26	4.44	4.67	4.63	4.59	4.54	4.50	4.45	4.41	4.36	4.32	4.28	4.23	4.19	4.14	4.10	4.05	4.01	3.97	3.92	3.88	3.84	3.79	3.75	3.70
74.0	4.30	4.48	4.72	4.67	4.63	4.59	4.54	4.50	4.45	4.41	4.37	4.32	4.28	4.23	4.19	4.15	4.10	4.06	4.01	3.97	3.93	3.88	3.84	3.79	3.75
74.5	4.34	4.52	4.77	4.72	4.68	4.63	4.59	4.55	4.50	4.46	4.41	4.37	4.33	4.28	4.24	4.19	4.15	4.11	4.06	4.02	3.97	3.93	3.89	3.84	3.80
75.0	4.38	4.57	4.81	4.77	4.72	4.68	4.64	4.59	4.55	4.50	4.46	4.42	4.37	4.33	4.28	4.24	4.20	4.15	4.11	4.06	4.02	3.98	3.93	3.89	3.84
75.5	4.42	4.61	4.86	4.82	4.77	4.73	4.68	4.64	4.60	4.55	4.51	4.46	4.42	4.38	4.33	4.29	4.24	4.20	4.16	4.11	4.07	4.02	3.98	3.94	3.89
76.0	4.47	4.65	4.91	4.86	4.82	4.77	4.73	4.69	4.64	4.60	4.55	4.51	4.47	4.42	4.38	4.33	4.29	4.25	4.20	4.16	4.11	4.07	4.03	3.98	3.94
76.5	4.51	4.69	4.95	4.91	4.87	4.82	4.78	4.73	4.69	4.65	4.60	4.56	4.51	4.47	4.43	4.38	4.34	4.29	4.25	4.21	4.16	4.12	4.07	4.03	3.99
77.0	4.55	4.73	5.00	4.96	4.91																				

TABLE 4. PREDICTED FEV₁ FOR FEMALES (KHUDSON, ET AL. AM REV RESPIR DIS. 1976. 113. 587.)

HT	AGE	17	19	21	23	25	27	29	31	33	35	37	39	41	43	45	47	49	51	53	55	57	59	61	63	65
52.0	2.31	2.40	2.33	2.29	2.25	2.21	2.16	2.12	2.00	2.04	2.00	1.95	1.91	1.87	1.83	1.79	1.74	1.70	1.66	1.62	1.58	1.53	1.49	1.45	1.41	
52.5	2.34	2.51	2.37	2.32	2.28	2.24	2.20	2.16	2.11	2.07	2.03	1.99	1.95	1.90	1.86	1.82	1.78	1.74	1.69	1.65	1.61	1.57	1.53	1.48	1.44	
53.0	2.38	2.55	2.40	2.36	2.32	2.27	2.23	2.19	2.15	2.11	2.06	2.02	1.98	1.94	1.90	1.85	1.81	1.77	1.73	1.69	1.64	1.60	1.56	1.52	1.40	
53.5	2.41	2.58	2.43	2.39	2.35	2.31	2.27	2.22	2.18	2.14	2.10	2.06	2.01	1.97	1.93	1.89	1.85	1.80	1.76	1.72	1.68	1.64	1.59	1.55	1.51	
54.0	2.45	2.62	2.47	2.43	2.38	2.34	2.30	2.26	2.22	2.17	2.13	2.09	2.05	2.01	1.96	1.92	1.88	1.84	1.80	1.75	1.71	1.67	1.63	1.59	1.54	
54.5	2.48	2.65	2.50	2.46	2.42	2.38	2.33	2.29	2.25	2.21	2.17	2.12	2.08	2.04	2.00	1.96	1.91	1.87	1.83	1.79	1.75	1.70	1.66	1.62	1.58	
55.0	2.51	2.68	2.54	2.49	2.45	2.41	2.37	2.33	2.28	2.24	2.20	2.16	2.12	2.07	2.03	1.99	1.95	1.91	1.86	1.82	1.78	1.74	1.70	1.65	1.61	
55.5	2.55	2.72	2.57	2.53	2.49	2.45	2.40	2.36	2.32	2.28	2.24	2.19	2.15	2.11	2.07	2.03	1.98	1.94	1.90	1.86	1.82	1.77	1.73	1.69	1.65	
56.0	2.58	2.75	2.61	2.56	2.52	2.48	2.44	2.40	2.35	2.31	2.27	2.23	2.19	2.14	2.10	2.06	2.02	1.98	1.93	1.89	1.85	1.81	1.77	1.72	1.68	
56.5	2.62	2.79	2.64	2.60	2.56	2.51	2.47	2.43	2.39	2.35	2.30	2.26	2.22	2.18	2.14	2.09	2.05	2.01	1.97	1.93	1.88	1.84	1.80	1.76	1.72	
57.0	2.65	2.82	2.67	2.63	2.59	2.55	2.51	2.46	2.42	2.38	2.34	2.30	2.25	2.21	2.17	2.13	2.09	2.04	2.00	1.96	1.92	1.88	1.83	1.79	1.75	
57.5	2.69	2.86	2.71	2.67	2.62	2.58	2.54	2.50	2.46	2.41	2.37	2.33	2.29	2.25	2.20	2.16	2.12	2.08	2.04	1.99	1.95	1.91	1.87	1.83	1.78	
58.0	2.72	2.89	2.74	2.70	2.66	2.62	2.57	2.53	2.49	2.45	2.41	2.36	2.32	2.28	2.24	2.20	2.15	2.11	2.07	2.03	1.99	1.94	1.90	1.86	1.82	
58.5	2.75	2.92	2.78	2.73	2.69	2.65	2.61	2.57	2.52	2.48	2.44	2.40	2.36	2.31	2.27	2.23	2.19	2.15	2.10	2.06	2.02	1.98	1.94	1.89	1.85	
59.0	2.79	2.96	2.81	2.77	2.73	2.69	2.64	2.60	2.56	2.52	2.48	2.43	2.39	2.35	2.31	2.27	2.22	2.18	2.14	2.10	2.06	2.01	1.97	1.93	1.89	
59.5	2.82	2.99	2.85	2.80	2.76	2.72	2.68	2.64	2.59	2.55	2.51	2.47	2.43	2.38	2.34	2.30	2.26	2.22	2.17	2.13	2.09	2.05	2.01	1.96	1.92	
60.0	2.86	3.03	2.88	2.84	2.80	2.75	2.71	2.67	2.63	2.59	2.54	2.50	2.46	2.42	2.38	2.33	2.29	2.25	2.21	2.17	2.12	2.08	2.04	2.00	1.96	
60.5	2.89	3.06	2.91	2.87	2.83	2.79	2.75	2.70	2.66	2.62	2.58	2.54	2.49	2.45	2.41	2.37	2.33	2.28	2.24	2.20	2.16	2.12	2.07	2.03	1.99	
61.0	2.93	3.10	2.95	2.91	2.86	2.82	2.78	2.74	2.70	2.65	2.61	2.57	2.53	2.49	2.44	2.40	2.36	2.32	2.28	2.23	2.19	2.15	2.11	2.07	2.02	
61.5	2.96	3.13	2.98	2.94	2.90	2.86	2.81	2.77	2.73	2.69	2.65	2.60	2.56	2.52	2.48	2.44	2.39	2.35	2.31	2.27	2.23	2.18	2.14	2.10	2.06	
62.0	2.99	3.16	3.02	2.97	2.93	2.89	2.85	2.81	2.76	2.72	2.68	2.64	2.60	2.55	2.51	2.47	2.43	2.39	2.34	2.30	2.26	2.22	2.18	2.13	2.09	
62.5	3.03	3.20	3.05	3.01	2.97	2.93	2.88	2.84	2.80	2.76	2.72	2.67	2.63	2.59	2.55	2.51	2.46	2.42	2.38	2.34	2.30	2.25	2.21	2.17	2.13	
63.0	3.06	3.23	3.09	3.04	3.00	2.96	2.92	2.88	2.83	2.79	2.75	2.71	2.67	2.62	2.58	2.54	2.50	2.46	2.41	2.37	2.33	2.29	2.25	2.20	2.16	
63.5	3.10	3.27	3.12	3.08	3.04	2.99	2.95	2.91	2.87	2.83	2.78	2.74	2.70	2.66	2.62	2.57	2.53	2.49	2.45	2.41	2.36	2.32	2.28	2.24	2.20	
64.0	3.13	3.30	3.15	3.11	3.07	3.03	2.99	2.94	2.90	2.86	2.82	2.78	2.73	2.69	2.65	2.61	2.57	2.52	2.48	2.44	2.40	2.36	2.31	2.27	2.23	
64.5	3.17	3.34	3.19	3.15	3.10	3.06	3.02	2.98	2.94	2.89	2.85	2.81	2.77	2.73	2.68	2.64	2.60	2.56	2.52	2.47	2.43	2.39	2.35	2.31	2.26	
65.0	3.20	3.37	3.22	3.18	3.14	3.10	3.05	3.01	2.97	2.93	2.89	2.84	2.80	2.76	2.72	2.68	2.63	2.59	2.55	2.51	2.47	2.42	2.38	2.34	2.30	
65.5	3.23	3.40	3.26	3.21	3.17	3.13	3.09	3.05	3.00	2.96	2.92	2.88	2.84	2.79	2.75	2.71	2.67	2.63	2.58	2.54	2.50	2.46	2.42	2.37	2.33	
66.0	3.27	3.44	3.29	3.25	3.21	3.17	3.12	3.08	3.04	3.00	2.96	2.91	2.87	2.83	2.79	2.75	2.70	2.66	2.62	2.58	2.54	2.49	2.45	2.41	2.37	
66.5	3.30	3.47	3.33	3.28	3.24	3.20	3.16	3.12	3.07	3.03	2.99	2.95	2.91	2.86	2.82	2.78	2.74	2.70	2.65	2.61	2.57	2.53	2.49	2.44	2.40	
67.0	3.34	3.51	3.36	3.32	3.28	3.23	3.19	3.15	3.11	3.07	3.02	2.98	2.94	2.90	2.86	2.81	2.77	2.73	2.69	2.65	2.60	2.56	2.52	2.48	2.44	
67.5	3.37	3.54	3.39	3.35	3.31	3.27	3.23	3.18	3.14	3.10	3.06	3.02	2.97	2.93	2.89	2.85	2.81	2.76	2.72	2.68	2.64	2.60	2.55	2.51	2.47	
68.0	3.41	3.58	3.43	3.39	3.34	3.30	3.26	3.22	3.18	3.13	3.09	3.05	3.01	2.96	2.92	2.88	2.84	2.80	2.76	2.71	2.67	2.63	2.59	2.55	2.50	
68.5	3.44	3.61	3.46	3.42	3.38	3.34	3.29	3.25	3.21	3.17	3.13	3.08	3.04	3.00	2.96	2.92	2.87	2.83	2.79	2.75	2.71	2.66	2.62	2.58	2.54	
69.0	3.47	3.64	3.50	3.46	3.41	3.37	3.33	3.29	3.25	3.20	3.16	3.12	3.08	3.04	2.99	2.95	2.91	2.87	2.83	2.78	2.74	2.70	2.66	2.62	2.57	
69.5	3.51	3.68	3.53	3.49	3.45	3.41	3.36	3.32	3.28	3.24	3.20	3.15	3.11	3.07	3.03	2.99	2.94	2.90	2.86	2.82	2.78	2.73	2.69	2.65	2.61	
70.0	3.54	3.71	3.57	3.52	3.48	3.44	3.40	3.36	3.31	3.27	3.23	3.19	3.15	3.10	3.06	3.02	2.98	2.94	2.89	2.85	2.81	2.77	2.73	2.68	2.64	
70.5	3.58	3.75	3.60	3.56	3.52	3.47	3.43	3.39	3.35	3.31	3.26	3.22	3.18	3.14	3.10	3.05	3.01	2.97	2.93	2.89	2.84	2.80	2.76	2.72	2.68	
71.0	3.61	3.78	3.63	3.59	3.55	3.51	3.47	3.42	3.38	3.34	3.30	3.26	3.21	3.17	3.13	3.09	3.05	3.00	2.96	2.92	2.88	2.84	2.79	2.75	2.71	
71.5	3.65	3.82	3.67	3.63	3.58	3.54	3.50	3.46	3.42	3.37	3.33	3.29	3.25	3.21	3.16	3.12	3.08	3.04	3.00	2.95	2.91	2.87	2.83	2.79	2.74	
72.0	3.68	3.85	3.70	3.66	3.62	3.58	3.53	3.49	3.45	3.41	3.37	3.32	3.28	3.24	3.20	3.16	3.11	3.07	3.03	2.99	2.95	2.90	2.86	2.82	2.78	
72.5	3.71	3.88	3.74	3.70	3.65	3.61	3.57	3.53	3.49	3.44	3.40	3.36	3.32	3.28	3.23	3.19	3.15	3.11	3.07	3.02	2.98	2.94	2.90	2.86	2.81	
73.0	3.75	3.92	3.77	3.73	3.69	3.65	3.60	3.56	3.52	3.48	3.44	3.39	3.35	3.31	3.27	3.23	3.18	3.14	3.10	3.06	3.02	2.97	2.93	2.89	2.85	
73.5	3.78	3.95	3.81	3.76	3.72	3.68	3.64	3.60	3.55	3.51	3.47	3.43	3.39	3.34	3.30	3.26	3.22	3.18	3.13	3.09	3.05	3.01	2.97	2.92	2.88	
74.0	3.82	3.99	3.84	3.80	3.76	3.71	3.67	3.63	3.59	3.55	3.50	3.46	3.42	3.38	3.34	3.29	3.25	3.21	3.17	3.13	3.08	3.04	3.00	2.96	2.92	
74.5	3.85	4.02	3.87	3.83	3.79	3.75	3.71	3.66	3.62	3.58	3.54	3.50	3.45	3.41	3.37	3.33	3.29	3.24	3.20	3.16	3.12	3.08	3.03	2.99	2.95	
75.0	3.89	4.06	3.91	3.87	3.82	3.78	3.74	3.70	3.66	3.61	3.57	3.53	3.49	3.45	3.40	3.36	3.32	3.28	3.24	3.19	3.15	3.11	3.07	3.03	2.98	
75.5	3.92	4.09	3.94	3.90	3.86	3.82	3.77	3.73	3.69	3.65	3.61	3.56	3.52	3.48	3.44	3.40	3.35	3.31	3.27	3.23	3.19	3.14	3.10	3.06	3.02	
76.0	3.95	4.12	3.98	3.94	3.89	3.85	3.81	3.77	3.73	3.69	3.64	3.60	3.56	3.52	3.47	3.43	3.39	3.35	3.31	3.26	3.22	3.18	3.14	3.10	3.05	
76.5	3.99	4.16	4.01	3.97	3.93	3.89	3.84	3.80	3.76	3.72	3.68	3.63	3.59	3.55	3.51	3.47	3.42	3.38	3.34	3.30	3.26	3.21	3.17	3.13	3.09	
77.0	4.02	4.19	4.05	4.00	3.96	3.92	3.88																			

That is, they should be accurately measured to within ± 50 ml or within ± 3 percent of reading, whichever is greater.

(j) The instrument must be capable of being calibrated in the field with respect to the FEV_1 and FVC. This calibration of the FEV_1 and FVC may be either directly or indirectly through volume and time base measurements. The volume calibration source should provide a volume displacement of at least 2 liters and should be accurate to within ± 30 milliliters.

(2) Technique for measurement of forced vital capacity maneuver.

(a) Use of a nose clip is recommended but not required. The procedures shall be explained in simple terms to the patient who shall be instructed to loosen any tight clothing and stand in front of the apparatus. The subject may sit, but care should be taken on repeat testing that same position be used and, if possible, the same spirometer. Particular attention shall be given to insure that the chin is slightly elevated with the neck slightly extended. The patient shall be instructed to make a full inspiration from a normal breathing pattern and then blow into the apparatus, without interruption, as hard, fast, and completely as possible. At least three forced expirations shall be carried out. During the maneuvers, the patient shall be observed for compliance with instructions. The expirations shall be checked visually for reproducibility from flow-volume or volume-time tracings or displays. The following efforts shall be judged unacceptable when the patient:

- (i) Has not reached full inspiration preceding the forced expiration,
- (ii) Has not used maximal effort during the entire forced expiration,
- (iii) Has not continued the expiration for at least 5 seconds or until an obvious plateau in the volume time curve has occurred,
- (iv) Has coughed or closed his glottis,
- (v) Has an obstructed mouthpiece or a leak around the mouthpiece (obstruction due to tongue being placed in front of mouthpiece, false teeth falling in front of mouthpiece, etc.),
- (vi) Has an unsatisfactory start of expiration, one characterized by excessive hesitation (or false starts), and therefore not allowing back extrapolation of time 0 (extrapolated volume on the volume time tracing must be less than 10 percent of the FVC),
- (vii) Has an excessive variability between the three acceptable curves. The variation between the two largest FVC's and FEV_1 's of the three satisfactory tracings should not exceed 10 percent or ± 100 milliliters, whichever is greater.

(b) Periodic and routine recalibration of the instrument or method for recording FVC and $FEV_{1.0}$ should be performed using a syringe or other volume source of at least 2 liters.

(3) Interpretation of spirogram.

(a) The first step in evaluating a spirogram should be to determine whether or not the patient has performed the test properly or as described in subsection (2) of this section. From the three satisfactory tracings, the forced vital capacity (FVC) and forced expiratory volume in 1 second ($FEV_{1.0}$) shall be measured and recorded. The largest observed FVC

and largest observed $FEV_{1.0}$ shall be used in the analysis regardless of the curve(s) on which they occur.

(b) The following guidelines are recommended by NIOSH for the evaluation and management of workers exposed to cotton dust. It is important to note that employees who show reductions in FEV_1 /FVC ratio below .75 or drops in Monday FEV_1 of 5 percent or greater on their initial screening exam, should be reevaluated within a month of the first exam. Those who show consistent decrease in lung function, as shown on the following table, should be managed as recommended.

(4) Qualifications of personnel administering the test.

Technicians who perform pulmonary function testing should have the basic knowledge required to produce meaningful results. Training consisting of approximately 16 hours of formal instruction should cover the following areas.

(a) Basic physiology of the forced vital capacity maneuver and the determinants of airflow limitation with emphasis on the relation to reproducibility of results.

(b) Instrumentation requirements including calibration procedures, sources of error and their correction.

(c) Performance of the testing including subject coaching, recognition of improperly performed maneuvers and corrective actions.

(d) Data quality with emphasis on reproducibility.

(e) Actual use of the equipment under supervised conditions.

(f) Measurement of tracings and calculations of results.

[Statutory Authority: Chapter 49.17 RCW. 88-14-108 (Order 88-11), § 296-62-14541, filed 7/6/88; 87-24-051 (Order 87-24), § 296-62-14541, filed 11/30/87.]

WAC 296-62-14543 Appendix E—Vertical elutriator equivalency protocol.

(a) Samples to be taken—In order to ascertain equivalency, it is necessary to collect a total of 100 samples from at least 10 sites in a mill. That is, there should be 10 replicate readings at each of 10 sites. The sites should represent dust levels which vary over the allowable range of 0.5 to 2 times the permissible exposure limit. Each sample requires the use of two vertical elutriators (VE's) and at least one but not more than two alternative devices (AD's). Thus, the end result is 200 VE readings and either 100 or 200 AD readings. The 2 VE readings and the 1 or 2 AD readings at each time and site must be made simultaneously. That is, the two VE's and one or two AD's must be arranged together in such a way that they are measuring essentially the same dust levels.

(b) Data averaging—The two VE readings taken at each site are then averaged. These averages are to be used as the 100 VE readings. If two alternate devices were used, their test results are also averaged. Thus, after this step is accomplished, there will be 100 VE readings and 100 AD readings.

(c) Differences—For each of the 100 sets of measurements (VE and AD) the difference is obtained as the average VE reading minus the AD reading. Call these differences D_i . Thus, we have.

$$D_i = VE_i - AD_i, i = 1, 2, \dots, 100 \quad (1)$$

Next we compute the arithmetic mean and standard deviations of the differences, using equations (2) and (3), respectively.

$$\bar{x}_D = \frac{1}{N} \sum_{i=1}^N D_i \quad (2)$$

$$S_D = \sqrt{\frac{\sum D_i^2 - \frac{(\sum D_i)^2}{N}}{N - 1}} \quad (3)$$

where N equals the number of differences (100 in this case), \bar{x}_D is the arithmetic mean and S_D is the standard deviation.

We next calculate the critical value as $T = KS_D + |\bar{x}_D|$ where $K = 1.87$, based on 100 samples.

(d) Equivalency test. The next step is to obtain the average of the 100 VE readings. This is obtained by equation (4)

$$\bar{x}_{VE} = \frac{1}{N} \left(\sum_{i=1}^N VE_i \right) \quad (4)$$

We next multiply 0.25 by \bar{x}_{VE} . If $T < 0.25 \bar{x}_{VE}$, we can say that the alternate device has passed the equivalency test.

[Statutory Authority: RCW 49.17.040 and 49.17.050. 86-16-009 (Order 86-28), § 296-62-14543, filed 7/25/86.]

PART O—COKE OVENS

WAC 296-62-200 Coke oven emissions. Scope and application. This section applies to the control of employee exposure to coke oven emissions.

[Order 77-14, § 296-62-200, filed 7/25/77.]

WAC 296-62-20001 Definitions. For the purpose of this section:

(1) "Authorized person." Any person specifically authorized by the employer whose duties require the person to enter a regulated area, or any person entering such an area as a designated representative of employees for the purpose of exercising the opportunity to observe monitoring and measuring procedures under WAC 296-62-20025.

(2) "Beehive oven." A coke oven in which the products of carbonization other than coke are not recovered, but are released into the ambient air.

(3) "Coke oven." A retort in which coke is produced by the destructive distillation or carbonization of coal.

(4) "Coke oven battery." A structure containing a number of slot-type coke ovens.

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(5) "Coke oven emissions." The benzenesoluble fraction of total particulate matter present during the destructive distillation or carbonization of coal for the production of coke.

(6) "Director." The director of the department of labor and industries or his or her authorized representative.

(7) "Emergency." Any occurrence such as, but not limited to, equipment failure which is likely to, or does, result in any massive release of coke oven emissions.

(8) "Existing coke oven battery." A battery in operation or under construction on January 20, 1977, and which is not rehabilitated.

(9) "Rehabilitated coke oven battery." A battery which is rebuilt, overhauled, renovated, or restored such as from the pad up, after January 20, 1977.

(10) "Stage charging." A procedure by which a predetermined volume of coal in each larry car hopper is introduced into an oven such that no more than two hoppers are discharging simultaneously.

(11) "Sequential charging." A procedure, usually automatically timed, by which a predetermined volume of coal in each larry car hopper is introduced into an oven such that no more than two hoppers commence or finish discharging simultaneously although, at some point, all hoppers are discharging simultaneously.

(12) "Pipeline charging." Any apparatus used to introduce coal into an oven which uses a pipe or duct permanently mounted onto an oven and through which coal is charged.

(13) "Green push." Coke which when removed from the oven results in emissions due to the presence of unvolatilized coal.

[Order 77-14, § 296-62-20001, filed 7/25/77.]

WAC 296-62-20003 Permissible exposure limit. The employer shall assure that no employee is exposed to coke oven emissions at concentrations greater than 150 micrograms per cubic meter of air (150 ug/m³), averaged over any 8-hour period.

[Order 77-14, § 296-62-20003, filed 7/25/77.]

WAC 296-62-20005 Regulated areas. (1) The employer shall establish regulated areas and shall limit access to them to authorized persons.

(2) The employer shall establish the following as regulated areas:

(a) The coke oven battery including topside and its machinery, pushside and its machinery, coke side and its machinery, and the battery ends; the wharf; and the screening station;

(b) The beehive oven and its machinery.

[Order 77-14, § 296-62-20005, filed 7/25/77.]

WAC 296-62-20007 Exposure monitoring and measurement. (1) Monitoring program.

(a) Each employer who has a place of employment where coke oven emissions are present shall monitor employees employed in the regulated area to measure their exposure to coke oven emissions.

(b) The employer shall obtain measurements which are representative of each employee's exposure to coke oven emissions over an eight-hour period. All measurements shall

[Title 296 WAC—p. 1627]

determine exposure without regard to the use of respiratory protection.

(c) The employer shall collect full-shift (for at least seven continuous hours) personal samples, including at least one sample during each shift for each battery and each job classification within the regulated areas including at least the following job classifications:

- (i) Lidman;
- (ii) Tar chaser;
- (iii) Larry car operator;
- (iv) Luteran;
- (v) Machine operator, coke side;
- (vi) Benchman, coke side;
- (vii) Benchman, pusher side;
- (viii) Heater;
- (ix) Quenching car operator;
- (x) Pusher machine operator;
- (xi) Screening station operator;
- (xii) Wharfman;
- (xiii) Oven patcher;
- (xiv) Oven repairman;
- (xv) Spellman; and
- (xvi) Maintenance personnel.

(d) The employer shall repeat the monitoring and measurements required by subsection (1) of this section at least every three months.

(2) Redetermination. Whenever there has been a production, process, or control change which may result in new or additional exposure to coke oven emissions, or whenever the employer has any other reason to suspect an increase in employee exposure, the employer shall repeat the monitoring and measurements required by subsection (1) of this section for those employees affected by such change or increase.

(3) Employee notification.

(a) The employer shall notify each employee in writing of the exposure measurements which represent that employee's exposure within five working days after the receipt of the results of measurements required by subsection (1) and (2) of this section.

(b) Whenever such results indicate that the representative employee exposure exceeds the permissible exposure limit, the employer shall, in such notification, inform each employee of that fact and of the corrective action being taken to reduce exposure to or below the permissible exposure limit.

(4) Accuracy of measurement. The employer shall use a method of monitoring and measurement which has an accuracy (with a confidence level of 95%) of not less than plus or minus 35% for concentrations of coke oven emissions greater than or equal to 150 Ug/m³.

[Order 77-14, § 296-62-20007, filed 7/25/77.]

WAC 296-62-20009 Methods of compliance. The employer shall control employee exposure to coke oven emissions by the use of engineer controls, work practices and respiratory protection as follows:

(1) Priority of compliance methods.

(a) Existing coke oven batteries.

(i) The employer shall institute the engineer and work practice controls listed in subsections (2), (3) and (4) of this

section in existing coke oven batteries at the earliest possible time, but not later than January 20, 1980, except to the extent that the employer can establish that such controls are not feasible. In determining the earliest possible time for institution of engineer and work practice controls, the requirement, effective August 27, 1971, to implement feasible administrative or engineer controls to reduce exposures to coal tar pitch volatiles, shall be considered. Wherever the engineer and work practice controls which can be instituted are not sufficient to reduce employee exposures to or below the permissible exposure limit, the employer shall nonetheless use them to reduce exposures to the lowest level achievable by these controls and shall supplement them by the use of respiratory protection which complies with the requirements of WAC 296-62-20011.

(ii) The engineer and work practice controls required under subsections (2), (3) and (4) of this section are minimum requirements generally applicable to all existing coke oven batteries. If, after implementing all controls required by subsections (2), (3) and (4) of this section, or after January 20, 1980, whichever is sooner, employee exposures still exceed the permissible exposure limit, employers shall implement any other engineer and work practice controls necessary to reduce exposure to or below the permissible exposure limit except to the extent that the employer can establish that such controls are not feasible. Whenever the engineer and work practice controls which can be instituted are not sufficient to reduce employee exposures to or below the permissible exposure limit, the employer shall nonetheless use them to reduce exposures to the lowest level achievable by these controls and shall supplement them by the use of respiratory protection which complies with the requirements of WAC 296-62-20011.

(b) New or rehabilitated coke oven batteries.

(i) The employer shall institute the best available engineer and work practice controls on all new or rehabilitated coke oven batteries to reduce and maintain employee exposures at or below the permissible exposure limit, except to the extent that the employer can establish that such controls are not feasible. Wherever the engineer and work practice controls which can be instituted are not sufficient to reduce employee exposures to or below the permissible exposure limit, the employer shall nonetheless use them to reduce exposures to the lowest level achievable by these controls and shall supplement them by the use of respiratory protection which complies with the requirements of WAC 296-62-20011.

(ii) If, after implementing all the engineer and work practice controls required by (b)(i) of this subsection, employee exposures still exceed the permissible exposure limit, the employer shall implement any other engineer and work practice controls necessary to reduce exposure to or below the permissible exposure limit except to the extent that the employer can establish that such controls are not feasible. Wherever the engineer and work practice controls which can be instituted are not sufficient to reduce employee exposures to or below the permissible exposure limit, the employer shall nonetheless use them to reduce exposures to the lowest level achievable by these controls and shall supplement them by the use of respiratory protection which complies with the requirements of WAC 296-62-20011.

(c) Beehive ovens.

(i) The employer shall institute engineer and work practice controls on all beehive ovens at the earliest possible time to reduce and maintain employee exposures at or below the permissible exposure limit, except to the extent that the employer can establish that such controls are not feasible. In determining the earliest possible time for institution of engineer and work practice controls, the requirement, effective August 27, 1971, to implement feasible administrative or engineer controls to reduce exposures to coal tar pitch volatiles, shall be considered. Wherever the engineer and work practice controls which can be instituted are not sufficient to reduce employee exposures to or below the permissible exposure limit, the employer shall nonetheless use them to reduce exposures to the lowest level achievable by these controls and shall supplement them by the use of respiratory protection which complies with the requirements of WAC 296-62-20011.

(ii) If, after implementing all engineer and work practice controls required by (c)(i) of this subsection, employee exposures still exceed the permissible exposure limit, the employer shall implement any other engineer and work practice controls necessary to reduce exposures to or below the permissible exposure limit except to the extent that the employer can establish that such controls are not feasible. Whenever the engineer and work practice controls which can be instituted are not sufficient to reduce employee exposures to or below the permissible exposure limit, the employer shall nonetheless use them to reduce exposures to the lowest level achievable by these controls and shall supplement them by the use of respiratory protection which complies with the requirements of WAC 296-62-20011.

(2) Engineer controls.

(a) Charging. The employer shall equip and operate existing coke oven batteries with all of the following engineer controls to control coke oven emissions during charging operations:

(i) One of the following methods of charging:

(A) Stage charging as described in subsection (3)(a)(ii) of this section; or

(B) Sequential charging as described in subsection (3)(a)(ii) of this section except that subsection (3)(a)(ii) and (3)(d) of this section does not apply to sequential charging; or

(C) Pipeline charging or other forms of enclosed charging in accordance with (a) of this subsection, except (a)(ii), (iv), (v), (vi) and (viii) of this subsection do not apply.

(ii) Drafting from two or more points in the oven being charged, through the use of double collector mains, or a fixed or moveable jumper pipe system to another oven, to effectively remove the gases from the oven to the collector mains;

(iii) Aspiration systems designed and operated to provide sufficient negative pressure and flow volume to effectively move the gases evolved during charging into the collector mains, including sufficient steam pressure, and steam jets of sufficient diameter;

(iv) Mechanical volumetric controls on each larry car hopper to provide the proper amount of coal to be charged through each charging hole so that the tunnel head will be sufficient to permit the gases to move from the oven into the collector mains;

(v) Devices to facilitate the rapid and continuous flow of coal into the oven being charged, such as stainless steel liners, coal vibrators or pneumatic shells;

(vi) Individually operated larry car drop sleeves and slide gates designed and maintained so that the gases are effectively removed from the oven into the collector mains;

(vii) Mechanized gooseneck and standpipe cleaners;

(viii) Air seals on the pusher machine leveler bars to control air infiltration during charging; and

(ix) Roof carbon cutters or a compressed air system or both on the pusher machine rams to remove roof carbon.

(b) Coking. The employer shall equip and operate existing coke oven batteries with all of the following engineer controls to control coke oven emissions during coking operations:

(i) A pressure control system on each battery to obtain uniform collector main pressure;

(ii) Ready access to door repair facilities capable of prompt and efficient repair of doors, door sealing edges and all door parts;

(iii) An adequate number of spare doors available for replacement purposes;

(iv) Chuck door gaskets to control chuck door emissions until such door is repaired, or replaced; and

(v) Heat shields on door machines.

(3) Work practice controls.

(a) Charging. The employer shall operate existing coke oven batteries with all of the following work practices to control coke oven emissions during the charging operation:

(i) Establishment and implementation of a detailed, written inspection and cleaning procedure for each battery consisting of at least the following elements:

(A) Prompt and effective repair or replacement of all engineer controls;

(B) Inspection and cleaning of goosenecks and standpipes prior to each charge to a specified minimum diameter sufficient to effectively move the evolved gases from the oven to the collector mains;

(C) Inspection for roof carbon build-up prior to each charge and removal of roof carbon as necessary to provide an adequate gas channel so that the gases are effectively moved from the oven into the collector mains;

(D) Inspection of the steam aspiration system prior to each charge so that sufficient pressure and volume is maintained to effectively move the gases from the oven to the collector mains;

(E) Inspection of steam nozzles and liquor sprays prior to each charge and cleaning as necessary so that the steam nozzles and liquor sprays are clean;

(F) Inspection of standpipe caps prior to each charge and cleaning and luting or both as necessary so that the gases are effectively moved from the oven to the collector mains; and

(G) Inspection of charging holes and lids for cracks, warpage and other defects prior to each charge and removal of carbon to prevent emissions, and application of luting material to standpipe and charging hole lids where necessary to obtain a proper seal.

(ii) Establishment and implementation of a detailed written charging procedure, designed and operated to eliminate emissions during charging for each battery, consisting of at least the following elements:

(A) Larry car hoppers filled with coal to a predetermined level in accordance with the mechanical volumetric controls required under subsection (2)(a)(iv) of this section so as to maintain a sufficient gas passage in the oven to be charged;

(B) The larry car aligned over the oven to be charged, so that the drop sleeves fit tightly over the charging holes; and

(C) The oven charged in accordance with the following sequence of requirements:

(I) The aspiration system turned on;

(II) Coal charged through the outermost hoppers, either individually or together, depending on the capacity of the aspiration system to collect the gases involved;

(III) The charging holes used under (a)(ii) and (b) of this subsection relidded or otherwise sealed off to prevent leakage of coke oven emissions;

(IV) If four hoppers are used, the third hopper discharged and relidded or otherwise sealed off to prevent leakage of coke oven emissions;

(V) The final hopper discharged until the gas channel at the top of the oven is blocked and then the chuck door opened and the coal leveled;

(VI) When the coal from the final hopper is discharged and the leveling operation complete, the charging hole relidded or otherwise sealed off to prevent leakage of coke oven emissions; and

(VII) The aspiration system turned off only after the charging holes have been closed.

(VIII) Establishment and implementation of a detailed written charging procedure, designed and operated to eliminate emissions during charging of each pipeline or enclosed charged battery.

(b) Coking. The employer shall operate existing coke oven batteries pursuant to a detailed written procedure established and implemented for the control of coke oven emissions during coking, consisting of at least the following elements:

(i) Checking oven back pressure controls to maintain uniform pressure conditions in the collecting main;

(ii) Repair, replacement and adjustment of oven doors and check doors and replacement of door jambs so as to provide a continuous metal-to-metal fit;

(iii) Cleaning of oven doors, chuck doors and door jambs each coking cycle so as to provide an effective seal;

(iv) An inspection system and corrective action program to control door emissions to the maximum extent possible; and

(v) Luting of doors that are sealed by luting each coking cycle and reluting, replacing or adjusting as necessary to control leakage.

(c) Pushing. The employer shall operate existing coke oven batteries with the following work practices to control coke oven emissions during pushing operations:

(i) Coke and coal spillage quenched as soon as practicable and not shoveled into a heated oven; and

(ii) A detailed written procedure for each battery established and implemented for the control of emissions during pushing consisting of the following elements:

(A) Dampering off the ovens and removal of charging hole lids to effectively control coke oven emissions during the push;

(B) Heating of the coal charge uniformly for a sufficient period so as to obtain proper coking including preventing green pushes;

(C) Prevention of green pushes to the maximum extent possible;

(D) Inspection, adjustment and correction of heating flue temperatures and defective flues at least weekly and after any green push, so as to prevent green pushes;

(E) Cleaning of heating flues and related equipment to prevent green pushes, at least weekly and after any green push.

(d) Maintenance and repair. The employer shall operate existing coke oven batteries pursuant to a detailed written procedure of maintenance and repair established and implemented for the effective control of coke oven emissions consisting of the following elements:

(i) Regular inspection of all controls, including goose-necks, standpipes, standpipe caps, charging hole lids and castings, jumper pipes and air seals for cracks, misalignment or other defects and prompt implementation of the necessary repairs as soon as possible;

(ii) Maintaining the regulated area in a neat, orderly condition free of coal and coke spillage and debris;

(iii) Regular inspection of the damper system, aspiration system and collector main for cracks or leakage, and prompt implementation of the necessary repairs;

(iv) Regular inspection of the heating system and prompt implementation of the necessary repairs;

(v) Prevention of miscellaneous fugitive topside emissions;

(vi) Regular inspection and patching of over brickwork;

(vii) Maintenance of battery equipment and controls in good working order;

(viii) Maintenance and repair of coke oven doors, chuck doors, door jambs and seals; and

(ix) Repairs instituted and completed as soon as possible, including temporary repair measures instituted and completed where necessary, including but not limited to:

(A) Prevention of miscellaneous fugitive topside emissions; and

(B) Chuck door gaskets, which shall be installed prior to the start of the next coking cycle.

(4) Filtered air.

(a) The employer shall provide positive-pressure, temperature controlled filtered air for larry car, pusher machine, door machine, and quench car cabs.

(b) The employer shall provide standby pulpits on the battery topside, at the wharf, and at the screening station, equipped with positive-pressure, temperature controlled filtered air.

(5) Emergencies. Whenever an emergency occurs, the next coking cycle may not begin until the cause of the emergency is determined and corrected, unless the employer can establish that it is necessary to initiate the next coking cycle in order to determine the cause of the emergency.

(6) Compliance program.

(a) Each employer shall establish and implement a written program to reduce exposures solely by means of the engineer and work practice controls specified in subsections (2) through (4) of this section.

(b) The written program shall include at least the following:

(i) A description of each coke oven operation by battery, including work force and operating crew, coking time, operating procedures and maintenance practices;

(ii) Engineer plans and other studies used to determine the controls for the coke battery;

(iii) A report of the technology considered in meeting the permissible exposure limit;

(iv) Monitoring data obtained in accordance with WAC 296-62-20007.

(v) A detailed schedule for the implementation of the engineer and work practice controls specified in subsections (2) through (4) of this section; and

(vi) Other relevant information.

(c) If, after implementing all controls required by subsections (2) through (4) of this section, or after January 20, 1980, whichever is sooner, or after completion of a new or rehabilitated battery the permissible exposure limit is still exceeded, the employer shall develop a detailed written program and schedule for the implementation of any additional engineer controls and work practices necessary to reduce exposure to or below the permissible exposure limit.

(d) Written plans for such programs shall be submitted, upon request, to the director, and shall be available at the worksite for examination and copying by the director, and the authorized employee representative. The plans required under this subsection shall be revised and updated at least every six months to reflect the current status of the program.

(7) Training in compliance procedures. The employer shall incorporate all written procedures and schedules required under this section in the education and training program required under WAC 296-62-20019 and, where appropriate, post in the regulated area.

[Statutory Authority: Chapter 49.17 RCW. 88-23-054 (Order 88-25), § 296-62-20009, filed 11/14/88. Statutory Authority: RCW 49.17.040 and 49.17.050. 86-16-009 (Order 86-28), § 296-62-20009, filed 7/25/86; Order 77-14, § 296-62-20009, filed 7/25/77.]

WAC 296-62-20011 Respiratory protection. (1) General.

For employees who use respirators required by this section, the employer must provide respirators that comply with the requirements of this section. Compliance with the permissible exposure limit may not be achieved by the use of respirators except during:

(a) Periods necessary to install or implement feasible engineering and work-practice controls;

(b) Work operations, such as maintenance and repair activity, for which engineering and work-practice controls are technologically not feasible;

(c) Work operations for which feasible engineering and work-practice controls are not yet sufficient to reduce employee exposure to or below the permissible exposure limit;

(d) Emergencies.

(2) Respirator program. The employer must implement a respiratory protection program as required by chapter 296-842 WAC, except WAC 296-842-13005 and 296-842-14005.

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(3) Respirator selection. The employer must select appropriate respirators or combination of respirators from Table I of this section.

TABLE I
RESPIRATORY PROTECTION FOR COKE
OVEN EMISSIONS

<u>Airborne concentration of coke oven emissions</u>	<u>Required respirator</u>
(i) Any concentration.	(A) A Type C supplied air respirator operated in pressure demand or other positive pressure or continuous flow mode; or (B) A powered air-purifying particulate filter respirator for dust, mist, and fume; or (C) A powered air-purifying particulate filter respirator combination chemical cartridge and particulate filter respirator for coke oven emissions.
(ii) Concentrations not greater than 1500 µg/m ³ .	(A) Any particulate filter respirator for dust, mist and fume, except single-use respirator; or (B) Any particulate filter respirator or combination chemical cartridge and particulate filter respirator for coke oven emissions; or (C) Any respirator listed in subsection (2)(a)(i) of this section.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. 05-03-093, § 296-62-20011, filed 1/18/05, effective 3/1/05. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-20011, filed 5/4/99, effective 9/1/99. Statutory Authority: RCW 49.17.040 and 49.17.050. 86-16-009 (Order 86-28), § 296-62-20011, filed 7/25/86. Statutory Authority: 49.17.040, 49.17.050, and 49.17.240. 81-16-015 (Order 81-20), § 296-62-20011, filed 7/27/81; Order 77-14, § 296-62-20011, filed 7/25/77.]

WAC 296-62-20013 Protective clothing and equipment. (1) Provision and Use. The employer shall provide and assure the use of appropriate protective clothing and equipment, such as but not limited to:

(a) Flame resistant jacket and pants;

(b) Flame resistant gloves;

(c) Face shields or vented goggles which comply with WAC 296-800-160;

(d) Footwear providing insulation from hot surfaces;

(e) Safety shoes which comply with WAC 296-800-160; and

(f) Protective helmets which comply with WAC 296-800-160.

(2) Cleaning and Replacement.

(a) The employer shall provide the protective clothing required by subsection (1)(a) and (b) of this section in a clean and dry condition at least weekly.

(b) The employer shall clean, launder, or dispose of protective clothing required by subsections (1)(a) and (b) of this section.

(c) The employer shall repair or replace the protective clothing and equipment as needed to maintain their effectiveness.

(d) The employer shall assure that all protective clothing is removed at the completion of a work shift only in change rooms prescribed in WAC 296-62-20015.

(e) The employer shall assure that contaminated protective clothing which is to be cleaned, laundered, or disposed of, is placed in a closed container in the changeroom.

(f) The employer shall inform any person who cleans or launders protective clothing required by this section, of the potentially harmful effects of exposure to coke oven emissions.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 01-11-038, § 296-62-20013, filed 5/9/01, effective 9/1/01; Order 77-14, § 296-62-20013, filed 7/25/77.]

WAC 296-62-20015 Hygiene facilities and practices.

(1) Change rooms. The employer shall provide clean change rooms equipped with storage facilities for street clothes and separate storage facilities for protective clothing and equipment whenever employees are required to wear protective clothing and equipment in accordance with WAC 296-62-20013.

(2) Showers.

(a) The employer shall assure that employees working in the regulated area shower at the end of the work shift.

(b) The employer shall provide shower facilities in accordance with WAC 296-800-230.

(3) Lunchrooms. The employer shall provide lunchroom facilities which have a temperature controlled, positive pressure, filtered air supply, and which are readily accessible to employees working in the regulated area.

(4) Lavatories.

(a) The employer shall assure that employees working in the regulated area wash their hands and face prior to eating.

(b) The employer shall provide lavatory facilities in accordance with WAC 296-800-230.

(5) Prohibition of activities in the regulated area.

(a) The employer shall assure that in the regulated area, food or beverages are not present or consumed, smoking products are not present or used, and cosmetics are not applied, except, that these activities may be conducted in the lunchrooms, change rooms and showers required under subsection (1)-(3) of this section.

(b) Drinking water may be consumed in the regulated area.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.-060. 03-18-090, § 296-62-20015, filed 9/2/03, effective 11/1/03. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 01-11-038, § 296-62-20015, filed 5/9/01, effective 9/1/01; Order 77-14, § 296-62-20015, filed 7/25/77.]

WAC 296-62-20017 Medical surveillance. (1) General requirements.

(a) Each employer shall institute a medical surveillance program for all employees who are employed in the regulated areas at least 30 days per year.

(b) This program shall provide each employee covered under subsection (1)(a) of this section with an opportunity for medical examinations in accordance with this section.

(c) The employer shall inform any employee who refuses any required medical examination of the possible health consequences of such refusal and shall obtain a signed statement from the employee indicating that the employee understands the risk involved in the refusal to be examined.

(d) The employer shall assure that all medical examinations and procedures are performed by or under the supervision of a licensed physician, and are provided without cost to the employee.

(2) Initial examinations. At the time of initial assignment to a regulated area or upon the institution of the medical surveillance program, the employer shall provide a medical examination including at least the following elements:

(a) A work history and medical history which shall include smoking history and the presence and degree of respiratory symptoms, such as breathlessness, cough, sputum production, and wheezing;

(b) A 14" x 17" posterior-anterior chest X ray and International Labour Office UICC/Cincinnati (ILO U/C) rating;

(c) Pulmonary function tests including forced vital capacity (FVC) and forced expiratory volume at one second (FEV 1.0) with recording of type of equipment used;

(d) Weight;

(e) A skin examination;

(f) Urinalysis for sugar, albumin, and hematuria; and

(g) A urinary cytology examination.

(3) Periodic examinations.

(a) The employer shall provide the examinations specified in subsections (2)(a)-(f) of this section at least annually for employees covered under subsection (1)(a) of this section.

(b) The employer shall provide the examinations specified in subsection (2)(a) and (c)-(g) of this section at least semi-annually for employees 45 years of age or older or with five or more years employment in the regulated area.

(c) Whenever an employee who is 45 years of age or older or with five or more years employment in the regulated area transfers or is transferred from employment in a regulated area, the employer shall continue to provide the examinations specified in subsections (2)(a) and (c)-(g) of this section semi-annually, as long as that employee is employed by the same employer or a successor employer.

(d) The employer shall provide the X ray specified in subsection (2)(b) of this section at least annually for employees covered under this subsection.

(e) Whenever an employee has not taken the examination specified in subsections (3)(a)-(c) of this section within the six months preceding the termination of employment, the employer shall provide such examinations to the employee upon termination of employment.

(4) Information provided to the physician. The employer shall provide the following information to the examining physician:

(a) A copy of this regulation and its Appendixes;

(b) A description of the affected employee's duties as they relate to the employee's exposure;

(c) The employee's exposure level or anticipated exposure level;

(d) A description of any personal protective equipment used or to be used; and

(e) Information from previous medical examinations of the affected employee which is not readily available to the examining physician.

(5) Physician's written opinion.

(a) The employer shall obtain a written opinion from the examining physician which shall include:

(i) The results of the medical examinations;

(ii) The physician's opinion as to whether the employee has any detected medical conditions which would place the employee at increased risk of material impairment of the employee's health from exposure to coke oven emissions;

(iii) Any recommended limitations upon the employee's exposure to coke oven emissions or upon the use of protective clothing or equipment such as respirators; and

(iv) A statement that the employee has been informed by the physician of the results of the medical examination and any medical conditions which require further explanation or treatment.

(b) The employer shall instruct the physician not to reveal in the written opinion specific findings or diagnoses unrelated to occupational exposure.

(c) The employer shall provide a copy of the written opinion to the affected employee.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-094, § 296-62-20017, filed 8/17/99, effective 12/1/99; 98-02-030, § 296-62-20017, filed 12/31/97, effective 1/31/98; Order 77-14, § 296-62-20017, filed 7/25/77.]

WAC 296-62-20019 Employee information and training. (1) Training program.

(a) The employer shall institute a training program for employees who are employed in the regulated area and shall assure their participation.

(b) The training program shall be provided as of January 20, 1977, for employees who are employed in the regulated area at that time or at the time of initial assignment to a regulated area.

(c) The training program shall be provided at least annually for all employees who are employed in the regulated area, except that training regarding the occupational safety and health hazards associated with exposure to coke oven emissions and the purpose, proper use, and limitations of respiratory protective devices shall be provided at least quarterly until January 20, 1978.

(d) The training program shall include informing each employee of:

(i) The information contained in the substance information sheet for coke oven emissions (Appendix A);

(ii) The purpose, proper use, and limitations of respiratory protective devices in addition to other information as required by chapter 296-842 WAC (see WAC 296-842-11005, 296-842-16005, and 296-842-19005).

(iii) The purpose for and a description of the medical surveillance program required by WAC 296-62-20017 including information on the occupational safety and health hazards associated with exposure to coke oven emissions;

(iv) A review of all written procedures and schedules required under WAC 296-62-20009; and

(v) A review of this standard.

(2) Access to training materials.

(2007 Ed.)

(a) The employer shall make a copy of this standard and its appendixes readily available to all employees who are employed in the regulated area.

(b) The employer shall provide all materials relating to the employee information and training program to the director.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. 05-03-093, § 296-62-20019, filed 1/18/05, effective 3/1/05. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-62-20019, filed 5/4/99, effective 9/1/99; Order 77-14, § 296-62-20019, filed 7/25/77.]

WAC 296-62-20021 Precautionary signs and labels.

(1) General.

(a) The employer may use labels or signs required by other statutes, regulations or ordinances in addition to, or in combination with, signs and labels required by this section.

(b) The employer shall assure that no statement appears on or near any sign required by this section which contradicts or detracts from the effects of the required sign.

(c) The employer shall assure that signs required by this section are illuminated and cleaned as necessary so that the legend is readily visible.

(2) Signs.

(a) The employer shall post signs in the regulated area bearing the legends:

DANGER
CANCER HAZARD
AUTHORIZED PERSONNEL ONLY
NO SMOKING OR EATING

(b) In addition, not later than January 20, 1978, the employer shall post signs in the areas where the permissible exposure limit is exceeded bearing the legend:

RESPIRATOR REQUIRED

(3) Labels. The employer shall apply precautionary labels to all containers of protective clothing contaminated with coke oven emissions. The label shall bear the following legend:

CAUTION
CLOTHING CONTAMINATED WITH COKE
EMISSIONS
DO NOT REMOVE DUST BY BLOWING OR SHAKING

[Order 77-14, § 296-62-20021, filed 7/25/77.]

WAC 296-62-20023 Recordkeeping. (1) Exposure measurements. The employer shall establish and maintain an accurate record of all measurements taken to monitor employee exposure to coke oven emissions required in WAC 296-62-20007.

(a) This record shall include:

(i) Name, social security number, and job classification of the employees monitored;

(ii) The date(s), number, duration and results of each of the samples taken, including a description of the sampling procedure used to determine representative employee exposure where applicable;

(iii) The type of respiratory protective devices worn, if any;

(iv) A description of the sampling and analytical methods used and evidence of their accuracy; and

(v) The environment variables that could affect the measurement of employee exposure.

(b) The employer shall maintain this record for at least 40 years or for the duration of employment plus 20 years, whichever is longer.

(2) Medical surveillance. The employer shall establish and maintain an accurate record for each employee subject to medical surveillance as required by WAC 296-62-20017.

(a) The record shall include:

(i) The name, social security number, and description of duties of the employee;

(ii) A copy of the physician's written opinion;

(iii) The signed statement of any refusal to take a medical examination under WAC 296-62-20017; and

(iv) Any employee medical complaints related to exposure to coke oven emissions.

(b) The employer shall keep, or assure that the examining physician keeps, the following medical records:

(i) A copy of the medical examination results including medical and work history required under WAC 296-62-20017;

(ii) A description of the laboratory procedures used and a copy of any standards or guidelines used to interpret the test results;

(iii) The initial X ray;

(iv) The X rays for the most recent 5 years;

(v) Any X ray with a demonstrated abnormality and all subsequent X rays;

(vi) The initial cytologic examination slide and written description;

(vii) The cytologic examination slide and written description for the most recent 10 years; and

(viii) Any cytologic examination slides with demonstrated atypia, if such atypia persists for 3 years, and all subsequent slides and written descriptions.

(c) The employer shall maintain medical records required under subsection (2) of this section for at least 40 years, or for the duration of employment plus 20 years, whichever is longer.

(3) Availability.

(a) The employer shall make available upon request all records required to be maintained by this section to the director for examination and copying.

(b) Employee exposure measurement records and employee medical records required by this subsection shall be provided upon request to employees, designated representatives, and the assistant director in accordance with chapter 296-802 WAC.

(c) The employer shall make available upon request employee medical records required to be maintained by subsection (2) of this section to a physician designated by the affected employee or former employee.

(4) Transfer of records.

(a) Whenever the employer ceases to do business, the successor employer shall receive and retain all records required to be maintained by this section.

(b) Whenever the employer ceases to do business and there is no successor employer to receive and retain the

records for the prescribed period, these records shall be transmitted by registered mail to the director.

(c) At the expiration of the retention period for the records required to be maintained under subsections (1) and (2) of this section, the employer shall transmit these records by registered mail to the director or shall continue to retain such records.

(d) The employer shall also comply with any additional requirements involving transfer of records set forth in chapter 296-802 WAC.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060. 04-10-026, § 296-62-20023, filed 4/27/04, effective 8/1/04. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-18-029 (Order 81-21), § 296-62-20023, filed 8/27/81; Order 77-14, § 296-62-20023, filed 7/25/77.]

WAC 296-62-20025 Observation of monitoring. (1)

Employee observation. The employer shall provide affected employees or their representatives an opportunity to observe any measuring or monitoring of employee exposure to coke oven emissions conducted pursuant to WAC 296-62-20007.

(2) Observation procedures.

(a) Whenever observation of the measuring or monitoring of employee exposure to coke oven emissions requires entry into an area where the use of protective clothing or equipment is required, the employer shall provide the observer with and assure the use of such equipment and shall require the observer to comply with all other applicable safety and health procedures.

(b) Without interfering with the measurement, observers shall be entitled to:

(i) An explanation of the measurement procedures;

(ii) Observe all steps related to the measurement of coke oven emissions performed at the place of exposure; and

(iii) Record the results obtained.

[Order 77-14, § 296-62-20025, filed 7/25/77.]

WAC 296-62-20027 Appendix A—Coke oven emissions substance information sheet.

APPENDIX A

COKE OVEN EMISSIONS

SUBSTANCE INFORMATION SHEET

I. SUBSTANCE IDENTIFICATION

(1) Substance: Coke oven emissions

(2) Definition: The benzene-soluble fraction of total particulate matter present during the destructive distillation or carbonization of coal for the production of coke.

(3) Permissible exposure limit: 150 micrograms per cubic meter of air determined as an average over an 8-hour period.

(4) Regulated areas: Only employees authorized by your employer should enter a regulated area. The employer is required to designate the following areas as regulated areas: the coke oven battery, including topside and its machinery, pushside and its machinery, and the screening station; and the wharf, the beehive ovens and machinery.

II. HEALTH HAZARD DATA

Exposure to coke oven emissions is a cause of lung cancer, and possibly kidney cancer, in humans. Although it does not have an excess number of skin cancer cases in humans, repeated skin contact with coke oven emissions should be avoided.

III. PROTECTIVE CLOTHING AND EQUIPMENT

- (1) Respirators: Respirators will be provided by your employer for routine use if your employer is in the process of implementing engineering and work practice controls or where engineering and work practice controls are not feasible or insufficient. You must wear respirators for nonroutine activities or in emergency situations where you are likely to be exposed to levels of coke oven emissions in excess of the permissible exposure limit. Since how well your respirator fits your face is very important, your employer is required to conduct fit tests to make sure the respirator seals properly when you wear it. These tests are simple and rapid and will be explained to you during your training sessions.
- (2) Protective clothing: Your employer is required to provide, and you must wear, appropriate, clean, protective clothing and equipment to protect your body from repeated skin contact with coke oven emissions and from the heat generated during the coking process. This clothing should include such items as jacket and pants and flame resistant gloves. Protective equipment should include face shield or vented goggles, protective helmets and safety shoes, insulated from hot surfaces where appropriate.

IV. HYGIENE FACILITIES AND PRACTICES

You must not eat, drink, smoke, chew gum or tobacco, or apply cosmetics in the regulated area, except that drinking water is permitted. Your employer is required to provide lunchrooms and other areas for these purposes.

Your employer is required to provide showers, washing facilities, and change rooms. If you work in a regulated area, you must wash your face, and hands before eating. You must shower at the end of the work shift. Do not take used protective clothing out of the change rooms without your employer's permission. Your employer is required to provide for laundering or cleaning of your protective clothing.

V. SIGNS AND LABELS

Your employer is required to post warning signs and labels for your protection. Signs must be posted in regulated areas. The signs must warn that a cancer hazard is present, that only authorized employees may enter the area, and that no smoking or eating is allowed. In regulated areas where coke oven emissions are above the permissible exposure limit, the signs should also warn that respirators must be worn.

VI. MEDICAL EXAMINATIONS

If you work in a regulated area at least 30 days per year, your employer is required to provide you with a medical examination every year. The medical examination must include a

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medical history, a chest X ray; pulmonary function test; weight comparison; skin examination; a urinalysis and a urine cytology exam for the early detection of urinary cancer. The urine cytology exam is only included in the initial exam until you are either forty-five years or older, or have five or more years employment in the regulated areas when the medical exams including this test, but excepting the X-ray exam, are to be given every six months; under these conditions, you are to be given an X-ray exam at least once a year. The examining physician will provide a written opinion to your employer containing the results of the medical exams. You should also receive a copy of this opinion.

VII. OBSERVATION OF MONITORING

Your employer is required to monitor your exposure to coke oven emissions and you are entitled to observe the monitoring procedure. You are entitled to receive an explanation of the measurement procedure, observe the steps taken in the measurement procedure, and to record the results obtained. When the monitoring procedure is taking place in an area where respirators or personal protective clothing and equipment are required to be worn, you must also be provided with and must wear the protective clothing and equipment.

VIII. ACCESS TO RECORDS

You or your representative are entitled to records of your exposure to coke oven emissions upon request to your employer. Your medical examination records can be furnished to your physician upon request to your employer.

IX. TRAINING AND EDUCATION

Additional information on all of these items plus training as to hazards of coke oven emissions and the engineering and work practice controls associated with your job will also be provided by your employer.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-094, § 296-62-20027, filed 8/17/99, effective 12/1/99; 99-10-071, § 296-62-20027, filed 5/4/99, effective 9/1/99. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 98-02-030, § 296-62-20027, filed 12/31/97, effective 1/31/98; Order 77-14, Appendix A (codified as WAC 296-62-20027), filed 7/25/77.]

WAC 296-62-20029 Appendix B—Industrial hygiene and medical surveillance guidelines.

APPENDIX B

INDUSTRIAL HYGIENE AND MEDICAL
SURVEILLANCE GUIDELINES

I. INDUSTRIAL HYGIENE GUIDELINES

- (1) Sampling. (Benzene-Soluble Fraction Total Particulate Matter.)

Samples collected should be full shift (8-hour) samples. Sampling should be done using a personal sampling pump with pulsation damper at a flow rate of 2 liters per minute. Samples should be collected on 0.8 micrometer pore size silver membrane filters (37 mm diameter) preceded by Gelman glass fiber type A filters encased in three-piece plastic (polystyrene) field monitor cassettes.

The cassette face cap should be on and the plug removed. The rotameter should be checked every hour to ensure that proper flow rates are maintained.

A minimum of three full-shift samples should be collected for each job classification on each battery, at least one from each shift. If disparate results are obtained for particular job classification, sampling should be repeated. It is advisable to sample each shift on more than one day to account for environmental variables (wind, precipitation, etc.) which may affect sampling. Differences in exposures among different work shifts may indicate a need to improve work practices on a particular shift. Sampling results from different shifts for each job classification should not be averaged. Multiple samples from same shift may be used to calculate an average exposure for a particular job classification.

(2) Analysis.

(a) All extraction glassware is cleaned with dichromic acid cleaning solution, rinsed with tap water, then deionized water, acetone, and allowed to dry completely. The glassware is rinsed with nanograde benzene before use. The Teflon cups are cleaned with benzene then with acetone.

(b) Pre-weigh the 2 ml Perkin-Elmer Teflon cups to one hundredth of a milligram on a Perkin-Elmer autobalance AD 2. Tare weight of the cups is about 50 mg.

(c) Place the silver membrane filter and glass fiber filter into a 15 ml test tube.

(d) Extract with 5 ml of benzene for five minutes in an ultrasonic cleaner.

(e) Filter the extract in 15 ml medium glass fritted funnels.

(f) Rinse test tube and filters with two 1.5 ml aliquots of benzene and filter through the fritted glass funnel.

(g) Collect the extract and two rinses in a 10 ml Kontes graduated evaporative concentrator.

(h) Evaporate down to a 1 ml while rinsing the sides with benzene.

(i) Pipet 0.5 ml into the Teflon cup and evaporate to dryness in a vacuum oven at 40°C for 3 hours.

(j) Weight the Teflon cup and the weight gain is due to the benzene soluble residue in half the sample.

II. MEDICAL SURVEILLANCE GUIDELINES

(1) General.

The minimum requirements for the medical examination for coke oven workers are given in WAC 296-62-20017.

The initial examination is to be provided to all coke oven workers who work at least thirty days in the regulated area. The examination includes a 14" x 17" posterior-anterior chest X ray and a ILO/UC rating to assure some standardization of X-ray reading, pulmonary function tests (FVC and FEV 1.0), weight, urinalysis, skin examination and a urinary cytologic examination. These tests are to serve as the baseline for comparing the employee's future test results. Periodic exams include all the elements of the initial exams, except that the urine cytologic test is to be performed only on those employees who are

forty-five years of age or older or who have worked for five or more years in the regulated area; periodic exams, with the exception of X rays, are to be performed semi-annually for this group instead of annually; for this group, X rays will continue to be given at least annually. The examination contents are minimum requirements, additional tests such as lateral and oblique X rays or additional pulmonary function tests may be performed if deemed necessary.

(2) Pulmonary function tests.

Pulmonary function tests should be performed in a manner which minimizes subject and operator bias. There has been shown to be learning effects with regard to the results obtained from certain tests, such as FEV 1.0. Best results can be obtained by multiple trials for each subject. The best of three trials or the average of the last three of five trials may be used in obtaining reliable results. The type of equipment used (manufacturer, model, etc.) should be recorded with the results as reliability and accuracy varies and such information may be important in the evaluation of test results. Care should be exercised to obtain the best possible testing equipment.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-094, § 296-62-20029, filed 8/17/99, effective 12/1/99; 98-02-030, § 296-62-20029, filed 12/31/97, effective 1/31/98; Order 77-14, Appendix B (codified as WAC 296-62-20029), filed 7/25/77.]

PART P—HAZARDOUS WASTE OPERATIONS AND TREATMENT, STORAGE, AND DISPOSAL FACILITIES

Note: The hazardous waste rules for general industry have been moved to chapter 296-843 WAC.

PART Q—HAZARDOUS CHEMICALS IN LABORATORIES

Note: The hazardous chemicals in laboratories rules for general industry have been moved to chapter 296-828 WAC.

Chapter 296-63 WAC

RIGHT TO KNOW FEE ASSESSMENT

WAC

296-63-001	Purpose and scope.
296-63-003	Definitions.
296-63-005	Selected industries.
296-63-007	Fee assessment.
296-63-009	Exemption requests.
296-63-011	Fraudulent exemption requests.
296-63-013	Appeals.
296-63-015	Fee assessment not received.

WAC 296-63-001 Purpose and scope. This chapter establishes a fee assessment under the Worker and Community Right to Know Act in accordance with RCW 49.70.170.

[Statutory Authority: RCW 49.17.040 and 49.17.050. 86-23-003 (Order 86-38), § 296-63-001, filed 11/6/86.]

WAC 296-63-003 Definitions. Unless the context clearly requires otherwise, the definitions of this section shall apply throughout this chapter.

(1) "Department" means the department of labor and industries.

(2) "Director" means the director of the department of labor and industries or his/her designee.

[Statutory Authority: RCW 49.17.040 and 49.17.050. 86-23-003 (Order 86-38), § 296-63-003, filed 11/6/86.]

WAC 296-63-005 Selected industries. Fees shall only be assessed to employers engaged in business operations having a standard industrial classification, as designated in the standard industrial classification manual prepared by the federal Office of Management and Budget, within the following major groups:

- (1) Numbers 01 through 08 (agriculture and forestry industries).
- (2) Numbers 10 through 14 (mining industries).
- (3) Numbers 15 through 17 (construction industries).
- (4) Numbers 20 through 39 (manufacturing industries).
- (5) Numbers 41, 42, and 44 through 49 (transportation, communications, electric, gas, and sanitary services).
- (6) Number 75 (automotive repair services, and garages).
- (7) Number 76 (miscellaneous repair services).
- (8) Number 80 (health services).
- (9) Number 82 (educational services).

[Statutory Authority: RCW 49.17.040 and 49.17.050. 86-23-003 (Order 86-38), § 296-63-005, filed 11/6/86.]

WAC 296-63-007 Fee assessment. (1) The department shall assess an annual fee to each employer in the selected industries identified in WAC 296-63-003.

(2) The fee shall only be assessed to employers who reported ten thousand four hundred or more worker hours to the department.

(3) The fee assessment shall be based on reported worker hours for the prior calendar year.

(4) One full-time equivalent employee is equal to two thousand eighty worker hours.

(5) The fee assessment shall be two dollars and fifty cents for each full-time equivalent employee. Any fraction of a full-time equivalent employee shall be counted as one full-time equivalent employee.

(6) The annual fee shall not exceed fifty thousand dollars for an individual employer.

(7) All fees collected by the department shall be deposited in the worker and community right to know fund.

[Statutory Authority: RCW 49.17.040 and 49.17.050. 86-23-003 (Order 86-38), § 296-63-007, filed 11/6/86.]

WAC 296-63-009 Exemption requests. (1) Employers who do not have hazardous chemicals at their workplace may submit a written request for exemption to the department. Submission of an exemption request does not relieve an employer of his/her obligation to pay the fee assessment until such time as the request is approved. Employers granted exemptions will be removed from the listing of employers to be assessed a fee beginning with the current billing period.

(2) Exemptions shall only be considered for an employer's entire workplace consisting of all activities reported to the department under the same employer identification number.

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(3) Each request for exemption must contain the following information:

- (a) Firm name and employer identification number;
- (b) Complete mailing address;
- (c) Complete location (such as street) address;
- (d) A certified statement in the form required by RCW 9A.72.085 that a hazardous chemical survey of the employer's premises has been completed by a qualified person, the identity and qualifications of the person completing the survey, and that no hazardous chemicals as defined by WAC 296-800-170 are present at the workplace.

(4) The department may schedule an on-site inspection to determine the validity of the exemption request.

(5) The employer shall provide to the department within five working days of receiving a request from the department, any additional information identified by the department as necessary for evaluating the exemption request.

(6) Exemption requests shall be mailed to:

Right to Know Program
Department of Labor and Industries
P.O. Box 44620
Olympia, Washington 98504-4620

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 01-11-038, § 296-63-009, filed 5/9/01, effective 9/1/01. Statutory Authority: RCW 49.70.170 and 49.17.040. 98-02-029, § 296-63-009, filed 12/31/97, effective 1/31/98. Statutory Authority: RCW 49.17.040 and 49.17.050. 86-23-003 (Order 86-38), § 296-63-009, filed 11/6/86.]

WAC 296-63-011 Fraudulent exemption requests.

(1) The department may assess a civil penalty against any employer who submits a fraudulent exemption request. Such penalty assessment shall be consistent with RCW 49.17.180 (1), and shall not exceed seventy thousand dollars.

(2) In addition, the director may cause a record of such fraudulent exemptions submission to be referred to the prosecuting attorney of the county wherein such submission occurred.

[Statutory Authority: Chapter 49.17 RCW. 91-24-017 (Order 91-07), § 296-63-011, filed 11/22/91, effective 12/24/91. Statutory Authority: RCW 49.17.040 and 49.17.050. 86-23-003 (Order 86-38), § 296-63-011, filed 11/6/86.]

WAC 296-63-013 Appeals. An employer may appeal the fee assessment or penalties in accordance with RCW 49.70.170(4).

[Statutory Authority: RCW 49.17.040 and 49.17.050. 86-23-003 (Order 86-38), § 296-63-013, filed 11/6/86.]

WAC 296-63-015 Fee assessment not received. When fee assessments are not received by the department, penalties shall be assessed to the delinquent employer in accordance with chapter 49.70 RCW and RCW 49.70.177.

[Statutory Authority: RCW 49.17.040 and 49.17.050. 86-23-003 (Order 86-38), § 296-63-015, filed 11/6/86.]

Chapter 296-65 WAC

ASBESTOS REMOVAL AND ENCAPSULATION

WAC

296-65-001
296-65-003

Purpose and scope.
Definitions.

296-65-005	Asbestos worker training course content.
296-65-007	Asbestos supervisor training course content.
296-65-010	Asbestos worker certification.
296-65-012	Asbestos supervisor certification.
296-65-015	Training course approval.
296-65-017	Contractor certification.
296-65-020	Notification requirements.
296-65-025	Fees.
296-65-030	Methods of compliance.
296-65-035	Reciprocity.
296-65-050	Denial, suspension, and revocation of certificates.

DISPOSITION OF SECTIONS FORMERLY CODIFIED IN THIS CHAPTER

296-65-040	Appeals—Notice and filing. [Statutory Authority: RCW 49.17.050(2) and 49.17.040. 87-10-008 (Order 87-06), § 296-65-040, filed 4/27/87. Statutory Authority: SSB 4209, 1985 c 387. 85-21-080 (Order 85-30), § 296-65-040, filed 10/22/85.] Repealed by 87-24-051 (Order 87-24), filed 11/30/87. Statutory Authority: Chapter 49.17 RCW.
296-65-045	Appeals—Procedure. [Statutory Authority: SSB 4209, 1985 c 387. 85-21-080 (Order 85-30), § 296-65-045, filed 10/22/85.] Repealed by 87-24-051 (Order 87-24), filed 11/30/87. Statutory Authority: Chapter 49.17 RCW.

WAC 296-65-001 Purpose and scope. This standard regulates asbestos removal and encapsulation, requires contractor certification, specifies minimum training for supervisors and workers on asbestos projects, requires notification of asbestos projects, and establishes a training course approval program. This standard applies to the removal or encapsulation of any materials containing more than one percent asbestos.

[Statutory Authority: RCW 49.17.040, [49.17.]050 and [49.17.]060. 97-19-014, § 296-65-001, filed 9/5/97, effective 11/5/97. Statutory Authority: Chapter 49.17 RCW. 89-21-018 (Order 89-10), § 296-65-001, filed 10/10/89, effective 11/24/89. Statutory Authority: SSB 4209, 1985 c 387. 85-21-080 (Order 85-30), § 296-65-001, filed 10/22/85.]

WAC 296-65-003 Definitions. Unless the context clearly requires otherwise, the definitions in this section apply throughout this standard.

"Approved" means approved by the department.

"Asbestos" includes chrysotile, amosite, crocidolite, tremolite asbestos, anthophyllite asbestos, and actinolite asbestos, and any of these minerals that have been chemically treated and/or altered.

"Asbestos fiber" means asbestos fiber as defined in WAC 296-62-07703 as "fiber."

"Asbestos abatement project" means an asbestos project involving three square feet or three linear feet, or more, of asbestos containing material.

"Asbestos project" includes the construction, demolition, repair, remodeling, maintenance or renovation of any public or private building or structure, mechanical piping equipment or system involving the demolition, removal, encapsulation, salvage, or disposal of material or outdoor activity releasing or likely to release asbestos fibers into the air.

"Certified asbestos contractor" means any partnership, firm, association, corporation or sole proprietorship, registered under chapter 18.27 RCW, that submits a bid, or contracts to remove or encapsulate asbestos for another and is certified by the department to remove or encapsulate asbestos.

"Certificate" means a certificate issued by the department that shall include the name of person awarded the certificate, certificate number, the discipline for which certification was conferred, training and examination dates, the course provider's name and address, and the course provider's telephone number, expiration date, and a statement that the person receiving the certificate has completed the training for asbestos accreditation under TSCA Title II.

"Certified asbestos supervisor" means an individual who is certified by the department under WAC 296-65-012.

"Certified asbestos worker" means an individual certified by the department under WAC 296-65-010.

"Department" means the department of labor and industries.

"Demolition" means the activity of razing a structure which includes the wrecking, removal, or dismantling of any load-supporting structural member of any facility including any related handling operations.

"Director" means the director of the department of labor and industries or the director's designee.

"Emergency project" means a project that was not planned but results from a sudden, unexpected event and does not include operations that are necessitated by nonroutine failures of equipment or systems.

"Encapsulation" means the application of an encapsulant to asbestos containing materials to control the release of asbestos fibers into the air. The encapsulation process either creates a membrane over the surface (bridging encapsulant) or penetrates the material and binds its components together (penetrating encapsulant).

"EPA MAP" means the environmental protection agency model accreditation plan for asbestos requirements in 40 CFR Part 763.

"HEPA filtration" means high-efficiency particulate air filtration found in respirators and vacuum systems capable of filtering 0.3 micron particles with 99.97% efficiency.

"Intact" means that the asbestos containing material has not crumbled, been pulverized, or otherwise deteriorated so that it is no longer likely to be bound with its matrix.

"NESHAP" means the National Emission Standards for Hazardous Air Pollutants.

"Owner" means the person who owns any public or private building, structure, facility, or mechanical system, or the remnants thereof, or the agent of such person, but does not include individuals who work on asbestos projects in their own single-family residences, no part of which is used for commercial purposes.

"Person" means any individual, partnership, firm, association, corporation, sole proprietorship, or the state of Washington or its political subdivisions.

"Revocation" means a permanent withdrawal of a certification issued by the department.

"Suspension" means a temporary withdrawal of a certification issued by the department. No suspension shall be less than six months or longer than one year.

[Statutory Authority: RCW 49.17.010, [49.17.]040, [49.17.]050, and 49.26-130. 00-06-075, § 296-65-003, filed 3/1/00, effective 4/10/00. Statutory Authority: RCW 49.17.040, 49.17.050, 49.26.040 and 49.26.130. 99-17-026, § 296-65-003, filed 8/10/99, effective 11/10/99. Statutory Authority: RCW 49.17.040, [49.17.]050 and [49.17.]060. 96-05-056, § 296-65-003, filed 2/16/96, effective 4/1/96. Statutory Authority: Chapter 49.17 RCW. 89-21-018 (Order 89-10), § 296-65-003, filed 10/10/89, effective 11/24/89;

87-24-051 (Order 87-24), § 296-65-003, filed 11/30/87. Statutory Authority: SSB 4209, 1985 c 387. 85-21-080 (Order 85-30), § 296-65-003, filed 10/22/85.]

WAC 296-65-005 Asbestos worker training course content. An approved asbestos worker training course shall consist of four days of training with a minimum of thirty-two hours. This initial training course shall provide, at a minimum, information on the following topics:

(1) The physical characteristics of asbestos including types, fiber size, aerodynamic characteristics and physical appearance.

(2) Examples of different types of asbestos and asbestos-containing materials. Real asbestos shall be used only for observation by trainees and shall be enclosed in sealed unbreakable containers.

(3) The health hazards of asbestos including the nature of asbestos related diseases, routes of exposure, dose-response relationships, synergism between cigarette smoking and asbestos exposure, latency period of diseases, hazards to immediate family, and the health basis for asbestos standards.

(4) Employee personal protective equipment including the classes and characteristics of respirator types, limitations of respirators, proper selection, inspection, donning, use, maintenance and storage procedure, methods for field checking of the facepiece-to-face seal (positive and negative-pressure checks), qualitative and quantitative fit testing procedures, variability between field and laboratory protection factors, factors that alter respirator fit (e.g., eye glasses and facial hair), the components of a proper respiratory protection program, respirator program administrator, requirements on oil lubricated reciprocating piston compressors for breathing air, and selection and use of personal protective clothing. Qualitative or quantitative fit testing shall be performed on at least one student for demonstration purposes and in accordance with WAC 296-62-07715 and 296-62-07739.

(5) Use, storage and handling of launderable clothing, nonslip footwear, gloves, eye protection and hard hats.

(6) Medical monitoring procedures and requirements, including the provisions of WAC 296-62-071 through 296-62-07121 and 296-62-07725, any additional recommended procedures and tests, benefits of medical monitoring and employee access to records.

(7) Air monitoring procedures and requirements specified in WAC 296-62-07709, including a description of equipment, sampling methods and strategies, reasons for air monitoring, types of samples, including area, personal and clearance samples, current standards with proposed changes if any, employee observation and notification, recordkeeping and employee access to records, interpretation of air monitoring results, and analytical methods for bulk and air samples.

(8) State-of-the-art work practices for asbestos removal and encapsulation activities including purpose, proper construction and maintenance of barriers and decontamination enclosure systems, posting of warning signs, electrical and ventilation system lock-out, proper working techniques and tools with vacuum attachments for minimizing fiber release, use of wet methods and surfactants, use of negative-pressure ventilation equipment for minimizing employee exposure to asbestos fibers and contamination prevention, scoring and breaking techniques for rigid asbestos products, glove bag

techniques, recommended and prohibited work practices, potential exposure situations, emergency procedures for sudden releases, use of HEPA vacuums and proper clean-up and disposal procedures. Work practice requirements for removal, encapsulation, enclosure, repair, and waste transportation shall be discussed individually. Appropriate work practices for both indoor and outdoor asbestos projects shall be included.

(9) Personal hygiene including entry and exit procedures for the work area, use of showers and prohibition of eating, drinking, smoking and chewing (gum or tobacco) in the work area. Potential exposures, such as family exposure shall also be included.

(10) Additional safety hazards that may be encountered during asbestos removal and encapsulation activities and hazard abatement, including electrical hazards, scaffold and ladder hazards, slips, trips and falls, confined spaces, noise, and heat stress.

(11) The requirements, procedures and standards established by:

(a) The Environmental Protection Agency, 40 CFR Part 61, Subparts A and M, and 40 CFR Part 763.

(b) Washington state department of ecology.

(c) Local air pollution control agencies.

(d) Washington state department of labor and industries, division of industrial safety and health, chapter 49.17 RCW (Washington Industrial Safety and Health Act), chapter 49.26 RCW (Health and safety—Asbestos), and ensuing regulations.

(12) Actual worksite considerations.

(13) The instruction required by this section shall include, at a minimum fourteen hours of hands-on training for the following:

(a) Glove bag techniques;

(b) The opportunity to don respirators including half facepiece and full facepiece air purifying respirators, powered air purifying respirators (PAPR), and Type-C supplied-air respirators;

(c) Removal of sprayed-on or troweled-on material, and pipe lagging;

(d) Basic construction of a decontamination unit, and proper entry and exit;

(e) Suit-up in protective clothing consisting of coveralls, foot coverings and head coverings.

(14) Course review, a review of the key aspects of the training course.

(15) Asbestos-containing materials shall not be used for hands-on training.

(16) In recognition that asbestos abatement is an evolving industry, the department reserves the right to require additional subjects to be taught and to specify the amount of time which shall be allotted to adequately cover required subjects. To assure adequate coverage of required material, each sponsor shall be provided and required to incorporate into the training course, a detailed outline of subject matter developed by the department.

[Statutory Authority: RCW 49.17.040, [49.17.]050 and [49.17.]060. 96-05-056, § 296-65-005, filed 2/16/96, effective 4/1/96. Statutory Authority: Chapter 49.17 RCW. 89-21-018 (Order 89-10), § 296-65-005, filed 10/10/89, effective 11/24/89; 87-24-051 (Order 87-24), § 296-65-005, filed 11/30/87. Statutory Authority: RCW 49.17.050(2) and 49.17.040. 87-10-

008 (Order 87-06), § 296-65-005, filed 4/27/87. Statutory Authority: SSB 4209, 1985 c 387. 85-21-080 (Order 85-30), § 296-65-005, filed 10/22/85.]

WAC 296-65-007 Asbestos supervisor training course content. An approved asbestos supervisor training course shall consist of at least five days of training. This initial training course shall include lectures, demonstrations, at least fourteen hours of hands-on training, course review and a written examination. Audio-visual materials, where appropriate, are recommended to complement lectures. The training course shall provide, at a minimum, information on the following topics:

(1) The physical characteristics of asbestos and asbestos-containing materials including identification of asbestos, aerodynamic characteristics, typical uses, physical appearance, hazard assessment considerations, and a summary of abatement control options.

(2) Health effects related to asbestos exposure including the nature of asbestos related diseases, routes of exposure, dose-response relationships and the lack of a safe level of exposure, synergism between asbestos exposure and cigarette smoking, latency period, hazards to the immediate family and the health basis for the standard.

(3) Employee personal protective equipment including the classes and characteristics of respirator types, limitations of respirators, proper selection, inspection, donning, use, maintenance, and storage procedures, methods for field checking of the facepiece-to-face seal (positive and negative pressure checks), variability between field and laboratory protection factors, quantitative and qualitative fit test requirements, factors that alter respirator fit (facial hair, scars, etc.), the components of a proper respirator program, requirements for oil lubricated reciprocating compressors, maintenance of Type-C systems, standards for breathing air, selection and use of personal protective clothing, use, storage, and handling of nondisposable clothing, and regulations covering personal protective equipment.

(4) State-of-the-art work practices for asbestos removal and encapsulation activities including purpose, proper construction and maintenance of barriers and decontamination enclosure systems, posting of warning signs, electrical and ventilation system lock-out, proper working techniques and tools with vacuum attachments for minimizing fiber release, use of wet methods and surfactants, use of negative-pressure ventilation equipment for minimizing employee exposure to asbestos fibers and contamination prevention, scoring and breaking techniques for rigid asbestos products, glove bag techniques, recommended and prohibited work practices, potential exposure situations, emergency procedures for sudden releases, use of HEPA vacuums and proper clean-up and disposal procedures. Work practice requirements for removal, encapsulation, and repair shall be discussed separately. Appropriate work practices for both indoor and outdoor asbestos projects shall be included.

(5) Personal hygiene including entry and exit procedures for the work area, use of showers and prohibition of eating, drinking, smoking, and chewing (gum and tobacco) in the work area. Potential exposures, such as family exposure shall also be included.

(6) Additional safety hazards that may be encountered during asbestos abatement activities and how to deal with

them, including electrical hazards, heat stress, air contaminants other than asbestos, fire and explosion hazards, scaffold and ladder hazards, slips, trips, and falls, confined space entry requirements, and noise hazards.

(7) Medical monitoring procedures and requirements, including the provisions of WAC 296-62-071 through 296-62-07121 and 296-62-07725, any additional recommended procedures and tests, benefits of medical monitoring and recordkeeping requirements.

(8) Air monitoring procedures and requirements specified in WAC 296-62-07709, including a description of equipment, sampling methods and strategies, reasons for air monitoring, types of samples, including area, personal and clearance samples, a description of aggressive sampling, current standards with proposed changes if any, employee observation and notification, recordkeeping, interpretation of air monitoring results, specifically from analyses performed by polarized light, phase contrast, and electron microscopy.

(9) The requirements, procedures, and standards established by:

(a) The Environmental Protection Agency, 40 CFR Part 61, Subparts A and M, and 40 CFR Part 763.

(b) The Washington state department of ecology.

(c) Local air pollution control agencies.

(d) Washington state department of labor and industries, division of industrial safety and health, chapter 49.17 RCW (Washington Industrial Safety and Health Act), chapter 49.26 RCW (Health and safety—Asbestos), and ensuing regulations.

(10) Actual worksite considerations.

(11) Insurance and liability issues including contractor issues, industrial insurance coverage and exclusions, third party liabilities and defenses, private insurance coverage and exclusions, recordkeeping recommended for legal and insurance purposes.

(12) Supervisory techniques for asbestos abatement projects including supervisory practices to enforce and reinforce the required work practices and discourage unsafe work practices.

(13) Contract specifications including a discussion of the key elements to be included in contract specifications.

(14) A minimum of fourteen hours of hands-on training for the following:

(a) Calibration of air-sampling equipment;

(b) Routine maintenance of air-purifying and air-supplied respirators;

(c) Setup of a decontamination unit including calculating the number of negative air machines needed as well as proper placement of the machines within the enclosure; and

(d) Quantitative and qualitative fit-testing protocols.

(15) Course review, a review of the key aspects of the training course.

(16) In recognition that asbestos abatement is an evolving industry, the department reserves the right to require additional subjects to be taught and to specify the amount of time which shall be allotted to adequately cover required subjects. To assure adequate coverage of required material, each sponsor shall be provided and required to incorporate into their training course, a detailed outline of subject matter developed by the department.

[Statutory Authority: RCW 49.17.040, [49.17.]050 and [49.17.]060. 96-05-056, § 296-65-007, filed 2/16/96, effective 4/1/96. Statutory Authority: Chapter 49.17 RCW. 89-21-018 (Order 89-10), § 296-65-007, filed 10/10/89, effective 11/24/89.]

WAC 296-65-010 Asbestos worker certification. (1)

For the purposes of this section "individual" means any natural person.

(2) To qualify for an asbestos worker certificate, an individual must do the following:

(a) Successfully complete an approved asbestos worker training course;

(b) Achieve a score of at least seventy percent on a one hundred question multiple choice closed book examination approved by the department but administered by the training course sponsor. If an individual does not pass the examination, then another examination (meeting the above criteria) may be given after a sufficient period of study. The new examination must not duplicate more than fifty percent of the questions used on prior examinations;

(c) Submit to the department a timely application validated by an approved training course sponsor. To be considered timely, an application must be received by the department no later than sixty days after the completion of the course. In the event that an application is not timely, the individual will be required to pass, with a score of at least seventy percent, an examination administered by the department. A nonrefundable fifty-dollar fee will be assessed when the application is submitted to the department; and

(d) Pay the fee prescribed in WAC 296-65-025.

(3) Individuals must not perform any asbestos project work prior to issuance of the certificate.

(4) Certificates will be issued and mailed to the individual applicants and will be valid for one year from the date of issuance.

(5) Certified asbestos workers shall attend an eight-hour worker refresher course prior to certificate renewal.

(a) The course shall, at a minimum, adequately review the subjects required by WAC 296-65-005, update information on state-of-the-art procedures and equipment, and review regulatory changes and interpretations. The department may require specific subjects.

(b) An application for renewal of the certificate must be validated by the refresher training course instructor.

(c) The refresher course must be taken prior to expiration of the certificate.

(d) The department must receive the certificate renewal application no later than the expiration date of the current certificate. Applicants missing this renewal deadline will be required to pass, with a score of seventy percent, an examination administered by the department. A nonrefundable fifty-dollar fee will be charged to take this examination.

(e) Individuals whose certificates have been expired for more than six months will be required to retake the entire basic worker course.

(6) The initial TSCA Title II worker accreditation certificate and the current worker certificate must be available for inspection at all times at the location of the asbestos project.

(7) The department may suspend or revoke a certificate as provided in WAC 296-65-050 and chapter 296-350 WAC.

(2007 Ed.)

[Statutory Authority: RCW 49.17.040, 49.17.050, 49.26.040 and 49.26.130. 99-17-026, § 296-65-010, filed 8/10/99, effective 11/10/99. Statutory Authority: RCW 49.17.040, [49.17.]050 and [49.17.]060. 96-05-056, § 296-65-010, filed 2/16/96, effective 4/1/96. Statutory Authority: Chapter 49.17 RCW. 89-21-018 (Order 89-10), § 296-65-010, filed 10/10/89, effective 11/24/89. Statutory Authority: SSB 4209, 1985 c 387. 85-21-080 (Order 85-30), § 296-65-010, filed 10/22/85.]

WAC 296-65-012 Asbestos supervisor certification.

(1) For the purposes of this section, "individual" means any natural person.

(2) To qualify for an asbestos supervisor certificate, an individual must meet the following criteria:

(a) Have at least 1600 hours of experience in one or more of the following disciplines:

(i) Asbestos abatement;

(ii) Asbestos project design;

(iii) Consultation on asbestos abatement projects;

(iv) Operations and maintenance program supervision;

(v) Construction project supervision;

(b) Successfully complete an approved asbestos supervisor training course;

(c) Achieve a score of at least seventy percent on a one hundred question multiple choice closed book examination approved by the department but administered by the training course sponsor. If an individual does not pass the examination, then another examination (meeting the above criteria) may be given after a sufficient period of study. The new examination must not duplicate more than fifty percent of the questions used on prior examinations;

(d) Submit to the department a timely application validated by an approved training course sponsor. To be considered timely, an application must be received by the department no later than sixty days after the completion of the course. In the event that an application is not timely, the individual will be required to pass, with a score of at least seventy percent, an examination administered by the department. A nonrefundable fifty-dollar fee will be assessed when the application is submitted to the department; and

(e) Pay the fee prescribed in WAC 296-65-025.

(3) An individual must not supervise any asbestos project prior to issuance of the certificate.

(4) Certificates will be issued and mailed to the individual applicants and will be valid for one year from the date of issuance.

(5) A certified asbestos supervisor must attend an eight-hour supervisor refresher course prior to certificate renewal. It is not necessary to also take a worker refresher course.

(a) The course must, at a minimum, adequately review the subjects required by WAC 296-65-007, update information on state-of-the-art procedures and equipment, and review regulatory changes and interpretations. The department may require specific subjects.

(b) An application for renewal of the certificate must be validated by the refresher training course instructor.

(c) The refresher course must be taken prior to expiration of the certificate.

(d) The department must receive the certificate renewal application no later than the expiration date of the current certificate. Applicants missing this renewal deadline will be required to pass, with a score of seventy percent, an examination

ation administered by the department. A nonrefundable fifty-dollar fee will be charged to take this examination.

(e) Individuals whose certificates have been expired for more than six months will be required to retake the entire basic supervisor course.

(6) The initial TSCA Title II supervisor accreditation certificate and the current supervisor certificate must be available for inspection at all times at the location of the asbestos project.

(7) The department may suspend or revoke a certificate as provided in WAC 296-65-050 and chapter 296-350 WAC.

[Statutory Authority: RCW 49.17.040, 49.17.050, 49.26.040 and 49.26.130. 99-17-026, § 296-65-012, filed 8/10/99, effective 11/10/99. Statutory Authority: RCW 49.17.040, [49.17.]050 and [49.17.]060. 96-05-056, § 296-65-012, filed 2/16/96, effective 4/1/96. Statutory Authority: Chapter 49.17 RCW. 89-21-018 (Order 89-10), § 296-65-012, filed 10/10/89, effective 11/24/89.]

WAC 296-65-015 Training course approval. (1) Basic and refresher asbestos training courses may be sponsored by any individual, person, or other entity having department approval. Approval shall be contingent on the sponsor's compliance, as applicable, with licensing requirements established by the state board of vocational education.

(2) Prior to receiving department approval, each course shall be evaluated by the department for the breadth of knowledge and experience required to properly train asbestos workers or supervisors. Course content shall be carefully scrutinized for adequacy and accuracy. Training techniques will be evaluated by the department.

(3) Sponsors of basic and refresher training courses proposed for approval must submit:

- (a) Background information about course sponsors;
- (b) Course locations and fees;
- (c) Copies of course handouts;
- (d) A detailed description of course content and the amount of time allotted to each major topic;
- (e) A description of teaching methods to be utilized and a list of all audio-visual materials; the department may, in its discretion, request that copies of the materials be provided for review. Any audio-visual materials provided to the department will be returned to the applicant;
- (f) A list of all personnel involved in course preparation and presentation and a description of the background, special training and qualifications of each. Instructors shall have academic and/or field experience in asbestos abatement. The department may, in its discretion, require proposed instructors to pass an examination on subjects related to their respective topics of instruction;
- (g) A description of student evaluation methods and a copy of the required written examination including the scoring methodology to be used in grading the examination;
- (h) A description of course evaluation methods;
- (i) Any restrictions on attendance (language, class size, affiliation, etc.);
- (j) A list of any other states that currently approve the training course;
- (k) A letter from the course provider that clearly indicates how the course provider meets the EPA MAP requirements; and

(l) The amount and type of hands-on training for initial training courses.

(4) Application for training course approval and course materials shall be submitted to the department at least sixty days prior to the requested approval date. Materials may be mailed to:

Asbestos Certification Program
Department of Labor and
Industries
P.O. Box 44614
Olympia, Washington 98504-4614

(5) The decision to grant or renew approval of a basic or refresher asbestos training course shall be in the sole discretion of the department.

Following approval of a basic or refresher asbestos training course, the department will issue the course sponsor an approval which is valid for one year from the date of issuance. Application for renewal must follow the procedures described in subsections (3) and (4) of this section.

Following approval of a basic or refresher asbestos training course, in recognition that asbestos abatement is an evolving industry, the department reserves the right to require additional subjects to be taught and to specify the amount of time which shall be allotted to adequately cover required subjects. To assure adequate coverage of required material, each sponsor shall be provided and required to incorporate into their training course, a detailed outline of subject matter developed by the department.

(6) To be considered timely, the training course approval renewal must be received by the department no later than thirty days before the certificate expiration date.

(7) Any changes to a training course must be approved by the department in advance.

(8) The course sponsor shall provide the department with a list of all persons who have completed a basic or refresher training course. The list must be provided no later than ten days after a course is completed and must include the name and address of each trainee.

(9) The course sponsor must notify the department, in writing, at least fourteen days before a training course is scheduled to begin. The notification must include the date, time and address where the training will be conducted.

(10) A representative of the department may, at the department's discretion, attend a training course as an observer to verify that the training course is conducted in accordance with the program approved by the department.

(11) Course sponsors conducting training outside the state of Washington shall reimburse the department for reasonable travel expenses associated with department audits of the training courses. Reasonable travel expenses are defined as current state of Washington per diem and travel allowance rates including airfare and/or surface transportation rates. Such reimbursement shall be paid within thirty days of receipt of the billing notice.

(12) The training course sponsor shall limit each class to a maximum of thirty participants.

(13) The instructor to student ratio shall not exceed one-to-ten for any of the training required by WAC 296-65-005(13) and 296-65-007(14).

(14) The department may terminate the training course approval, if in the department's judgment the sponsor fails to maintain the course content and quality as initially approved, or fails to make changes to a course as required by WAC 296-65-015(5). The minimum criteria for withdrawal of training course approval shall include:

- (a) Misrepresentation of the extent of training courses approval by a state or EPA;
- (b) Failure to submit required information or notification in a timely manner;
- (c) Failure to maintain requisite records;
- (d) Falsification of accreditation records, instructor qualifications, or other accreditation information; or
- (e) Failure to adhere to the training standards and accreditation requirements of chapter 296-65 WAC.

(15) Any "notice of termination of training course approval" issued by the department may act as an order of immediate restraint as described by RCW 49.17.130.

(16) Recordkeeping requirements for training providers: All approved providers of accredited asbestos training courses must comply with the following minimum recordkeeping requirements:

(a) Training course materials. A training provider must retain copies of all instructional materials used in delivery of the classroom training such as student manuals, instructor notebooks and handouts.

(b) Instructor qualifications. A training provider must retain copies of all instructors' resumes, and the documents approving each instructor issued by either EPA or the department. Instructors must be approved by the department before teaching courses for accreditation purposes. A training provider must notify the department in advance whenever it changes course instructors. Records must accurately identify the instructors that taught each particular course for each date that a course is offered.

(c) Examinations. A training provider must document that each person who receives an accreditation certificate for an initial training course has achieved a passing score on the examination. These records must clearly indicate the date upon which the exam was administered, the training course and discipline for which the exam was given, the name of the person who proctored the exam, a copy of the exam, and the name and test score of each person taking the exam. The topic and dates of the training course must correspond to those listed on that person's accreditation certificate.

(d) Accreditation certificates. The training providers shall maintain records that document the names of all persons who have been awarded certificates, their certificate numbers, the disciplines for which accreditation was conferred, training and expiration dates, and the training location. The training provider shall maintain the records in a manner that allows verification by telephone of the required information.

(e) Verification of certificate information. Training providers of refresher training courses shall confirm that their students possess valid accreditation before granting course admission.

(f) Records retention and access.

(i) The training provider shall maintain all required records for a minimum of three years. The training provider, however, may find it advantageous to retain these records for a longer period of time.

(ii) The training provider must allow reasonable access to all of the records required by the MAP, and to any other records which may be required by the department for the approval of asbestos training providers or the accreditation of asbestos training courses, to both EPA and to the department, on request.

(iii) If a training provider ceases to conduct training, the training provider shall notify the department and give it the opportunity to take possession of that provider's asbestos training records.

(17) A representative of the department may, at the department's discretion, provide an examination as a substitution to the examination administered by the training course provider. The examination replacement will be used to verify that the training course is conducted in accordance with the program approved by the department.

[Statutory Authority: RCW 49.17.040, [49.17.]050 and [49.17.]060. 97-01-079, § 296-65-015, filed 12/17/96, effective 3/1/97; 96-05-056, § 296-65-015, filed 2/16/96, effective 4/1/96. Statutory Authority: Chapter 49.17 RCW. 89-21-018 (Order 89-10), § 296-65-015, filed 10/10/89, effective 11/24/89; 87-24-051 (Order 87-24), § 296-65-015, filed 11/30/87. Statutory Authority: RCW 49.17.050(2) and 49.17.040. 87-10-008 (Order 87-06), § 296-65-015, filed 4/27/87. Statutory Authority: SSB 4209, 1985 c 387. 85-21-080 (Order 85-30), § 296-65-015, filed 10/22/85.]

WAC 296-65-017 Contractor certification. (1) In order to obtain certification, an asbestos contractor must submit an application to the department. The application shall provide the following information:

(a) A list of asbestos projects conducted by the contractor during the previous twelve months. Such list shall include for each project:

- (i) Project name;
- (ii) Location;
- (iii) Brief description;
- (iv) Identity of any citations or enforcement actions issued for violations of asbestos regulations by any local, state, or federal jurisdiction relative to each individual project; and

(v) Name of the on-site project manager or supervisor.

(b) A list of asbestos supervisors (include certification number) working for the company.

(c) A statement certifying that the contractor has read and understands all applicable Washington state rules and regulations regarding asbestos abatement and will comply with them.

(d) A statement certifying that the applicant contractor's asbestos license or accreditation issued by any other state or jurisdiction has not been revoked, suspended, or denied by that state or jurisdiction.

(2) Upon approval, the department will issue the contractor a certificate. Denial of approval shall be in writing.

(3) Certificates shall be valid for a period of twelve months. Certificates may be extended during department review of a renewal application.

Note: In circumstances where it is necessary to coordinate an expiration date with the date of expiration of a contractor registration issued under chapter 18.27 RCW, certificates may be valid for less than one year. In such circumstances, the certificate fee prescribed in WAC 296-65-025 shall be prorated accordingly for the initial application only.

(4) The application for certificate renewal shall contain the information specified in subsection (1) of this section.

(5) Applications for renewal must be received by the department not less than sixty days before the certificate expires.

(6) The department may suspend or revoke the certificate as provided in WAC 296-65-050 and chapter 296-350 WAC.

[Statutory Authority: Chapter 49.17 RCW. 89-21-018 (Order 89-10), § 296-65-017, filed 10/10/89, effective 11/24/89.]

WAC 296-65-020 Notification requirements. (1)

Before any person or individual begins an asbestos project as defined in WAC 296-62-07722 and 296-65-003 involving more than forty-eight square feet or ten linear feet, unless the surface area of the pipe is greater than forty-eight square feet, of asbestos containing material, written notification must be provided to the department. Notices must include:

- (a) Name and address of the owner and contractor.
- (b) Description of the facility including size, age, and prior use of the facility.
- (c) Amount of asbestos-containing material to be removed or encapsulated.
- (d) Location of the facility.
- (e) Exact starting and completion dates of the asbestos project, including shifts during which abatement work will be accomplished. These dates must correspond to the dates specified for asbestos removal in the contract. Any change in these dates or work shifts must be communicated to the department by an amended notice filed at the office where the original notice was filed.

- When the starting date or time changes, the amended notice must be filed no later than 5:00 p.m. on the business day prior to the starting date in the original notice and prior to the new starting date.

- When the completion date or time changes, the amended notice must be filed before completion of the project, and within eight hours from when the person learns that the change will occur.

Notice may be filed by facsimile (fax).

(f) Nature of the project and methods used to remove or encapsulate the material.

(2) Notices must be received by the department no later than ten days prior to the start of the project. Notices must be sent directly to the department of labor and industries regional office having jurisdiction on the project.

(3) The director may waive the prenotification requirement upon written request of an owner for large-scale, ongoing projects. In granting such a waiver, the director will require the owner to provide prenotification if significant changes in personnel, methodologies, equipment, work site, or work procedures occur or are likely to occur. The director will further require annual resubmittal of such notification.

(4) The director, upon review of an owner's reports, work practices, or other data available as a result of inspections, audits, or other authorized activities, may reduce the size threshold for prenotification required by this section. Such a change will be based on the director's determination that significant problems in personnel, methodologies, equipment, work site, or work procedures are creating the potential for violations of this chapter.

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(5) Emergency projects which disturb or release asbestos into the air must be reported to the department within three working days after commencement of the project in the manner otherwise required under this chapter. The employees, the employees' collective bargaining representative or employee representative, if any, and other persons at the project area must be notified of the emergency as soon as possible by the person undertaking the emergency project. A notice describing the nature of the emergency project must be clearly posted adjacent to the work area.

(6) Incremental phasing in the conduct or design of asbestos projects or otherwise conducting or designing asbestos projects of a size less than the threshold exemption specified in subsection (1) of this section, with the intent of avoiding the notification requirements, is a violation of this chapter.

[Statutory Authority: RCW 49.17.040, 49.17.050, 49.26.040 and 49.26.130. 99-17-026, § 296-65-020, filed 8/10/99, effective 11/10/99. Statutory Authority: RCW 49.17.040, [49.17.]050 and [49.17.]060. 96-05-056, § 296-65-020, filed 2/16/96, effective 4/1/96. Statutory Authority: Chapter 49.17 RCW. 89-21-018 (Order 89-10), § 296-65-020, filed 10/10/89, effective 11/24/89; 87-24-051 (Order 87-24), § 296-65-020, filed 11/30/87. Statutory Authority: RCW 49.17.050(2) and 49.17.040. 87-10-008 (Order 87-06), § 296-65-020, filed 4/27/87. Statutory Authority: SSB 4209, 1985 c 387. 85-21-080 (Order 85-30), § 296-65-020, filed 10/22/85.]

WAC 296-65-025 Fees. (1) A nonrefundable administrative fee of twenty-five dollars will be assessed for each initial, replacement, or renewal asbestos worker certificate application. The fee (check or money order) must accompany the certificate application and be made payable to the department. An application form may be obtained from any approved training course instructor or directly from the department.

(2) A nonrefundable administrative fee of thirty-five dollars will be assessed for each initial, replacement, or renewal asbestos supervisor certificate application. The fee (check or money order) must accompany the certificate application and be made payable to the department. An application form may be obtained from any approved training course instructor or directly from the department.

(3) A nonrefundable administrative fee of one thousand dollars will be assessed for each initial or renewal contractor certificate application. The fee (check or money order) must accompany the certificate application and be made payable to the department. An application form may be obtained from the department.

Note: In circumstances where it is necessary to coordinate an expiration date with the date of expiration of a contractor registration issued under chapter 18.27 RCW, certificates may be valid for less than one year. In such circumstances, the certificate fee prescribed in WAC 296-65-025 will be prorated accordingly for the initial application only.

(4) A nonrefundable administrative fee of one thousand dollars will be assessed for each initial and renewal application for training course approval. A check or money order must accompany any application made under the provisions of WAC 296-65-015.

[Statutory Authority: RCW 49.17.040, 49.17.050, 49.26.040, and 49.26.130. 99-17-026, § 296-65-025, filed 8/10/99, effective 11/10/99. Statutory Authority: Chapter 49.17 RCW. 89-21-018 (Order 89-10), § 296-65-025, filed 10/10/89, effective 11/24/89; 87-24-051 (Order 87-24), § 296-65-

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025, filed 11/30/87. Statutory Authority: SSB 4209, 1985 c 387. 85-21-080 (Order 85-30), § 296-65-025, filed 10/22/85.]

WAC 296-65-030 Methods of compliance. (1) Before submitting a bid or working on an asbestos abatement project, any person or individual must obtain an asbestos contractor certificate as provided in WAC 296-65-017 and must have in its employ at least one certified asbestos supervisor responsible for supervising all asbestos projects undertaken by the contractor.

(2) A certified asbestos supervisor will not be required on asbestos projects involving less than three square feet or three linear feet of asbestos-containing material unless the surface area of the pipe is greater than three square feet. A certified asbestos supervisor is required for all Class I and II asbestos work in accordance with WAC 296-62-07728(4).

(3) No employee or other individual is eligible to do work or supervise an asbestos project without being issued a certificate by the department.

(a) Employees performing Class I or Class II asbestos work must be certified asbestos workers as specified in WAC 296-62-07722.

(b) Employees performing Class III or Class IV asbestos work specified by WAC 296-62-07722 as an asbestos project shall be certified asbestos workers.

(4) No person may assign any employee, contract with, or permit any individual, to work on an asbestos project as specified in WAC 296-62-07722 in any facility without the project being performed by a certified asbestos worker.

(5) A certified asbestos supervisor must provide direct, on-site supervision for an asbestos project. When an employer conducts an asbestos abatement project in its own facility by its own certified employees, supervision may be performed in the regular course of a certified asbestos supervisor's duties. Asbestos workers must have access to and be under the control of certified asbestos supervisors throughout the duration of the project.

(6) Any construction, renovation, remodeling, maintenance, repair, or demolition which was started without meeting the requirements of this section must be halted immediately and cannot be resumed before meeting such requirements.

[Statutory Authority: RCW 49.17.040, 49.17.050, 49.26.040 and 49.26.130. 99-17-026, § 296-65-030, filed 8/10/99, effective 11/10/99. Statutory Authority: RCW 49.17.040, [49.17.050 and [49.17.060. 97-19-014, § 296-65-030, filed 9/5/97, effective 11/5/97; 96-05-056, § 296-65-030, filed 2/16/96, effective 4/1/96. Statutory Authority: Chapter 49.17 RCW. 89-21-018 (Order 89-10), § 296-65-030, filed 10/10/89, effective 11/24/89. Statutory Authority: RCW 49.17.050(2) and 49.17.040. 87-10-008 (Order 87-06), § 296-65-030, filed 4/27/87. Statutory Authority: SSB 4209, 1985 c 387. 85-21-080 (Order 85-30), § 296-65-030, filed 10/22/85.]

WAC 296-65-035 Reciprocity. (1) The department may recognize certifications issued by another state for asbestos workers or supervisors provided that:

(a) The worker is in possession of a currently valid certification from the other state; and

(b) The department evaluates the other state's qualification procedures and determines the certification to be equivalent to the minimum requirements of this chapter.

(2) When the department's evaluation of another state's qualification procedures identifies that equivalent require-

ments are met, the department is authorized to issue a Washington state certification upon receipt of a completed application.

(3) When the department's evaluation of another state's qualification procedures identifies deficiencies, the department may require specific supplemental training and/or examination before issuing a Washington state certification.

[Statutory Authority: Chapter 49.17 RCW. 89-21-018 (Order 89-10), § 296-65-035, filed 10/10/89, effective 11/24/89.]

WAC 296-65-050 Denial, suspension, and revocation of certificates. (1) The department may deny, suspend, or revoke a certificate for failure of the holder to comply with any requirement of this chapter or any applicable health and safety standards and regulations.

(2) The criteria for decertification for asbestos workers, supervisors, and contractors shall include:

(a) Performing work requiring accreditation at a job site without being in physical possession of initial and current accreditation certificates;

(b) Permitting the duplication or use of one's own accreditation certificate by another;

(c) Performing work for which accreditation has not been received; or

(d) Obtaining accreditation from a training provider that does not have approval to offer training for the particular discipline from either EPA or from a state that has a contractor accreditation plan at least as stringent as the EPA MAP.

(3) The following persons are not certified for the purposes of this chapter and their respective certificate(s) shall be revoked by the department:

(a) Any person who obtains accreditation through fraudulent representation of training or examination documents;

(b) Any person who obtains training documentation through fraudulent means;

(c) Any person who gains admission to and completes refresher training through fraudulent representation of initial or previous refresher training documentation; or

(d) Any person who obtains accreditation through fraudulent representation of accreditation requirements such as education, training, professional registration, or experience.

(4) Before any certificate may be denied, suspended, or revoked, the holder thereof shall be given written notice of the department's intention to do so, mailed by registered mail, return receipt requested, to the holder's last known address. The notice shall enumerate the allegations against such holder and shall give him or her the opportunity to request a conference before the department. At such conference, the department and the holder shall have opportunity to produce witnesses and give testimony.

(5) A denial, suspension, or revocation order may be appealed to the board of industrial insurance appeals within fifteen working days after the denial, suspension, or revocation order is entered. The notice of appeal may be filed with the department or the board of industrial insurance appeals. The board of industrial insurance appeals shall hold the hearing in accordance with procedures established in RCW 49.17.140. Any party aggrieved by an order of the board of industrial insurance appeals may obtain superior court review in the manner provided in RCW 49.17.150.

(6) The department may suspend or revoke any certificate issued under this chapter for a period of not less than six months upon the following grounds:

(a) The certificate was obtained through error or fraud;
or

(b) The holder thereof is judged to be incompetent to carry out the work for which the certificate was issued.

[Statutory Authority: RCW 49.17.040, [49.17.]050 and [49.17.]060. 96-05-056, § 296-65-050, filed 2/16/96, effective 4/1/96. Statutory Authority: Chapter 49.17 RCW. 89-21-018 (Order 89-10), § 296-65-050, filed 10/10/89, effective 11/24/89.]

Chapter 296-67 WAC

SAFETY STANDARDS FOR PROCESS SAFETY MANAGEMENT OF HIGHLY HAZARDOUS CHEMICALS

WAC

296-67-001	Process safety management of highly hazardous chemicals.
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296-67-285	Appendix A—List of highly hazardous chemicals, toxics and reactives (mandatory).
296-67-289	Appendix B—Block flow diagram and simplified process flow diagram (nonmandatory).
296-67-291	Appendix C—Compliance guidelines and recommendations for process safety management (nonmandatory).
296-67-293	Appendix D—Sources of further information (nonmandatory).

WAC 296-67-001 Process safety management of highly hazardous chemicals. (1) Purpose. This section contains requirements for preventing or minimizing the consequences of catastrophic releases of toxic, reactive, flammable, or explosive chemicals. These releases may result in toxic, fire, or explosion hazards.

(2) Application.

(a) This part applies to the following:

(i) A process which involves a chemical at or above the specified threshold quantities listed in WAC 296-67-285, Appendix A;

(ii) A process which involves a flammable liquid or gas (as defined in WAC 296-62-05405 [WAC 296-800-170]) on site in one location, in a quantity of 10,000 pounds (4535.9 kg) or more except for:

(A) Hydrocarbon fuels used solely for workplace consumption as a fuel (e.g., propane used for comfort heating, gasoline for vehicle refueling), if such fuels are not a part of a process containing another highly hazardous chemical covered by this standard;

(B) Flammable liquids stored in atmospheric tanks or transferred which are kept below their normal boiling point without benefit of chilling or refrigeration.

(b) This part does not apply to:

(i) Retail facilities;

(ii) Oil or gas well drilling or servicing operations; or

(iii) Normally unoccupied remote facilities.

[Statutory Authority: Chapter 49.17 RCW. 92-17-022 (Order 92-06), § 296-67-001, filed 8/10/92, effective 9/10/92.]

WAC 296-67-005 Definitions. "Atmospheric tank" means a storage tank which has been designed to operate at pressures from atmospheric through 0.5 p.s.i.g. (pounds per square inch gauge, 3.45 Kpa).

"Boiling point" means the boiling point of a liquid at a pressure of 14.7 pounds per square inch absolute (p.s.i.a.) (760 mm.). For the purposes of this part, where an accurate boiling point is unavailable for the material in question, or for mixtures which do not have a constant boiling point, the 10 percent point of a distillation performed in accordance with the Standard Method of Test for Distillation of Petroleum Products, ASTM D-86-62, may be used as the boiling point of the liquid.

"Catastrophic release" means a major uncontrolled emission, fire, or explosion, involving one or more highly hazardous chemicals, that presents serious danger to employees in the workplace.

"Facility" means the buildings, containers, or equipment which contain a process.

"Highly hazardous chemical" means a substance possessing toxic, reactive, flammable, or explosive properties and specified by WAC 296-67-001 (2)(a).

"Hot work" means work involving electric or gas welding, cutting, brazing, or similar flame or spark-producing operations.

"Normally unoccupied remote facility" means a facility which is operated, maintained, or serviced by employees who visit the facility only periodically to check its operation and to perform necessary operating or maintenance tasks. No employees are permanently stationed at the facility. Facilities meeting this definition are not contiguous with, and must be geographically remote from all other buildings, processes, or persons.

"Process" means any activity involving a highly hazardous chemical including any use, storage, manufacturing, handling, or the on-site movement of such chemicals, or combination of these activities. For purposes of this definition, any group of vessels which are interconnected and separate vessels which are located such that a highly hazardous chemical could be involved in a potential release shall be considered a single process.

"Replacement in kind" means a replacement which satisfies the design specification.

"Trade secret" means any confidential formula, pattern, process, device, information, or compilation of information that is used in an employer's business, and that gives the employer an opportunity to obtain an advantage over competitors who do not know or use it. Chapter 296-62 WAC, Part B-1, sets out the criteria to be used in evaluating trade secrets.

[Statutory Authority: RCW 49.17.010, [49.17.]040, and [49.17.]050. 01-11-038, § 296-67-005, filed 5/9/01, effective 9/1/01. Statutory Authority: Chapter 49.17 RCW. 93-21-075 (Order 93-06), § 296-67-005, filed 10/20/93, effective 12/1/93; 92-17-022 (Order 92-06), § 296-67-005, filed 8/10/92, effective 9/10/92.]

WAC 296-67-009 Employee participation. (1)

Employers shall develop a written plan of action regarding the implementation of the employee participation required by this section.

(2) Employers shall consult with employees and their representatives on the conduct and development of process hazards analyses and on the development of the other elements of process safety management in this standard.

(3) Employers shall provide to employees and their representatives access to process hazard analyses and to all other information required to be developed under this standard.

[Statutory Authority: Chapter 49.17 RCW. 92-17-022 (Order 92-06), § 296-67-009, filed 8/10/92, effective 9/10/92.]

WAC 296-67-013 Process safety information. In

accordance with the schedule set forth in WAC 296-67-017, the employer shall complete a compilation of written process safety information before conducting any process hazard analysis required by the standard. The compilation of written process safety information is to enable the employer and the employees involved in operating the process to identify and understand the hazards posed by those processes involving highly hazardous chemicals. This process safety information shall include information pertaining to the hazards of the highly hazardous chemicals used or produced by the process, information pertaining to the technology of the process, and information pertaining to the equipment in the process.

(1) Information pertaining to the hazards of the highly hazardous chemicals in the process. This information shall consist of at least the following:

- (a) Toxicity information;
- (b) Permissible exposure limits;
- (c) Physical data;
- (d) Reactivity data;
- (e) Corrosivity data;
- (f) Thermal and chemical stability data; and
- (g) Hazardous effects of inadvertent mixing of different materials that could foreseeably occur.

Note: Material Safety Data Sheets meeting the requirements of WAC 296-62-05413 may be used to comply with this requirement to the extent they contain the information required by this section.

(2) Information pertaining to the technology of the process.

(a) Information concerning the technology of the process shall include at least the following:

- (i) A block flow diagram or simplified process flow diagram (see WAC 296-67-289, Appendix B);
- (ii) Process chemistry;
- (iii) Maximum intended inventory;
- (iv) Safe upper and lower limits for such items as temperatures, pressures, flows, or compositions; and
- (v) An evaluation of the consequences of deviations, including those affecting the safety and health of employees.

(b) Where the original technical information no longer exists, such information may be developed in conjunction with the process hazard analysis in sufficient detail to support the analysis.

(3) Information pertaining to the equipment in the process.

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(a) Information pertaining to the equipment in the process shall include:

- (i) Materials of construction;
- (ii) Piping and instrument diagrams (P&IDs);
- (iii) Electrical classification;
- (iv) Relief system design and design basis;
- (v) Ventilation system design;
- (vi) Design codes and standards employed;
- (vii) Material and energy balances for processes built after May 26, 1992; and
- (viii) Safety systems (e.g., interlocks, detection, or suppression systems).

(b) The employer shall document that equipment complies with recognized and generally accepted good engineering practices.

(c) For existing equipment designed and constructed in accordance with codes, standards, or practices that are no longer in general use, the employer shall determine and document that the equipment is designed, maintained, inspected, tested, and operating in a safe manner.

[Statutory Authority: Chapter 49.17 RCW. 92-17-022 (Order 92-06), § 296-67-013, filed 8/10/92, effective 9/10/92.]

WAC 296-67-017 Process hazard analysis. (1) The employer shall perform an initial process hazard analysis (hazard evaluation) on processes covered by this standard. The process hazard analysis shall be appropriate to the complexity of the process and shall identify, evaluate, and control the hazards involved in the process. Employers shall determine and document the priority order for conducting process hazard analyses based on a rationale which includes such considerations as extent of the process hazards, number of potentially affected employees, age of the process, and operating history of the process. The process hazard analysis shall be conducted as soon as possible, but not later than the following schedule:

- (a) No less than 25 percent of the initial process hazards analyses shall be completed by May 26, 1994;
- (b) No less than 50 percent of the initial process hazards analyses shall be completed by May 26, 1995;
- (c) No less than 75 percent of the initial process hazards analyses shall be completed by May 26, 1996;
- (d) All initial process hazards analyses shall be completed by May 26, 1997;
- (e) Process hazards analyses completed after May 26, 1987, which meet the requirements of this section are acceptable as initial process hazards analyses. These process hazard analyses shall be updated and revalidated, based on their completion date, in accordance with this section.

(2) The employer shall use one or more of the following methodologies that are appropriate to determine and evaluate the hazards of the process being analyzed.

- (a) What-If;
 - (b) Checklist;
 - (c) What-If/Checklist;
 - (d) Hazard and Operability Study (HAZOP);
 - (e) Failure Mode and Effects Analysis (FMEA);
 - (f) Fault Tree Analysis; or
 - (g) An appropriate equivalent methodology.
- (3) The process hazard analysis shall address:
- (a) The hazards of the process;

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(b) The identification of any previous incident which had a likely potential for catastrophic consequences in the workplace;

(c) Engineering and administrative controls applicable to the hazards and their interrelationships such as appropriate application of detection methodologies to provide early warning of releases. (Acceptable detection methods might include process monitoring and control instrumentation with alarms, and detection hardware such as hydrocarbon sensors);

(d) Consequences of failure of engineering and administrative controls;

(e) Facility siting;

(f) Human factors; and

(g) A qualitative evaluation of a range of the possible safety and health effects of failure of controls on employees in the workplace.

(4) The process hazard analysis shall be performed by a team with expertise in engineering and process operations, and the team shall include at least one employee who has experience and knowledge specific to the process being evaluated. Also, one member of the team must be knowledgeable in the specific process hazard analysis methodology being used.

(5) The employer shall establish a system to promptly address the team's findings and recommendations; assure that the recommendations are resolved in a timely manner and that the resolution is documented; document what actions are to be taken; complete actions as soon as possible; develop a written schedule of when these actions are to be completed; communicate the actions to operating, maintenance, and other employees whose work assignments are in the process and who may be affected by the recommendations or actions.

(6) At least every five years after the completion of the initial process hazard analysis, the process hazard analysis shall be updated and revalidated by a team meeting the requirements of this section, to assure that the process hazard analysis is consistent with the current process.

(7) Employers shall retain process hazards analyses and updates or revalidations for each process covered by this part, as well as the documented resolution of recommendations described in this section for the life of the process.

[Statutory Authority: Chapter 49.17 RCW. 92-17-022 (Order 92-06), § 296-67-017, filed 8/10/92, effective 9/10/92.]

WAC 296-67-021 Operating procedures. (1) The employer shall develop and implement written operating procedures that provide clear instructions for safely conducting activities involved in each covered process consistent with the process safety information and shall address at least the following elements.

(a) Steps for each operating phase:

(i) Initial startup;

(ii) Normal operations;

(iii) Temporary operations;

(iv) Emergency shutdown including the conditions under which emergency shutdown is required, and the assignment of shutdown responsibility to qualified operators to ensure that emergency shutdown is executed in a safe and timely manner;

(v) Emergency operations;

(vi) Normal shutdown; and

(vii) Startup following a turnaround, or after an emergency shutdown.

(b) Operating limits:

(i) Consequences of deviation; and

(ii) Steps required to correct or avoid deviation.

(c) Safety and health considerations:

(i) Properties of, and hazards presented by, the chemicals used in the process;

(ii) Precautions necessary to prevent exposure, including engineering controls, administrative controls, and personal protective equipment;

(iii) Control measures to be taken if physical contact or airborne exposure occurs;

(iv) Quality control for raw materials and control of hazardous chemical inventory levels; and

(v) Any special or unique hazards.

(d) Safety systems and their functions.

(2) Operating procedures shall be readily accessible to employees who work in or maintain a process.

(3) The operating procedures shall be reviewed as often as necessary to assure that they reflect current operating practice, including changes that result from changes in process chemicals, technology, and equipment, and changes to facilities.

(4) The employer shall certify annually that these operating procedures are current and accurate.

(5) The employer shall develop and implement safe work practices to provide for the control of hazards during operations such as lockout/tagout; confined space entry; opening process equipment or piping; and control over entrance into a facility by maintenance, contractor, laboratory, or other support personnel. These safe work practices shall apply to employees and contractor employees.

[Statutory Authority: Chapter 49.17 RCW. 92-17-022 (Order 92-06), § 296-67-021, filed 8/10/92, effective 9/10/92.]

WAC 296-67-025 Training. (1) Initial training.

(a) Each employee presently involved in operating a process, and each employee before being involved in operating a newly assigned process, shall be trained in an overview of the process and in the operating procedures as specified in WAC 296-67-021. The training shall include emphasis on the specific safety and health hazards, emergency operations including shutdown, and safe work practices applicable to the employee's job tasks.

(b) In lieu of initial training for those employees already involved in operating a process on May 26, 1992, an employer may certify in writing that the employee has the required knowledge, skills, and abilities to safely carry out the duties and responsibilities as specified in the operating procedures.

(2) Refresher training. Refresher training shall be provided at least every three years, and more often if necessary, to each employee involved in operating a process to assure that the employee understands and adheres to the current operating procedures of the process. The employer, in consultation with the employees involved in operating the process, shall determine the appropriate frequency of refresher training.

(3) Training documentation. The employer shall ascertain that each employee involved in operating a process has received and understood the training required by this section. The employer shall prepare a record which contains the identity of the employee, the date of training, and the means used to verify that the employee understood the training.

[Statutory Authority: Chapter 49.17 RCW. 92-17-022 (Order 92-06), § 296-67-025, filed 8/10/92, effective 9/10/92.]

WAC 296-67-029 Contractors. (1) Application. This section applies to contractors performing maintenance or repair, turnaround, major renovation, or specialty work on or adjacent to a covered process. It does not apply to contractors providing incidental services which do not influence process safety, such as janitorial work, food and drink services, laundry, delivery, or other supply services.

(2) Employer responsibilities.

(a) The employer, when selecting a contractor, shall obtain and evaluate information regarding the contract employer's safety performance and programs.

(b) The employer shall inform contract employers of the known potential fire, explosion, or toxic release hazards related to the contractor's work and the process.

(c) The employer shall explain to contract employers the applicable provisions of the emergency action plan required by WAC 296-67-053.

(d) The employer shall develop and implement safe work practices consistent with WAC 296-67-021, to control the entrance, presence, and exit of contract employers and contract employees in covered process areas.

(e) The employer shall periodically evaluate the performance of contract employers in fulfilling their obligations as specified in subsection (3) of this section.

(f) The employer shall maintain a contract employee injury and illness log related to the contractor's work in process areas.

(3) Contract employer responsibilities.

(a) The contract employer shall assure that each contract employee is trained in the work practices necessary to safely perform his/her job.

(b) The contract employer shall assure that each contract employee is instructed in the known potential fire, explosion, or toxic release hazards related to his/her job and the process, and the applicable provisions of the emergency action plan.

(c) The contract employer shall document that each contract employee has received and understood the training required by this paragraph. The contract employer shall prepare a record which contains the identity of the contract employee, the date of training, and the means used to verify that the employee understood the training.

(d) The contract employer shall assure that each contract employee follows the safety rules of the facility including the safe work practices required by WAC 296-67-021.

(e) The contract employer shall advise the employer of any unique hazards presented by the contract employer's work, or of any hazards found by the contract employer's work.

[Statutory Authority: Chapter 49.17 RCW. 92-17-022 (Order 92-06), § 296-67-029, filed 8/10/92, effective 9/10/92.]

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WAC 296-67-033 Prestartup safety review. (1) The employer shall perform a prestartup safety review for new facilities and for modified facilities when the modification is significant enough to require a change in the process safety information.

(2) The prestartup safety review shall confirm that prior to the introduction of highly hazardous chemicals to a process:

(a) Construction and equipment is in accordance with design specifications;

(b) Safety, operating, maintenance, and emergency procedures are in place and are adequate;

(c) For new facilities, a process hazard analysis has been performed and recommendations have been resolved or implemented before startup; and modified facilities meet the requirements contained in management of change, WAC 296-67-045.

(d) Training of each employee involved in operating a process has been completed.

[Statutory Authority: Chapter 49.17 RCW. 92-17-022 (Order 92-06), § 296-67-033, filed 8/10/92, effective 9/10/92.]

WAC 296-67-037 Mechanical integrity. (1) Application. WAC 296-67-037 (2) through (6) apply to the following process equipment:

(a) Pressure vessels and storage tanks;

(b) Piping systems (including piping components such as valves);

(c) Relief and vent systems and devices;

(d) Emergency shutdown systems;

(e) Controls (including monitoring devices and sensors, alarms, and interlocks); and

(f) Pumps.

(2) Written procedures. The employer shall establish and implement written procedures to maintain the ongoing integrity of process equipment.

(3) Training for process maintenance activities. The employer shall train each employee involved in maintaining the ongoing integrity of process equipment in an overview of that process and its hazards and in the procedures applicable to the employee's job tasks to assure that the employee can perform the job tasks in a safe manner.

(4) Inspection and testing.

(a) Inspections and tests shall be performed on process equipment.

(b) Inspection and testing procedures shall follow recognized and generally accepted good engineering practices.

(c) The frequency of inspections and tests of process equipment shall be consistent with applicable manufacturers' recommendations and good engineering practices, and more frequently if determined to be necessary by prior operating experience.

(d) The employer shall document each inspection and test that has been performed on process equipment. The documentation shall identify the date of the inspection or test, the name of the person who performed the inspection or test, the serial number or other identifier of the equipment on which the inspection or test was performed, a description of the inspection or test performed, and the results of the inspection or test.

(5) Equipment deficiencies. The employer shall correct deficiencies in equipment that are outside acceptable limits (defined by the process safety information in WAC 296-67-013) before further use or in a safe and timely manner when necessary means are taken to assure safe operation.

(6) Quality assurance.

(a) In the construction of new plants and equipment, the employer shall assure that equipment as it is fabricated is suitable for the process application for which they will be used.

(b) Appropriate checks and inspections shall be performed to assure that equipment is installed properly and consistent with design specifications and the manufacturer's instructions.

(c) The employer shall assure that maintenance materials, spare parts and equipment are suitable for the process application for which they will be used.

[Statutory Authority: Chapter 49.17 RCW. 92-17-022 (Order 92-06), § 296-67-037, filed 8/10/92, effective 9/10/92.]

WAC 296-67-041 Hot work permit. (1) The employer shall issue a hot work permit for hot work operations conducted on or near a covered process.

(2) The permit shall document that the fire prevention and protection requirements in WAC 296-24-695 have been implemented prior to beginning the hot work operations; it shall indicate the date(s) authorized for hot work; and identify the object on which hot work is to be performed.

(3) The permit shall be kept on file until completion of the hot work operations.

[Statutory Authority: Chapter 49.17 RCW. 92-17-022 (Order 92-06), § 296-67-041, filed 8/10/92, effective 9/10/92.]

WAC 296-67-045 Management of change. (1) The employer shall establish and implement written procedures to manage changes (except for "replacements in kind") to process chemicals, technology, equipment, and procedures; and, changes to facilities that affect a covered process.

(2) The procedures shall assure that the following considerations are addressed prior to any change:

- (a) The technical basis for the proposed change;
- (b) Impact of change on safety and health;
- (c) Modifications to operating procedures;
- (d) Necessary time period for the change; and
- (e) Authorization requirements for the proposed change.

(3) Employees involved in operating a process and maintenance and contract employees whose job tasks will be affected by a change in the process shall be informed of, and trained in, the change prior to start up of the process or affected part of the process.

(4) If a change covered by this section results in a change in the process safety information required by WAC 296-67-013, such information shall be updated accordingly.

(5) If a change covered by this section results in a change in the operating procedures or practices required by WAC 296-67-021, such procedures or practices shall be updated accordingly.

[Statutory Authority: Chapter 49.17 RCW. 92-17-022 (Order 92-06), § 296-67-045, filed 8/10/92, effective 9/10/92.]

[Title 296 WAC—p. 1650]

WAC 296-67-049 Incident investigation. (1) The employer shall investigate each incident which resulted in, or could reasonably have resulted in a catastrophic release of highly hazardous chemical in the workplace.

(2) An incident investigation shall be initiated as promptly as possible, but not later than 48 hours following the incident.

(3) An incident investigation team shall be established and consist of at least one person knowledgeable in the process involved, including a contract employee if the incident involved work of the contractor, and other persons with appropriate knowledge and experience to thoroughly investigate and analyze the incident.

(4) A report shall be prepared at the conclusion of the investigation which includes at a minimum:

- (a) Date of incident;
- (b) Date investigation began;
- (c) A description of the incident;
- (d) The factors that contributed to the incident; and
- (e) Any recommendations resulting from the investigation.

(5) The employer shall establish a system to promptly address and resolve the incident report findings and recommendations. Resolutions and corrective actions shall be documented.

(6) The report shall be reviewed with all affected personnel whose job tasks are relevant to the incident findings including contract employees where applicable.

(7) Incident investigation reports shall be retained for five years.

[Statutory Authority: Chapter 49.17 RCW. 92-17-022 (Order 92-06), § 296-67-049, filed 8/10/92, effective 9/10/92.]

WAC 296-67-053 Emergency planning and response. The employer shall establish and implement an emergency action plan for the entire plant in accordance with the provisions of WAC 296-24-567. In addition, the emergency action plan shall include procedures for handling small releases. Employers covered under this standard may also be subject to the emergency response provisions contained in chapter 296-824 WAC, Emergency response to hazardous substance releases.

[Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050, and [49.17].060. 02-20-034, § 296-67-053, filed 9/24/02, effective 10/1/02. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 01-11-038, § 296-67-053, filed 5/9/01, effective 9/1/01. Statutory Authority: Chapter 49.17 RCW. 92-17-022 (Order 92-06), § 296-67-053, filed 8/10/92, effective 9/10/92.]

WAC 296-67-057 Compliance audits. (1) Employers shall certify that they have evaluated compliance with the provisions of this section at least every three years to verify that the procedures and practices developed under the standard are adequate and are being followed.

(2) The compliance audit shall be conducted by at least one person knowledgeable in the process.

(3) A report of the findings of the audit shall be developed.

(4) The employer shall promptly determine and document an appropriate response to each of the findings of the compliance audit, and document that deficiencies have been corrected.

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(5) Employers shall retain the two most recent compliance audit reports.

[Statutory Authority: Chapter 49.17 RCW. 92-17-022 (Order 92-06), § 296-67-057, filed 8/10/92, effective 9/10/92.]

WAC 296-67-061 Trade secrets. (1) Employers shall make all information necessary to comply with the section available to those persons responsible for compiling the process safety information (required by WAC 296-67-013), those assisting in the development of the process hazard analysis (required by WAC 296-67-017), those responsible for developing the operating procedures (required by WAC 296-67-021), and those involved in incident investigations (required by WAC 296-67-049), emergency planning and response (WAC 296-67-053) and compliance audits (WAC 296-67-057) without regard to possible trade secret status of such information.

(2) Nothing in this section shall preclude the employer from requiring the persons to whom the information is made available under WAC 296-67-061 to enter into confidentiality agreements not to disclose the information as set forth in WAC 296-62-053.

(3) Subject to the rules and procedures set forth in WAC 296-62-053, employees and their designated representatives shall have access to trade secret information contained within the process hazard analysis and other documents required to be developed by this standard.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 01-11-038, § 296-67-061, filed 5/9/01, effective 9/1/01. Statutory Authority: Chapter 49.17 RCW. 92-17-022 (Order 92-06), § 296-67-061, filed 8/10/92, effective 9/10/92.]

WAC 296-67-285 Appendix A—List of highly hazardous chemicals, toxics and reactives (mandatory). This appendix contains a listing of toxic and reactive highly hazardous chemicals which present a potential for a catastrophic event at or above the threshold quantity.

CHEMICAL NAME	CAS*	TQ**
Acetaldehyde	75-07-0	2500
Acrolein (2-Propenal)	107-02-8	150
Acrylyl Chloride	814-68-6	250
Allyl Chloride	107-05-1	1000
Allylamine	107-11-9	1000
Alkylaluminums	Varies	5000
Ammonia, Anhydrous	7664-41-7	10000
Ammonia solutions (>44% ammonia by weight)	7664-41-7	15000
Ammonium Perchlorate	7790-98-9	7500
Ammonium Permanganate	7787-36-2	7500
Arsine (also called Arsenic Hydride)	7784-42-1	100
Bis(Chloromethyl) Ether	542-88-1	100
Boron Trichloride	10294-34-5	2500
Boron Trifluoride	7637-07-2	250
Bromine	7726-95-6	1500
Bromine Chloride	13863-41-7	1500
Bromine Pentafluoride	7789-30-2	2500
Bromine Trifluoride	7787-71-5	15000
3-Bromopropyne (also called Propargyl Bromide)	106-96-7	100
Butyl Hydroperoxide (Tertiary)	75-91-2	5000
Butyl Perbenzoate (Tertiary)	614-45-9	7500
Carbonyl Chloride (see Phosgene)	75-44-5	100
Carbonyl Fluoride	353-50-4	2500
Cellulose Nitrate (concentration >12.6% nitrogen)	9004-70-0	2500
Chlorine	7782-50-5	1500

CHEMICAL NAME	CAS*	TQ**
Chlorine Dioxide	10049-04-4	1000
Chlorine Pentafluoride	13637-63-3	1000
Chlorine Trifluoride	7790-91-2	1000
Chlorodiethylaluminum (also called Diethylaluminum Chloride)	96-10-6	5000
1-Chloro-2,4-Dinitrobenzene	97-00-7	5000
Chloromethyl Methyl Ether	107-30-2	500
Chloropicrin	76-06-2	500
Chloropicrin and Methyl Bromide mixture	None	1500
Chloropicrin and Methyl Chloride mixture	None	1500
Cumene Hydroperoxide	80-15-9	5000
Cyanogen	460-19-5	2500
Cyanogen Chloride	506-77-4	500
Cyanuric Fluoride	675-14-9	100
Diacetyl Peroxide (Concentration >70%)	110-22-5	5000
Diazomethane	334-88-3	500
Dibenzoyl Peroxide	94-36-0	7500
Diborane	19287-45-7	100
Dibutyl Peroxide (Tertiary)	110-05-4	5000
Dichloro Acetylene	7572-29-4	250
Dichlorosilane	4109-96-0	2500
Diethylzinc	557-20-0	10000
Diisopropyl Peroxydicarbonate	105-64-6	7500
Dilaluroyl Peroxide	105-74-8	7500
Dimethyldichlorosilane	75-78-5	1000
Dimethylhydrazine, 1,1-	57-14-7	1000
Dimethylamine, Anhydrous	124-40-3	2500
2,4-Dinitroaniline	97-02-9	5000
Ethyl Methyl Ketone Peroxide (also Methyl Ethyl Ketone Peroxide; concentration >60%)	1338-23-4	5000
Ethyl Nitrite	109-95-5	5000
Ethylamine	75-04-7	7500
Ethylene Fluorohydrin	371-62-0	100
Ethylene Oxide	75-21-8	5000
Ethyleneimine	151-56-4	1000
Fluorine	7782-41-4	1000
Formaldehyde (Formalin)	50-00-0	1000
Furan	110-00-9	500
Hexafluoroacetone	684-16-2	5000
Hydrochloric Acid, Anhydrous	7647-01-0	5000
Hydrofluoric Acid, Anhydrous	7664-39-3	1000
Hydrogen Bromide	10035-10-6	5000
Hydrogen Chloride	7647-01-0	5000
Hydrogen Cyanide, Anhydrous	74-90-8	1000
Hydrogen Fluoride	7664-39-3	1000
Hydrogen Peroxide (52% by weight or greater)	7722-84-1	7500
Hydrogen Selenide	7783-07-5	150
Hydrogen Sulfide	7783-06-4	1500
Hydroxylamine	7803-49-8	2500
Iron, Pentacarbonyl	13463-40-6	250
Isopropylamine	75-31-0	5000
Ketene	463-51-4	100
Methacrylaldehyde	78-85-3	1000
Methacryloyl Chloride	920-46-7	150
Methacryloyloxyethyl Isocyanate	30674-80-7	100
Methyl Acrylonitrile	126-98-7	250
Methylamine, Anhydrous	74-89-5	1000
Methyl Bromide	74-83-9	2500
Methyl Chloride	74-87-3	15000
Methyl Chloroformate	79-22-1	500
Methyl Ethyl Ketone Peroxide (concentration >60%)	1338-23-4	5000
Methyl Fluoroacetate	453-18-9	100
Methyl Fluorosulfate	421-20-5	100
Methyl Hydrazine	60-34-4	100
Methyl Iodide	74-88-4	7500
Methyl Isocyanate	624-83-9	250
Methyl Mercaptan	74-93-1	5000
Methyl Vinyl Ketone	79-84-4	100
Methyltrichlorosilane	75-79-6	500
Nickel Carbonyl (Nickel Tetracarbonyl)	13463-39-3	150
Nitric Acid (94.5% by weight or greater)	7697-37-2	500
Nitric Oxide	10102-43-9	250

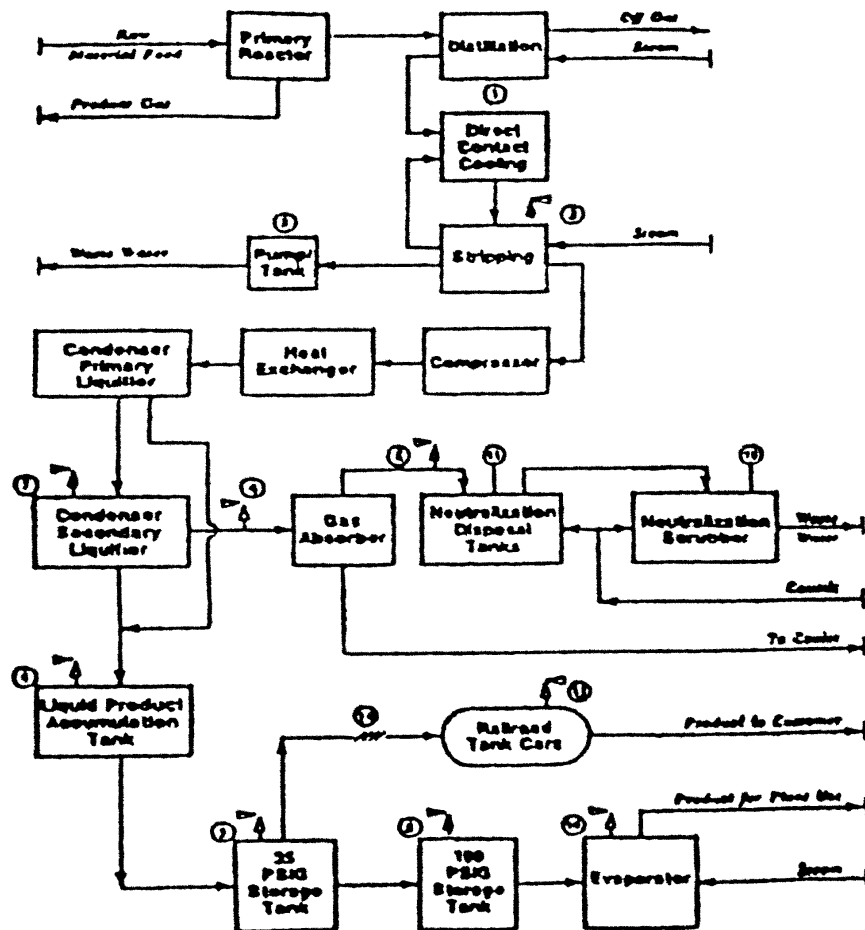
CHEMICAL NAME	CAS*	TQ**
Nitroaniline (para Nitroaniline)	100-01-6	5000
Nitromethane	75-52-5	2500
Nitrogen Dioxide	10102-44-0	250
Nitrogen Oxides (NO; NO ₂ ; N ₂ O ₄ ; N ₂ O ₃)	10102-44-0	250
Nitrogen Tetroxide (also called Nitrogen Peroxide)	10544-72-6	250
Nitrogen Trifluoride	7783-54-2	5000
Nitrogen Trioxide	10544-73-7	250
Oleum (65% to 80% by weight; also called Fuming Sulfuric Acid)	8014-94-7	1000
Osmium Tetroxide	20816-12-0	100
Oxygen Difluoride (Fluorine Monoxide)	7783-41-7	100
Ozone	10028-15-6	100
Pentaborane	19624-22-7	100
Peracetic Acid (concentration >60% Acetic Acid; also called Peroxyacetic Acid)	79-21-0	1000
Perchloric Acid (concentration >60% by weight)	7601-90-3	5000
Perchloromethyl Mercaptan	594-42-3	150
Perchloryl Fluoride	7616-94-6	5000
Peroxyacetic Acid (concentration >60% Acetic Acid; also called Peracetic Acid)	79-21-0	1000
Phosgene (also called Carbonyl Chloride)	75-44-5	100
Phosphine (Hydrogen Phosphide)	7803-51-2	100
Phosphorus Oxychloride (also called Phosphoryl Chloride)	10025-87-3	1000
Phosphorus Trichloride	7719-12-2	1000
Phosphoryl Chloride (also called Phosphorus Oxychloride)	10025-87-3	1000
Propargyl Bromide	106-96-7	100
Propyl Nitrate	627-3-4	2500
Sarin	107-44-8	100
Selenium Hexafluoride	7783-79-1	1000
Stibine (Antimony Hydride)	7803-52-3	500
Sulfur Dioxide (liquid)	7446-09-5	1000
Sulfur Pentafluoride	5714-22-7	250
Sulfur Tetrafluoride	7783-60-0	250
Sulfur Trioxide (also called Sulfuric Anhydride)	7446-11-9	1000
Sulfuric Anhydride (also called Sulfur Trioxide)	7446-11-9	1000
Tellurium Hexafluoride	7783-80-4	250
Tetrafluoroethylene	116-14-3	5000
Tetrafluorohydrazine	10036-47-2	5000
Tetramethyl Lead	75-74-1	1000
Thionyl Chloride	7719-09-7	250
Trichloro (chloromethyl) Silane	1558-25-4	100
Trichloro (dichlorophenyl) Silane	27137-85-5	2500
Trichlorosilane	10025-78-2	5000
Trifluorochloroethylene	79-38-9	10000
Trimethoxysilane	2487-90-3	1500

* Chemical Abstract Service Number.

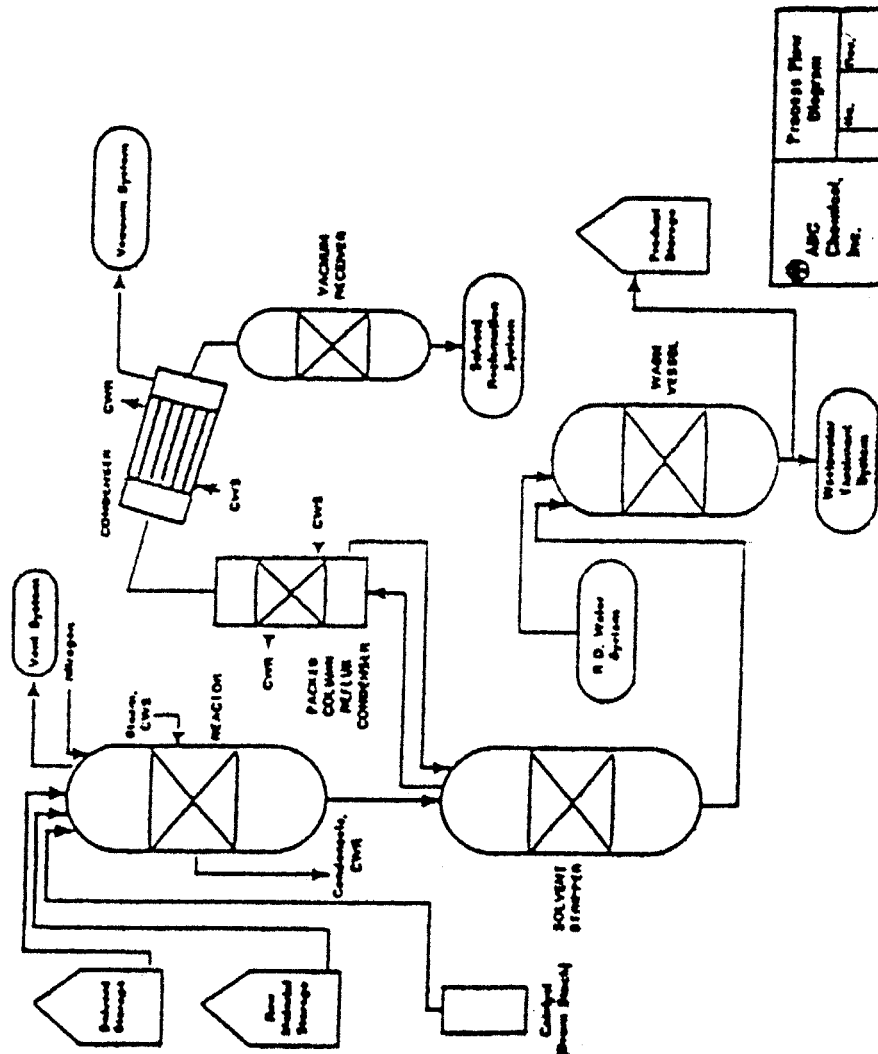
** Threshold Quantity in Pounds (Amount necessary to be covered by this standard).

[Statutory Authority: Chapter 49.17 RCW. 93-21-075 (Order 93-06), § 296-67-285, filed 10/20/93, effective 12/1/93; 92-17-022 (Order 92-06), § 296-67-285, filed 8/10/92, effective 9/10/92.]

EXAMPLE OF A BLOCK FLOW DIAGRAM



EXAMPLE OF A PROCESS FLOW DIAGRAM



[Statutory Authority: Chapter 49.17 RCW. 92-17-022 (Order 92-06), § 296-67-289, filed 8/10/92, effective 9/10/92.]

WAC 296-67-291 Appendix C—Compliance guidelines and recommendations for process safety management (nonmandatory). This appendix serves as a nonmandatory guideline to assist employers and employees in complying with the requirements of this section, as well as provides other helpful recommendations and information. Examples presented in this appendix are not the only means of achieving the performance goals in the standard. This appendix neither adds nor detracts from the requirements of the standard.

(1) Introduction to process safety management. The major objective of process safety management of highly hazardous chemicals is to prevent unwanted releases of hazardous chemicals especially into locations which could expose employees and others to serious hazards. An effective process safety management program requires a systematic approach to evaluating the whole process. Using this approach the process design, process technology, operational and maintenance activities and procedures, nonroutine activities and procedures, emergency preparedness plans and procedures, training programs, and other elements which impact

the process are all considered in the evaluation. The various lines of defense that have been incorporated into the design and operation of the process to prevent or mitigate the release of hazardous chemicals need to be evaluated and strengthened to assure their effectiveness at each level. Process safety management is the proactive identification, evaluation and mitigation or prevention of chemical releases that could occur as a result of failures in process, procedures, or equipment. The process safety management standard targets highly hazardous chemicals that have the potential to cause a catastrophic incident. This standard as a whole is to aid employers in their efforts to prevent or mitigate episodic chemical releases that could lead to a catastrophe in the workplace and possibly to the surrounding community. To control these types of hazards, employers need to develop the necessary expertise, experiences, judgment, and proactive initiative within their workforce to properly implement and maintain an effective process safety management program as envisioned in the WISHA standard. This WISHA standard is required by the Clean Air Act amendments as is the Environmental Protection Agency's Risk Management Plan. Employ-

ers, who merge the two sets of requirements into their process safety management program, will better assure full compliance with each as well as enhancing their relationship with the local community. While WISHA believes process safety management will have a positive effect on the safety of employees in workplaces and also offers other potential benefits to employers (increased productivity), smaller businesses which may have limited resources available to them at this time, might consider alternative avenues of decreasing the risks associated with highly hazardous chemicals at their workplaces. One method which might be considered is the reduction in the inventory of the highly hazardous chemical. This reduction in inventory will result in a reduction of the risk or potential for a catastrophic incident. Also, employers including small employers may be able to establish more efficient inventory control by reducing the quantities of highly hazardous chemicals on site below the established threshold quantities. This reduction can be accomplished by ordering smaller shipments and maintaining the minimum inventory necessary for efficient and safe operation. When reduced inventory is not feasible, then the employer might consider dispersing inventory to several locations on site. Dispersing storage into locations where a release in one location will not cause a release in another location is a practical method to also reduce the risk or potential for catastrophic incidents.

(2) Employee involvement in process safety management. Section 304 of the Clean Air Act amendments states that employers are to consult with their employees and their representatives regarding the employers efforts in the development and implementation of the process safety management program elements and hazard assessments. Section 304 also requires employers to train and educate their employees and to inform affected employees of the findings from incident investigations required by the process safety management program. Many employers, under their safety and health programs, have already established means and methods to keep employees and their representatives informed about relevant safety and health issues and employers may be able to adapt these practices and procedures to meet their obligations under this standard. Employers who have not implemented an occupational safety and health program may wish to form a safety and health committee of employees and management representatives to help the employer meet the obligations specified by this standard. These committees can become a significant ally in helping the employer to implement and maintain an effective process safety management program for all employees.

(3) Process safety information. Complete and accurate written information concerning process chemicals, process technology, and process equipment is essential to an effective process safety management program and to a process hazards analysis. The compiled information will be a necessary resource to a variety of users including the team that will perform the process hazards analysis as required under WAC 296-67-017; those developing the training programs and the operating procedures; contractors whose employees will be working with the process; those conducting the prestartup reviews; local emergency preparedness planners; and incurrence and enforcement officials. The information to be compiled about the chemicals, including process intermediates, needs to be comprehensive enough for an accurate assess-

ment of the fire and explosion characteristics, reactivity hazards, the safety and health hazards to workers, and the corrosion and erosion effects on the process equipment and monitoring tools. Current material safety data sheet (MSDS) information can be used to help meet this requirement which must be supplemented with process chemistry information including runaway reaction and over pressure hazards if applicable. Process technology information will be a part of the process safety information package and it is expected that it will include diagrams of the type shown in WAC 296-67-289, Appendix B of this part as well as employer established criteria for maximum inventory levels for process chemicals; limits beyond which would be considered upset conditions; and a qualitative estimate of the consequences or results of deviation that could occur if operating beyond the established process limits. Employers are encouraged to use diagrams which will help users understand the process. A block flow diagram is used to show the major process equipment and interconnecting process flow lines and show flow rates, stream composition, temperatures, and pressures when necessary for clarity. The block flow diagram is a simplified diagram. Process flow diagrams are more complex and will show all main flow streams including valves to enhance the understanding of the process, as well as pressures and temperatures on all feed and product lines within all major vessels, in and out of headers and heat exchangers, and points of pressure and temperature control. Also, materials of construction information, pump capacities and pressure heads, compressor horsepower and vessel design pressures and temperatures are shown when necessary for clarity. In addition, major components of control loops are usually shown along with key utilities on process flow diagrams. Piping and instrument diagrams (P&IDs) may be the more appropriate type of diagrams to show some of the above details and to display the information for the piping designer and engineering staff. The P&IDs are to be used to describe the relationships between equipment and instrumentation as well as other relevant information that will enhance clarity. Computer software programs which do P&IDs or other diagrams useful to the information package, may be used to help meet this requirement. The information pertaining to process equipment design must be documented. In other words, what were the codes and standards relied on to establish good engineering practice. These codes and standards are published by such organizations as the American Society of Mechanical Engineers, American Petroleum Institute, American National Standards Institute, National Fire Protection Association, American Society for Testing and Materials, National Board of Boiler and Pressure Vessel Inspectors, National Association of Corrosion Engineers, American Society of Exchange Manufacturers Association, and model building code groups. In addition, various engineering societies issue technical reports which impact process design. For example, the American Institute of Chemical Engineers has published technical reports on topics such as two phase flow for venting devices. This type of technically recognized report would constitute good engineering practice. For existing equipment designed and constructed many years ago in accordance with the codes and standards available at that time and no longer in general use today, the employer must document which codes and standards were used and that the design and construction

along with the testing, inspection and operation are still suitable for the intended use. Where the process technology requires a design which departs from the applicable codes and standards, the employer must document that the design and construction is suitable for the intended purpose.

(4) Process hazard analysis. A process hazard analysis (PHA), sometimes called a process hazard evaluation, is one of the most important elements of the process safety management program. A PHA is an organized and systematic effort to identify and analyze the significance of potential hazards associated with the processing or handling of highly hazardous chemicals. A PHA provides information which will assist employers and employees in making decisions for improving safety and reducing the consequences of unwanted or unplanned releases of hazardous chemicals. A PHA is directed toward analyzing potential causes and consequences of fires, explosions, releases of toxic or flammable chemicals and major spills of hazardous chemicals. The PHA focuses on equipment, instrumentation, utilities, human actions (routine and nonroutine), and external factors that might impact the process. These considerations assist in determining the hazards and potential failure points or failure modes in a process. The selection of a PHA methodology or technique will be influenced by many factors including the amount of existing knowledge about the process. Is it a process that has been operated for a long period of time with little or no innovation and extensive experience has been generated with its use? Or, is it a new process or one which has been changed frequently by the inclusion of innovative features? Also, the size and complexity of the process will influence the decision as to the appropriate PHA methodology to use. All PHA methodologies are subject to certain limitations. For example, the checklist methodology works well when the process is very stable and no changes are made, but it is not as effective when the process has undergone extensive change. The checklist may miss the most recent changes and consequently the changes would not be evaluated. Another limitation to be considered concerns the assumptions made by the team or analyst. The PHA is dependent on good judgment and the assumptions made during the study need to be documented and understood by the team and reviewer and kept for a future PHA. The team conducting the PHA need to understand the methodology that is going to be used. A PHA team can vary in size from two people to a number of people with varied operational and technical backgrounds. Some team members may only be a part of the team for a limited time. The team leader needs to be fully knowledgeable in the proper implementation of the PHA methodology that is to be used and should be impartial in the evaluation. The other full or part time team members need to provide the team with expertise in areas such as process technology, process design, operating procedures and practices, including how the work is actually performed, alarms, emergency procedures, instrumentation, maintenance procedures, both routine and non-routine tasks, including how the tasks are authorized, procurement of parts and supplies, safety and health, and any other relevant subject as the need dictates. At least one team member must be familiar with the process. The ideal team will have an intimate knowledge of the standards, codes, specifications and regulations applicable to the process being studied. The selected team members need to be compatible

and the team leader needs to be able to manage the team, and the PHA study. The team needs to be able to work together while benefiting from the expertise of others on the team or outside the team, to resolve issues, and to forge a consensus on the findings of the study and recommendations. The application of a PHA to a process may involve the use of different methodologies for various parts of the process. For example, a process involving a series of unit operations of varying sizes, complexities, and ages may use different methodologies and team members for each operation. Then the conclusions can be integrated into one final study and evaluation. A more specific example is the use of a checklist PHA for a standard boiler or heat exchanger and the use of a hazard and operability PHA for the overall process. Also, for batch type processes like custom batch operations, a generic PHA of a representative batch may be used where there are only small changes of monomer or other ingredient ratios and the chemistry is documented for the full range and ratio of batch ingredients. Another process that might consider using a generic type of PHA is a gas plant. Often these plants are simply moved from site to site and therefore, a generic PHA may be used for these movable plants. Also, when an employer has several similar size gas plants and no sour gas is being processed at the site, then a generic PHA is feasible as long as the variations of the individual sites are accounted for in the PHA. Finally, when an employer has a large continuous process which has several control rooms for different portions of the process such as for a distillation tower and a blending operation, the employer may wish to do each segment separately and then integrate the final results. Additionally, small businesses which are covered by this rule, will often have processes that have less storage volume, less capacity, and less complicated than processes at a large facility. Therefore, WISHA would anticipate that the less complex methodologies would be used to meet the process hazard analysis criteria in the standard. These process hazard analyses can be done in less time and with a few people being involved. A less complex process generally means that less data, P&IDs, and process information is needed to perform a process hazard analysis. Many small businesses have processes that are not unique, such as cold storage lockers or water treatment facilities. Where employer associations have a number of members with such facilities, a generic PHA, evolved from a checklist or what-if questions, could be developed and used by each employer effectively to reflect his/her particular process; this would simplify compliance for them. When the employer has a number of processes which require a PHA, the employer must set up a priority system of which PHAs to conduct first. A preliminary or gross hazard analysis may be useful in prioritizing the processes that the employer has determined are subject to coverage by the process safety management standard. Consideration should first be given to those processes with the potential of adversely affecting the largest number of employees. This prioritizing should consider the potential severity of a chemical release, the number of potentially affected employees, the operating history of the process such as the frequency of chemical releases, the age of the process and any other relevant factors. These factors would suggest a ranking order and would suggest either using a weighing factor system or a systematic ranking method. The use of a preliminary hazard analysis would assist an

employer in determining which process should be of the highest priority and thereby the employer would obtain the greatest improvement in safety at the facility. Detailed guidance on the content and application of process hazard analysis methodologies is available from the American Institute of Chemical Engineers' Center for Chemical Process Safety (see WAC 296-67-293, Appendix D).

(5) Operating procedures and practices. Operating procedures describe tasks to be performed, data to be recorded, operating conditions to be maintained, samples to be collected, and safety and health precautions to be taken. The procedures need to be technically accurate, understandable to employees, and revised periodically to ensure that they reflect current operations. The process safety information package is to be used as a resource to better assure that the operating procedures and practices are consistent with the known hazards of the chemicals in the process and that the operating parameters are accurate. Operating procedures should be reviewed by engineering staff and operating personnel to ensure that they are accurate and provide practical instructions on how to actually carry out job duties safely. Operating procedures will include specific instructions or details on what steps are to be taken or followed in carrying out the stated procedures. These operating instructions for each procedure should include the applicable safety precautions and should contain appropriate information on safety implications. For example, the operating procedures addressing operating parameters will contain operating instructions about pressure limits, temperature ranges, flow rates, what to do when an upset condition occurs, what alarms and instruments are pertinent if an upset condition occurs, and other subjects. Another example of using operating instructions to properly implement operating procedures is in starting up or shutting down the process. In these cases, different parameters will be required from those of normal operation. These operating instructions need to clearly indicate the distinctions between startup and normal operations such as the appropriate allowances for heating up a unit to reach the normal operating parameters. Also the operating instructions need to describe the proper method for increasing the temperature of the unit until the normal operating temperature parameters are achieved. Computerized process control systems add complexity to operating instructions. These operating instructions need to describe the logic of the software as well as the relationship between the equipment and the control system; otherwise, it may not be apparent to the operator. Operating procedures and instructions are important for training operating personnel. The operating procedures are often viewed as the standard operating practices (SOPs) for operations. Control room personnel and operating staff, in general, need to have a full understanding of operating procedures. If workers are not fluent in English then procedures and instructions need to be prepared in a second language understood by the workers. In addition, operating procedures need to be changed when there is a change in the process as a result of the management of change procedures. The consequences of operating procedure changes need to be fully evaluated and the information conveyed to the personnel. For example, mechanical changes to the process made by the maintenance department (like changing a valve from steel to brass or other subtle changes) need to be evaluated to determine if operat-

ing procedures and practices also need to be changed. All management of change actions must be coordinated and integrated with current operating procedures and operating personnel must be oriented to the changes in procedures before the change is made. When the process is shut down in order to make a change, then the operating procedures must be updated before startup of the process. Training in how to handle upset conditions must be accomplished as well as what operating personnel are to do in emergencies such as when a pump seal fails or a pipeline ruptures. Communication between operating personnel and workers performing work within the process area, such as nonroutine tasks, also must be maintained. The hazards of the tasks are to be conveyed to operating personnel in accordance with established procedures and to those performing the actual tasks. When the work is completed, operating personnel should be informed to provide closure on the job.

(6) Employee training. All employees, including maintenance and contractor employees, involved with highly hazardous chemicals need to fully understand the safety and health hazards of the chemicals and processes they work with for the protection of themselves, their fellow employees and the citizens of nearby communities. Training conducted in compliance with WAC 296-800-170, chemical hazard communication program standard, will help employees to be more knowledgeable about the chemicals they work with as well as familiarize them with reading and understanding MSDS. However, additional training in subjects such as operating procedures and safety work practices, emergency evacuation and response, safety procedures, routine and non-routine work authorization activities, and other areas pertinent to process safety and health will need to be covered by an employer's training program. In establishing their training programs, employers must clearly define the employees to be trained and what subjects are to be covered in their training. Employers in setting up their training program will need to clearly establish the goals and objectives they wish to achieve with the training that they provide to their employees. The learning goals or objectives should be written in clear measurable terms before the training begins. These goals and objectives need to be tailored to each of the specific training modules or segments. Employers should describe the important actions and conditions under which the employee will demonstrate competence or knowledge as well as what is acceptable performance. Hands-on-training where employees are able to use their senses beyond listening, will enhance learning. For example, operating personnel, who will work in a control room or at control panels, would benefit by being trained at a simulated control panel or panels. Upset conditions of various types could be displayed on the simulator, and then the employee could go through the proper operating procedures to bring the simulator panel back to the normal operating parameters. A training environment could be created to help the trainee feel the full reality of the situation but, of course, under controlled conditions. This realistic type of training can be very effective in teaching employees correct procedures while allowing them to also see the consequences of what might happen if they do not follow established operating procedures. Other training techniques using videos or on-the-job training can also be very effective for teaching other job tasks, duties, or other important information. An

effective training program will allow the employee to fully participate in the training process and to practice their skill or knowledge. Employers need to periodically evaluate their training programs to see if the necessary skills, knowledge, and routines are being properly understood and implemented by their trained employees. The means or methods for evaluating the training should be developed along with the training program goals and objectives. Training program evaluation will help employers to determine the amount of training their employees understood, and whether the desired results were obtained. If, after the evaluation, it appears that the trained employees are not at the level of knowledge and skill that was expected, the employer will need to revise the training program, provide retraining, or provide more frequent refresher training sessions until the deficiency is resolved. Those who conducted the training and those who received the training should also be consulted as to how best to improve the training process. If there is a language barrier, the language known to the trainees should be used to reinforce the training messages and information. Careful consideration must be given to assure that employees including maintenance and contract employees receive current and updated training. For example, if changes are made to a process, impacted employees must be trained in the changes and understand the effects of the changes on their job tasks (e.g., any new operating procedures pertinent to their tasks). Additionally, as already discussed the evaluation of the employee's absorption of training will certainly influence the need for training.

(7) Contractors. Employers who use contractors to perform work in and around processes that involve highly hazardous chemicals, will need to establish a screening process so that they hire and use contractors who accomplish the desired job tasks without compromising the safety and health of employees at a facility. For contractors, whose safety performance on the job is not known to the hiring employer, the employer will need to obtain information on injury and illness rates and experience and should obtain contractor references. Additionally, the employer must assure that the contractor has the appropriate job skills, knowledge and certifications (such as for pressure vessel welders). Contractor work methods and experiences should be evaluated. For example, does the contractor conducting demolition work swing loads over operating processes or does the contractor avoid such hazards? Maintaining a site injury and illness log for contractors is another method employers must use to track and maintain current knowledge of work activities involving contract employees working on or adjacent to covered processes. Injury and illness logs of both the employer's employees and contract employees allow an employer to have full knowledge of process injury and illness experience. This log will also contain information which will be of use to those auditing process safety management compliance and those involved in incident investigations. Contract employees must perform their work safely. Considering that contractors often perform very specialized and potentially hazardous tasks such as confined space entry activities and nonroutine repair activities it is quite important that their activities be controlled while they are working on or near a covered process. A permit system or work authorization system for these activities would also be helpful to all affected employers. The use of a work authorization system keeps an employer

informed of contract employee activities, and as a benefit the employer will have better coordination and more management control over the work being performed in the process area. A well run and well maintained process where employee safety is fully recognized will benefit all of those who work in the facility whether they be contract employees or employees of the owner.

(8) Prestartup safety. For new processes, the employer will find a PHA helpful in improving the design and construction of the process from a reliability and quality point of view. The safe operation of the new process will be enhanced by making use of the PHA recommendations before final installations are completed. P&IDs are to be completed along with having the operating procedures in place and the operating staff trained to run the process before startup. The initial startup procedures and normal operating procedures need to be fully evaluated as part of the prestartup review to assure a safe transfer into the normal operating mode for meeting the process parameters. For existing processes that have been shutdown for turnaround, or modification, etc., the employer must assure that any changes other than "replacement in kind" made to the process during shutdown go through the management of change procedures. P&IDs will need to be updated as necessary, as well as operating procedures and instructions. If the changes made to the process during shutdown are significant and impact the training program, then operating personnel as well as employees engaged in routine and nonroutine work in the process area may need some refresher or additional training in light of the changes. Any incident investigation recommendations, compliance audits or PHA recommendations need to be reviewed as well to see what impacts they may have on the process before beginning the startup.

(9) Mechanical integrity. Employers will need to review their maintenance programs and schedules to see if there are areas where "breakdown" maintenance is used rather than an ongoing mechanical integrity program. Equipment used to process, store, or handle highly hazardous chemicals needs to be designed, constructed, installed, and maintained to minimize the risk of releases of such chemicals. This requires that a mechanical integrity program be in place to assure the continued integrity of process equipment. Elements of a mechanical integrity program include the identification and categorization of equipment and instrumentation, inspections and tests, testing and inspection frequencies, development of maintenance procedures, training of maintenance personnel, the establishment of criteria for acceptable test results, documentation of test and inspection results, and documentation of manufacturer recommendations as to meantime to failure for equipment and instrumentation. The first line of defense an employer has available is to operate and maintain the process as designed, and to keep the chemicals contained. This line of defense is backed up by the next line of defense which is the controlled release of chemicals through venting to scrubbers or flares, or to surge or overflow tanks which are designed to receive such chemicals, etc. These lines of defense are the primary lines of defense or means to prevent unwanted releases. The secondary lines of defense would include fixed fire protection systems like sprinklers, water spray, or deluge systems, monitor guns, etc., dikes, designed drainage systems, and other systems which would control or

mitigate hazardous chemicals once an unwanted release occurs. These primary and secondary lines of defense are what the mechanical integrity program needs to protect and strengthen these primary and secondary lines of defenses where appropriate. The first step of an effective mechanical integrity program is to compile and categorize a list of process equipment and instrumentation for inclusion in the program. This list would include pressure vessels, storage tanks, process piping, relief and vent systems, fire protection system components, emergency shutdown systems, and alarms and interlocks and pumps. For the categorization of instrumentation and the listed equipment the employer would prioritize which pieces of equipment require closer scrutiny than others. Meantime to failure of various instrumentation and equipment parts would be known from the manufacturer's data or the employer's experience with the parts, which would then influence the inspection and testing frequency and associated procedures. Also, applicable codes and standards such as the National Board Inspection Code, or those from the American Society for Testing and Material, American Petroleum Institute, National Fire Protection Association, American National Standards Institute, American Society of Mechanical Engineers, and other groups, provide information to help establish an effective testing and inspection frequency, as well as appropriate methodologies. The applicable codes and standards provide criteria for external inspections for such items as foundation and supports, anchor bolts, concrete or steel supports, guy wires, nozzles and sprinklers, pipe hangers, grounding connections, protective coatings and insulation, and external metal surfaces of piping and vessels, etc. These codes and standards also provide information on methodologies for internal inspection, and a frequency formula based on the corrosion rate of the materials of construction. Also, erosion both internal and external needs to be considered along with corrosion effects for piping and valves. Where the corrosion rate is not known, a maximum inspection frequency is recommended, and methods of developing the corrosion rate are available in the codes. Internal inspections need to cover items such as vessel shell, bottom and head; metallic linings; nonmetallic linings; thickness measurements for vessels and piping; inspection for erosion, corrosion, cracking and bulges; internal equipment like trays, baffles, sensors, and screens for erosion, corrosion or cracking and other deficiencies. Some of these inspections may be performed by state or local government inspectors under state and local statutes. However, each employer needs to develop procedures to ensure that tests and inspections are conducted properly and that consistency is maintained even where different employees may be involved. Appropriate training is to be provided to maintenance personnel to ensure that they understand the preventive maintenance program procedures, safe practices, and the proper use and application of special equipment or unique tools that may be required. This training is part of the overall training program called for in the standard. A quality assurance system is needed to help ensure that the proper materials of construction are used, that fabrication and inspection procedures are proper, and that installation procedures recognize field installation concerns. The quality assurance program is an essential part of the mechanical integrity program and will help to maintain the primary and secondary lines of defense that have been designed into the

process to prevent unwanted chemical releases or those which control or mitigate a release. "As built" drawings, together with certifications of coded vessels and other equipment, and materials of construction need to be verified and retained in the quality assurance documentation. Equipment installation jobs need to be properly inspected in the field for use of proper materials and procedures and to assure that qualified craftsmen are used to do the job. The use of appropriate gaskets, packing, bolts, valves, lubricants, and welding rods need to be verified in the field. Also procedures for installation of safety devices need to be verified, such as the torque on the bolts on ruptured disc installations, uniform torque on flange bolts, proper installation of pump seals, etc. If the quality of parts is a problem, it may be appropriate to conduct audits of the equipment supplier's facilities to better assure proper purchases of required equipment which is suitable for its intended service. Any changes in equipment that may become necessary will need to go through the management of change procedures.

(10) Nonroutine work authorizations. Nonroutine work which is conducted in process areas needs to be controlled by the employer in a consistent manner. The hazards identified involving the work that is to be accomplished must be communicated to those doing the work, but also to those operating personnel whose work could affect the safety of the process. A work authorization notice or permit must have a procedure that describes the steps the maintenance supervisor, contractor representative or other person needs to follow to obtain the necessary clearance to get the job started. The work authorization procedures need to reference and coordinate, as applicable, lockout/tagout procedures, line breaking procedures, confined space entry procedures and hot work authorizations. This procedure also needs to provide clear steps to follow once the job is completed in order to provide closure for those that need to know the job is now completed and equipment can be returned to normal.

(11) Managing change. To properly manage changes to process chemicals, technology, equipment and facilities, one must define what is meant by change. In this process safety management standard, change includes all modifications to equipment, procedures, raw materials and processing conditions other than "replacement in kind." These changes need to be properly managed by identifying and reviewing them prior to implementation of the change. For example, the operating procedures contain the operating parameters (pressure limits, temperature ranges, flow rates, etc.) and the importance of operating within these limits. While the operator must have the flexibility to maintain safe operation within the established parameters, any operation outside of these parameters requires review and approval by a written management of change procedure. Management of change covers such as changes in process technology and changes to equipment and instrumentation. Changes in process technology can result from changes in production rates, raw materials, experimentation, equipment unavailability, new equipment, new product development, change in catalyst and changes in operating conditions to improve yield or quality. Equipment changes include among others change in materials of construction, equipment specifications, piping prearrangements, experimental equipment, computer program revisions and changes in alarms and interlocks. Employers need to establish means

and methods to detect both technical changes and mechanical changes. Temporary changes have caused a number of catastrophes over the years, and employers need to establish ways to detect temporary changes as well as those that are permanent. It is important that a time limit for temporary changes be established and monitored since, without control, these changes may tend to become permanent. Temporary changes are subject to the management of change provisions. In addition, the management of change procedures are used to insure that the equipment and procedures are returned to their original or designed conditions at the end of the temporary change. Proper documentation and review of these changes is invaluable in assuring that the safety and health considerations are being incorporated into the operating procedures and the process. Employers may wish to develop a form or clearance sheet to facilitate the processing of changes through the management of change procedures. A typical change form may include a description and the purpose of the change, the technical basis for the change, safety and health considerations, documentation of changes for the operating procedures, maintenance procedures, inspection and testing, P&IDs, electrical classification, training and communications, prestartup inspection, duration if a temporary change, approvals and authorization. Where the impact of the change is minor and well understood, a check list reviewed by an authorized person with proper communication to others who are affected may be sufficient. However, for a more complex or significant design change, a hazard evaluation procedure with approvals by operations, maintenance, and safety departments may be appropriate. Changes in documents such as P&IDs, raw materials, operating procedures, mechanical integrity programs, electrical classifications, etc., need to be noted so that these revisions can be made permanent when the drawings and procedure manuals are updated. Copies of process changes need to be kept in an accessible location to ensure that design changes are available to operating personnel as well as to PHA team members when a PHA is being done or one is being updated.

(12) Investigation of incidents. Incident investigation is the process of identifying the underlying causes of incidents and implementing steps to prevent similar events from occurring. The intent of an incident investigation is for employers to learn from past experiences and thus avoid repeating past mistakes. The incidents for which WISHA expects employers to become aware and to investigate are the types of events which result in or could reasonably have resulted in a catastrophic release. Some of the events are sometimes referred to as "near misses," meaning that a serious consequence did not occur, but could have. Employers need to develop in-house capability to investigate incidents that occur in their facilities. A team needs to be assembled by the employer and trained in the techniques of investigation including how to conduct interviews of witnesses, needed documentation and report writing. A multidisciplinary team is better able to gather the facts of the event and to analyze them and develop plausible scenarios as to what happened, and why. Team members should be selected on the basis of their training, knowledge and ability to contribute to a team effort to fully investigate the incident. Employees in the process area where the incident occurred should be consulted, interviewed, or made a member of the team. Their knowledge of the events

form a significant set of facts about the incident which occurred. The report, its findings and recommendations are to be shared with those who can benefit from the information. The cooperation of employees is essential to an effective incident investigation. The focus of the investigation should be to obtain facts, and not to place blame. The team and the investigation process should clearly deal with all involved individuals in a fair, open, and consistent manner.

(13) Emergency preparedness. Each employer must address what actions employees are to take when there is an unwanted release of highly hazardous chemicals. Emergency preparedness or the employer's tertiary (third) lines of defense are those that will be relied on along with the secondary lines of defense when the primary lines of defense which are used to prevent an unwanted release fail to stop the release. Employers will need to decide if they want employees to handle and stop small or minor incidental releases. Whether they wish to mobilize the available resources at the plant and have them brought to bear on a more significant release. Or whether employers want their employees to evacuate the danger area and promptly escape to a preplanned safe zone area, and allow the local community emergency response organizations to handle the release. Or whether the employer wants to use some combination of these actions. Employers will need to select how many different emergency preparedness or tertiary lines of defense they plan to have and then develop the necessary plans and procedures, and appropriately train employees in their emergency duties and responsibilities and then implement these lines of defense. Employers at a minimum must have an emergency action plan which will facilitate the prompt evacuation of employees due to an unwanted release of a highly hazardous chemical. This means that the employer will have a plan that will be activated by an alarm system to alert employees when to evacuate and, that employees who are physically impaired, will have the necessary support and assistance to get them to the safe zone as well. The intent of these requirements is to alert and move employees to a safe zone quickly. Delaying alarms or confusing alarms are to be avoided. The use of process control centers or similar process buildings in the process area as safe areas is discouraged. Recent catastrophes have shown that a large life loss has occurred in these structures because of where they have been sited and because they are not necessarily designed to withstand over-pressures from shockwaves resulting from explosions in the process area. Unwanted incidental releases of highly hazardous chemicals in the process area must be addressed by the employer as to what actions employees are to take. If the employer wants employees to evacuate the area, then the emergency action plan will be activated. For outdoor processes where wind direction is important for selecting the safe route to a refuge area, the employer should place a wind direction indicator such as a wind sock or pennant at the highest point that can be seen throughout the process area. Employees can move in the direction of cross wind to upwind to gain safe access to the refuge area by knowing the wind direction. If the employer wants specific employees in the release area to control or stop the minor emergency or incidental release, these actions must be planned for in advance and procedures developed and implemented. Preplanning for handling incidental releases for minor emergencies in the process area needs to be done,

appropriate equipment for the hazards must be provided, and training conducted for those employees who will perform the emergency work before they respond to handle an actual release. The employer's training program, including the hazard communication standard training is to address the training needs for employees who are expected to handle incidental or minor releases. Preplanning for releases that are more serious than incidental releases is another important line of defense to be used by the employer. When a serious release of a highly hazardous chemical occurs, the employer through preplanning will have determined in advance what actions employees are to take. The evacuation of the immediate release area and other areas as necessary would be accomplished under the emergency action plan. If the employer wishes to use plant personnel such as a fire brigade, spill control team, a hazardous materials team, or use employees to render aid to those in the immediate release area and control or mitigate the incident, these actions are covered by chapter 296-824 WAC, Emergency response to hazardous substance releases. If outside assistance is necessary, such as through mutual aid agreements between employers or local government emergency response organizations, these emergency responders are also covered by chapter 296-824 WAC. The safety and health protections required for emergency responders are the responsibility of their employers and of the on-scene incident commander. Responders may be working under very hazardous conditions and therefore the objective is to have them competently led by an on-scene incident commander and the commander's staff, properly equipped to do their assigned work safely, and fully trained to carry out their duties safely before they respond to an emergency. Drills, training exercises, or simulations with the local community emergency response planners and responder organizations is one means to obtain better preparedness. This close cooperation and coordination between plant and local community emergency preparedness managers will also aid the employer in complying with the Environmental Protection Agency's risk management plan criteria. One effective way for medium to large facilities to enhance coordination and communication during emergencies for on plant operations and with local community organizations is for employers to establish and equip an emergency control center. The emergency control center would be sited in a safe zone area so that it could be occupied throughout the duration of an emergency. The center would serve as the major communication link between the on-scene incident commander and plant or corporate management as well as with the local community officials. The communication equipment in the emergency control center should include a network to receive and transmit information by telephone, radio, or other means. It is important to have a backup communication network in case of power failure or one communication means fails. The center should also be equipped with the plant layout and community maps, utility drawings including fire water, emergency lighting, appropriate reference materials such as a government agency notification list, company personnel phone list, SARA Title III reports and material safety data sheets, emergency plans and procedures manual, a listing with the location of emergency response equipment, mutual aid information, and access to meteorological or weather condition data and any dispersion modeling data.

(14) Compliance audits. Employers need to select a trained individual or assemble a trained team of people to audit the process safety management system and program. A small process or plant may need only one knowledgeable person to conduct an audit. The audit is to include an evaluation of the design and effectiveness of the process safety management system and a field inspection of the safety and health conditions and practices to verify that the employer's systems are effectively implemented. The audit should be conducted or led by a person knowledgeable in audit techniques and who is impartial towards the facility or area being audited. The essential elements of an audit program include planning, staffing, conducting the audit, evaluation and corrective action, follow-up and documentation. Planning in advance is essential to the success of the auditing process. Each employer needs to establish the format, staffing, scheduling, and verification methods prior to conducting the audit. The format should be designed to provide the lead auditor with a procedure or checklist which details the requirements of each section of the standard. The names of the audit team members should be listed as part of the format as well. The checklist, if properly designed, could serve as the verification sheet which provides the auditor with the necessary information to expedite the review and assure that no requirements of the standard are omitted. This verification sheet format could also identify those elements that will require evaluation or a response to correct deficiencies. This sheet could also be used for developing the follow-up and documentation requirements. The selection of effective audit team members is critical to the success of the program. Team members should be chosen for their experience, knowledge, and training and should be familiar with the processes and with auditing techniques, practices, and procedures. The size of the team will vary depending on the size and complexity of the process under consideration. For a large, complex, highly instrumented plant, it may be desirable to have team members with expertise in process engineering and design, process chemistry, instrumentation and computer controls, electrical hazards and classifications, safety and health disciplines, maintenance, emergency preparedness, warehousing or shipping, and process safety auditing. The team may use part-time members to provide for the depth of expertise required as well as for what is actually done or followed, compared to what is written. An effective audit includes a review of the relevant documentation and process safety information, inspection of the physical facilities, and interviews with all levels of plant personnel. Utilizing the audit procedure and checklist developed in the preplanning stage, the audit team can systematically analyze compliance with the provisions of the standard and any other corporate policies that are relevant. For example, the audit team will review all aspects of the training program as part of the overall audit. The team will review the written training program for adequacy of content, frequency of training, effectiveness of training in terms of its goals and objectives as well as to how it fits into meeting the standard's requirements, documentation, etc. Through interviews, the team can determine the employee's knowledge and awareness of the safety procedures, duties, rules, emergency response assignments, etc. During the inspection, the team can observe actual practices such as safety and health policies, procedures, and work authorization practices.

This approach enables the team to identify deficiencies and determine where corrective actions or improvements are necessary. An audit is a technique used to gather sufficient facts and information, including statistical information, to verify compliance with standards. Auditors should select as part of their preplanning a sample size sufficient to give a degree of confidence that the audit reflects the level of compliance with the standard. The audit team, through this systematic analysis, should document areas which require corrective action as well as those areas where the process safety management system is effective and working in an effective manner. This provides a record of the audit procedures and findings, and serves as a baseline of operation data for future audits. It will assist future auditors in determining changes or trends from previous audits. Corrective action is one of the most important parts of the audit. It includes not only addressing the identified deficiencies, but also planning, followup, and documentation. The corrective action process normally begins with a management review of the audit findings. The purpose of this review is to determine what actions are appropriate, and to establish priorities, timetables, resource allocations, and requirements and responsibilities. In some cases, corrective action may involve a simple change in procedure or minor maintenance effort to remedy the concern. Management of change procedures need to be used, as appropriate, even for what may seem to be a minor change. Many of the deficiencies can be acted on promptly, while some may require engineering studies or indepth review of actual procedures and practices. There may be instances where no action is necessary and this is a valid response to an audit finding. All actions taken, including an explanation where no action is taken on a finding, needs to be documented as to what was done and why. It is important to assure that each deficiency identified is addressed, the corrective action to be taken noted, and the audit person or team responsible be properly documented by the employer. To control the corrective action process, the employer should consider the use of a tracking system. This tracking system might include periodic status reports shared with affected levels of management, specific reports such as completion of an engineering study, and a final implementation report to provide closure for audit findings that have been through management of change, if appropriate, and then shared with affected employees and management. This type of tracking system provides the employer with the status of the corrective action. It also provides the documentation required to verify that appropriate corrective actions were taken on deficiencies identified in the audit.

[Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050, and [49.17].060. 02-20-034, § 296-67-291, filed 9/24/02, effective 10/1/02. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 01-11-038, § 296-67-291, filed 5/9/01, effective 9/1/01. Statutory Authority: Chapter 49.17 RCW. 93-21-075 (Order 93-06), § 296-67-291, filed 10/20/93, effective 12/1/93; 92-17-022 (Order 92-06), § 296-67-291, filed 8/10/92, effective 9/10/92.]

WAC 296-67-293 Appendix D—Sources of further information (nonmandatory). (1) Center for Chemical Process Safety, American Institute of Chemical Engineers, 345 East 47th Street, New York, NY 10017, (212) 705-7319.

(2) "Guidelines for Hazard Evaluation Procedures," American Institute of Chemical Engineers; 345 East 47th Street, New York, NY 10017.

(3) "Guidelines for Technical Management of Chemical Process Safety," Center for Chemical Process Safety of the American Institute of Chemical Engineers; 345 East 47th Street, New York, NY 10017.

(4) "Evaluating Process Safety in the Chemical Industry," Chemical Manufacturers Association; 2501 M Street NW, Washington, DC 20037.

(5) "Safe Warehousing of Chemicals," Chemical Manufacturers Association; 2501 M Street NW, Washington, D.C. 20037.

(6) "Management of Process Hazards," American Petroleum Institute (API Recommended Practice 750); 1220 L Street, N.W., Washington, D.C. 20005.

(7) "Improving Owner and Contractor Safety Performance," American Petroleum Institute (API Recommended Practice 2220); API, 1220 L Street N.W., Washington, D.C. 20005.

(8) Chemical Manufacturers Association (CMA's Manager Guide), First Edition, September 1991; CMA, 2501 M Street, N.W., Washington, D.C. 20037.

(9) "Improving Construction Safety Performance," Report A-3, The Business Roundtable; The Business Roundtable, 200 Park Avenue, New York, NY 10166. (Report includes criteria to evaluate contractor safety performance and criteria to enhance contractor safety performance).

(10) "Recommended Guidelines for Contractor Safety and Health," Texas Chemical Council; Texas Chemical Council, 1402 Nueces Street, Austin, TX 78701-1534.

(11) "Loss Prevention in the Process Industries," Volumes I and II; Frank P. Lees, Butterworth; London 1983.

(12) "Safety and Health Program Management Guidelines," 1989; U.S. Department of Labor, Occupational Safety and Health Administration.

(13) "Safety and Health Guide for the Chemical Industry," 1986, (OSHA 3091); U.S. Department of Labor, Occupational Safety and Health Administration; 200 Constitution Avenue, N.W., Washington, D.C. 20210.

(14) "Review of Emergency Systems," June 1988; U.S. Environmental Protection Agency (EPA), Office of Solid Waste and Emergency Response, Washington, D.C. 20460.

(15) "Technical Guidance for Hazards Analysis, Emergency Planning for Extremely Hazardous Substances," December 1987; U.S. Environmental Protection Agency (EPA), Federal Emergency Management Administration (FEMA) and U.S. Department of Transportation (DOT), Washington, D.C. 20460.

(16) "Accident Investigation*** A New Approach," 1983, National Safety Council; 444 North Michigan Avenue, Chicago, IL 60611-3991.

(17) "Fire Explosion Index Hazard Classification Guide," 6th Edition, May 1987, Dow Chemical Company; Midland, Michigan 48674.

(18) "Chemical Exposure Index," May 1988, Dow Chemical Company; Midland, Michigan 48674.

[Statutory Authority: Chapter 49.17 RCW. 92-17-022 (Order 92-06), § 296-67-293, filed 8/10/92, effective 9/10/92.]

Chapter 296-78 WAC

SAFETY STANDARDS FOR SAWMILLS AND WOODWORKING OPERATIONS

WAC

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296-78-630	Stave croziers.
296-78-635	Jointers.
296-78-640	Jointers (stave and heading).
296-78-645	Wood shapers.
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296-78-655	Tenoning machines.
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296-78-790	Crane platforms and footwalks.
296-78-795	Crane cages.
296-78-800	Crane rail stops, bumpers and fenders.
296-78-805	Crawler locomotive and truck cranes.
296-78-810	Chain and electric hoists.
296-78-815	Monorail hoists.
296-78-820	Air hoists.
296-78-825	Jib, pillar, and portable floor cranes, crabs, and winches.
296-78-830	Standard crane hand signals—Illustrations.
296-78-835	Vehicles.
296-78-840	Loading, piling, storage and conveying.
296-78-84001	Loading, piling, storage and conveying—General.
296-78-84003	Conveyors.
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296-78-84009	Bins and bunkers.
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DISPOSITION OF SECTIONS FORMERLY CODIFIED IN THIS CHAPTER

296-78-005	Foreword. [Order 76-7, § 296-78-005, filed 3/1/76; Order 74-28, § 296-78-005, filed 5/7/74; Foreword, effective 6/1/51, filed 3/23/60.] Repealed by 81-18-029 (Order 81-21), filed 8/27/81. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240.
296-78-007	Definitions applicable to this chapter. [Order 74-28, § 296-78-007, filed 5/7/74.] Repealed by 81-18-029 (Order 81-21), filed 8/27/81. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240.
296-78-010	General safety standards. [Rules A-1 through A-19, effective 6/1/51, filed 3/23/60.] Repealed by Order 74-28, filed 5/7/74 and Order 76-7, filed 3/1/76.
296-78-015	Minimum requirements for first aid. [Rule B-1, effective 6/1/51, filed 3/23/60.] Repealed by Order 74-28, filed 5/7/74 and Order 76-7, filed 3/1/76.
296-78-020	First-aid kit. [Rule B-2, effective 6/1/51, filed 3/23/60.] Repealed by Order 74-28, filed 5/7/74 and Order 76-7, filed 3/1/76.
296-78-025	First-aid room. [Rule B-3, effective 6/1/51, filed 3/23/60.] Repealed by Order 74-28, filed 5/7/74 and Order 76-7, filed 3/1/76.
296-78-030	Construction and isolated equipment. [Order 77-12, § 296-78-030, filed 7/11/77; Order 76-7, § 296-78-030, filed 3/1/76; Order 74-28, § 296-78-030, filed 5/7/74; Rules C-1 through C-61, effective 6/1/51, filed 3/23/60.] Repealed by 81-18-029 (Order 81-21), filed 8/27/81. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240.
296-78-035	Mechanical, steam and electrical equipment—General provisions. [Order 74-28, § 296-78-035, filed 5/7/74; Rules D-1 through D-19, effective 6/1/51, filed 3/23/60.] Repealed by 81-18-029 (Order 81-21), filed 8/27/81. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240.
296-78-040	Boiler and pressure vessels. [Order 74-28, § 296-78-040, filed 5/7/74; Rule D-20, effective 6/1/51, filed 3/23/60.] Repealed by 81-18-029 (Order 81-21), filed 8/27/81. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240.
296-78-045	Electrical service and equipment. [Order 74-28, § 296-78-045, filed 5/7/74; Rule D-21, effective 6/1/51, filed 3/23/60.] Repealed by 81-18-029 (Order 81-21), filed 8/27/81. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240.
296-78-050	Electrical utilization—Definitions. [Rule D-22, effective 6/1/51, filed 3/23/60.] Repealed by Order 74-28, filed 5/7/74 and Order 76-7, filed 3/1/76.
296-78-055	Electrical utilization—General requirements—Safety. [Rule D-23, effective 6/1/51, filed 3/23/60.] Repealed by Order 74-28, filed 5/7/74 and Order 76-7, filed 3/1/76.

296-78-060	Electrical utilization—General requirements—Current. [Rule D-24, effective 6/1/51, filed 3/23/60.] Repealed by Order 74-28, filed 5/7/74 and Order 76-7, filed 3/1/76.		
296-78-065	Electrical utilization—General requirements—Grounding. [Rule D-25, effective 6/1/51, filed 3/23/60.] Repealed by Order 74-28, filed 5/7/74 and Order 76-7, filed 3/1/76.		
296-78-070	Electrical utilization—General requirements—Circuits to be grounded. [Rule D-26, effective 6/1/51, filed 3/23/60.] Repealed by Order 74-28, filed 5/7/74 and Order 76-7, filed 3/1/76.	296-78-170	Elevators, moving walks and other lifting devices. [Order 76-29, § 296-78-170, filed 9/30/76; Order 74-28, § 296-78-170, filed 5/7/74; Rule D-54, effective 6/1/51, filed 3/23/60.] Repealed by 81-18-029 (Order 81-21), filed 8/27/81. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240.
296-78-075	Electrical utilization—General requirements—Grounding noncurrent-carrying metal parts. [Rule D-27, effective 6/1/51, filed 3/23/60.] Repealed by Order 74-28, filed 5/7/74 and Order 76-7, filed 3/1/76.	296-78-175	Platform hoists. [Rule D-55, effective 6/1/51, filed 3/23/60.] Repealed by Order 74-28, filed 5/7/74 and Order 76-7, filed 3/1/76.
296-78-080	Electrical utilization—Working spaces about electrical equipment—Dimensions. [Rule D-28, effective 6/1/51, filed 3/23/60.] Repealed by Order 74-28, filed 5/7/74 and Order 76-7, filed 3/1/76.	296-78-180	Transportation—Lumber handling equipment—Cranes—Construction. [Order 74-28, § 296-78-180, filed 5/7/74; Rule E-1, effective 6/1/51, filed 3/23/60.] Repealed by 81-18-029 (Order 81-21), filed 8/27/81. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240.
296-78-085	Electrical utilization—Guarding or isolating live parts—Inclosure or elevation. [Rule D-29, effective 6/1/51, filed 3/23/60.] Repealed by Order 74-28, filed 5/7/74 and Order 76-7, filed 3/1/76.	296-78-185	Electrical equipment. [Order 74-28, § 296-78-185, filed 5/7/74; Rule E-2, effective 6/1/51, filed 3/23/60.] Repealed by 81-18-029 (Order 81-21), filed 8/27/81. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240.
296-78-090	Electrical utilization—Separation and barriers. [Rule D-30, effective 6/1/51, filed 3/23/60.] Repealed by Order 74-28, filed 5/7/74 and Order 76-7, filed 3/1/76.	296-78-190	Chains, wire rope, cables and fiber rope. [Order 74-28, § 296-78-190, filed 5/7/74; Rule E-3, effective 6/1/51, filed 3/23/60.] Repealed by 81-18-029 (Order 81-21), filed 8/27/81. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240.
296-78-095	Electrical utilization—Hazardous locations. [Rule D-31, effective 6/1/51, filed 3/23/60.] Repealed by Order 74-28, filed 5/7/74 and Order 76-7, filed 3/1/76.	296-78-195	Floor operated cranes. [Order 74-28, § 296-78-195, filed 5/7/74; Rule E-4, effective 6/1/51, filed 3/23/60.] Repealed by 81-18-029 (Order 81-21), filed 8/27/81. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240.
296-78-100	Electrical utilization—Suitability and size of conductors. [Rule D-32, effective 6/1/51, filed 3/23/60.] Repealed by Order 74-28, filed 5/7/74 and Order 76-7, filed 3/1/76.	296-78-200	Operators. [Order 77-12, § 296-78-200, filed 7/11/77; Order 74-28, § 296-78-200, filed 5/7/74; Rule E-5, effective 6/1/51, filed 3/23/60.] Repealed by 81-18-029 (Order 81-21), filed 8/27/81. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240.
296-78-105	Electrical utilization—Fuses and circuit breakers. [Rule D-33, effective 6/1/51, filed 3/23/60.] Repealed by Order 74-28, filed 5/7/74 and Order 76-7, filed 3/1/76.	296-78-205	Signalmen. [Order 74-28, § 296-78-205, filed 5/7/74; Rule E-6, effective 6/1/51, filed 3/23/60.] Repealed by 81-18-029 (Order 81-21), filed 8/27/81. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240.
296-78-110	Electrical utilization—General requirements for switches—Accessibility, marking and installation. [Rule D-34, effective 6/1/51, filed 3/23/60.] Repealed by Order 74-28, filed 5/7/74 and Order 76-7, filed 3/1/76.	296-78-210	Repairmen. [Order 74-28, § 296-78-210, filed 5/7/74; Rule E-7, effective 6/1/51, filed 3/23/60.] Repealed by 81-18-029 (Order 81-21), filed 8/27/81. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240.
296-78-115	Electrical utilization—Guarding switches. [Rule D-35, effective 6/1/51, filed 3/23/60.] Repealed by Order 74-28, filed 5/7/74 and Order 76-7, filed 3/1/76.	296-78-215	Construction requirements. [Order 74-28, § 296-78-215, filed 5/7/74; Rule E-8, effective 6/1/51, filed 3/23/60.] Repealed by 81-18-029 (Order 81-21), filed 8/27/81. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240.
296-78-120	Electrical utilization—Platforms and mats. [Rule D-36, effective 6/1/51, filed 3/23/60.] Repealed by Order 74-28, filed 5/7/74 and Order 76-7, filed 3/1/76.	296-78-220	Crane platforms and footwalks. [Order 74-28, § 296-78-220, filed 5/7/74; Rule E-9, effective 6/1/51, filed 3/23/60.] Repealed by 81-18-029 (Order 81-21), filed 8/27/81. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240.
296-78-125	Electrical utilization—Switchboards and panelboards—Control or arrangement. [Rule D-37, effective 6/1/51, filed 3/23/60.] Repealed by Order 74-28, filed 5/7/74 and Order 76-7, filed 3/1/76.	296-78-225	Crane cages. [Order 74-28, § 296-78-225, filed 5/7/74; Rule E-10, effective 6/1/51, filed 3/23/60.] Repealed by 81-18-029 (Order 81-21), filed 8/27/81. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240.
296-78-130	Electrical utilization—Inclosure of parts. [Rule D-38, effective 6/1/51, filed 3/23/60.] Repealed by Order 74-28, filed 5/7/74 and Order 76-7, filed 3/1/76.	296-78-230	Crane rail stops, bumpers and fenders. [Order 74-28, § 296-78-230, filed 5/7/74; Rule E-11, effective 6/1/51, filed 3/23/60.] Repealed by 81-18-029 (Order 81-21), filed 8/27/81. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240.
296-78-135	Electrical utilization—Motors and motor-driven machinery—Grounding machine frames. [Rule D-39, effective 6/1/51, filed 3/23/60.] Repealed by Order 74-28, filed 5/7/74 and Order 76-7, filed 3/1/76.	296-78-235	Crawler locomotive and truck cranes. [Order 74-28, § 296-78-235, filed 5/7/74; Rule E-12, effective 6/1/51, filed 3/23/60.] Repealed by 81-18-029 (Order 81-21), filed 8/27/81. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240.
296-78-140	Electrical utilization—Mats and platforms. [Rule D-40, effective 6/1/51, filed 3/23/60.] Repealed by Order 74-28, filed 5/7/74 and Order 76-7, filed 3/1/76.	296-78-240	Construction, operation and maintenance—Chain and electric hoists. [Order 74-28, § 296-78-240, filed 5/7/74; Rule E-13, effective 6/1/51, filed 3/23/60.] Repealed by 81-18-029 (Order 81-21), filed 8/27/81. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240.
296-78-145	Electrical utilization—Water barrel rheostats prohibited. [Rule D-41, effective 6/1/51, filed 3/23/60.] Repealed by Order 74-28, filed 5/7/74 and Order 76-7, filed 3/1/76.	296-78-245	Monorail hoists. [Order 74-28, § 296-78-245, filed 5/7/74; Rule E-14, effective 6/1/51, filed 3/23/60.] Repealed by 81-18-029 (Order 81-21), filed 8/27/81. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240.
296-78-150	Electrical utilization—Employees—Safety requirements. [Rule D-42, effective 6/1/51, filed 3/23/60.] Repealed by Order 74-28, filed 5/7/74 and Order 76-7, filed 3/1/76.	296-78-250	Air hoists. [Order 74-28, § 296-78-250, filed 5/7/74; Rule E-15, effective 6/1/51, filed 3/23/60.] Repealed by 81-18-029 (Order 81-21), filed 8/27/81. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240.
296-78-155	Electrical utilization—"Bridging" fuses prohibited. [Rule D-43, effective 6/1/51, filed 3/23/60.] Repealed by Order 74-28, filed 5/7/74 and Order 76-7, filed 3/1/76.		
296-78-160	Electrical utilization—Leakage of electricity shall be reported. [Rule D-44, effective 6/1/51, filed 3/23/60.] Repealed by Order 74-28, filed 5/7/74 and Order 76-7, filed 3/1/76.		
296-78-162	Electrical utilization—Safe standing room required. [Rule D-45, effective 6/1/51, filed 3/23/60.] Repealed by Order 74-28, filed 5/7/74 and Order 76-7, filed 3/1/76.		
296-78-165	Electrical utilization—Use of disconnected wires for starting machinery prohibited. [Rules D-46 through D-		

296-78-255	Jib, pillar, and portable floor cranes, crabs, and winches. [Order 74-28, § 296-78-255, filed 5/7/74; Rule E-16, effective 6/1/51, filed 3/23/60.] Repealed by 81-18-029 (Order 81-21), filed 8/27/81. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240.	296-78-345	Miscellaneous woodworking machines—Planers, stickers, molders, matchers. [Order 74-28, § 296-78-345, filed 5/7/74; Rule I-1, effective 6/1/51, filed 3/23/60.] Repealed by 81-18-029 (Order 81-21), filed 8/27/81. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240.
296-78-260	Standard crane hand signals—Illustration. [Order 74-28, § 296-78-260, filed 5/7/74; Rule E-17, effective 6/1/51, filed 3/23/60.] Repealed by 81-18-029 (Order 81-21), filed 8/27/81. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240.	296-78-350	Planers (stave and heading). [Order 74-28, § 296-78-350, filed 5/7/74; Rule I-2, effective 6/1/51, filed 3/23/60.] Repealed by 81-18-029 (Order 81-21), filed 8/27/81. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240.
296-78-265	Vehicles. [Order 77-12, § 296-78-265, filed 7/11/77; Order 74-28, § 296-78-265, filed 5/7/74; Rules E-18 through E-39, effective 6/1/51, filed 3/23/60.] Repealed by 81-18-029 (Order 81-21), filed 8/27/81. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240.	296-78-355	Stave croziers. [Order 74-28, § 296-78-355, filed 5/7/74; Rule I-3, effective 6/1/51, filed 3/23/60.] Repealed by 81-18-029 (Order 81-21), filed 8/27/81. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240.
296-78-270	Loading, piling, storage and conveying. [Order 76-7, § 296-78-270, filed 3/1/76; Order 74-28, § 296-78-270, filed 5/7/74; Rules F-1 through F-43, effective 6/1/51, filed 3/23/60.] Repealed by 81-18-029 (Order 81-21), filed 8/27/81. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240.	296-78-360	Jointers. [Order 74-28, § 296-78-360, filed 5/7/74; Rule I-4, effective 6/1/51, filed 3/23/60.] Repealed by 81-18-029 (Order 81-21), filed 8/27/81. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240.
296-78-275	Log dumps and ponds—Headmills. [Order 76-7, § 296-78-275, filed 3/1/76; Order 74-28, § 296-78-275, filed 5/7/74; Rules G-1 through G-50, effective 6/1/51, filed 3/23/60.] Repealed by 81-18-029 (Order 81-21), filed 8/27/81. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240.	296-78-365	Jointers (stave and heading). [Order 74-28, § 296-78-365, filed 5/7/74; Rule I-5, effective 6/1/51, filed 3/23/60.] Repealed by 81-18-029 (Order 81-21), filed 8/27/81. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240.
296-78-280	Band saws—Saws. [Order 76-7, § 296-78-280, filed 3/1/76; Order 74-28, § 296-78-280, filed 5/7/74; Rule H-1, effective 6/1/51, filed 3/23/60.] Repealed by 81-18-029 (Order 81-21), filed 8/27/81. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240.	296-78-370	Miscellaneous woodworking machines—Jointers—(Shingle). [Rule I-6, effective 6/1/51, filed 3/23/60.] Repealed by Order 74-28, filed 5/7/74 and Order 76-7, filed 3/1/76.
296-78-285	Circular saws. [Order 74-28, § 296-78-285, filed 5/7/74; Rule H-2, effective 6/1/51, filed 3/23/60.] Repealed by 81-18-029 (Order 81-21), filed 8/27/81. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240.	296-78-375	Wood shapers. [Order 74-28, § 296-78-375, filed 5/7/74; Rule I-7, effective 6/1/51, filed 3/23/60.] Repealed by 81-18-029 (Order 81-21), filed 8/27/81. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240.
296-78-290	Edgers. [Order 77-12, § 296-78-290, filed 7/11/77; Order 76-7, § 296-78-290, filed 3/1/76; Order 74-28, § 296-78-290, filed 5/7/74; Rules H-3A through H-3J, effective 6/1/51, filed 3/23/60.] Repealed by 81-18-029 (Order 81-21), filed 8/27/81. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240.	296-78-380	Boring and mortising machines. [Order 74-28, § 296-78-380, filed 5/7/74; Rule I-8, effective 6/1/51, filed 3/23/60.] Repealed by 81-18-029 (Order 81-21), filed 8/27/81. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240.
296-78-295	Equalizer saws. [Order 74-28, § 296-78-295, filed 5/7/74; Rule H-4, effective 6/1/51, filed 3/23/60.] Repealed by 81-18-029 (Order 81-21), filed 8/27/81. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240.	296-78-385	Tenoning machines. [Order 74-28, § 296-78-385, filed 5/7/74; Rule I-9, effective 6/1/51, filed 3/23/60.] Repealed by 81-18-029 (Order 81-21), filed 8/27/81. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240.
296-78-300	Gang saws and re-saws. [Order 74-28, § 296-78-300, filed 5/7/74; Rule H-5, effective 6/1/51, filed 3/23/60.] Repealed by 81-18-029 (Order 81-21), filed 8/27/81. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240.	296-78-390	Lathe (pail and barrel). [Order 74-28, § 296-78-390, filed 5/7/74; Rule I-10, effective 6/1/51, filed 3/23/60.] Repealed by 81-18-029 (Order 81-21), filed 8/27/81. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240.
296-78-305	Jump saws. [Order 74-28, § 296-78-305, filed 5/7/74; Rule H-6, effective 6/1/51, filed 3/23/60.] Repealed by 81-18-029 (Order 81-21), filed 8/27/81. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240.	296-78-395	Sanding machines. [Order 74-28, § 296-78-395, filed 5/7/74; Rule I-11, effective 6/1/51, filed 3/23/60.] Repealed by 81-18-029 (Order 81-21), filed 8/27/81. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240.
296-78-310	Saws—Shingle saws. [Rule H-7, effective 6/1/51, filed 3/23/60.] Repealed by Order 74-28, filed 5/7/74 and Order 76-7, filed 3/1/76.	296-78-400	Glue machines. [Order 74-28, § 296-78-400, filed 5/7/74; Rule I-12, effective 6/1/51, filed 3/23/60.] Repealed by 81-18-029 (Order 81-21), filed 8/27/81. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240.
296-78-315	Trimmer and slasher saws. [Order 74-28, § 296-78-315, filed 5/7/74; Rule H-8, effective 6/1/51, filed 3/23/60.] Repealed by 81-18-029 (Order 81-21), filed 8/27/81. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240.	296-78-405	Lath mills. [Order 74-28, § 296-78-405, filed 5/7/74; Rule J-1, effective 6/1/51, filed 3/23/60.] Repealed by 81-18-029 (Order 81-21), filed 8/27/81. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240.
296-78-320	Barrel stave saws. [Order 74-28, § 296-78-320, filed 5/5/74; Rule H-9, effective 6/1/51, filed 3/23/60.] Repealed by 81-18-029 (Order 81-21), filed 8/27/81. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240.	296-78-410	Veneer and plywood plants—Peeling and barking. [Order 74-28, § 296-78-410, filed 5/7/74; Rule K-1, effective 6/1/51, filed 3/23/60.] Repealed by 81-18-029 (Order 81-21), filed 8/27/81. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240.
296-78-325	Swing saws. [Order 74-28, § 296-78-325, filed 5/7/74; Rule H-10, effective 6/1/51, filed 3/23/60.] Repealed by 81-18-029 (Order 81-21), filed 8/27/81. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240.	296-78-415	Veneer lathe. [Order 74-28, § 296-78-415, filed 5/7/74; Rules K-2 through K-4, effective 6/1/51, filed 3/23/60.] Repealed by 81-18-029 (Order 81-21), filed 8/27/81. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240.
296-78-330	Table saws. [Order 74-28, § 296-78-330, filed 5/7/74; Rule H-11, effective 6/1/51, filed 3/23/60.] Repealed by 81-18-029 (Order 81-21), filed 8/27/81. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240.	296-78-420	Veneer slicer and cutter. [Order 74-28, § 296-78-420, filed 5/7/74; Rule K-5, effective 6/1/51, filed 3/23/60.] Repealed by 81-18-029 (Order 81-21), filed 8/27/81. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240.
296-78-335	Circular saws, speeds, repairs. [Order 74-28, § 296-78-335, filed 5/7/74; Rule H-12, effective 6/1/51, filed 3/23/60.] Repealed by 81-18-029 (Order 81-21), filed 8/27/81. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240.	296-78-425	Veneer clipper. [Order 74-28, § 296-78-425, filed 5/7/74; Rule K-6, effective 6/1/51, filed 3/23/60.] Repealed by 81-18-029 (Order 81-21), filed 8/27/81.
296-78-340	Saw filing and grinding rooms and equipment. [Order 74-28, § 296-78-340, filed 5/7/74; Rule H-13, effective		

- 296-78-430 Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240.
Veneer wringer (swede). [Order 74-28, § 296-78-430, filed 5/7/74; Rule K-7, effective 6/1/51, filed 3/23/60.] Repealed by 81-18-029 (Order 81-21), filed 8/27/81. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240.
- 296-78-450 The shake and shingle industry. [Order 76-7, § 296-78-450, filed 3/1/76; Order 74-28, § 296-78-450, filed 5/7/74.] Repealed by 81-18-029 (Order 81-21), filed 8/27/81. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240.
- 296-78-555 First-aid room. [Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-18-029 (Order 81-21), § 296-78-555, filed 8/27/81.] Repealed by 00-01-038, filed 12/7/99, effective 2/1/00. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050.

WAC 296-78-500 Foreword. (1) General requirements. The chapter 296-78 WAC shall apply to and include safety requirements for all installations where the primary manufacturing of wood building products takes place. The installations may be a permanent fixed establishment or a portable operation. These operations shall include but are not limited to log and lumber handling, sawing, trimming and planing, plywood or veneer manufacturing, canting operations, waste or residual handling, operation of dry kilns, finishing, shipping, storage, yard and yard equipment, and for power tools and affiliated equipment used in connection with such operation. WAC 296-78-450 shall apply to shake and shingle manufacturing. The provisions of WAC 296-78-500 through 296-78-84011 are also applicable in shake and shingle manufacturing except in instances of conflict with the requirements of WAC 296-78-705. (Rev. 1-28-76.)

(2) This standard shall augment the Washington state general safety and health standards, general occupational health standards, electrical workers safety rules, and any other standards which are applicable to all industries governed by chapter 80, Laws of 1973, Washington Industrial Safety and Health Act. In the event of any conflict between any portion of this chapter and any portion of any of the general application standards, the provisions of this chapter 296-78 WAC, shall apply.

(3) In exceptional cases where compliance with specific provisions of this chapter can only be accomplished to the serious detriment and disadvantage of an operation, variance from the requirement may be permitted by the director of the department of labor and industries after receipt of application for variance which meets the requirements of chapter 296-350 WAC.

(4) No safety program will run itself. To be successful, the wholehearted interest of the employees' group (labor unions) and management must not only be behind the program, but the fact must also be readily apparent to all.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 01-11-038, § 296-78-500, filed 5/9/01, effective 9/1/01. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-18-029 (Order 81-21), § 296-78-500, filed 8/27/81.]

WAC 296-78-505 Definitions applicable to this chapter. (1) "A-frame" means a structure made of two independent columns fastened together at the top and separated at the bottom for stability.

(2) "Annealing" heating then cooling to soften and render less brittle.

(3) "Binder" a hinged lever assembly used to connect the ends of a wrapper to tighten the wrapper around the load of logs or materials.

(4) "Boom" logs or timbers fastened together end to end and used to contain floating logs. The term includes enclosed logs.

(5) "Brow log" a log placed parallel to a roadway at a landing or dump to protect vehicles while loading or unloading.

(6) "Bunk" a cross support for a load.

(7) "Cant" a log slabbled on one or more sides.

(8) "Carriage" (log carriage) a framework mounted on wheels which runs on tracts or in grooves in a direction parallel to the face of the saw, and which contains apparatus to hold a log securely and advance it toward the saw.

(9) "Carrier" an industrial truck so designed and constructed that it straddles the load to be transported with mechanisms to pick up the load and support it during transportation.

(10) "Chipper" a machine which cuts material into chips.

(11) "Chock," "bunk block," and "cheese block" a wedge that prevents logs or loads from moving.

(12) "Cold deck" a pile of logs stored for future removal.

(13) "Crotch lines" two short lines attached to a hoisting line by a ring or shackle, the lower ends being attached to loading hooks.

(14) "Dog" (carriage dog) a steel tooth or assembly of steel teeth, one or more of which are attached to each carriage knee to hold log firmly in place on carriage.

(15) "Drag saw" a power-driven, reciprocating cross-cut saw mounted on suitable frame and used for bucking logs.

(16) "Head block" that part of a carriage which holds the log and upon which it rests. It generally consists of base, knee, taper set, and mechanism.

(17) "Head rig" a combination of head saw and log carriage used for the initial breakdown of logs into timbers, cants, and boards.

(18) "Hog" a machine for cutting or grinding slabs and other coarse residue from the mill.

(19) "Husk" a head saw framework on a circular mill.

(20) "Industrial truck" a mobile, power-driven vehicle used to carry, push or pull material. It is designed for "in-plant" or "on-site" use rather than highway use.

(21) "Kiln tender" the operator of a kiln.

(22) "Lift truck" an industrial truck used for lateral transportation and equipped with a power-operated lifting device, usually in the form of forks, for piling or unpling lumber units or packages.

(23) "Live rolls" cylinders of wood or metal mounted on horizontal axes and rotated by power, which are used to convey slabs, lumber, and other wood products.

(24) "Loading boom" any structure projecting from a pivot point and intended to be used for lifting and guiding loads for the purpose of loading or unloading.

(25) "Log" a portion of a tree, usually a minimum of twelve feet in length, capable of being further processed into a variety of wood products.

(26) "Log deck" a platform in the sawmill on which the logs remain until needed for sawing.

(27) "Log haul" a conveyor for transferring logs to mill.

(28) "Lumber dimensions" the nominal size of surfaced lumber, unless otherwise stated.

(29) "Lumber hauling truck" an industrial truck, other than a lift truck or a carrier, used for the transport of lumber.

(30) "Package" a unit of lumber.

(31) "Peavy" a stout wooden handle fitted with a spike and hook and used for rolling logs.

(32) "Peeler block" a portion of a tree usually bucked in two foot intervals plus trim, to be peeled in a lathe or sliced in a slicer into veneer for further processing into plywood.

(33) "Pike pole" a long pole whose end is shod with a sharp pointed spike.

(34) "Pitman rod" connecting rod.

(35) "Resaw" band, circular, or sash gang saws used to break down slabs, cants, or flitches into lumber.

(36) "Running line" any moving rope as distinguished from a stationary rope such as a guyline.

(37) "Safety factor" a calculated reduction factor which may be applied to laboratory test values to obtain safe working stresses for wooden beams and other mechanical members; ratio of breaking load to safe load.

(38) "Saw guide" a device for steadying a circular or bandsaw.

(39) "Setwork" a mechanism on a sawmill carriage which enables an operator to move the log into position for another cut.

(40) "Sorting gaps" the areas on a log pond enclosed by boom sticks into which logs are sorted.

(41) "Spreader wheel" a metal wheel that separates the board from the log in back of circular saws to prevent binding.

(42) "Splitter" a knife-type, nonrotating spreader.

(43) "Sticker" a strip of wood or other material used to separate layers of lumber.

(44) "Stiff boom" the anchored, stationary boom sticks which are tied together and on which boom persons work.

(45) "Swifter" is a tying of boom sticks together to prevent them from spreading while being towed.

(46) "Telltale" a device used to serve as a warning for overhead objects.

(47) "Top saw" the upper of two circular saws on a head rig, both being on the same husk.

(48) "Tramway" a way for trams, usually consisting of parallel tracks laid on wooden beams.

(49) "Trestle" a braced framework of timbers, piles or steelwork for carrying a road or railroad over a depression.

(50) "Wrapper" a chain, strap or wire rope assembly used to contain a load of logs or materials.

[Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-18-029 (Order 81-21), § 296-78-505, filed 8/27/81.]

WAC 296-78-510 Education and first-aid standards.

It shall be the duty of every employer to comply with such standards and systems of education for safety as shall be, from time to time, prescribed for such employer by the director of labor and industries through the division of industrial safety and health or by statute.

[Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-18-029 (Order 81-21), § 296-78-510, filed 8/27/81.]

(2007 Ed.)

WAC 296-78-515 Management's responsibility. (1) It shall be the responsibility of management to establish, supervise, and enforce, in a manner which is effective in practice:

(a) A safe and healthful working environment.

(b) An accident prevention program as required by these standards.

(c) Training programs to improve the skill and competency of all employees in the field of occupational safety and health. Such training shall include the on-the-job instructions on the safe use of powered materials handling equipment, machine tool operations, use of toxic materials and operation of utility systems prior to assignments to jobs involving such exposures.

(2) The employer shall develop and maintain a chemical hazard communication program as required by WAC 296-800-170, which will provide information to all employees relative to hazardous chemicals or substances to which they are exposed, or may become exposed, in the course of their employment.

(3) Management shall not assign mechanics, millwrights, or other persons to work on equipment by themselves when there is a probability that the person could fall from elevated work locations or equipment or that a person could be pinned down by heavy parts or equipment so that they could not call for or obtain assistance if the need arises.

Note: This subsection does not apply to operators of motor vehicles, watchperson or certain other jobs which, by their nature, are singular employee assignments. However, a definite procedure for checking the welfare of all employees during their working hours shall be instituted and all employees so advised.

(4) After the emergency actions following accidents that cause serious injuries that have immediate symptoms, a preliminary investigation of the cause of the accident shall be conducted. The investigation shall be conducted by a person designated by the employer, the immediate supervisor of the injured employee, witnesses, employee representative if available and any other person with the special expertise required to evaluate the facts relating to the cause of the accident. The findings of the investigation shall be documented by the employer for reference at any following formal investigation.

(5) Reporting of fatality or multiple hospitalization incidents.

(a) Within eight hours after the fatality or probable fatality of any employee from a work-related incident or the inpatient hospitalization of two or more employees as a result of a work-related incident, the employer of any employees so affected shall report the fatality/multiple hospitalization by telephone or in person, to the nearest office of the department or by using the OSHA toll-free central telephone number, 1-800-321-6742.

(i) This requirement applies to each such fatality or hospitalization of two or more employees which occurs within thirty days of the incident.

(ii) Exception: If any employer does not learn of a reportable incident at the time it occurs and the incident would otherwise be reportable under this subsection, the employer shall make a report within eight hours of the time the incident is reported to any agent or employee of the employer.

(iii) Each report required by this subsection shall relate the following information: Establishment name, location of the incident, time of the incident, number of fatalities or hospitalized employees, contact person, phone number, and a brief description of the incident.

(b) Equipment involved in an incident resulting in an immediate or probable fatality or in the in-patient hospitalization of two or more employees, shall not be moved, until a representative of the department investigates the incident and releases such equipment, except where removal is essential to prevent further incident. Where necessary to remove the victim, such equipment may be moved only to the extent of making possible such removal.

(c) Upon arrival of a department investigator, employer shall assign to assist the investigator, the immediate supervisor and all employees who were witnesses to the incident, or whoever the investigator deems necessary to complete the investigation.

(6) A system for maintaining records of occupational injuries and illnesses as prescribed by chapter 296-27 WAC.

Note: Recordable cases include:

- (a) Every occupational death.
- (b) Every industrial illness.
- (c) Every occupational injury that involves one of the following:
 - (i) Unconsciousness.
 - (ii) Inability to perform all phases of regular job.
 - (iii) Inability to work full time on regular job.
 - (iv) Temporary assignment to another job.
 - (v) Medical treatment beyond first aid.

All employers with eleven or more employees shall record occupational injury and illness information on forms OSHA 101 - supplementary record occupational injuries and illnesses and OSHA 200 - log and summary. Forms other than OSHA 101 may be substituted for the supplementary record of occupational injuries and illnesses if they contain the same items.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 01-11-038, § 296-78-515, filed 5/9/01, effective 9/1/01. Statutory Authority: Chapter 49.17 RCW. 94-20-057 (Order 94-16), § 296-78-515, filed 9/30/94, effective 11/20/94; 91-24-017 (Order 91-07), § 296-78-515, filed 11/22/91, effective 12/24/91; 89-11-035 (Order 89-03), § 296-78-515, filed 5/15/89, effective 6/30/89. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-18-029 (Order 81-21), § 296-78-515, filed 8/27/81.]

WAC 296-78-520 Employee's responsibility. (1)

Employees shall coordinate and cooperate with all other employees in an attempt to eliminate accidents.

(2) Employees shall study and observe all safe practices governing their work.

(3) Employees should offer safety suggestions, wherein such suggestions may contribute to a safer work environment.

(4) Employees shall apply the principles of accident prevention in their daily work and shall use proper safety devices and protective equipment as required by their employment or employer.

(5) Employees shall properly care for all personal protective equipment.

(6) Employees shall make a prompt report to their immediate supervisor, of each industrial injury or occupational illness, regardless of the degree of severity.

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(7) Employees shall not wear torn or loose clothing while working around machinery.

[Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-18-029 (Order 81-21), § 296-78-520, filed 8/27/81.]

WAC 296-78-525 Accident-prevention programs.

Each employer shall develop a formal accident-prevention program, tailored to the needs of the particular plant or operation and to the type of hazards involved. The department may be contacted for assistance in developing appropriate programs.

(1) The following are the minimal program elements for all employers:

(a) A safety orientation program describing the employer's safety program and including:

(i) How and when to report injuries, including instruction as to the location of first-aid facilities.

(ii) How to report unsafe conditions and practices.

(iii) The use and care of required personal protective equipment.

(iv) The proper actions to take in event of emergencies including the routes of exiting from areas during emergencies.

(v) Identification of the hazardous gases, chemicals or materials involved along with the instructions on the safe use and emergency action following accidental exposure.

(vi) A description of the employers total safety program.

(vii) An on-the-job review of the practices necessary to perform the initial job assignments in a safe manner.

(b) A designated safety and health committee consisting of management and employee representatives with the employee representatives being elected or appointed by fellow employees.

(2) Each accident-prevention program shall be outlined in written format.

[Statutory Authority: Chapter 49.17 RCW. 94-20-057 (Order 94-16), § 296-78-525, filed 9/30/94, effective 11/20/94. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-18-029 (Order 81-21), § 296-78-525, filed 8/27/81.]

WAC 296-78-530 Safety and health committee plan.

(1) All employers of eleven or more employees, shall have a designated safety committee composed of employer and employee elected members.

(a) The terms of employee-elected members shall be a maximum of one year. Should a vacancy occur on the committee, a new member shall be elected prior to the next scheduled meeting.

(b) The number of employer-selected members shall not exceed the number of employee-elected members.

(2) The safety committee shall have an elected chairperson.

(3) The safety committee shall be responsible for determining the frequency of committee meetings.

Note: If the committee vote on the frequency of safety meetings is stalemated, the division's regional safety educational representative may be consulted for recommendations.

(a) The committee shall be responsible for determining the date, hour and location of the meetings.

(b) The length of each meeting shall not exceed one hour except by majority vote of the committee.

(2007 Ed.)

(4) Minutes of each committee meeting shall be prepared and filed for a period of at least one year and shall be made available for review by noncompliance personnel of the division of industrial safety and health.

(5) Safety and health committee meetings shall address the following:

(a) A review of the safety and health inspection reports to assist in correction of identified unsafe conditions or practices.

(b) An evaluation of the accident investigations conducted since the last meeting to determine if the cause of the unsafe acts or unsafe conditions involved was properly identified and corrected.

(c) An evaluation of the accident or illness prevention program with the discussion of recommendation for improvement where indicated.

(d) The attendance shall be documented.

(e) The subject(s) discussed shall be documented.

(6) All employers of ten or less employees and employers of eleven or more employees where the employees are segregated on different shifts or in widely dispersed locations in crews of ten or less employees, may elect to have foreman-crew meetings in lieu of a safety and health committee plan provided:

(a) Foreman-crew safety meetings be held at least once a month, however, if conditions require, weekly or semi-monthly meetings shall be held to discuss safety problems as they arise.

(b) All items under subsection (5) of this section shall be covered.

[Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-18-029 (Order 81-21), § 296-78-530, filed 8/27/81.]

WAC 296-78-535 Safety bulletin board. There shall be installed and maintained in every fixed establishment, a safety bulletin board sufficient in size to display and post safety bulletins, newsletters, posters, accident statistics and other safety educational material. It is recommended that safety bulletin boards be painted green and white.

[Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-18-029 (Order 81-21), § 296-78-535, filed 8/27/81.]

WAC 296-78-540 First-aid training and certification. The employer must ensure that first-aid trained personnel are available to help employees who are injured or who become acutely ill on the job. The employer must meet this requirement by maintaining first-aid trained staff on the job site. The employer must ensure that:

(1) Each person in charge of employees has first-aid training; or another person with first-aid training is present or available to the employees. Such training must be successfully completed every two years;

(2) Documentation of first-aid training is kept;

(3) Emergency telephone numbers are adequately posted.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060. 04-07-160, § 296-78-540, filed 3/23/04, effective 5/1/04. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 01-11-038, § 296-78-540, filed 5/9/01, effective 9/1/01; 00-01-038, § 296-78-540, filed 12/7/99, effective 2/1/00. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-18-029 (Order 81-21), § 296-78-540, filed 8/27/81.]

(2007 Ed.)

WAC 296-78-545 First-aid supplies. The first-aid kits and supplies requirements of WAC 296-800-150 apply within the scope of chapter 296-78 WAC.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 01-11-038, § 296-78-545, filed 5/9/01, effective 9/1/01; 00-01-038, § 296-78-545, filed 12/7/99, effective 2/1/00. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-18-029 (Order 81-21), § 296-78-545, filed 8/27/81.]

WAC 296-78-550 First-aid station. Employers with fifty or more employees per shift at one location must establish a first-aid station in accordance with the requirements in chapter 296-24 WAC, Part A-1.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 00-01-038, § 296-78-550, filed 12/7/99, effective 2/1/00. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-18-029 (Order 81-21), § 296-78-550, filed 8/27/81.]

WAC 296-78-560 Safe place standards. (1) Each employer shall furnish to each of his employees a place of employment free from recognized hazards that are causing or likely to cause serious injury or death to his employees.

(2) Every employer shall furnish and use safety devices and safeguards, and shall adopt and use practices, means, methods, operations, and processes which are reasonably adequate to render such employment and place of employment safe. Every employer shall do every other thing reasonably necessary to protect the life and safety of employees.

(3) No employer shall require any employee to go or be in any employment or place of employment which is not safe.

(4) No employer shall fail or neglect:

(a) To provide and use safety devices and safeguards.

(b) To adopt and use methods and processes reasonably adequate to render the employment and place of employment safe.

(c) To do every other thing reasonably necessary to protect the life and safety of employees.

(5) No employer, owner, or lessee of any real property shall construct or cause to be constructed any place of employment that is not safe.

(6) No person shall do any of the following:

(a) Remove, displace, damage, destroy or carry off any safety device, safeguard, notice, or warning, furnished for use in any employment or place of employment.

(b) Interfere in any way with the use thereof by any other person.

(c) Interfere with the use of any method or process adopted for the protection of any employee, including himself, in such employment, or place of employment.

(d) Fail or neglect to do every other thing reasonably necessary to protect the life and safety of employees.

(e) Intoxicating beverages and narcotics shall not be permitted or used in or around work sites. Workers under the influence of alcohol or narcotics shall not be permitted on the work site. This rule does not apply to persons taking prescription drugs and or narcotics as directed by a physician providing such use shall not endanger the worker or others.

[Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-18-029 (Order 81-21), § 296-78-560, filed 8/27/81.]

WAC 296-78-565 Log dumps and ponds—Head-mills.

[Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-18-029 (Order 81-21), § 296-78-565, filed 8/27/81.]

WAC 296-78-56501 Log dumps and ponds. (1) Log dumps, booms, ponds or storage areas, if used at night, shall be illuminated in accordance with the requirements of WAC 296-800-210, safety and health core rules.

(2) A log dump shall be constructed at each log pond or decking ground. Log trucks shall not be unloaded by use of peavies or by hand.

(a) The roadbed shall be of hard packed gravel, heavy planking or equivalent material and shall be maintained at all times. Roadbeds at log dumps shall be of width and evenness to insure safe operation of equipment.

(b) A mechanical unloading device shall be provided and used for unloading logs. Log unloading areas shall be arranged and maintained to provide a safe working area.

(c) Signs prohibiting unauthorized foot or vehicle traffic in log unloading and storage areas shall be posted.

(d) At no time shall one person be permitted to work alone on a log dump, a booming or rafting grounds, or a log pond.

(3) Water log dumps. Ungrounded electrically powered hoists using handheld remote control in grounded locations, such as log dumps or mill log lifts, shall be actuated by circuits operating at less than 50 volts to ground.

(4)(a) A brow log, skid timbers or the equivalent shall be installed on all log dumps.

(b) Where logs are unloaded onto skids, sufficient space shall be provided between the top of the skids and the ground to accommodate the body of a person.

(c) All truck dumps shall be built with not more than six inches variation of level from side to side.

(5)(a) All truck log dumps shall be equipped with a positive safeguard to prevent logs from leaving the load on the side opposite the brow log. Jill pokes shall not be used on truck log dumps.

(b) Unloading lines shall be attached and tightened or other positive safeguard in place before binder chains are released at any log dump.

(c) Stakes and chocks which trip shall be constructed in such manner that the tripping mechanism that releases the stake or chocks is activated at the opposite side of the load being tripped.

(d) Binders shall be released only from the side on which the unloader operates, except when released by remote control devices or except when person making release is protected by racks or stanchions or other equivalent means.

(e) Loads on which a binder is fouled by the unloading machine shall have an extra binder or metal band of equal strength placed around the load, or the load shall be otherwise secured so that the fouled binder can be safely removed.

(f) Unloading lines, crotch lines, or equally effective means shall be arranged and used in a manner to minimize the possibility of any log swinging or rolling back.

(6)(a) In unloading operations, the operator of unloading machine shall have an unobstructed view of the vehicle and the logs being unloaded.

(b) Unloading lines shall be arranged so that it is not necessary for the employees to attach them from the pond or dump site of the load except when entire loads are lifted from the log-transporting vehicle.

(7) All log dumps shall be kept reasonably free of bark and other debris.

(8) Employees shall remain in the clear until all moving equipment has come to a complete stop.

(9) Artificial log ponds subject to unhealthy stagnation shall be drained, cleansed, and water changed at least once every six months.

(10) All employees whose regular work requires walking on logs shall wear spiked or caked shoes, except when working in snow.

(11) Employees whose duties require them to work from boats, floating logs, boom sticks, or walkways along or on water must be provided with and must wear appropriate buoyant devices while performing such duties.

(a) Employees are not considered exposed to the danger of drowning:

(i) When working behind standard height and strength guardrails;

(ii) When working inside operating cabs or stations which eliminate the possibility of accidentally falling into the water;

(iii) When wearing approved safety belts with lifeline attached so as to preclude the possibility of falling into the water.

(b) Prior to and after each use, personal floating devices shall be inspected for defects which would reduce their designed effectiveness. Defective personal flotation devices shall not be used.

(c) To meet the approved criteria required by this subsection (11), a personal flotation device shall be approved by the United States Coast Guard as a Type I PFD, Type II PFD, Type III PFD, or Type V PFD, or their equivalent, pursuant to 46 CFR 160 (Coast Guard lifesaving equipment specifications) and 33 CFR 175.23 (Coast Guard table of devices equivalent to personal flotation devices). Ski belt or inflatable type personal flotation devices are specifically prohibited.

(12)(a) Wooden pike poles shall be of continuous, straight grained No. 1 material. Defective poles, blunt or dull pikes shall not be used.

(b) Aluminum or other metal poles shall not be used where hazard of coming in contact with live electric wires exists.

(13)(a) Walkways and floats shall be provided and security anchored to provide safe passage for workers.

(b) Permanent cable swifters shall be so arranged that it will not be necessary to roll boom sticks in order to attach or detach them.

(c) Inspection of cable or dogging lines shall be made as necessary to determine when repair or removal from service is necessary.

(14)(a) Decks of floats or other walkways shall be kept above the waterline at all times and shall be capable of supporting four times the load to be imposed.

(b) Floating donkeys or other power-driven machinery used on booms shall be placed on a raft or float with enough buoyancy to keep the deck above water.

(15)(a) All regular boom sticks and foot logs shall be reasonably straight, have all protruding knots and bark removed, and shall be capable of supporting above the waterline at either end, any necessary weight of workers and equipment.

(b) Stiff booms shall be two float logs wide secured by boom chains or other connecting devices, and of a width adequate for the working needs. Walking surfaces shall be free of loose material and maintained in good repair.

(c) Boom sticks shall be fastened together with crossies or couplings.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-124, § 296-78-56501, filed 1/23/02, effective 3/1/02; 01-11-038, § 296-78-56501, filed 5/9/01, effective 9/1/01. Statutory Authority: Chapter 49.17 RCW. 89-11-035 (Order 89-03), § 296-78-56501, filed 5/15/89, effective 6/30/89. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-18-029 (Order 81-21), § 296-78-56501, filed 8/27/81.]

WAC 296-78-56503 Log hauls. (1) Every log haul used as a walkway shall have at least one walkway with standard railing to enable workers to stand clear of the logs in the chute. Cleats shall be installed to provide safe footing on sloping walkways.

(2) Workers shall not stand under or dangerously near to logs that are being hoisted vertically to the log deck.

(3)(a) Log haul gears and bull chain drive mechanism shall be adequately guarded for the protection of employees.

(b) Log haul bull chains or cable shall be designed, installed, and maintained to provide a 4 to 1 safety factor for the intended load.

(c) Troughs for the return strand of log haul chains shall be provided over passageways.

(d) Overhead protection shall be provided for employees working below logs being moved to the log deck.

(4) Log haul controls shall be arranged to operate from a position where the operator will at all times be in the clear of logs, machinery lines and rigging. Such controls shall operate mechanism only when moved toward the log slip or deck.

(5) Where possible an automatic stop shall be installed on all log hauls. A positive stop shall be installed on all log hauls to prevent logs from traveling too far ahead in the mill.

(6)(a) Slip persons shall handle pike poles in such manner as to be in the clear in case of a slip back.

(b) All sorting gaps shall have a stiff boom on each side.

(c) The banks of the log pond in the vicinity of the log haul shall be reinforced to prevent caving in.

[Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-18-029 (Order 81-21), § 296-78-56503, filed 8/27/81.]

WAC 296-78-56505 Boats and mechanical devices on waters. (1) The applicable provisions of the Standard for Fire Protection for Motorcraft, NFPA No. 302-1994, shall be complied with. Prior to starting the boat motor, any spilled fuel shall be removed and vapors shall be exhausted from any area in which they may accumulate.

(2) The bilge area shall be kept clean and oil, grease, fuel, or highly combustible materials shall not be allowed to accumulate.

(3) Adequate ventilation equipment shall be provided and used for the bilge area to prevent the accumulation of toxic or explosive gases or vapors.

(4) Adequate ventilation equipment shall be provided and used for the cabin area on enclosed cabin-type boats to prevent an accumulation of harmful gases or vapors.

(5) Deck and cabin lighting shall be provided and used where necessary to provide safe levels of illumination aboard boats. Boats operated during the period from sunset to sunrise, or in conditions of restricted visibility, shall display navigation lights as required by the United States Coast Guard. Searchlights or floodlights shall be provided to facilitate safe navigation and to illuminate working or boarding areas adjacent to the craft.

(6) Decks of pond boats shall be covered with nonslip material. On craft used by workers wearing calked shoes, all areas where the operator or workers must stand or walk shall be made of or be covered with wood or other suitable matting or nonslip material and such covering shall be maintained in good condition.

(7) Each boat shall be provided with a fire extinguisher and life ring with at least fifty feet of one-fourth inch line attached.

Note: For additional requirements relating to portable fire extinguishers see WAC 296-800-300.

(8)(a) Along docks, walkways, or other fixed installations on or adjacent to open water more than five feet deep, approved life rings with at least ninety feet of one-fourth inch line attached, shall be provided. The life rings shall be spaced at intervals not to exceed two hundred feet and shall be kept in easily visible and readily accessible locations.

(b) When employees are assigned work at other casual locations where exposure to drowning exists, at least one approved life ring with at least ninety feet of line attached, shall be provided in the immediate vicinity of the work assigned.

(c) When work is assigned over water where the vertical drop from the accidental fall would exceed fifty feet, special arrangements shall be made with and approved by the department of labor and industries prior to such assignment.

(d) Lines attached to life rings on fixed locations shall be at least ninety feet in length, at least one-fourth inch in diameter, and have a minimum breaking strength of five hundred pounds. Similar lines attached to life rings on boats shall be at least fifty feet in length.

(e) Life rings must be United States Coast Guard approved thirty-inch size.

(f) Life rings and attached lines shall be provided and maintained to retain their buoyancy and strength.

(g) Log broncs, boomscoters, and boomboats shall not be loaded with personnel or equipment so as to adversely affect their stability or seaworthiness.

(h) Boats shall not be operated at an excessive speed or handled recklessly.

(i) Boat fuel shall be transported and stored in approved containers. Refer to WAC 296-24-58501(19) for definition of approved.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060. 03-06-076, § 296-78-56505, filed 3/4/03, effective 8/1/03. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-03-124, § 296-78-56505, filed 1/23/02, effective 3/1/02; 01-17-033, § 296-78-56505, filed 8/8/01, effective 9/1/01. Statutory Authority: Chapter 49.17 RCW. 96-17-056, § 296-78-56505, filed 8/20/96, effective 10/15/96; 88-23-054 (Order 88-25), § 296-78-56505, filed 11/14/88. Statutory Authority: RCW

49.17.040, 49.17.050 and 49.17.240. 81-18-029 (Order 81-21), § 296-78-56505, filed 8/27/81.]

WAC 296-78-56507 Log decks. (1) Dry deck storage.

(a) Dry deck storage areas shall be kept orderly and shall be maintained in a condition which is conducive to safe operation of mobile equipment.

(b) Logs shall be stored in stabilized piles, and roadways and traffic lanes shall be maintained at a width adequate for safe travel of log handling equipment.

(c) Logs shall be arranged to minimize the chance of accidentally rolling from the deck.

(2)(a) Employees shall not spool cable on winch or drums with their hands.

(b) Log wells shall be provided with safeguard to prevent logs from rolling back into well off log deck.

(3) Jump skids on log decks shall be installed in grooves in a manner that they cannot work out onto the carriage way.

(4)(a) Log decks shall be provided with effective means to prevent logs from accidentally rolling down the deck onto the carriage or its runway.

(b) Swing saws. Swing saws on log decks shall be equipped with a barricade and stops for protection of employees who may be on the opposite side of the log haul chute.

(c) Drag saws. Where reciprocating log cutoff saws (drag saws) are provided, they shall not project into walkway or aisle.

(d) Circular cutoff saws. Circular log bucking or cutoff saws shall be so located and guarded as to allow safe entrance to and exit from the building.

(e) Entrance doorway. Where the cutoff saw partially blocks the entrance from the log haul runway the entrance shall be guarded.

(5) A barricade or other positive stop shall be erected between the sawyer's stand and the log deck to protect the sawyer from rolling logs. Such barricade or stop shall be of sufficient strength to stop any log.

(6) Chains from overhead canting gear or other equipment shall not be allowed to hang over the log deck in such manner as to endanger workers.

(7) Canting gear control levers shall be so arranged that they move away from the carriage to operate.

(8) Moving parts or equipment on or about log decks shall be guarded.

(9) Peavies, canthooks and other hand tools shall be kept in good repair at all times.

(10) Workers shall not go below logs on decks that are likely to roll or be rolled. Means of access shall be provided to the head rig which does not subject employees to the hazard of moving logs or equipment.

[Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-18-029 (Order 81-21), § 296-78-56507, filed 8/27/81.]

WAC 296-78-56509 Mechanical barkers. (1) Rotary barkers. Rotary barking devices shall be so guarded as to protect employees from flying chips, bark, or other extraneous material.

(2) Elevating ramp. If an elevating ramp or gate is used, it shall be provided with a safety chain, hook, or other means of suspension while employees are underneath.

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(3) Area around barkers. The hazardous area around ring barkers and their conveyors shall be fenced off or posted as a prohibited area for unauthorized persons.

(4) Enclosing hydraulic barkers. Hydraulic barkers shall be enclosed with strong baffles at the inlet and outlet. The operator shall be protected by adequate safety glass or equivalent.

(5) Holddown rolls. Holddown rolls shall be installed at the infeed and outfeed sections of mechanical ring barkers to control the movement of logs.

(6) If such holddown rolls have a tendency to throw logs or chunks, horseshoe or equivalent type guards shall be installed to contain the logs or chunks.

[Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-18-029 (Order 81-21), § 296-78-56509, filed 8/27/81.]

WAC 296-78-56511 Head rigs and feed works. (1) A clear walkway shall be provided along the upper side of the log deck and around the head rig unless an overhead walkway is provided.

(2) The sawyer shall be primarily responsible for the safety of the carriage crew and off-bearers. He shall exercise due care in the operation of the carriage and log turning devices.

(3) Feedworks and log turning control levers shall be so arranged that they may be securely locked when not in use and shall be guarded against accidental contact.

(4)(a) A positive means shall be provided to prevent unintended movement of the carriage. This shall involve a control locking device, a carriage tie-down, or both.

(b) An emergency control or equally effective means shall be provided so that the sawyer may stop the head rig section of the mill without leaving the operator station.

(5) An effective method of disengaging the head rig saws from the power unit shall be installed on all head rigs where the power unit is not directly controlled by the sawyer. The saws shall be disengaged from the source of power while repairs or changes are made.

(6) A shield of lexan, makrolon, merlon, plestar, or equivalent transparent material, shall be installed between the sawyer's stand and the head saws in all circular mills. In band mills and chipper type installations, a wire screen of not less than twelve gauge wire, one-half inch mesh, mounted in a frame in compliance with chapter 296-806 WAC, Machine safety, is an acceptable substitute for the type shield required in circular mills.

(7) Safety glasses, safety shields or other suitable eye protection shall be provided for and use by head rig off-bearers.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060. 04-14-028, § 296-78-56511, filed 6/29/04, effective 1/1/05. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-18-029 (Order 81-21), § 296-78-56511, filed 8/27/81.]

WAC 296-78-56513 Log carriages. (1) Carriages upon which employees are required to work shall be solidly decked over.

(2) Dogs. Dogging devices shall be adequate to secure logs, cants, or boards, during sawing operations.

(2007 Ed.)

(3) The feed control lever of friction or belt driven carriage feed works shall be arranged to operate away from the saws or carriage track.

(4) A quick action valve, controlled from the sawyer's stand, shall be located in the steam line to any steam operated feed works. The valve shall be tested daily.

(5) Valves in steam feeds shall be closed and locked in a neutral position before the sawyer leaves his station. Leaking steam valves or piping shall not be used on carriage drives.

(6)(a) Where employees ride the headrig carriage, clearance of the rear edge of the carriage shall be either not more than two inches or shall be not less than thirty inches from the side wall of the building. The side wall shall be boarded over smoothly to height of not less than six feet six inches from the setter's platform and for at least the length of the carriage travel. Where the clearance is thirty inches or more the floor between the back side of the setter's platform and the wall shall be raised to the level of the platform. The clearance between the floor edge and the platform shall not be more than two inches.

(b) Barriers and warning signs. A barrier shall be provided to prevent employees from entering the space necessary for travel of the carriage, with headblocks fully retracted, for the full length and extreme ends of carriage runways. Warning signs shall be posted at possible entry points to this area.

(7) Safe access to the head rig shall be provided.

(8) No roof truss or roof timber or other obstruction shall be located within six feet six inches of the upper surface of the setter's platform on any carriage.

(9) Doors which lead onto a passageway at the end or side of the carriage runway shall be provided with a handrail opposite such doorway. Handrail shall not be less than eighteen inches from the carriage run. A warning sign shall be posted on the entrance side of such doorways.

(10) A stop or bumper capable of stopping the loaded carriage at operating speed shall be installed at each end of the carriage run.

(11) Rail sweeps shall be installed in front of the front wheels in the direction of travel. Such sweeps shall extend to within one-fourth inch of the rail.

(12) Where power operated log turners are used, carriage knees shall be provided with goosenecks or other means of protecting the carriage crew from climbing logs.

(13) Employees shall use a stick or wire brush to clear head blocks of debris.

(14) All weakened or broken carriage boards which will not support the load to be imposed with a safety factor of 4, shall be immediately replaced.

(15) Carriage control. A positive means shall be provided to prevent unintended movement of the carriage. This may involve a control locking device, a carriage tie-down, or both.

[Statutory Authority: Chapter 49.17 RCW. 96-17-056, § 296-78-56513, filed 8/20/96, effective 10/15/96. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-18-029 (Order 81-21), § 296-78-56513, filed 8/27/81.]

WAC 296-78-570 Band saws—Saws. (1) Band head rigs shall be given a thorough daily inspection and any deficiency reported and corrected.

(2007 Ed.)

(2) Any band saw found to have developed a crack greater than one-tenth the width of the saw shall be removed from service until the width of the saw is reduced to eliminate the crack, the cracked section is removed, or the development of the crack is arrested by welding.

(3) Band saws shall not be continued in use of the head rig for which they have been designed after they have been reduced forty percent in width.

(4) Leather gloves, or equivalent hand protection, shall be worn by employees while changing band saws.

(5) All head band saw wheels shall have a minimum rim thickness of five-eighths inch, except for a distance of not to exceed one inch from the front edge of the wheel.

(6) Provisions shall be made for alerting and warning employees before starting band head saws, and measures shall be taken to insure that all persons are in the clear.

(7) No band saw shall be run at a peripheral speed in excess of that recommended by the manufacturer. The manufacturer's recommended maximum speed shall be stamped in plainly legible figures on some portion of the assembly.

(8) A band wheel that has developed a crack in the rim shall be immediately removed from service. If a crack has developed in a spoke the wheel shall be removed from service until repaired.

(9) All band wheels shall be completely encased or guarded on both sides. The exposed part of the saw blade on the uptravel between the two wheels shall be encased, and no portion of the blade exposed, except such part of the cutting edge as is essential for sawing the material at hand.

(10) All band wheel guards shall be constructed of not less than ten U.S. gauge metal, or not less than two inch wood material or equivalent, attached to the frames. Ventilating ports shall not exceed 2 x 4 inches in size. Openings necessary for lubrication or repair of the saw shall have doors or gates of equivalent strength to the remainder of the guard, and such doors or gates shall be securely closed during operation.

(11) Every band mill shall be equipped with a saw catcher, rest or guard of substantial construction.

(12) All band saws other than head mills shall be enclosed or guarded except the working side of the blade between the guide and the table. The guard for the portion of the saw between the sliding guide and the upper saw wheel guard shall be adjusted with the guide.

(13) Each gang ripper of band or straight saw type shall have the cutting edges of the saw guarded by a hood or screen secured to the framework of the machine.

[Statutory Authority: Chapter 49.17 RCW. 96-17-056, § 296-78-570, filed 8/20/96, effective 10/15/96. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-18-029 (Order 81-21), § 296-78-570, filed 8/27/81.]

WAC 296-78-575 Circular saws. (1) Single circular head saws. Circular head saws shall not be operated at speeds in excess of those specified by the manufacturer. Maximum speed shall be etched on the saw.

(2) On all circular saw mills the horizontal distance from the side of the saw to the nearest post of the husk or frame shall be at least one inch greater than the clear vertical distance between the collars of the top and bottom saws.

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(3) Circular head saws shall be equipped with safety guides that can be readily adjusted without use of wrench or other hand tools. Brackets or edging supports shall be installed between the saw and the side of the husk.

(4) The upper saw of a double circular mill shall be provided with a hood or guard. A screen or other suitable device shall be placed so as to protect the sawyer from flying particles.

(5) All circular sawmills where live rolls are not used behind the head saw shall be equipped with an effective spreader or splitter. In any mill where the head saw is used for edging lumber, the splitter shall be solid and stationary and shall extend above the head blocks.

(6) Drag saws or circular cut-off saws shall be so arranged that they will not project into any passageway. When existing installations do not leave clear passage, saws shall be fenced off in order to make it impossible for anyone to walk into them. Means to securely hold material being sawed shall be provided wherever such material creates a hazard.

(7) All employees shall be in the clear before starting operation of drag or swing cut-off saws.

(8) Twin circular head saws. Twin circular head saw rigs such as scrag saws, shall meet the specifications for single circular head saws in subsection (1) of this section, where applicable.

[Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-18-029 (Order 81-21), § 296-78-575, filed 8/27/81.]

WAC 296-78-580 Edgers. (1) Edgers shall be guarded by a metal housing of ten gauge sheet metal, ten gauge by one-half inch mesh wire, screen, or by a baffle of not less than two inch wood material.

(2) Openings in end frames shall be enclosed with sheet metal, wire screen or wood and may be hinged or arranged to permit oiling and removal of saws.

(3) The top of the edger shall be guarded to prevent contact by employees or debris being thrown and all chains and gears fully enclosed as required by WAC 296-78-710 of this chapter.

(4) Vertical arbor edgers installed ahead of the main saw shall be so located and guarded that an employee cannot contact any part of the edger saws from his normal operating position.

(5) Edgers shall not be located in the main roll case behind the head saw.

(6) All edgers shall be equipped with pressure feed rolls. The controls shall be installed and located so that from the normal work station the operator can quickly stop the infeed drive without releasing the hold down tension of the pressure rolls.

(7) All edgers shall be provided with a method of preventing or guarding against kickbacks. Finger units or dogs installed at the edger, or hinged steel plates suspended across the feed table may be used for this purpose. A kickback barricade, in line with the edger, if fenced off may be used.

(8) Pressure and feed rolls on edgers shall be guarded against accidental contact by means of roll covers, bars or strips. The pressure rolls shall not be lifted while stock is being run, or while any person is in line with the feed side of the saws.

(9) Edger men shall not raise feed rolls and reach between saws while edger is in operation.

(10) Edger men shall not put hands on cants being run through the edger.

(11) Live rolls and rotating powered tailing devices in back of edger shall operate at a speed not less than the speed of the edger feed rolls.

(12) Tables in back of edgers shall be kept clear of cants, edgings and unnecessary debris.

[Statutory Authority: Chapter 49.17 RCW. 96-17-056, § 296-78-580, filed 8/20/96, effective 10/15/96. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-18-029 (Order 81-21), § 296-78-580, filed 8/27/81.]

WAC 296-78-585 Equalizer saws. (1) Equalizer saws for bolts, staves, heading, etc., shall have the saws encased, except that portion immediately adjacent to the feeding device.

(2) Feeding devices on all such equipment shall be provided with guards to prevent contact with the feeding device by employees.

[Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-18-029 (Order 81-21), § 296-78-585, filed 8/27/81.]

WAC 296-78-590 Gang saws and re-saws. (1) Gang saws and re-saws shall be fully guarded or housed in accordance with conditions. Cranks, pitman rods, and other moving parts shall be guarded.

(2) Feed rolls shall be enclosed by a cover over the top, front, and open ends except where guarded by location. Drive mechanism to feed rolls shall be enclosed.

(3) Feed rolls shall be enclosed and if the operator stands within thirty inches of the feed rolls, they shall be so guarded as to prevent operator coming into contact with them.

(4) Circular re-saws or rip saws, except power feed rip saws with a roller or wheel back of the saw, shall be provided with splitters or spreaders.

(5) A hood of metal or wood of sufficient strength to give protection against splinters or flying teeth shall be provided over all circular rip saws.

(6) That portion of the saw extending below the table shall be so guarded as to prevent contact.

(7) Circular rip saws shall be equipped with a standard anti-kickback device.

(8) Carriage cradles of whole-log sash gang saws, Swedish gangs shall be of height to prevent logs from kicking out while being loaded.

(9) Band re-saws. Band re-saws shall meet the specifications for band head saws as required in WAC 296-78-570(7).

(10) Circular gang re-saws.

(a) Banks of circular gang re-saws shall be guarded by a hood to contain teeth or debris which can be thrown by the saws.

(b) Circular gang re-saws shall be provided with safety fingers or other anti-kickback devices.

(c) Circular gang re-saws shall not be operated at speeds exceeding those recommended by the manufacturer.

(d) Feed belts and drive pulleys shall be guarded in accordance with chapter 296-806 WAC, Machine safety.

(e) Each circular gang re-saw, except self-feed saws with a live roll or wheel at back of saw, shall be provided with spreaders.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060. 04-14-028, § 296-78-590, filed 6/29/04, effective 1/1/05. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-18-029 (Order 81-21), § 296-78-590, filed 8/27/81.]

WAC 296-78-595 Jump saws. (1) Jump saws shall have guards below the top of the table or roll case. A guard shall be placed over the roll casing to prevent persons from walking into or over the saw.

(2) Jump saws, underhung swing saws, or bed trimmers shall be so arranged that the saws are fully enclosed when not in actual use.

(3) A positive stop shall be installed to prevent the saw from passing the front edge of the roll case or table. The throat in the table or roll case shall be only wide enough to permit unobstructed operation of the saw.

(4) Guards constructed of not less than two inch wood material or of heavy wire mesh mounted in a steel frame shall be placed in front of jump saw trimmers. Stops shall be installed to prevent timber from being thrown off the roll case.

(5) Foot treadle operated saws shall be provided with safeguards to prevent accidental contact.

[Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-18-029 (Order 81-21), § 296-78-595, filed 8/27/81.]

WAC 296-78-600 Trimmer and slasher saws. (1) Trimmer of [and] slasher saws shall be guarded in front by a flat or round steel framework with a rigid metal screen or light iron bars attached thereto, or by wood baffles of not less than two inch wood material securely bolted to the frame.

Maximum speed. Trimmer saws shall not be run at peripheral speeds in excess of those recommended by the manufacturer.

(2) Front guards for a series of saws shall be set as close to the top of the feed table as is practical when considering the type of machine in use and the material being cut. The end saws of a series shall be guarded or fenced off.

(3) The rear of a series of saws shall have a stationary or swinging guard of not less than two inch wood material or equivalent the full width of the saws and as much wider as is necessary to protect persons at the rear of the trimmer.

(4) Safety stops. Automatic trimmer saws shall be provided with safety stops or hangers to prevent saws from dropping on table.

(5) Feed chains shall be stopped while employees are on the feed table.

(6) Spotters for trimmers or slashers shall be provided with goggles or other eye protection when conditions so warrant.

[Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-18-029 (Order 81-21), § 296-78-600, filed 8/27/81.]

WAC 296-78-605 Swing saws. (1) Manually operated swing cut-off saws of the following types shall be set up, guarded and operated in accordance with chapter 296-806 WAC, Machine safety:

- Saws into which materials to be cut are fed or positioned and/or held in position by hand pressure during the cutting stroke; and/or

- Saws on which the cutting stroke is propelled by hand pressure; and/or

- Saws on which the operator is within arm's reach of the blade when the operator is standing at the operator's control station and the blade is fully extended to the limit of operating travel.

(2) Operators of hand operated swing saws shall not stand directly in front of saw while making a cut.

(3) Swing cut-off saws which are fed by powered live rolls, conveyor chains and/or belts and which are operated from a remote operator's station (defined as being beyond arm's reach of the blade when the blade is fully extended to the limit of operating travel) shall be set up, guarded and operated in accordance with the following:

(a) Overhead swing cut-off saws shall be guarded by a hood which shall cover the upper half of the cutting edge at least to the depth of the teeth.

(b) The driving belts on overhead swing cut-off saws, where exposed to contact, shall be provided with guards as required by WAC 296-78-71505.

(c) Saws shall be completely enclosed when in idle position.

(d) Power operated swing saws shall have controls so arranged that the operators will not stand directly in front of saw when making cut.

(e) All swing saws shall be equipped with a counter balance which shall be permanently fastened to the frame of the saw and so arranged or adjusted that it will return the saw beyond the rear edge of the table or roll case without a rebounding motion. Wire rope, chain or nonmetallic rope running to a weight over a sheave shall not be used for attaching counter balance.

(f) No swing cut-off or trim saw shall be located directly in line with stock coming from an edger.

(g) Swing limit stops shall be provided and so adjusted that at no time shall the forward swing of the saw extend the cutting edge of the saw beyond a line perpendicular with the edge of the saw table, roll case, guard or barrier.

(h) Saws that are fed into the cut by means of air, steam, hydraulic cylinders, or other power device or arrangement shall be designed so they can be locked or rendered inoperative.

(i) Foot treadle operated saws shall be provided with safeguards to prevent accidental contact.

(j) Swing saws on log decks shall be equipped with a positive stop for the protection of persons who may be on the opposite side of the log haul chute.

(k) Tables or roll casings for swing saws shall be provided with stops or lineup rail to prevent material being pushed off on opposite side.

(4) Operators of hand operated swing saws shall not stand directly in front of saw while making cut.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060. 04-14-028, § 296-78-605, filed 6/29/04, effective 1/1/05. Statutory Authority: Chapter 49.17 RCW. 96-17-056, § 296-78-605, filed 8/20/96, effective 10/15/96. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-18-029 (Order 81-21), § 296-78-605, filed 8/27/81.]

WAC 296-78-610 Circular saws, speeds, repairs. (1)

Circular saws shall not be operated at speeds in excess of that specified by the manufacturer. Speeds shall be etched on all new saws. When saws are repaired, remanufactured or retensioned in any way to change their operating speeds, such change of speed shall be etched on the saw. These etched speeds shall not be exceeded.

(2) Circular saws shall be inspected for cracks each time that the teeth are filed or set.

(3) A circular saw shall be discontinued from use until properly repaired when found to have developed a crack equal to the length indicated in the following table:

<u>Length of Crack</u>	<u>Diameter</u>
1/2 -inch	Up to 12"
1 -inch	Over 12" to 24"
1-1/2 -inch	Over 24" to 36"
2 -inch	Over 36" to 48"
2-1/2 -inch	Over 48" to 60"
3 -inch	Over 60"

(4) Welding or slotting of cracked saws shall be done by a sawsmith under a procedure recommended by the saw manufacturer. Holes shall not be drilled in saws as a means of arresting cracks. After saws are repaired they shall be retensioned. Unless a sawsmith is employed, saws shall be returned to the manufacturer for welding or tensioning.

[Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-18-029 (Order 81-21), § 296-78-610, filed 8/27/81.]

WAC 296-78-615 Saw filing and grinding rooms and equipment. (1) Approaches to filing rooms shall be kept free from material and equipment at all times.

(2) Enclosed grinding and filing rooms shall be ventilated as specified in the general occupational health standard, WAC 296-62-110 through 296-62-11019.

(3) Each filing and grinding room shall be provided with two exits so arranged as to permit easy escape in case of fire.

(4) Floor shall be cleaned regularly and shall be kept free from oil, grease and other materials that might cause employees to slip or fall.

(5) Flooring around machines shall be kept in good repair at all times.

(6) Saw grinding machine belts shall be provided with guards where these belts pass through the frame of the machine.

(7) All grinding wheels on such machines shall be provided with a metal retaining hood which shall also cover the arbor ends if they are exposed to contact.

(8) Filing room employees shall be provided with goggles, face shields, or other necessary protective equipment and are required to wear the same.

(9) Guarding and mounting of abrasive wheels shall be in accordance with chapter 296-806 WAC, Machine safety.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060. 04-14-028, § 296-78-615, filed 6/29/04, effective 1/1/05. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-18-029 (Order 81-21), § 296-78-615, filed 8/27/81.]

WAC 296-78-620 Miscellaneous woodworking machines—Planers, stickers, molders, matchers. (1) Each planing, molding, sticking and matching machine shall have all cutting heads, and saws if used, covered by a solid metal guard. If such guard is constructed of sheet metal, the mate-

rial used shall be not less than one-sixteenth inch in thickness, and if cast iron is used, it shall be not less than three-sixteenths inch in thickness.

(2) Planers, stickers, molding, sticking and matching machines shall be provided with exhaust fans, hoods and dust conveyors to remove the harmful dusts, etc., from the vicinity of the operator. Such hoods may be arranged to serve as guards for cutting heads.

(3) Planers and other machinery or equipment shall not be oiled while in motion, unless provided with guards or other devices to permit oiling without any possibility of contact with moving parts of machinery.

(4) Feed rolls shall be guarded by means of roll covers, bars or strips, attached to the roll frame in such manner as to remain in adjustment for any thickness of lumber.

(5)(a) Levers or controls shall be so arranged or guarded as to prevent accidental operation of machines.

(b) Foot treadle operated machines shall have a treadle guard fastened over the treadle.

(c) Locks, blocks, or other device shall be provided for positive immobilization of machine controls while repairs or adjustments are being made.

(6) Side head hoods shall be of sufficient height to safeguard the head set screw.

(7) Side heads shall not be adjusted while machine is in operation, except when extension adjusting devices are provided.

(8) Side belt and pulley guards shall be kept in place at all times the machine is in motion.

(9) All universal joints shall be enclosed.

[Statutory Authority: Chapter 49.17 RCW. 96-17-056, § 296-78-620, filed 8/20/96, effective 10/15/96. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-18-029 (Order 81-21), § 296-78-620, filed 8/27/81.]

WAC 296-78-625 Planers (stave and headings). (1)

Each planer (stave and heading) shall have all cutting heads, and saws if used, covered by a solid metal guard.

(2) Stave and heading planers shall be provided with exhaust fans, hoods and dust conveyors to remove the harmful dusts, etc., from the vicinity of the operator. Such hoods may be arranged to serve as guards for cutting heads.

(3) Sectional feed rolls should be provided. Where solid feed rolls are used, a sectional finger device (or other means equally effective) shall be provided to prevent kickbacks.

[Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-18-029 (Order 81-21), § 296-78-625, filed 8/27/81.]

WAC 296-78-630 Stave croziers. (1)

Stave croziers shall have the heads guarded completely by the exhaust hood or other device, except that portion which actually inbeds itself in the stock.

(2) Each stave crozier shall have all feed chains and sprockets completely enclosed.

[Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-18-029 (Order 81-21), § 296-78-630, filed 8/27/81.]

WAC 296-78-635 Jointers. (1)

Each hand feed jointer or buzz planer with horizontal head shall be provided with an automatic guard over the cutting head both in front of and in back of the guide.

(2) Each jointer or buzz planer with horizontal head shall be equipped with a cylindrical cutting head, the throat of which shall not exceed three-eighths inch in depth or one-half inch in width. The knife projection shall not exceed one-eighth inch beyond the cylindrical body of the head.

(3) The opening in the table shall be kept as small as possible. The clearance between the edge of the rear table and the cutter head shall be not more than one-eighth inch. The table throat opening shall be not more than two and one-half inches when tables are set or aligned with each other for zero cut.

(4) Each jointer or buzz planer with vertical head shall be guarded by an exhaust hood or other approved device which shall completely enclose the revolving head except for a slot sufficiently wide to permit the application of material. The guard shall effectively protect the operator's hand from coming in contact with the revolving knives. The guard shall automatically adjust itself to cover the unused portion of the head and shall remain in contact with the material at all times.

(5) Push sticks shall be provided and used for feeding stock through hand operated jointers or buzz planers.

[Statutory Authority: Chapter 49.17 RCW. 96-17-056, § 296-78-635, filed 8/20/96, effective 10/15/96. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-18-029 (Order 81-21), § 296-78-635, filed 8/27/81.]

WAC 296-78-640 Jointers (stave and heading). (1)

Stave and heading jointers and matchers shall have the heads guarded completely by the exhaust hood or other device, except that portion where the stock is applied.

(2) Foot power stave jointing machines shall have the knife effectively guarded to prevent the operator's fingers from coming in contact with it.

[Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-18-029 (Order 81-21), § 296-78-640, filed 8/27/81.]

WAC 296-78-645 Wood shapers. (1) The cutting head of each wood shaper, hand feed panel raiser, or other similar machine not automatically fed, shall be guarded with a cage or pulley guard or other device so designed as to keep the operator's hands away from the cutting edge. In no case shall a warning device of leather or other material attached to the spindle be acceptable. Cylindrical heads shall be used whenever the nature of the work permits. The diameter of circular shaper guards shall be not less than the greatest diameter of the cutter.

(2) All double spindle shapers shall be provided with a spindle starting and stopping device for each spindle or provision shall be made that only one spindle operate at any one time.

[Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-18-029 (Order 81-21), § 296-78-645, filed 8/27/81.]

WAC 296-78-650 Boring and mortising machines.

(1) Boring and mortising machines shall be provided with safety bit chucks without projecting set screws. Automatic machines shall be provided with point of operation guards. When necessary to prevent material from revolving with the bit, clamps or stops shall be provided and used to hold material firmly against the guides.

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(2) The requirements of WAC 296-806-48048, Make sure boring and mortising machines meet these requirements, shall be applicable to boring and mortising machines.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060. 04-14-028, § 296-78-650, filed 6/29/04, effective 1/1/05. Statutory Authority: Chapter 49.17 RCW. 96-17-056, § 296-78-650, filed 8/20/96, effective 10/15/96. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-18-029 (Order 81-21), § 296-78-650, filed 8/27/81.]

WAC 296-78-655 Tenoning machines. (1) Each tenoning machine shall have all cutting heads, saws if used, and all exposed moving parts guarded. In the case of cutting heads and saws, the guard shall be of solid metal.

(2) If sheet metal is used, it shall be not less than ten U.S. gauge in thickness. If cast metal is used it shall be not less than three-sixteenths inch thick, or if aluminum is used, it shall be not less than five-eighths inch thick. The hood of the exhaust system may form part or all of the guard. When so used, the hood shall be constructed of metal of a thickness not less than that specified herein.

(3) Feed chains and sprockets of all double end tenoning machines shall be completely enclosed, except that portion of chain used for conveying stock. At rear ends of frames over which the feed conveyors run, sprockets and chains shall be guarded at the sides by plates projecting beyond the periphery of sprockets and ends of lugs.

(4) The rear end of the frame over which the feed conveyors run shall be so extended that the material as it leaves the machine will be guided to a point within easy reach of the person removing stock at the rear of the tenoner.

(5) Single end tenoners, hand fed, shall have a piece of sheet metal placed so that the operator's hands cannot slip off the lever handle into the tool in passing. Such guard shall be fastened to the lever.

[Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-18-029 (Order 81-21), § 296-78-655, filed 8/27/81.]

WAC 296-78-660 Lathe (pail and barrel). (1) Each profile, swing-head and back-knife lathe shall have all cutting heads covered by a solid metal guard.

(2) If sheet metal is used, it shall be not less than ten U.S. gauge in thickness. If cast metal is used, it shall be not less than three-sixteenths inch thick, or if aluminum is used, it shall be not less than five-eighths inch thick. The hood of the exhaust system may form part or all of the guard. When so used, the hood shall be constructed of metal of a thickness not less than that specified above.

(3) Pail and barrel lathes shall be guarded in accordance with the specifications for profile and back-knife lathes insofar as they are applicable.

(4) The requirements of WAC 296-806-450, Lathes, shall be applicable to pail and barrel lathes.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060. 04-14-028, § 296-78-660, filed 6/29/04, effective 1/1/05. Statutory Authority: Chapter 49.17 RCW. 96-17-056, § 296-78-660, filed 8/20/96, effective 10/15/96. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-18-029 (Order 81-21), § 296-78-660, filed 8/27/81.]

WAC 296-78-665 Sanding machines. (1) Each belt sanding machine shall have both pulleys enclosed in such a manner as to guard the points where the belt runs onto the

pulleys. The edges of the unused run of belt shall be enclosed or otherwise guarded from contact by employees.

(2) Each drum sanding machine shall be provided with a guard so arranged as to completely enclose the revolving drum except such portion required for the application of the material to be finished. Guards with hinges to facilitate the insertion of sandpaper may be installed. The exhaust hood may form part or all of this guard. When so used, the hood shall conform to the specifications as given under exhaust systems in WAC 296-78-710.

(3) All standard stationary sanding machines shall be provided with exhaust systems in conformity with the section of this code dealing with exhaust systems.

(4) All portable sanding machines shall be provided with means of removing excessive dust, or employees using equipment shall be provided with such necessary respiratory protective equipment as will conform to the requirements of chapter 296-842 WAC, Respirators.

(5) The requirements of WAC 296-806-475, sanding machines, shall be applicable to sanding machines.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. 05-20-055, § 296-78-665, filed 10/3/05, effective 12/1/05; 05-03-093, § 296-78-665, filed 1/18/05, effective 3/1/05; 04-14-028, § 296-78-665, filed 6/29/04, effective 1/1/05. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-10-071, § 296-78-665, filed 5/4/99, effective 9/1/99. Statutory Authority: Chapter 49.17 RCW. 96-17-056, § 296-78-665, filed 8/20/96, effective 10/15/96. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-18-029 (Order 81-21), § 296-78-665, filed 8/27/81.]

WAC 296-78-670 Glue machines. (1) Personal protective equipment as required by the safety and health core rules, WAC 296-800-160, and the general occupational health standard, WAC 296-62-11021, and proper washing facilities with noncaustic soap and sterilizers, shall be provided for all employees handling glue. Rubber gloves and other personal equipment must be sterilized when transferred from one person to another.

(2) Glue spreaders shall be enclosed on the in-running side, leaving only sufficient space to insert the stock.

(3) All glue spreaders shall be equipped with a panic bar or equivalent type device that can be reached from either the infeed or outfeed side of the spreader to shut off the power in an emergency situation. Such device shall be installed on existing glue spreaders no later than April 1, 1982, and be standard equipment on any glue spreader purchased after January 1, 1982.

(4) All glue mixing and handling rooms where located above work areas shall have water tight floors.

(5) All glue rooms shall be provided with ventilation in accordance with WAC 296-62-110 through 296-62-11013, of the general occupational health standard.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 01-11-038, § 296-78-670, filed 5/9/01, effective 9/1/01. Statutory Authority: Chapter 49.17 RCW. 94-20-057 (Order 94-16), § 296-78-670, filed 9/30/94, effective 11/20/94. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-18-029 (Order 81-21), § 296-78-670, filed 8/27/81.]

WAC 296-78-675 Lath mills. (1) Lath mills shall be so arranged that stock pickers shall be protected from slabs and bolts from slasher and trimmers.

(2) Bolters and lath machines shall be provided with a wall or shield of not less than two inch wood material or

equivalent, constructed in front of the machines, to protect stock pickers and passing employees from kickbacks.

(3) Lath bolters and lath mills shall have all feed rolls, belts, gears and moving parts provided with approved guards. Feed chains shall be guarded to as low a point as the maximum height of the stock will permit.

(4)(a) Lath bolters and lath mill saws shall be provided with a sheet metal guard not less than one-eighth inch thick, or a cast iron guard not less than three-sixteenths inch thick, or equivalent. These hoods may be hinged so that they can be turned back to permit changing of the saws.

(b) A metal plate baffle, finger device or other device, shall be installed to prevent kickbacks.

(5)(a) The feed rolls on bolters or lath mills shall not be raised while any employee is in line with the saws.

(b) The stock shall be pushed through the saws with another piece of stock or push stick.

(6)(a) The lath trimmer shall be provided with guards on the ends, the top and the rear so designed as to contain debris and prevent employee contact with the saw. The belt drive shall be provided with guards as required by WAC 296-78-710.

(b) The entire top half of all trimmer saws shall be provided with guards. The guards shall be so adjusted as to prevent employees from accidentally contacting saws.

[Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-18-029 (Order 81-21), § 296-78-675, filed 8/27/81.]

WAC 296-78-680 Veneer and plywood plants—Peeling and barking. (1) Where peeling or barking pits are located directly under the log cranes, logs shall not be moved over workers.

(2) Single spiked hooks without a bell shall not be used for handling logs. Hooks shall be equipped with hand holds and shall be maintained in condition to safely perform the job application.

(3) Mechanical barking devices shall be so guarded as to protect employees from flying chips, bark or other matter.

(4) Logs shall not be removed from barker until barking head has ceased to revolve, unless barker is so designed and arranged that barking head will not create or constitute a hazard to employees.

[Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-18-029 (Order 81-21), § 296-78-680, filed 8/27/81.]

WAC 296-78-685 Veneer lathe. (1) The elevating ramp (gate) shall be provided with a safety chain and hook or other positive means of suspension while employees are working underneath same.

(2) The area under the tipple from lathe to stock trays shall be provided with railings or other suitable means of preventing employees from entering this area, if access is not prevented by the construction of the machine and employees can enter this area.

(3) Catwalks shall be provided along stock trays so that employees will not have to climb on the sides of trays to straighten stock.

(4) Any section of stock trays shall be locked out or shall have an operator stationed at starting controls while stock is being removed or adjusted.

(5) Guards which will cover the cutting edge of veneer lathe and clipper blades shall be provided and used while such blades are being transported about premises.

[Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-18-029 (Order 81-21), § 296-78-685, filed 8/27/81.]

WAC 296-78-690 Veneer slicer and cutter. (1) Each veneer slicer and each rotary veneer cutter shall have all revolving and other moving knives provided with guards.

(2) The requirements of chapter 296-806 WAC, Machine safety, shall be applicable to veneer slicers and cutters.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060. 04-14-028, § 296-78-690, filed 6/29/04, effective 1/1/05. Statutory Authority: Chapter 49.17 RCW. 96-17-056, § 296-78-690, filed 8/20/96, effective 10/15/96. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-18-029 (Order 81-21), § 296-78-690, filed 8/27/81.]

WAC 296-78-695 Veneer clipper. (1) Each veneer clipper shall have either automatic feed or shall be provided with a guard which will make it impossible to place any portion of the hand under the knife while feeding stock. Where practicable, such guard shall be of the vertical finger type.

(2) The rear of each manually operated clipper shall be guarded either by a screen or vertical finger guard which shall make it impossible for any portion of the hand to be placed under the knife while removing clipped stock.

[Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-18-029 (Order 81-21), § 296-78-695, filed 8/27/81.]

WAC 296-78-700 Veneer wringer (swede). The entry side of each veneer wringer other than glue spreader shall be enclosed, leaving only sufficient space to insert stock. A guard shall be provided to prevent the veneer from overriding the top roll and kicking back.

[Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-18-029 (Order 81-21), § 296-78-700, filed 8/27/81.]

WAC 296-78-705 The shake and shingle industry. The following terms and standards shall apply only in the manufacturing of shakes and shingles and these requirements shall take precedence over other sawmill and woodworking standards.

[Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-18-029 (Order 81-21), § 296-78-705, filed 8/27/81.]

WAC 296-78-70501 Definitions—Terms, general. (1) "Block(s)" - those sections of a log cut in various lengths.

(2) "Block(s)" and "bolt(s)" may be considered to be synonymous.

(3) "Clipper saw" - a circular saw used to trim manufactured shingles.

(4) "Groover" - a cylinder-type knife (knives) similar to a planer knife (knives), used to cut grooves into the face surface of shakes or shingles.

(5) "Hip" and "ridge saw" - a circular saw used to cut various angles on the side edge of shakes or shingles.

(6) "Johnson bar" - a shaft used to control the feed of the carriage.

(2007 Ed.)

(7) "Knee bolter circular saw" - a stationary circular saw used to trim and debark blocks (the blocks are manually maneuvered onto a carriage and fed into a saw).

(8) "Log haul" - a power conveyor used to move logs to mill.

(9) "Packers" - employees who pack the manufactured shakes or shingles into bundles.

(10) "Panagraph power splitter" - a hydraulically operated wedge, manually positioned into place, used to split blocks.

(11) "Power saw splitter" - a stationary circular saw used to split (saw) blocks, (the blocks are manually maneuvered onto a carriage and fed into the saw).

(12) "Set works" - a component of the shingle machine, located on the machine frame, used to control the thickness of each shingle being manufactured.

(13) "Shake machine" - a band saw used to cut shake blanks into manufactured shakes.

(14) "Shake splitter" - a stationary hydraulically operated wedge, manually controlled, used to split shake blocks into shake blanks or boards.

(15) "Shim saw" - a circular saw used to re-cut manufactured shingles into narrow widths.

(16) "Shingle machine" - a machine used to manufacture shingles; composed of a feed, set works, and carriage system, all functioning in relation to a circular saw.

(17) "Shingle saw" - a circular saw used to cut shingles from blocks.

(18) "Spault" - the first and last section(s) of a block as it is cut into shingles.

(19) "Spault catcher" - a device located on the shingle machine next to the solid feed rolls, used to hold the last section of each block being cut (called a spault), in place.

(20) "Track or swing cutoff saw" - a circular saw used to cut blocks from a log.

[Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-18-029 (Order 81-21), § 296-78-70501, filed 8/27/81.]

WAC 296-78-70503 Shake and shingle machinery—General. (1) Track or swing cutoff circular saw.

(a) Manually operated track or swing circular cutoff saws of the following types shall be set up, guarded and operated in accordance with chapter 296-806 WAC, Machine safety:

- Saws into which materials to be cut are fed or positioned and/or held in position by hand pressure during the cutting stroke; and

- Saws on which the cutting stroke is propelled by manual (hand) pressure; and

- Saws on which the operator is within arm's reach of the blade when the blade is fully extended to the limit of operating travel and the operator is standing at the operator's normal control station/location.

(b) Large track or swing circular cutoff saws into which materials to be cut are fed by powered live rolls, conveyor belts and/or chains and which are operated from a remote operator's control station, defined as beyond arm's reach when the blade is fully extended to the limit of operating travel, shall be set up, guarded and operated in accordance with the following:

(i) A power operated track or swing cutoff circular saw shall have controls so arranged that operators are not positioned directly in front of the saw while making a cut.

(ii) All track or swing cutoff circular saws shall be completely encased or guarded when the saw is in the retract position, except for that portion of the guard that must be left open for the operation of the saw.

(iii) Track or swing cutoff circular saw guards shall be constructed of sheet metal not less than one-eighth inch thick, or a wood guard of not less than nominal two inch thick wood material, or equivalent.

Hinged or removable doors or gates will be permitted where necessary to permit adjusting and oiling.

(iv) The driving belt(s) on the track or swing cutoff circular saw shall be guarded in accordance with chapter 296-806 WAC, Machine safety.

(v) A safety catch shall be provided to prevent the track cutoff saw from leaving the track.

(2) Overhead deck splitter - panagraph.

(a) Panagraph splitters shall have a shroud incorporated on the upper pressure plate to eliminate the possibility of the splitter moving from the operating area. This shroud shall be constructed of solid design with a minimum width of three inches and a minimum thickness of three-eighths inch.

(b) Mechanically operated overhead splitters shall have handles moving opposite the stroke of the piston.

(c) When the leading edge of the panagraph splitter is completely extended, the maximum clearance from the deck to the splitting edge shall be two inches.

(3) Power splitter saw. Power splitters shall have spreaders behind the saw to prevent materials from squeezing the saw or being thrown back on the operator. The top of the saw shall be completely covered.

(4) Knee bolter circular saw.

(a) A safety catch shall be provided to prevent the bolter carriage from leaving the track.

(b) Bolter saws shall be provided with a canopy guard of sheet metal not less than one-eighth inch thick, or cast iron guard not less than three-sixteenths inch thick or a wood guard of not less than nominal four inch thick wood material or equivalent.

The bolter canopy guard shall completely enclose the rear portion of the saw. It shall be so arranged and adjusted as to cover the front of the saw; not to exceed twenty inches from the top of the carriage to the bottom of the guard on sixteen inch and eighteen inch block and twenty-six inches on twenty-four inch blocks, of the material being cut.

(c) Bolter saws shall be provided with wipers of belting or other suitable material. These wipers shall be installed on both sides of the saw in such a manner as to deflect knots, chips, slivers, etc., that are carried by the saw.

(d) A positive device shall be provided and used to manually lock and hold the feed table in the neutral position when not in use.

(e) That portion of all bolter saws which is below and behind the saw table shall be guarded by the exhaust hood or other device. Hinged or removable doors or gates will be permitted where necessary to permit adjusting and oiling.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060. 04-14-028, § 296-78-70503, filed 6/29/04, effective 1/1/05. Statutory Authority: Chapter 49.17 RCW. 96-17-056, § 296-78-70503, filed

8/20/96, effective 10/15/96. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-18-029 (Order 81-21), § 296-78-70503, filed 8/27/81.]

WAC 296-78-70505 Shake machinery. (1) Shake splitters.

(a) A positive deenergizing device shall be provided within ready reach of each shake splitter operator.

(b) Each shake splitter shall be provided with an adjustable stroke limiter to eliminate the splitting blade from striking the table.

(c) All splitters shall have a maximum clearance of four inches, from the splitting edge to the table surface, when the splitter is in the extended position.

(d) All splitter tables shall have a friction surface to reduce kick out of the material being split.

(e) Shake splitters shall not be operated at a speed that would cause chunks to be thrown in such a manner as to create a hazard.

(f) The use of foot pedal (treadle) mechanisms shall be provided with protection to prevent unintended operation from falling or moving objects or by accidental stepping onto the pedal.

(i) The pedal shall have a nonslip surface.

(ii) The pedal return spring shall be of the compression type, operating on a rod or guided within a hole or tube, or designed to prevent interleaving of spring coils in event of breakage.

(iii) If pedal counterweights are provided, the path of the travel of the weight shall be enclosed.

(2) Shake saw guards.

(a) Every shake band saw shall be equipped with a saw guard on both sides of the blade down to the top side of the guide.

(b) The outside saw guard shall extend a minimum of three and one-half inches below the bottom edge of the saw guide.

(c) The maximum opening between the saw guide and table rolls shall be fifteen inches.

(3) Shake saw band wheel guards.

(a) The band wheels on all shake band saws shall be completely encased or guarded on both sides. The guards shall be constructed of not less than No. 14 U.S. gauge metal or material equal in strength.

(b) The metal doors, on such guards, shall have a wood liner of a minimum thickness of one-half inch.

(4) Shake saw band wheel speeds and maintenance.

(a) No band wheel shall be run at a peripheral speed in excess of that recommended by the manufacturer.

(b) Each band wheel shall be carefully inspected at least once a month by management.

Any band wheel in which a crack is found in the rim or in a spoke shall be immediately discontinued from service until properly repaired.

(c) Each band saw frame shall be provided with a tension indicator.

[Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-18-029 (Order 81-21), § 296-78-70505, filed 8/27/81.]

WAC 296-78-70507 Upright shingle machine. (1) Upright shingle saw guard.

(a) Every shingle machine carriage shall be equipped with a hand guard which:

(i) Projects at least one inch beyond the cutting edge of the saw.

(ii) Shall be located not more than one-half inch from the side of the saw blade.

(b) Shingle saw guards shall have a rim guard so designed and installed as to prevent chips and knots from flying from the saws. Such guards shall cover the edge of the saw to at least the depth of the teeth, except such part of the cutting edge as is essential for sawing the material.

(c) Saw arbors and couplings shall be guarded to prevent contact.

(d) Every part of a clipper saw blade, except that part which is exposed to trim shingles, shall be enclosed by a guard, so designed and installed to prevent contact with the clipper saw. An additional guard shall be installed not more than four inches above the clipper board and not more than one-half inch from the vertical plane of the saw.

(e) The underside of clipper saw boards shall be equipped with a finger guard to effectively protect the operator's fingers. The guard shall be a minimum of five inches long and one and one-quarter inches deep.

(2) Upright carriage guards.

(a) Automatic revolving cam set works and rocker arms, on machine frame, shall be guarded where exposed to contact.

(b) The spault catchers shall be not less than three-sixteenths inch thick and kept sharp at all times. Missing teeth shall be replaced.

(3) Carriage feed works.

(a) The pinion gear, bull wheel and Johnson bar, operating the saw carriage, shall be guarded where exposed to contact.

(b) Each shingle machine clutch treadle shall be arranged so that it is necessary to manually operate the treadle to start the machine. Devices which start the machine when the jaw treadle is released shall not be installed or used. The carriage shall have a brake to hold it in a neutral position.

(c) Carriage speed shall not exceed thirty-four strokes per minute.

[Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-18-029 (Order 81-21), § 296-78-70507, filed 8/27/81.]

WAC 296-78-70509 Related shake and shingle sawing machinery. (1) Flat or taper saw. A wood or metal guard or its equivalent shall be secured to the sliding table at the side nearest the sawyer to protect him from contact with the cutting edge of the saw when a block is not in the cut.

(2) Hip and ridge saws. The hip and ridge saws shall be guarded with a hood-like device. This guard shall cover that portion of the saw not needed to cut the material, located above the cutting table.

(a) The remaining portion of the saw, located below the table, shall be guarded to prevent contact by employees.

(b) The hip and ridge guarding standard is applicable to both shake and shingle hip and ridge saws.

(3) Shim stock saws. The top ends and sides of the shim stock saws shall be guarded. All shim stock saw power transmission mechanism shall be guarded.

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(4) Shake or shingle groover. The top ends and sides of the groover, to include the press rolls, shall be guarded to contain material or debris which can be thrown and to prevent contact. All groover machine power transmission mechanism shall be guarded in compliance with WAC 296-78-710.

(5) Circular saws, speeds and repairs.

(a) Maximum allowable speeds.

(i) No circular saw shall be run at a speed in excess of that recommended by the manufacturer.

(ii) Such speed shall be etched or otherwise permanently marked on the blade, and that speed shall not be exceeded.

(b) Repairs and reconditions.

(i) Shingle saws when reduced in size to less than forty inches in diameter shall be discontinued from service as shingle saws on upright or vertical machines.

(ii) Shingle saws may be reconditioned for use as clipper saws provided the surface is reground and the proper balance attained.

(iii) Shingle saws may be used to no less than thirty-six inches on flat or taper saw machines.

[Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-18-029 (Order 81-21), § 296-78-70509, filed 8/27/81.]

WAC 296-78-70511 Safety rules. (1) General.

(a) Workers shall not leave shingle machines unattended while the carriage is in motion.

(b) Shingle blocks shall not be piled more than one tier high on tables or roll cases. Chunks may be placed horizontally one tier high on top of shingle blocks. Shingle blocks shall be piled in a stable manner, not more than seventy-two inches high, within the immediate working area of the shingle sawyer or the area shall be barricaded.

(c) Provisions shall be made to prevent blocks from falling into the packing area.

(d) On each machine operated by electric motors, positive means shall be provided for rendering such controls or devices inoperative while repairs or adjustments are being made to the machines they control.

(e) Workers shall not stand on top of blocks while in the process of splitting other blocks into bolts.

(2) Jointers (shingle). Shingle jointers shall have the front, or cutting face of the knives, housed except for a narrow slot through which the shingles may be fed against the knives.

[Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-18-029 (Order 81-21), § 296-78-70511, filed 8/27/81.]

WAC 296-78-710 Construction and isolated equipment.

[Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-18-029 (Order 81-21), § 296-78-710, filed 8/27/81.]

WAC 296-78-71001 General. (1) Construction when not specifically covered in these standards shall be governed by such other standards adopted by the department of labor and industries as may apply.

(2) All buildings, docks, tramways, walkways, log dumps and other structures shall be so designed, constructed, and maintained as to provide a safety factor of four. This means that all members shall be capable of supporting four

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times the maximum load to be imposed. This provision refers to buildings, docks and so forth designed and constructed subsequent to the effective date of these standards and also refers in all cases where either complete or major changes or repairs are made to such buildings, docks, tramways, walkways, log dumps and other structures.

(3) Basements on ground floors under mills shall be evenly surfaced, free from unnecessary obstructions and debris, and provided with lighting facilities in compliance with the requirements of the safety and health core rules, WAC 296-800-210.

(4) All engines, motors, transmission machinery or operating equipment installed in mill basements or ground floors shall be equipped with standard safeguards for the protection of workers.

(5) Flooring of buildings, ramps and walkways not subject to supporting motive equipment shall be of not less than two-inch wood planking or material of equivalent structural strength.

(6) Flooring of buildings, ramps, docks, trestles and other structure required to support motive equipment shall be of not less than full two and one-half inch wood planing or material of equivalent structural strength. However, where flooring is covered by steel floor plates, two inch wood planking or material of equivalent structural strength may be used.

(7) Walkways, docks, and platforms.

(a) Walkways, docks and platforms shall be constructed and maintained in accordance with the requirements of WAC 296-24-735 through 296-24-75011 and WAC 296-800-270.

(b) Maintenance. Walkways shall be evenly floored and kept in good repair.

(c) Where elevated platforms are used they shall be equipped with stairways or ladders in accordance with WAC 296-24-765 through 296-24-81013, WAC 296-800-250 and chapter 296-876 WAC, Ladders, portable and fixed.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. 06-16-020, § 296-78-71001, filed 7/24/06, effective 12/1/06; 04-18-080, § 296-78-71001, filed 8/31/04, effective 11/1/04; 03-06-076, § 296-78-71001, filed 3/4/03, effective 8/1/03. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 01-11-038, § 296-78-71001, filed 5/9/01, effective 9/1/01. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-18-029 (Order 81-21), § 296-78-71001, filed 8/27/81.]

WAC 296-78-71003 Floor and wall openings. (1) All floor and wall openings either temporary or permanent, shall be protected as required by WAC 296-24-750 through 296-24-75011 and WAC 296-800-260.

(2) The area under floor openings shall, where practical, be fenced off. When this is not practical, the areas shall be plainly marked with yellow lines and telltails shall be installed to hang within five and one-half feet of the ground or floor level.

(3) Where floor openings are used to drop materials from one level to another, audible warning systems shall be installed and used to indicate to employees on the lower level that material is to be dropped.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 01-11-038, § 296-78-71003, filed 5/9/01, effective 9/1/01. Statutory Authority: Chapter 49.17 RCW. 96-17-056, § 296-78-71003, filed 8/20/96, effective 10/15/96. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-18-029 (Order 81-21), § 296-78-71003, filed 8/27/81.]

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WAC 296-78-71005 Floors, docks, platforms and runways. (1) Faces of docks except on loading and unloading sides of rail and truck loading platforms, and runways used for the operation of lift trucks and other vehicles shall have a guard or shear timber eight by eight inches set over three inch blocks and securely fastened to the floor by bolts of not less than five-eighths inch diameter.

(2) The flooring of buildings, docks and passageways shall be kept in good repair at all times. When a hazardous condition develops that cannot be immediately repaired, the area shall be fenced off and not used until adequate repairs are made.

(3) All working areas shall be kept free from unnecessary obstruction and debris.

(4) Floors around machines and other places where workers are required to stand shall be provided with effective means to prevent slipping.

[Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-18-029 (Order 81-21), § 296-78-71005, filed 8/27/81.]

WAC 296-78-71007 Footwalks and passageways. (1) All footwalks and passageways subject to slipping hazards due to peculiarities of conditions or processes of the operation shall be provided with nonslip surfaces.

(2) Walkways in accordance with WAC 296-78-71001 (8) shall be provided over roll casings, transfer tables, conveyors or other moving parts except where stepping over such equipment is not in connection with usual and necessary traffic.

(3) Walkways alongside of sorting tables shall be of sufficient width to provide safe working area. Such walkways shall be evenly floored and kept in good repair at all times. They shall be kept free from obstructions and debris.

(4) When employees are required to clear plug-ups in veneer trays or lumber sorting trays, adequate walkways with standard guardrails shall be provided for access to the trays whenever possible. When walkways are not provided, safety belts or harnesses with lanyards, tied off to substantial anchorages, shall be provided and used at all times.

(5) Walkways and stairways with standard hand rails shall be provided wherever space will permit, for oilers and other employees whose duties require them to go consistently to elevated and hazardous locations.

(a) Where such passageways are over walkways or work areas, standard toeboards shall be provided.

(b) Protection as required by chapter 296-806 WAC, Machine safety, shall be provided against contact with transmission machinery or moving conveyors.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060. 04-14-028, § 296-78-71007, filed 6/29/04, effective 1/1/05. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-18-029 (Order 81-21), § 296-78-71007, filed 8/27/81.]

WAC 296-78-71009 Stairways and ladders. (1) Stairways shall be used in preference over ladders wherever possible. Stairways or ladders, whichever is used, shall be constructed and maintained in accordance with the provisions of WAC 296-24-75009 through 296-24-81013, WAC 296-800-250 and chapter 296-876 WAC, Ladders, portable and fixed.

(2) Doors shall not open directly on a flight of stairs.

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(3) Permanent ladders shall be fastened securely at both top and bottom.

(4) Portable ladders shall not be used upon footing other than suitable type.

(5) Hooks or other means of securing portable ladders when in use, shall be provided.

(6) Portable ladders shall not be used for oiling machinery which is in motion.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. 06-16-020, § 296-78-71009, filed 7/24/06, effective 12/1/06. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 01-11-038, § 296-78-71009, filed 5/9/01, effective 9/1/01. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-18-029 (Order 81-21), § 296-78-71009, filed 8/27/81.]

WAC 296-78-71011 Egress and exit. (1) In all enclosed buildings, means of egress shall be provided in accordance with the provisions of WAC 296-800-310.

(2) All swinging doors shall be provided with windows, the bottom of which shall be not more than forty-eight inches above the floor. One window shall be provided for each section of double swinging doors. All such windows shall be of shatter proof or safety glass unless otherwise protected against breakage.

(3) Outside exits shall open outward. Where sliding doors are used as exits, an inner door not less than two feet six inches by six feet shall be cut inside each of the main doors and arranged to open outward.

(4) At least two fire escapes or substantial outside stairways, shall be provided for mill buildings where the floor level is more than eight feet above the ground.

(a) Buildings over one hundred fifty feet in length shall have at least one additional fire escape or substantial outside stairway for each additional one hundred fifty feet of length or fraction thereof.

(b) Passageways to fire escapes or outside stairways shall be marked and kept free of obstructions at all times.

(c) Fire protection. The requirements of chapter 296-24 WAC, Part G-3 of the general safety and health standard, and WAC 296-800-300 of the safety and health core rules, and chapter 296-811 WAC, Fire brigades, shall be complied with in providing the necessary fire protection for sawmills.

(d) Fire drills shall be held at least quarterly and shall be documented.

(5) Where a doorway opens upon a roadway, railroad track, or upon a tramway or dock over which vehicles travel, a barricade or other safeguard and a warning sign shall be placed to prevent workers from stepping directly into moving traffic.

(6) Tramways and trestles shall be substantially supported by piling or framed bent construction which shall be frequently inspected and maintained in good repair at all times. Tramways or trestles used both for vehicular and pedestrian traffic shall have a walkway with standard hand rail at the outer edge and shear timber on the inner edge, and shall provide three feet clearance to vehicles. When walkways cross over other thoroughfares, they shall be solidly fenced at the outer edge to a height of 42 inches over such thoroughfares.

(7) Where tramways and trestles are built over railroads they shall have a vertical clearance of twenty-two feet above

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the top of the rails. When constructed over carrier docks or roads, they shall have a vertical clearance of not less than six feet above the drivers foot rest on the carrier, and in no event shall this clearance be less than twelve feet from the surface of the lower roadway or dock.

(8) Walkways (either temporary or permanent) shall be not less than twenty-four inches wide and two inches thick, nominal size, securely fastened at each end. When such walkways are used on an incline the angle shall not be greater than twenty degrees from horizontal.

(9) Walkways from the shore or dock to floats or barges shall be securely fastened at the shore end only and clear space provided for the other end to adjust itself to the height of the water.

(10) Cleats of one by four inch material shall be fastened securely across walkways at uniform intervals of eighteen inches whenever the grade is sufficient to create a slipping hazard.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. 06-01-073, § 296-78-71011, filed 12/20/05, effective 3/1/06; 03-06-076, § 296-78-71011, filed 3/4/03, effective 8/1/03. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 01-11-038, § 296-78-71011, filed 5/9/01, effective 9/1/01. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-18-029 (Order 81-21), § 296-78-71011, filed 8/27/81.]

WAC 296-78-71013 Cableways. (1)(a) Inclined cableways shall have a central line between the rails in practical alignment with the center of the hoisting drums. A substantial bumper shall be installed at the foot of each incline.

(b) Barricades or warning signs shall be installed to warn pedestrians to stand clear of the cables on inclined cableways. The cables shall not be put into motion without activating an alarm system, either audible or visible, which will inform anyone on the tracks to stand clear.

(2) Employees shall not ride on or stand below the cars on an inclined cableway.

[Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-18-029 (Order 81-21), § 296-78-71013, filed 8/27/81.]

WAC 296-78-71015 Tanks and chemicals. (1) All open vats and tanks into which workers may fall shall be guarded with standard railings or screen guards in all cases where such guarding is possible with regard to practical operation.

(2) Foundations of elevated tanks shall be accessible for inspections. When the tank platform is more than five feet above the ground a stairway or ladder shall be permanently attached.

(3) Every open tank over five feet in height shall be equipped with fixed standard ladders both inside and out, extending from the bottom to the rim of the tank arranged to be accessible to each other, so far as local conditions permit.

(4) The use of chemicals for treating of lumber for prevention of sap stain or mold or as preservatives, shall conform to the requirements of chapter 296-835 WAC, Dipping and coating operations (dip tanks).

(a) Storage, handling, and use of chemicals. Threshold limits. Employees shall not be exposed to airborne concentration of toxic dusts, vapors, mists or gases that exceed the threshold limit values set forth in chapter 296-62 WAC, Part H, and chapter 296-841 WAC, Respiratory hazard.

(b) Protective equipment. The use of chemicals shall be controlled so as to protect employees from harmful exposure to toxic materials. Where necessary, employees shall be provided with and required to wear such protective equipment as will afford adequate protection against harmful exposure as required by WAC 296-800-160, and chapter 296-842 WAC, Respirators.

(5)(a) Means shall be provided and used to collect any excess of chemicals used in treating lumber so as to protect workers from accidental contact with harmful concentrations of toxic chemicals or fumes.

(b) Dip tanks containing flammable or combustible liquids shall be constructed, maintained and used in accordance with chapter 296-835 WAC, Dipping and coating operations (dip tanks).

(c) An evacuation plan shall be developed and implemented for all employees working in the vicinity of dip tanks using flammable and/or combustible liquids. A copy of the plan shall be available at the establishment for inspection at all times. Every employee shall be made aware of the evacuation plan and know what to do in the event of an emergency and be evacuated in accordance with the plan. The plan shall be reviewed with employees at least quarterly and documented.

(d) When automatic foam, automatic carbon dioxide or automatic dry chemical extinguishing systems are used, an alarm device shall be activated to alert employees in the dip tank area before and during the activation of the system. The following combinations of extinguishment systems when used in conjunction with the evacuation plan as stated above will be acceptable in lieu of bottom drains:

(i) A dip tank cover with an automatic foam extinguishing system under the cover, or an automatic carbon dioxide system, or an automatic dry chemical extinguishing system, or an automatic water spray extinguishing system;

(ii) An automatic dry chemical extinguishing system with an automatic carbon dioxide system or a second automatic dry chemical extinguishing system or an automatic foam extinguishing system;

(iii) An automatic carbon dioxide system with a second automatic carbon dioxide system or an automatic foam extinguishing system.

(e) The automatic water spray extinguishing systems, automatic foam extinguishing systems, and dip tank covers shall conform with the requirements of chapter 296-835 WAC, Dipping and coating operations (dip tanks). The automatic carbon dioxide systems and dry chemical extinguishing system shall conform with the requirements of WAC 296-24-615 and 296-24-620.

(6) Where workers are engaged in the treating of lumber with chemicals or are required to handle lumber or other materials so treated, the workers shall be provided with, at no cost to the worker, and required to use such protective equipment as will provide complete protection against contact with toxic chemicals or fumes therefrom.

(7) Sanitation requirements. The requirements of WAC 296-800-220 and 296-800-230 (safety and health core rules), shall govern sanitation practices.

(8) The sides of steam vats and soaking pits unless otherwise guarded shall extend forty-two inches above the floor

level. The floor adjacent thereto shall be of nonslip construction.

(9) Large steam vats or soaking pits, divided into sections, shall be provided with substantial walkways between each section, each walkway to be provided with standard railings which may be removable if necessary.

(10) Covers shall be removed only from that portion of the steaming vats on which workers are working and a portable railing shall be placed at this point to protect the operators.

(11) Workers shall not ride or step on logs in steam vats.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060, 05-20-055, § 296-78-71015, filed 10/3/05, effective 12/1/05; 05-03-093, § 296-78-71015, filed 1/18/05, effective 3/1/05. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 02-15-102, § 296-78-71015, filed 7/17/02, effective 10/1/02; 01-11-038, § 296-78-71015, filed 5/9/01, effective 9/1/01. Statutory Authority: Chapter 49.17 RCW. 96-17-056, § 296-78-71015, filed 8/20/96, effective 10/15/96; 94-20-057 (Order 94-16), § 296-78-71015, filed 9/30/94, effective 11/20/94. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-18-029 (Order 81-21), § 296-78-71015, filed 8/27/81.]

WAC 296-78-71017 Dry kilns. (1) Dry kilns shall be so constructed upon solid foundations that tracks will not sag. Dry kilns shall be provided with suitable walkways. Each kiln shall have doors that operate from the inside and be provided with escape doors of adequate height and width to accommodate an average size man, that also operates from the inside, and shall be located in or near the main door. Escape doors shall swing in the direction of exit. Kiln doors and door carriers shall be fitted with safety devices to prevent the doors or carriers from falling.

(2) Ladders. A fixed ladder, in accordance with the requirements of chapter 296-876 WAC, Ladders, portable and fixed, or other means shall be provided to permit access to the roof. Where controls and machinery are mounted on the roof, a permanent stairway with standard handrail shall be installed in accordance with the requirements of WAC 296-800-250.

(3) A heated room shall be provided for the use of the kiln operator in inclement weather. He should remain in such room for at least ten minutes after leaving a hot kiln before going to cold outside air.

(4) Where operating pits are used, they shall be well ventilated, drained and lighted. Substantial gratings shall be installed at the kiln floor line. Steam lines shall be provided with insulation wherever exposed to contact by employees. Fans shall be enclosed by standard safeguards.

(5) Mechanical equipment. All belts, pulleys, blowers, and other exposed moving equipment used in or about kilns shall be guarded in accordance with chapter 296-806 WAC, Machine safety.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060, 06-16-020, § 296-78-71017, filed 7/24/06, effective 12/1/06; 04-14-028, § 296-78-71017, filed 6/29/04, effective 1/1/05. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 01-11-038, § 296-78-71017, filed 5/9/01, effective 9/1/01. Statutory Authority: Chapter 49.17 RCW. 96-17-056, § 296-78-71017, filed 8/20/96, effective 10/15/96. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-18-029 (Order 81-21), § 296-78-71017, filed 8/27/81.]

WAC 296-78-71019 Exhaust systems. (1) Air requirements in buildings, where persons are habitually employed,

shall meet the requirements of the general occupational health standard, WAC 296-62-100 through 296-62-11013.

(2) Where the natural ventilation is not sufficient to remove dust, fumes or vapors that create or constitute a hazard, additional means of removal shall be provided.

(3) All mills containing one or more machines whose operations create dust, shavings, chips or slivers during a period of time equal to or greater than one-fourth of the working day or shift, shall be equipped with a collecting system either continuous or automatic in action and of sufficient strength and capacity to thoroughly remove such refuse from the points of operation of the machines and the work areas.

(4) Each woodworking machine that creates dust, shavings, chips, or slivers shall be equipped with an exhaust or conveyor system located and adjusted to remove the maximum amount of refuse from the point of operation and immediate vicinity.

(5) Blower, collecting and exhaust systems shall be designed, constructed and maintained in accordance with American National Standards Z33.1 - 1961 (for the installation of blower and exhaust systems for dust, stock and vapor removal or conveying) and Z12.2 - 1962 (R1969) (code for the prevention of dust explosions in woodworking and wood flour manufacturing plants).

(6) Fans used for ventilating shall be of ample capacity, as evidenced by the performance schedules of the manufacturers, and shall be guarded when exposed to contact. Hoods, dust conveyors, dust collectors and other accessory equipment shall be large enough to insure free intake and discharge.

(7) The outlet or discharge of all ventilating equipment shall be so arranged that at no time will the dust, vapors, gases or other air borne impurities discharged, create or constitute a hazard.

(8) Where a hood is used to form a part or all of the guard required on a given machine, it shall be constructed of not less than ten U.S. gauge sheet metal, or if of cast iron it shall be not less than three-sixteenths inches in thickness.

(9) All exhaust pipes shall be of such construction and internal dimensions as to minimize the possibility of clogging. They shall be readily accessible for cleaning.

(10) All exhaust pipes shall empty into settling or dust chambers which shall effectively prevent the dust or refuse from entering any work area. Such settling or dust chambers shall be so designed and operated as to reduce to a minimum the danger of fire or dust explosions.

(11) In lieu of a general ventilating system, exhaust or blower units may be installed on the dust or fume producing machine, provided the required protection is secured thereby.

(12) When proper ventilation is not provided, and temporary hazardous conditions are therefore encountered, the employer shall furnish approved respiratory and visual equipment: Provided, however, That the exposure to such hazard shall not be for more than two hours duration. Protective measures and equipment shall meet the requirements of the general occupational health standard, chapter 296-842 WAC.

(13) Provisions for the daily removal of refuse shall be made in all operations not required to have an exhaust system, or having refuse too heavy, or bulky, or otherwise unsuitable to be handled by an exhaust system.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. 05-03-093, § 296-78-71019, filed 1/18/05, effective 3/1/05. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 01-11-038, § 296-78-71019, filed 5/9/01, effective 9/1/01; 99-10-071, § 296-78-71019, filed 5/4/99, effective 9/1/99. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-18-029 (Order 81-21), § 296-78-71019, filed 8/27/81.]

WAC 296-78-71021 Spray painting. All spray painting operations shall be carried on in accordance with the requirements of the general safety and health standard, WAC 296-24-370 through 296-24-37027 and the general occupational health standard, WAC 296-62-11019.

[Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-18-029 (Order 81-21), § 296-78-71021, filed 8/27/81.]

WAC 296-78-71023 Lighting. The lighting and illumination requirements of the safety and health core rules, WAC 296-800-210, shall apply.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 01-11-038, § 296-78-71023, filed 5/9/01, effective 9/1/01. Statutory Authority: RCW 49.17.040 and 49.17.050. 82-13-045 (Order 82-22), § 296-78-71023, filed 6/11/82. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-18-029 (Order 81-21), § 296-78-71023, filed 8/27/81.]

WAC 296-78-71025 Gas piping and appliances. All gas piping and appliances shall be installed in accordance with the American National Standard Requirements for Gas Appliances and Gas Piping Installations, Z21.30 - 1964.

[Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-18-029 (Order 81-21), § 296-78-71025, filed 8/27/81.]

WAC 296-78-715 Mechanical, steam and electrical equipment.

[Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-18-029 (Order 81-21), § 296-78-715, filed 8/27/81.]

WAC 296-78-71501 General provisions. (1) All machinery or other equipment located or used on the premises of the operation or in the processes incidental thereto, shall be provided and maintained with approved standard safeguards, irrespective of ownership.

(2) Machines shall be so located that each operator will have sufficient space in which to handle material with the least possible interference from or to other workers or machines.

(3) Machines shall be so placed that it will not be necessary for the operator to stand where passing traffic creates a hazard.

(4) Aisles of sufficient width to permit the passing of vehicles or employees without crowding shall be provided in all work areas and stock or storage rooms.

(5) All metal decking around machinery shall be equipped to effectively prevent slipping.

(6) All machinery or equipment started by a control so located as to create impaired vision of any part of such machinery or equipment shall be provided with an audible warning device, where such machinery or equipment is exposed to contact at points not visible to the operator. Such devices shall be sounded before starting up unless positive mechanical or electrical interlocking controls are provided which will prevent starting until all such posts are cleared.

(7) A mechanical or electrical power control device shall be provided at each machine which will make it possible for the operator to stop the machine feed without leaving his position at the point of operation.

(8) All machines operated by means of treadles, levers, or other similar devices, shall be provided with positive and approved nonrepeat devices except where such machine is being used as an automatic repeating device.

(9) Operating levers and treadles on all machines or machinery shall be so located and protected that they cannot be shifted or tripped accidentally.

(10) All power driven machinery shall be stopped and brought to a complete standstill before any repairs or adjustments are made or pieces of material or refuse removed, except where motion is necessary to make adjustments.

[Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-18-029 (Order 81-21), § 296-78-71501, filed 8/27/81.]

WAC 296-78-71503 Lock out—Tag out. (1) To avoid accidental activation of machinery, electrical devices or other equipment which could create a hazardous condition while performing maintenance, repair, cleanup or construction work, the main disconnect(s) (line circuit breakers) shall first be locked out and tagged in accordance with the following provisions:

(2) Effective date. Effective July 1, 1982, only padlocks or other equivalent protective devices shall be used for locking out the main disconnect(s) (line circuit breakers) of machinery, electrical devices or other equipment that is shut down while maintenance, repair, cleanup, construction work or other type of work is done to the equipment. Tags shall be used to supplement the padlocks or other equivalent protective devices, and shall be used only for informational purposes.

(3) Padlocks, tags or equivalent protective devices to be supplied. The employer shall supply and the employee(s) shall use as many padlocks or other equivalent protective devices as are necessary to effectively lock out all affected equipment.

(4) Lock out plan. An effective lock out plan shall be formulated in writing and all concerned employees so informed. The plan shall contain specific procedures for locking out equipment, information to be contained on supplemental tags and specific procedures for unlocking equipment after repairs, cleanup, etc., have been completed.

(5) Informational tags. Tags used for providing supplemental information with lock out padlocks or other equivalent protective devices shall contain the name of the person authorizing placement, reason for placing, date, signature of person placing tag and such other relative information as deemed necessary by the person placing the tag.

(6) Lock out by pushbutton only. Locking out a machine or item of equipment by use of a pushbutton or other local control device only will not be acceptable as meeting the intent of these rules.

(7) Coordination of locking out devices. When repair, adjustment, cleanup, maintenance or construction work is necessary and the lock out procedures must be followed by any person not familiar with all power sources or material entry sources to any area involved, that person shall consult with the operator, supervisor, or some person that is capable

of informing him of proper lock out procedures and supplemental tagging information.

(8) Lock out before removing guards. Equipment shall be stopped and locked out before employees remove guards or reach into any potentially hazardous area. The only exception to this rule will be when equipment must be in motion in order to make proper adjustments.

(9) Removal of lock outs. Each person actively engaged in the repair, maintenance, cleanup, etc., shall lock out the affected equipment and place the informational tag. Upon completion of the work and reinstallation of the guards, that person shall personally remove his lock and tag, except when it is positively determined that an employee has left the premises without removing his lock and tag, other persons may remove the locks and tags in accordance with a procedure formulated by each firm and approved by the division of industrial safety and health.

(10) Valves to be locked and tagged out. Each valve used to control the flow of hazardous materials into, or used to activate the equipment being worked on, shall be locked and tagged out.

(11) Piping systems deactivated. Prior to working on piping systems containing pressurized or hazardous materials, the valve(s) controlling the flow to the affected area shall be locked and tagged out. The piping in the area to be worked on shall be drained and purged, if needed. If the piping contains hazardous materials, the piping shall be isolated from the work area by the insertion of blank flanges in the piping system.

(12) Pipe lines without valves. If pipelines or ducts are constructed without valves or closures that can be locked out, the lines or ducts shall be broken at a flange and a blank flange inserted to stop accidental flow of any hazardous material.

(13) Testing after lock out. After locking out and tagging equipment, a test shall be conducted to ascertain that the equipment has been made inoperative or the flow of hazardous material has been positively stopped. Precautions shall be taken to ascertain that persons will not be subjected to hazard while conducting the test if power source or flow of material is not shut off.

(14) Temporary or alternate power to be avoided. Whenever possible, temporary or alternate sources of power to the equipment being worked on shall be avoided. If the use of such power is necessary, all affected employees shall be informed and the source of temporary or alternate power shall be identified.

[Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-18-029 (Order 81-21), § 296-78-71503, filed 8/27/81.]

WAC 296-78-71505 Mechanical power transmission apparatus. (1) Machines and other equipment shall not be oiled while in motion, unless provided with guards or other devices to permit oiling without any possibility of contact with moving parts of machinery.

(2) Inspections shall be made to assure that shaftings, bearings and machines are in proper alignment at all times and that bolts in shaft hangars, couplings and boxes are tight.

(3) Isolated bearings or other equipment not reached by walkway shall be served by a ladder or other means of safe access.

(4) Running belts under power on or off pulleys shall be accomplished by mechanical means which will not expose employees to moving elements of the operation.

(5) Counterweights located on or near passageways or work areas shall be provided with enclosures. Overhead counterweights shall be provided with substantial safety chains or cables, or otherwise secured against falling.

(6) The construction, operation, and maintenance of all mechanical power-transmission apparatus shall be in accordance with chapter 296-806 WAC, Machine safety.

(7) Baffles shall be erected, where necessary, to protect employees from breaking belts, chains, ropes or cables.

(8) Overhead horizontal belts, chains or rope drives shall be provided with guards.

(9) Hydraulic systems. Means shall be provided to block, chain, or otherwise secure equipment normally supported by hydraulic pressure so as to provide for safe maintenance.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060. 04-14-028, § 296-78-71505, filed 6/29/04, effective 1/1/05. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-18-029 (Order 81-21), § 296-78-71505, filed 8/27/81.]

WAC 296-78-720 Boiler and pressure vessels. Boilers and pressure vessels shall be constructed, maintained and inspected in accordance with the provisions of the boiler and unfired pressure vessel law, chapter 70.79 RCW, and chapter 296-104 WAC as administered by the boiler inspection section of the department of labor and industries.

[Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-18-029 (Order 81-21), § 296-78-720, filed 8/27/81.]

WAC 296-78-725 Nonionizing radiation. (1) Only qualified and trained employees shall be assigned to install, operate, adjust, and maintain laser equipment. Proof of qualification of the laser equipment operator shall be available and in possession of operator at all times.

(2) Employees, when working in areas in which a potentially hazardous exposure (see WAC 296-62-09005(4)) to direct or reflected laser radiation exists, shall be provided with antilaser eye protection devices specified in WAC 296-62-09005, general occupational health standards.

(3) Areas in which lasers are used shall be posted with standard laser warning placards.

(4) Beam shutters or caps shall be utilized, or the laser turned off, when laser transmission is not actually required. When the laser is left unattended for a substantial period of time, such as during lunch hour, overnight, or at change of shifts, the laser shall be turned off or shutters or caps shall be utilized.

(5) The laser beam shall not be directed at employees.

(6) Only mechanical or electronic means shall be used as a detector for guiding the internal alignment of the laser.

(7) The laser equipment shall bear such labels, logos and data placards to indicate maximum output and class designation as required of the manufacturer at time of sale, by I.A.W. Part 1040, CFR Title 21. Such labels, logos, data placards, etc., shall be maintained in a legible condition.

(8) When it is raining or snowing, or when there is dust or fog in the air, and it is impracticable to cease laser system operation, employees shall be kept out of range of the area of source and target during such weather conditions.

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(9) Employees shall not be exposed to light intensities in excess of:

(a) Direct staring: One micro-watt per square centimeter;

(b) Incidental observing: One milliwatt per square centimeter;

(c) Diffused reflected light: Two and one-half watts per square centimeter.

(10) The laser equipment shall not be modified except by the manufacturer.

(11) Laser unit in operation shall be set up above the heads of the employees, when possible.

(12) Employees shall not be exposed to radio frequency/microwave radiation in excess of the permissible exposure limits specified in WAC 296-62-09005.

[Statutory Authority: Chapter 49.17 RCW. 96-17-056, § 296-78-725, filed 8/20/96, effective 10/15/96. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-18-029 (Order 81-21), § 296-78-725, filed 8/27/81.]

WAC 296-78-730 Electrical service and equipment.

(1) Electrical service and equipment shall be constructed, maintained, inspected and operated according to chapter 296-24 WAC, General safety and health standards, Part L, and WAC 296-800-280 of the safety and health core rules.

(2) Repairs. Electrical repairs shall be made only by authorized and qualified personnel.

(3) Identification. Marks of identification on electrical equipment shall be clearly visible.

(4) Protective equipment. Rubber protective equipment shall be provided as required by WAC 296-24-092(1) of the general safety and health standard.

(5) Open switches. Before working on electrical equipment, switches shall be open and shall be locked out.

(6) Concealed conductors. Where electrical conductors are known to be concealed, no work shall be performed until such conductors are located.

(7) Overload relays. Overload relays shall be reset by authorized qualified personnel only.

(8) Passageways to panels. Passageways to switch centers or panels shall at all times be kept free from obstruction. Not less than three feet of clear space shall be maintained in front of switch centers or panels at all times.

(9) Bridging fuses. Fuses shall not be doubled or bridged.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 01-11-038, § 296-78-730, filed 5/9/01, effective 9/1/01. Statutory Authority: Chapter 49.17 RCW. 91-24-017 (Order 91-07), § 296-78-730, filed 11/22/91, effective 12/24/91. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-18-029 (Order 81-21), § 296-78-730, filed 8/27/81.]

WAC 296-78-735 Elevators, moving walks. Elevators, moving walks and other lifting devices intended for either passenger or freight service shall be constructed, maintained, inspected and operated in accordance with the provisions of chapter 70.87 RCW, WAC 296-24-875 through 296-24-90009 of the general safety and health standards, and those specific standards which are applicable from the division of building and construction safety inspection services, elevator section.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 01-11-038, § 296-78-735, filed 5/9/01, effective 9/1/01. Statutory Authority: RCW

49.17.040, 49.17.050 and 49.17.240. 81-18-029 (Order 81-21), § 296-78-735, filed 8/27/81.]

WAC 296-78-740 Transportation—Lumber handling equipment—Cranes—Construction. (1) All apparatus shall be designed throughout, with not less than the following factors of safety, under static full rated load stresses, based on ultimate strength of the material used:

Material	Factor of Safety
Cast iron	12
Cast steel	8
Structural steel	5
Forged steel	5
Cables	5

(2) A notice shall be placed on every crane and hoist showing the maximum allowable load in pounds or tons. This notice shall be placed in such a manner as to be clearly legible from the floor.

(3) Cranes shall be of what is known as "all steel construction." No cast iron shall be used in parts subject to tension except in drums, trolley sides, bearings, brackets and brake shoes.

(4) The construction of cranes shall be such that all parts may be safely lubricated and inspected when cranes are not in operation.

(5) Bolts subject to stress shall be of the through type and all bolts shall be equipped with approved protection so that the bolt will not work loose or nuts work off.

(6) Outside crane cages shall be enclosed. There shall be windows on three sides of the cage and windows in the front, and the side opposite the door shall be the full width of the cage.

(7) Where a tool box or receptacle is used for the storing of oil cans, tools, etc., it shall be permanently secured in the cage or on the foot-walk of outside cranes and on the foot-walk of inside cranes. Tool boxes of hot metal cranes shall be constructed of metal.

(8) All gears on cranes shall be provided with standard guards.

(9) Keys projecting from revolving shafts shall be guarded.

(10) A braking apparatus shall be provided on every type of crane and shall be so designed and installed as to be capable of effectually braking a weight of at least one and one-half times the full rated load.

[Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-18-029 (Order 81-21), § 296-78-740, filed 8/27/81.]

WAC 296-78-745 Electrical equipment. (1) All exposed current-carrying parts except conductors, connected to circuits above three hundred volts to ground shall be so isolated, insulated, or guarded that no employee can come in contact with them. Exposed parts less than 300 volts shall be protected in some suitable way against possible accidental contact. Exposed metallic parts of conduit armored cable or molding shall be permanently grounded.

(2) Guards for the current-carrying parts of unisolated electrical equipment, such as controllers, motors, transformers, automatic cutouts, circuit breakers, switches, and other

devices shall consist of cabinets, casings, or shields of permanently grounded metal or of insulating material.

(3) All parts of electrical equipment, such as fuses and the handles and arc chutes of circuit breakers, shall be so isolated or guarded that the liability of employees being struck or burned by sparking, flashing or movement during operation is reduced to a minimum.

(4) All exposed noncurrent carrying metal parts of electrical equipment shall be permanently grounded. The ground connection through well bonded track rails will be considered satisfactory.

(5) The metallic parts of portable cranes, derricks, hoists, and similar equipment on which wires, cables, chains, or other conducting objects are maintained shall be provided with an effective protective ground, where operated in the vicinity of supply lines.

(6) Readily accessible means shall be provided whereby all conductors and equipment located in cranes can be disconnected entirely from the source of energy at a point as near as possible to the main current collectors.

(7) Means shall be provided to prevent the starting and operation of equipment by unauthorized persons.

(8) The control levers of traveling cranes shall be so located that the operator can readily face the direction of travel.

(9) A hoist limiting device shall be provided for each hoist.

(10) All fuses shall be of the enclosed arcless type.

[Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-18-029 (Order 81-21), § 296-78-745, filed 8/27/81.]

WAC 296-78-750 Chains, wire rope, cables and fiber rope. (1) Ropes, cables, slings, and chains.

(a) Safe usage. Ropes, cables, slings, and chains shall be used in accordance with safe use practices recommended by the manufacturer or within safe limits recommended by the equipment manufacturer when used in conjunction with it.

Work by qualified persons. Installation, inspection, maintenance, repair, and testing of ropes, cables, slings, and chains shall be done only by persons qualified to do such work.

(b) Proof testing. The employer shall ensure that before use, each new, repaired, or reconditioned alloy steel chain sling, including all welded components in the sling assembly, shall be proof tested by the sling manufacturer or equivalent entity, in accordance with paragraph 5.2 of the American Society of Testing and Materials Specification A391.65 (ANSI G61.1-1968). The employer shall retain the certificate of the proof test and shall make it available for examination. When a chain sling assembly is made up of segments of proof tested alloy chain and proof tested individual components such as mechanical coupling links, hooks and similar devices; it is not necessary to test the assembled unit, when appropriate test certification of individual components is available and the assembled sling is appropriately tagged by the manufacturer or equal entity. The sling shall not be used in excess of the rated capacity of the weakest component.

(c) Slings. Slings and their fittings and fastenings, when in use, shall be inspected daily for evidence of overloading, excessive wear, or damage. Slings found to be defective shall be removed from service.

(2) Proper storage shall be provided for slings while not in use.

(3) Protection shall be provided between the sling and sharp unyielding surfaces of the load to be lifted.

(4) Hooks. No open hook shall be used in rigging to lift any load where there is hazard from relieving the tension on the hook from the load or hook catching or fouling.

(5) Ropes or cables. Wire rope or cable shall be inspected when installed and once each day thereafter, when in use. It shall be removed from hoisting or load-carrying service when kinked or when one of the following conditions exist:

(a) When three broken wires are found in one lay of 6 by 6 wire rope.

(b) When six broken wires are found in one lay of 6 by 19 wire rope.

(c) When nine broken wires are found in one lay of 6 by 37 wire rope.

(d) When eight broken wires are found in one lay of 8 by 19 wire rope.

(e) When marked corrosion appears.

(f) Wire rope of a type not described herein shall be removed from service when four percent of the total number of wires composing such rope are found to be broken in one lay.

(g) Condemned. When wire rope, slings or cables deteriorate through rust, wear, broken wires, kinking or other conditions, to the extent there is a reasonable doubt that the necessary safety factor is maintained, the use of such equipment shall be discontinued.

(6) Wire rope removed from service due to defects shall be plainly marked or identified as being unfit for further use on cranes, hoists, and other load-carrying devices.

(7) The ratio between the rope diameter and the drum, block, sheave, or pulley tread diameter shall be such that the rope will adjust itself to the bend without excessive wear, deformation, or injury. In no case shall the safe value of drums, blocks, sheaves, or pulleys be reduced when replacing such items unless compensating changes are made for rope used and for safe loading limits.

(8) Drums, sheaves, and pulleys. Drums, sheaves, and pulleys shall be smooth and free from surface defects liable to injure rope. Drums, sheaves, or pulleys having eccentric bores or cracked hubs, spokes, or flanges shall be removed from service.

(9) Connections. Connections, fittings, fastenings, and other parts used in connection with ropes and cables shall be of the quality, size and strength recommended by the manufacturer for the use intended. These connections shall be installed in accordance with the manufacturer's recommendations.

(10) Socketing, splicing, and seizing.

(a) Socketing, splicing, and seizing of cables shall be performed only by qualified persons.

(b) All eye splices shall be made in a manner recommended by the manufacturer and wire rope thimbles of proper size shall be fitted in the eye, except that in slings the use of thimbles shall be optional.

(11) Wire rope clips attached with U-bolts shall have these bolts on the dead or short end of the rope. The U-bolt nuts shall be retightened immediately after initial load carry-

ing use and at frequent intervals thereafter. The number and spacing of clips shall be as follows:

Improved Plow Steel Diameter of Rope	Number of Clips (Drop Forged)	Required Other Material	Minimum Space Between Clips
3/8 to 5/8"	3	4	3-3/4 "
3/4"	4	5	4-1/2 "
7/8"	4	5	5-1/4 "
1 "	5	6	6 "
1-1/8"	6	6	6-3/4 "
1-1/4"	6	7	7-1/2 "
1-3/8"	7	7	8-1/4 "
1-1/2"	7	8	9 "

(a) When a wedge socket-type fastening is used, the dead or short end of the cable shall be clipped with a U-bolt or otherwise made secure against loosening.

(b) Fittings. Hooks, shackles, rings, pad eyes, and other fittings that show excessive wear or that have been bent, twisted, or otherwise damaged shall be removed from service.

(12) Running lines. Running lines of hoisting equipment located within six feet six inches of the ground or working level shall be boxed off or otherwise guarded, or the operating area shall be restricted.

(13) Preventing abrasion. The reeving of a rope shall be so arranged as to minimize chafing or abrading while in use.

(14) Sheave guards. Bottom sheaves shall be protected by close fitting guards to prevent cable from jumping the sheave.

(15) There shall be not less than two full wraps of hoisting cable on the drums of cranes and hoists at all times of operation.

(16) Where the cables are allowed to pile on the drums of cranes, the drums shall have a flange at each end to prevent the cables from slipping off the drum.

(17) Chains. Chains used in load carrying service shall be inspected before initial use and weekly thereafter.

If at any time any three-foot length of chain is found to have stretched one-third the length of a link it shall be discarded.

(18) Chains shall be spliced in compliance with the requirements of the general safety and health standard, WAC 296-24-29413.

(19) Wherever annealing of chains is attempted, it shall be done in properly equipped annealing furnaces and under the direct supervision of a competent person thoroughly versed in heat treating.

Chain shall be normalized or annealed periodically as recommended by the manufacturer.

(20) Fiber rope.

(a) Frozen fiber rope shall not be used in load carrying service.

(b) Fiber rope that has been subjected to acid shall not be used for load carrying purposes.

(c) Fiber rope shall be protected from abrasion by padding where it is fastened or drawn over square corners or sharp or rough surfaces.

[Statutory Authority: Chapter 49.17 RCW. 96-17-056, § 296-78-750, filed 8/20/96, effective 10/15/96. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-18-029 (Order 81-21), § 296-78-750, filed 8/27/81.]

WAC 296-78-755 Natural and synthetic fiber rope slings. (1) Sling use.

(a) Fiber rope slings made from conventional three strand construction fiber rope shall not be used with loads in excess of the rated capacities prescribed in Tables D-16 through D-19 of Part "D" of the general safety and health standards, chapter 296-24 WAC.

(b) Slings not included in these tables shall be used only in accordance with the manufacturer's recommendations.

(2) Safe operating temperatures. Natural and synthetic fiber rope slings, except for wet frozen slings, may be used in a temperature range from minus 20°F to plus 180°F without decreasing the working load limit. For operations outside this temperature range and for wet frozen slings, the sling manufacturer's recommendations shall be followed.

(3) Splicing. Spliced fiber rope slings shall not be used unless they have been spliced in accordance with the following minimum requirements and in accordance with any additional recommendations of the manufacturer:

(a) In manila rope, eye splices shall consist of at least three full tucks, and short splices shall consist of at least six full tucks, three on each side of the splice center line.

(b) In synthetic fiber rope, eye splices shall consist of at least four full tucks, and short splices shall consist of at least eight full tucks, four on each side of the center line.

(c) Strand end tails shall not be trimmed flush with the surface of the rope immediately adjacent to the full tucks. This applies to all types of fiber rope and both eye and short splices. For fiber rope under one inch in diameter, the tail shall project at least six rope diameters beyond the last full tuck. For fiber rope one inch in diameter and larger, the tail shall project at least six inches beyond the last full tuck. Where a projecting tail interferes with the use of the sling, the tail shall be tapered and spliced into the body of the rope using at least two additional tucks (which will require a tail length of approximately six rope diameters beyond the last full tuck).

(d) Fiber rope slings shall have a minimum clear length of rope between eye splices equal to ten times the rope diameter.

(e) Knots shall not be used in lieu of splices.

(f) Clamps not designed specifically for fiber ropes shall not be used for splicing.

(g) For all eye splices, the eye shall be of such size to provide an included angle of not greater than sixty degrees at the splice when the eye is placed over the load or support.

(4) End attachments. Fiber rope slings shall not be used if end attachments in contact with the rope have sharp edges or projections.

(5) Removal from service. Natural and synthetic fiber rope slings shall be immediately removed from service if any of the following conditions are present:

(a) Abnormal wear.

(b) Powdered fiber between strands.

(c) Broken or cut fibers.

(d) Variations in the size or roundness of strands.

(e) Discoloration or rotting.

(f) Distortion of hardware in the sling.

(6) Repairs. Only fiber rope slings made from new rope shall be used. Use of repaired or reconditioned fiber rope slings is prohibited.

[Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-18-029 (Order 81-21), § 296-78-755, filed 8/27/81.]

WAC 296-78-760 Synthetic web slings. (1) Sling identification. Each sling shall be marked or coded to show the rated capacities for each type of hitch and type of synthetic web material.

(2) Webbing. Synthetic webbing shall be of uniform thickness and width and selvage edges shall not be split from the webbing's width.

(3) Fittings. Fittings shall be:

(a) Of a minimum breaking strength equal to that of the sling; and

(b) Free of all sharp edges that could in any way damage the webbing.

(4) Attachment of end fittings to webbing and formation of eyes. Stitching shall be the only method used to attach end fittings to webbing and to form eyes. The thread shall be in an even pattern and contain a sufficient number of stitches to develop the full breaking strength of the sling.

(5) Sling use. Synthetic web slings illustrated in Figure D-6 shall not be used with loads in excess of the rated capacities specified in Tables D-20 through D-22. Slings not included in these tables shall be used only in accordance with the manufacturer's recommendations.

(6) Environmental conditions. When synthetic web slings are used, the following precautions shall be taken:

(a) Nylon web slings shall not be used where fumes, vapors, sprays, mists or liquids of acids or phenolics are present.

(b) Polyester and polypropylene web slings shall not be used where fumes, vapors, sprays, mists or liquids of caustics are present.

(c) Web slings with aluminum fittings shall not be used where fumes, vapors, sprays, mists or liquids of caustics are present.

(7) Safe operating temperatures. Synthetic web slings of polyester and nylon shall not be used at temperatures in excess of 180°F. Polypropylene web slings shall not be used at temperatures in excess of 200°F.

(8) Repairs.

(a) Synthetic web slings which are repaired shall not be used unless repaired by a sling manufacturer or an equivalent entity.

(b) Each repaired sling shall be proof tested by the manufacturer or equivalent entity to twice the rated capacity prior to its return to service. The employer shall retain a certificate of the proof test and make it available for examination.

(c) Slings, including webbing and fittings, which have been repaired in a temporary manner shall not be used.

(9) Removal from service. Synthetic web slings shall be immediately removed from service if any of the following conditions are present:

(a) Acid or caustic burns;

(b) Melting or charring of any part of the sling surface;

- (c) Snags, punctures, tears or cuts;
- (d) Broken or worn stitches; or
- (e) Distortion of fittings.

[Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-18-029 (Order 81-21), § 296-78-760, filed 8/27/81.]

WAC 296-78-765 Floor operated cranes. (1) An unobstructed aisle not less than three feet wide shall be maintained for travel of the operator except in such cases where the control handles are hung from the trolleys of traveling cranes.

(2) The controller or controllers, if rope operated, shall automatically return to the "off" position when released by the operator.

(3) Pushbuttons, in pendant stations, shall return to the "off" position when pressure is released by the crane operator.

(4) All pushbuttons shall be marked to indicate their purpose.

[Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-18-029 (Order 81-21), § 296-78-765, filed 8/27/81.]

WAC 296-78-770 Operators. (1) Cranes shall be operated only by regular crane operators, authorized substitutes who have had adequate experience and training under the supervision of a competent operator, or by crane repair person or inspectors.

(2) No person under the age of eighteen years shall be permitted to operate a crane.

(3) Operators shall be required to pass a practical examination limited to the specific type of equipment to be operated. Operators shall meet the following physical qualifications:

(a) Have vision of at least 20/30 Snellen in one eye, and 20/50 in the other, with or without corrective lenses.

(b) Be able to distinguish red, green, and yellow, regardless of position of colors, if color differentiation is required for operation.

(c) Hearing, with or without hearing aid, must be adequate for the specific operation.

(d) A history of epilepsy or an uncorrected disabling heart condition shall be cause for a doctor decision to determine qualifications to operate a crane.

(4) Hands shall be kept free when going up and down ladders. Articles which are too large to go into pockets or belts shall be lifted to or lowered from the crane by hand line. (Except where stairways are provided.)

(5) Cages shall be kept free of clothing and other personal belongings. Tools, extra fuses, oil cans, waste and other articles necessary in the crane cage shall be stored in a tool box and not left loose on or about the crane.

(6) The operator shall familiarize himself fully with all crane rules and with the crane mechanism and its proper care. If adjustments or repairs are necessary, he shall report the same at once to the proper authority.

(7) The operator shall not eat, smoke or read while actually engaged in the operation of the crane.

(8) The operator or someone especially designated shall lubricate all working parts of the crane.

(9) Cranes shall be examined for loose parts or defects each day on which they are in use.

(2007 Ed.)

(10) Sawdust, oil or other debris shall not be allowed to accumulate to create a fire, health or slipping hazard.

(11) Operators shall avoid, as far as possible, carrying loads over workers. Loads shall not be carried over employees without sounding an audible warning alarm.

(12) Whenever the operator finds the main or emergency switch open, he shall not close it, even when starting on regular duty, until he has made sure that no one is on or about the crane. He shall not oil or repair the crane unless the main switch is open.

(13) If the power goes off, the operator shall immediately throw all controllers to "off" position until the power is again available.

(14) Before closing the main switch the operator shall make sure that all controllers are in "off" position until the power is again available.

(15) The operator shall pay special attention to the block, when long hitches are made, to avoid tripping the limit switch.

(16) The operator shall recognize signals only from the person who is supervising the lift except for emergency stop signals. Operating signals shall follow established standard crane signals as illustrated in WAC 296-78-830 of this chapter. Whistle signals may be used where one crane only is in operation. Cranes shall have audible warning device which shall be sounded in event of emergency.

(17) Before starting to hoist, the operator shall place the trolley directly over the load to avoid swinging it when being hoisted.

(18) The operator shall not make side pulls with the crane except when especially instructed to do so by the proper authority.

(19) When handling maximum loads, the operator shall test the hoist brakes after the load has been lifted a few inches. If the brakes do not hold, the load shall be lowered at once and the brakes adjusted or repaired.

(20) Bumping into runway stops or other cranes shall be avoided. When the operator is ordered to engage with or push other cranes, he shall do so with special care for the safety of persons on or below cranes.

(21) When lowering a load, the operator shall proceed carefully and make sure that he has the load under safe control.

(22) When leaving the cage the operator shall throw all controllers to "off" position and open the main switch.

(23) If the crane is located out of doors the operator shall lock the crane in a secure position to prevent it from being blown along or off the track by a severe wind.

(24) Railroad cars shall not be pulled along the tracks with sidepulls on an overhead crane.

(25) Operators shall not move the crane or a load unless floor signals are clearly understood.

(26) The rated lifting capacity of a crane shall not be exceeded. If any doubt exists about the weight of a load which might exceed the rated capacity, the foreman in charge must be contacted before any attempt is made to lift the load. The foreman shall determine that the load is within the rated capacity of the crane or the load shall not be lifted.

(27) Crane operators and floorpersons shall coordinate their activities on every lift or movement of the crane. Both the operator and signalperson shall clearly understand any

problem a movement might create with regard to surrounding materials, structures, equipment or personnel.

[Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-18-029 (Order 81-21), § 296-78-770, filed 8/27/81.]

WAC 296-78-775 Signalpersons. (1) Signalpersons shall give all the signals to the operator in accordance with established standard signals as illustrated in WAC 296-78-830 of this chapter.

(2) A designated person shall be responsible for the condition and use of all hoisting accessories and for all hitches.

(3) Before an operator moves a crane upon which an empty chain or cable sling is hanging, both ends of the sling shall be placed on the hook.

(4) Signalpersons, where necessary, shall walk ahead of the moving load and warn people to keep clear of it. They shall see that the load is carried high enough to clear all obstructions.

(5) Signalpersons shall notify the person in charge in advance when an extra heavy load is to be handled.

(6) No person shall be permitted to stand or pass under an electric magnet in use.

(7) The electrical circuit for electric magnets shall be maintained in good condition. Means for taking up the slack cable shall be provided.

[Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-18-029 (Order 81-21), § 296-78-775, filed 8/27/81.]

WAC 296-78-780 Repairpersons. (1) When repairs are necessary, repairpersons shall have the crane run to a location where the repair work will least interfere with the other cranes and with operations on the floor.

(2) Before starting repairs, repairpersons shall see that all controllers are thrown to the "off" position, and that main or emergency switches are opened; one of these shall be locked out in compliance with WAC 296-78-715(11) of this chapter.

(3) Repairpersons shall immediately place warning signs or "Out of Order" signs on a crane to be repaired and also on the floor beneath or hanging from the crane so that it can easily be seen from the floor. If other cranes are operated on the same runway, repairpersons shall also place rail stops at a safe distance or make other safe provisions.

(4) When repairing runways, repairpersons shall place rail stops and warning signs or signals so as to protect both ends of the section to be repaired.

(5) Repairpersons shall take care to prevent loose parts from falling or being thrown upon the floor beneath.

(6) Repairs shall not be considered complete until all guards and safety devices have been put in place and the block and tackle and other loose material have been removed.

[Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-18-029 (Order 81-21), § 296-78-780, filed 8/27/81.]

WAC 296-78-785 Construction requirements. (1) Calculations for wind pressure on outside overhead traveling cranes shall be based on not less than 30 pounds per square foot of exposed surface.

(2) No overhung gears shall be used unless provided with an effective means of keeping them in place, and keys shall be secured to prevent gears working loose.

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Safety lugs or brackets shall be provided on the trolley frames and bridge ends of overhead traveling cranes, so that in the event of a broken axle or wheel the trolley or bridge proper will not have a drop greater than one inch.

(3) Where there are no members over an outside overhead crane suitable for attaching blocks for repair work, and a locomotive crane is not available, a structural steel outrigger of sufficient strength to lift the heaviest part of the trolley shall be provided.

(4) Outside overhead traveling cranes shall be equipped with wind indicators and rail clamps as required by the general safety and health standards, WAC 296-24-23503.

(5) Foot brakes, or other effective means shall be provided to control the bridge travel of all overhead traveling cranes.

[Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-18-029 (Order 81-21), § 296-78-785, filed 8/27/81.]

WAC 296-78-790 Crane platforms and footwalks. (1) Platforms shall be provided when changing and repairing truck wheels on end trucks.

(2) A platform or footwalk shall be located on crane or crane runway to give access to the crane cage, and it shall be accessible from one or more stairways or fixed ladders. This platform or footwalk shall be not less than eighteen inches in width.

(3) Where stairways are used to give access to platforms they shall make an angle of not more than fifty degrees with the horizontal and shall be equipped with substantial railing. If ladders are used to give access to platforms they shall extend not less than thirty-six inches above the platform. Railed stairways or ladders to be used as a means of ingress and egress to crane cages shall be located at either or both ends.

(4) A footwalk shall be placed along the entire length of the bridge on the motor side, and a short platform twice the length of the trolley placed at one end of the girder on the opposite side, with a vertical clearance of at least six feet six inches where the design of crane or building permits, but in no case shall there be less than four feet clearance. For hand operated cranes the footwalk shall not be required to be installed on the bridge of the crane, but there shall be a repair platform equal in strength and design to that required for motor operated cranes, installed on the wall of the building or supported by the crane runway at a height equal to the lower edge of the bridge girder to facilitate necessary repairs.

(5) Clear width of footwalks shall not be less than eighteen inches except around the bridge motor where it may be reduced to fifteen inches.

(6) Footwalks shall be of substantial construction and rigidly braced. Footwalks for outside service shall be constructed so as to provide proper drainage, but the cracks between the boards shall not be wider than one-fourth inch.

(7) Every footwalk shall have a standard railing and toeboard at all exposed edges. Railings and toeboards shall conform in construction and design with the following requirements:

(a) Railings shall be not less than thirty-six inches nor more than forty-two inches in height, with an additional rail midway between the top rail and the floor.

(2007 Ed.)

(b) Pipe railings shall be not less than one and one-fourth inch inside diameter if of iron or be not less than one and one-half inches outside diameter if of brass tubing.

(c) Metal rails other than pipe shall be at least equal in strength to that of one and one-half by three-sixteenths inch angle and shall be supported by uprights of equal strength.

(d) Posts or uprights shall be spaced not more than eight feet center to center.

(e) Toeboards shall be not less than four inches in height.

(f) Toeboards shall be constructed in a permanent and substantial manner of metal, wood, or other material equivalent thereto in strength. Where of wood, toeboards shall be at least equal in cross section to one inch by four inches; where of steel at least one-eighth inch by four inches; where of other construction at least equal to the requirements for steel. Perforations up to one-half inch are permissible in metal toeboards.

(8) No openings shall be permitted between the bridge footwalk and the crane girders. Where wire mesh is used to fill this opening the mesh openings shall be not greater than one-half inch.

(9) All footwalks and platforms shall be so designed as to be capable of sustaining a concentrated load of one hundred pounds per lineal foot.

[Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-18-029 (Order 81-21), § 296-78-790, filed 8/27/81.]

WAC 296-78-795 Crane cages. (1) Safe means of escape shall be provided for operators of all cranes in all operating locations. Rope ladders shall not be used as a regular means of access but may be installed as an emergency escape device to be used in the event of fire, mechanical breakdown or other emergency.

(2) The operator's cage shall be located at a place from which signals can be clearly distinguishable, and shall be securely fastened in a place and well braced to minimize vibration. It shall be large enough to allow ample room for the control equipment and the operator. The operator shall not be required to step over an open space of more than eighteen inches when entering the cage.

(3) Cab operated cranes shall be equipped with a portable fire extinguisher which meets the requirements of WAC 296-24-590 through 296-24-59007 and WAC 296-800-300.

(4) In establishments where continuous loud noises prevail such as caused by the operation of pneumatic tools, steam exhausts from boilers, etc., adequate signals shall be installed on cranes or one or more employees shall be placed on the floor for each crane operated to give warning to other employees of the approach of a crane with a load. Where there are more than two cranes on the same runway or within the same building structure, signaling devices are required to give warning to other employees of the approach of a crane with a load.

(5) Cages of cranes subjected to heat from below shall be of noncombustible construction and shall have a steel plate shield not less than one-eighth inch thick, placed not less than six inches below the bottom of the floor of the cage.

(6) Outside crane cages shall be enclosed. There shall be windows on three sides of the cage. The windows in the front and the side opposite the door shall be the full width of the cage.

(2007 Ed.)

(7) The floor of the cage on out-door cranes shall be extended to form an entrance landing which shall be equipped with a handrail and toeboard constructed to the specifications of WAC 296-78-790 of this chapter.

(8) A copy of the rules for operators shall be permanently posted in the cages of all cage-operated cranes.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 01-11-038, § 296-78-795, filed 5/9/01, effective 9/1/01. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-18-029 (Order 81-21), § 296-78-795, filed 8/27/81.]

WAC 296-78-800 Crane rail stops, bumpers and fenders. (1) Rail stops shall be provided at both ends of the crane runway and at ends of the crane bridge. When two trolleys are operated on the same bridge rails, bumpers shall be provided to prevent collision of trolleys.

(2) Bumpers and rail stops shall extend at least as high as the centers of the wheel.

(3) Rail stops shall be fastened to the girders or girders and rails, but not to the rails alone. This does not apply to portable rail stops. Portable rail stops shall not be used as permanent rail stops.

(4) Rail stops shall be built up of plates and angles or be made of cast steel.

(5) Fenders shall be installed which extend below the lowest point of the treads of gantry type crane wheels. They shall be of a shape and form that will tend to push or raise an employee's hand, arm or leg off the rail and away from the wheel.

[Statutory Authority: Chapter 49.17 RCW. 96-17-056, § 296-78-800, filed 8/20/96, effective 10/15/96. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-18-029 (Order 81-21), § 296-78-800, filed 8/27/81.]

WAC 296-78-805 Crawler locomotive and truck cranes. Crawler locomotive and truck cranes shall be constructed, maintained, inspected and operated in accordance with the provisions of WAC 296-24-240 through 296-24-24019 of the general safety and health standards.

[Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-18-029 (Order 81-21), § 296-78-805, filed 8/27/81.]

WAC 296-78-810 Chain and electric hoists. (1) Chain and electric hoists shall be of what is known as "all steel construction." No cast iron shall be used in parts subject to tension except drums, bearings or brake shoes.

(2) The chains shall be made of the best quality steel or iron with welded links.

(3) Chain and electric hoists shall have a factor of safety of at least five.

(4) Chain and electric hoists shall be equipped with a device which will automatically lock the load when hoisting is stopped.

(5) Electric hoists shall be provided with a limit stop to prevent the hoist block from traveling too far in case the operating handle is not released in time.

(6) Workers shall not ride the load of any chain or electric hoist. If necessary to balance the load manually, it shall be done from a safe distance.

(7) The rated capacity of the hoist shall be posted on both the hoist and the jib or rail.

[Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-18-029 (Order 81-21), § 296-78-810, filed 8/27/81.]

WAC 296-78-815 Monorail hoists. (1) No attempt shall be made with a monorail hoist to lift or move an object by a side pull, unless designed for that purpose.

(2) A stop shall be provided at all switches and turntables which will prevent the trolley from running off should the switch be turned or be left in the open position.

(3) All monorail hoists operating on swivels shall be equipped with one or more safety catches which will support the load should a suspension pin fail. All trolley frames shall be safeguarded against spreading.

(4) Rail stops shall be provided at the ends of crane runways. Such rail stops shall extend at least as high as the centers of the wheels.

(5) All monorail hoists shall have the rated capacity posted on both the hoist and the rail.

[Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-18-029 (Order 81-21), § 296-78-815, filed 8/27/81.]

WAC 296-78-820 Air hoists. (1) To prevent piston rod lock nuts from becoming loose and allowing rod to drop when supporting a load, lock nut shall be secured to piston rod by a castellated nut and cotter-pin.

(2) A clevis, "D" strap or other means shall be used to prevent the hoist cylinder becoming detached from the hanger.

(3) All air hoists shall have their rated capacity posted on both the hoist and the jib or rail.

[Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-18-029 (Order 81-21), § 296-78-820, filed 8/27/81.]

WAC 296-78-825 Jib, pillar, and portable floor cranes, crabs, and winches. (1) Side pulls shall not be made with jib or pillar cranes. The arm or boom shall be directly over the load when making a lift.

(2) The gears of all cranes shall be enclosed, and if hand operated by means of a crab or winch, a locking dog shall be provided to hold load when the handle is released.

(3) Some form of brake or safety lowering device shall be provided on all crabs, winches, and jib cranes.

(4) A hoist limiting device shall be provided on all jib cranes of ten or more tons capacity.

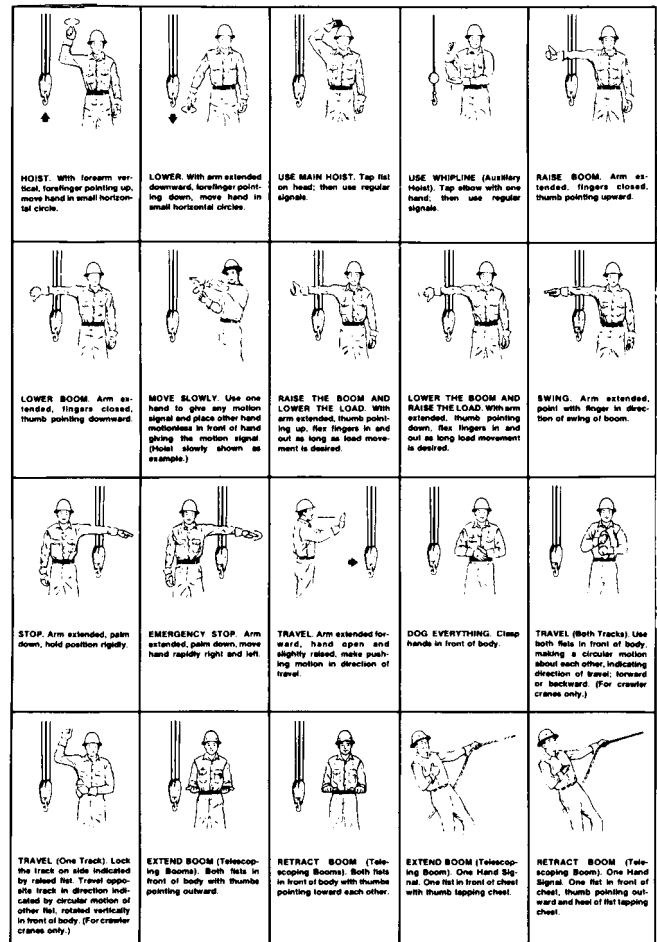
(5) The rated capacity of the hoisting device shall be posted on the hoist and the arm or boom.

[Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-18-029 (Order 81-21), § 296-78-825, filed 8/27/81.]

WAC 296-78-830 Standard crane hand signals—Illustrations. (1) The following hand signals shall be used for crawler, locomotive, and truck cranes and a copy shall be posted in the cab at the operator's station.

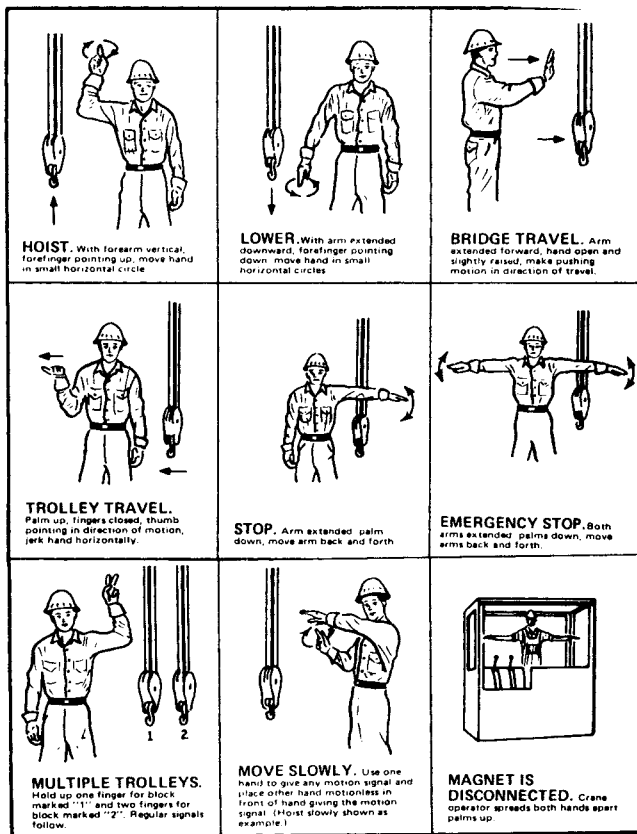
[Title 296 WAC—p. 1694]

CRAWLER, LOCOMOTIVE, AND TRUCK CRANES



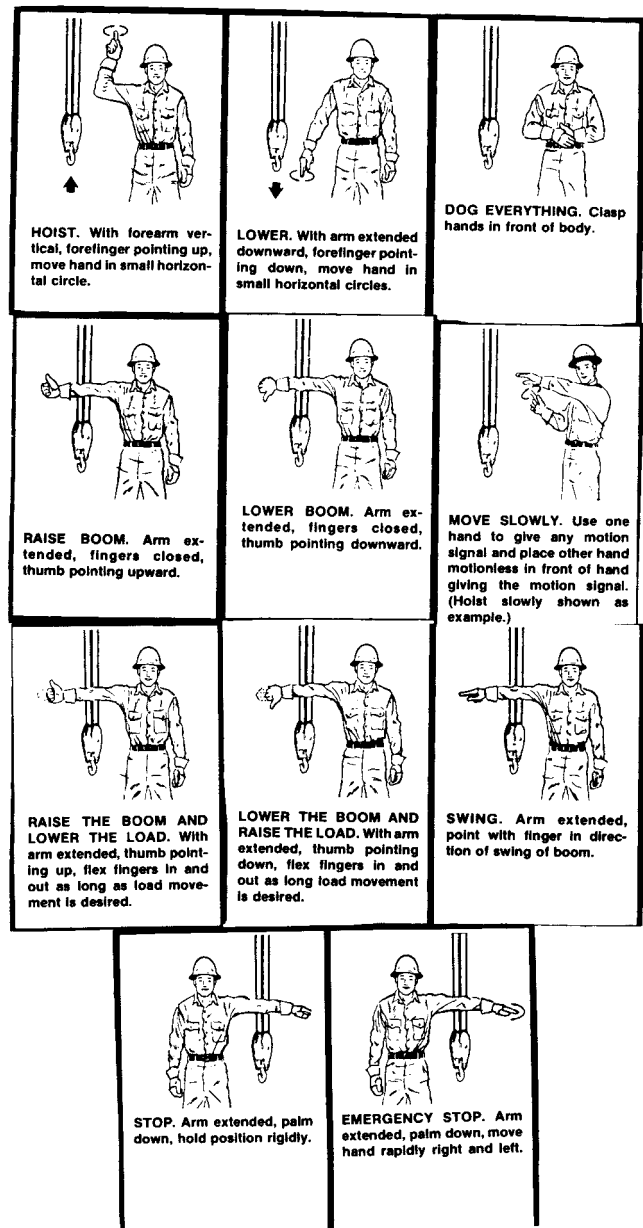
(2) The following hand signals shall be used for overhead and gantry cranes and a copy shall be posted in the cab at the operator's station.

STANDARD HAND SIGNALS FOR CONTROLLING OVERHEAD AND GANTRY CRANES

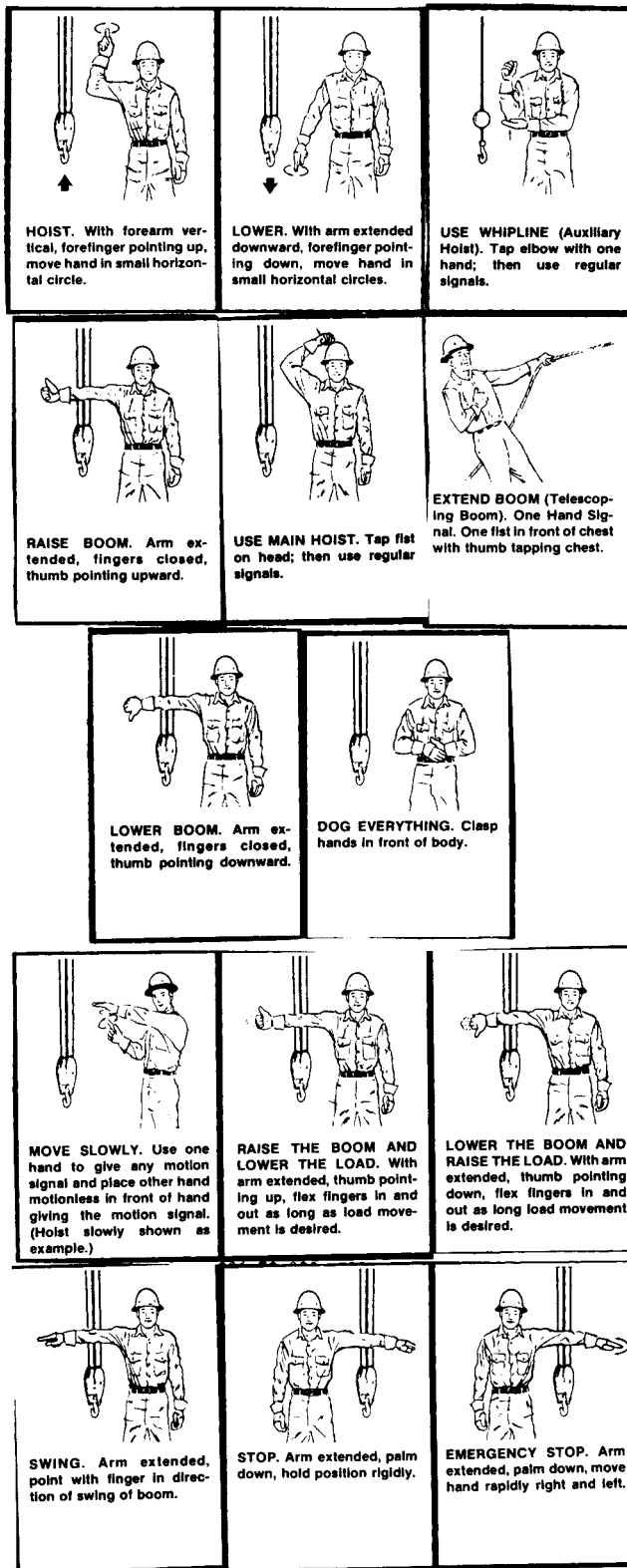


(3) The following hand signals shall be used for derricks and a copy shall be posted in the cab at the operator's station.

STANDARD HAND SIGNALS FOR CONTROLLING DERRICKS



(4) The following hand signals shall be used for portal, tower, and pillar cranes and a copy shall be posted in the cab at the operator's station.

STANDARD HAND SIGNALS FOR CONTROLLING PORTAL,
TOWER AND PILLAR CRANES

[Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-18-029 (Order 81-21), § 296-78-830, filed 8/27/81.]

WAC 296-78-835 Vehicles. (1) Vehicles.

(a) Scope. Vehicles shall include all mobile equipment normally used in sawmill, planing mill, storage, shipping, and yard operations, including log sorting yards.

(b) Lift trucks. Lift truck shall be designed, constructed, maintained and operated in accordance with the requirements of WAC 296-24-230 through 296-24-23035 of the general safety and health standards.

(c) Carriers. Drive chains on lumber carriers shall be adequately guarded to prevent contact at the pinch points.

(d)(i) Lumber carriers shall be so designed and constructed that the operator's field of vision shall not be unnecessarily restricted.

(ii) Carriers shall be provided with ladders or equivalent means of access to the operator's platform or cab.

(e) Lumber hauling trucks.

(i) On trucks where the normal operating position is ahead of the load in the direction of travel, the cab shall be protected by a barrier at least as high as the cab. The barrier shall be capable of stopping the weight of the load capacity of the vehicle if the vehicle were to be stopped suddenly while traveling at its normal operating speed. The barrier shall be constructed in such a manner that individual pieces of a normal load will not go through openings in the barrier.

(ii) Stakes, stake pockets, racks, tighteners, and binders shall provide a positive means to secure the load against any movement during transit.

(iii) Where rollers are used, at least two shall be equipped with locks which shall be locked when supporting loads during transit.

(2) Warning signals and spark arrestors. All vehicles shall be equipped with audible warning signals and where practicable shall have spark arrestors.

(3) Flywheels, gears, sprockets and chains and other exposed parts that constitute a hazard to workers shall be enclosed in standard guards.

(4) All vehicles operated after dark or in any area of reduced visibility shall be equipped with head lights and backup lights which adequately illuminate the direction of travel for the normal operating speed of the vehicle. The vehicle shall also be equipped with tail lights which are visible enough to give sufficient warning to surrounding traffic at the normal traffic operating speed.

(5) All vehicles operated in areas where overhead hazards exist shall be equipped with an overhead guard for the protection of the operator.

(6) Where vehicles are so constructed and operated that there is a possibility of the operator being injured by backing into objects, a platform guard shall be provided and so arranged as not to hinder the exit of the driver.

(7) Trucks, lift trucks and carriers shall not be operated at excessive rates of speed. When operating on tramways or docks more than six feet above the ground or lower level they shall be limited to a speed of not more than twelve miles per hour. When approaching blind corners they shall be limited to four miles per hour.

(8) Vehicles shall not be routed across principal thoroughfares while employees are going to or from work unless pedestrian lanes are provided.

(a) Railroad tracks and other hazardous crossings shall be plainly posted.

(b) Restricted overhead clearance. All areas of restricted side or overhead clearance shall be plainly marked.

(c) Pickup and unloading points. Pickup and unloading points and paths for lumber packages on conveyors and transfers and other areas where accurate spotting is required, shall be plainly marked and wheel stops provided where necessary.

(d) Aisles, passageways, and roadways. Aisles, passageways, and roadways shall be sufficiently wide to provide safe side clearance. One-way aisles may be used for two-way traffic if suitable turnouts are provided.

(9) Where an operator's vision is impaired by the vehicle or load it is carrying, he shall move only on signal from someone so stationed as to have a clear view in the direction the vehicle is to travel.

(10) Lift trucks shall be equipped, maintained and operated in compliance with the requirements of the general safety and health standard, WAC 296-24-230 through 296-24-23035.

(11) Load limits. No vehicle shall be operated with loads exceeding its safe load capacity.

(12) Vehicles with internal combustion engines shall not be operated in enclosed buildings or buildings with ceilings less than sixteen feet high unless the buildings have ventilation adequate to maintain air quality as required by the general occupational health standard, chapter 296-62 WAC.

(13) Vehicles shall not be refueled while motor is running. Smoking or open flames shall not be allowed in the refueling area.

(14) No employee other than trained operators or mechanics shall start the motor of, or operate any log or lumber handling vehicle.

(15) All vehicles shall be equipped with brakes capable of holding and controlling the vehicle and capacity load upon any grade or incline over which they may operate.

(16) Unloading equipment and facilities.

(a) Machines used for hoisting, unloading, or lowering logs shall be equipped with brakes capable of controlling or holding the maximum load in midair.

(b) The lifting cylinders of all hydraulically operated log handling machines, or where the load is lifted by wire rope, shall be equipped with a positive device for preventing the uncontrolled lowering of the load or forks in case of a failure in the hydraulic system.

(c) A limit switch shall be installed on powered log handling machines to prevent the lift arms from traveling too far in the event the control switch is not released in time.

(d) When forklift-type machines are used to load trailers, a means of securing the loading attachment to the fork shall be installed and used.

(e) A-frames and similar log unloading devices shall have adequate height to provide safe clearance for swinging loads and to provide for adequate crotch lines and spreader bar devices.

(f) Log handling machines used to stack logs or lift loads above operator's head shall be equipped with overhead protection.

(g) Unloading devices shall be equipped with a horn or other plainly audible signaling device.

(h) Movement of unloading equipment shall be coordinated by audible or hand signals when operator's vision is impaired or operating in the vicinity of other employees.

Lift trucks regularly used for transporting peeler blocks or cores shall have tusks or a similar type hold down device to prevent the blocks or cores from rolling off the forks.

(17) Where spinners are used on steering wheels, they shall be of the automatic retracting type or shall be built into the wheel in such a manner as not to extend above the plane surface of the wheel. Vehicles equipped with positive anti-kickback steering are exempted from this requirement.

(18) Mechanical stackers and unstackers shall have all gears, sprockets and chains exposed to the contact of workers, fully enclosed by guards as required by WAC 296-78-710 of this chapter.

(19) Manually operated control switches shall be properly identified and so located as to be readily accessible to the operator. Main control switches shall be so designed that they can be locked in the open position.

(20) Employees shall not stand or walk under loads being lifted or moved. Means shall be provided to positively block the hoisting platform when employees must go beneath the stacker or unstacker hoist.

(21) No person shall ride any lift truck or lumber carrier unless a suitable seat is provided, except for training purposes.

(22) Unstacking machines shall be provided with a stopping device which shall at all times be accessible to at least one employee working on the machine.

(23) Floor of unstacker shall be kept free of broken stickers and other debris. A bin or frame shall be provided to allow for an orderly storage of stickers.

(24) Drags or other approved devices shall be provided to prevent lumber from running down on graders.

(25) Liquefied petroleum gas storage and handling. Storage and handling of liquefied petroleum gas shall be in accordance with the requirements of WAC 296-24-475 through 296-24-47517 of the general safety and health standards.

(26) Flammable liquids. Flammable liquids shall be stored and handled in accordance with WAC 296-24-330 through 296-24-33019 of the general safety and health standards.

(27) Guarding side openings. The hoistway side openings at the top level of the stacker and unstacker shall be protected by enclosures of standard railings.

(28) Guarding hoistway openings. When the hoist platform or top of the load is below the working platform, the hoistway openings shall be guarded.

(29) Guarding lower landing area. The lower landing area of stackers and unstackers shall be guarded by enclosures that prevent entrance to the area or pit below the hoist platform. Entrances should be protected by electrically interlocked gates which, when open, will disconnect the power and set the hoist brakes. When the interlock is not installed, other positive means of protecting the entrance shall be provided.

(30) Lumber lifting devices. Lumber lifting devices on all stackers shall be designed and arranged so as to minimize the possibility of lumber falling from such devices.

(31) Inspection. At the start of each work shift, equipment operators shall inspect the equipment they will use for evidence of failure or incipient failure. Equipment found to have defects which might affect the operating safety shall not be used until the defects are corrected.

(32) Cleaning pits. Safe means of entrance and exit shall be provided to permit cleaning of pits.

(33) Preventing entry to hazardous area. Where the return of trucks from unstacker to stacker is by mechanical power or gravity, adequate signs, warning devices, or barriers shall be erected to prevent entry into the hazardous area.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. 06-05-027, § 296-78-835, filed 2/7/06, effective 4/1/06; 03-06-076, § 296-78-835, filed 3/4/03, effective 8/1/03. Statutory Authority: Chapter 49.17 RCW. 96-17-056, § 296-78-835, filed 8/20/96, effective 10/15/96. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-18-029 (Order 81-21), § 296-78-835, filed 8/27/81.]

WAC 296-78-840 Loading, piling, storage and conveying.

[Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-18-029 (Order 81-21), § 296-78-840, filed 8/27/81.]

WAC 296-78-84001 Loading, piling, storage and conveying—General. (1) Units or loads of lumber built up for transportation by overhead cranes, lift trucks, auto trucks, or manually or mechanically operated transfers shall be provided with at least one set of stickers for each eighteen inches in height of unit or load. One set of stickers shall be not more than six inches from the top of units of lumber up to three inch dimension. Where dimension of material is greater than three inches, a set of stickers shall be placed under the top layer. Stickers shall extend the full width of the package, shall be uniformly spaced, and shall be aligned one above the other. Stickers may be lapped with a minimum overlapping of twelve inches. Stickers shall not protrude more than two inches beyond the sides of the package.

(2) Lumber loading. Loads shall be built and secured to insure stability in transit.

(3) Units or loads of lumber shall not be lifted or moved until all workers are in the clear.

(4) Gradient of roll sets or roll cases over which units of lumber are to be moved shall not exceed three percent. The movement of units shall be under control at all times.

(5) Stacking of lumber in yards, either by units or in block piles, shall be conducted in a safe and orderly manner.

(6) Foundations for piling lumber in yards shall be capable of supporting the maximum applied load without tipping or sagging.

(7) The height of stacked units in storage areas shall not exceed seven of the usual four foot units, subject to the following qualifications:

(a) Units of lumber shall not be stacked more than four high unless two or more stacks of units are tied together with ties.

(b) Long units of lumber shall not be stacked upon shorter packages except where a stable pile can be made with the use of package separators.

(c) In unit package piles, substantial polsters or unit separators shall be placed between each package directly over the stickers.

(8) Wooden horses used for loading preformed loads of lumber shall be of material not less than four by six inches in cross section net measure.

(9) Unstable piles. Piles of lumber which have become unstable shall be immediately made stable or removed.

(10) Lift boards or pallets shall be loaded in such a manner as to prevent material from spilling or the material shall be secured with a binder.

(11) Packing rooms shall be kept free of debris and chutes shall be equipped with a means of slowing down the materials.

(12) Sorting chains shall be provided with a stopping device which shall at all times be readily accessible to at least one employee working on the chain.

(13) The inside of the walkway of all green chains and sorting tables shall be provided with a standard toeboard.

(14) Rollers or other devices shall be provided for removing heavy dimension lumber from the cabin or table.

(15) Roll casings and transfer tables shall be cleaned regularly and shall be kept reasonably free from debris.

(16) In all permanent installations, green chains and sorting tables shall be roofed over to provide protection from inclement weather. Normal work stations shall be provided with a drained work surface which is evenly floored of non-slip material.

(17) Power driven rolls shall be operated in a manner to prevent end collisions.

(18) The space between live rolls shall be filled in on either side of crosswalks with material of structural strength to withstand the load imposed with a four to one safety factor.

(19) The driving mechanism of live rolls shall be guarded wherever exposed to contact.

(20) Live rolls shall be replaced when their surface develops a break or hole.

(21) Guarding. Spiked live rolls shall be guarded.

(22) Ramps or skidways used to transfer lumber or materials from one level to another shall be provided with all safeguards necessary for the protection of workers.

(23) Landings on a lower level where lumber or timbers are discharged over ramps or skidways shall be provided with a solid bumper not less than six inches in height at the outer edge. Such landing shall be maintained in good repair at all times.

(24) Ramps or skidways shall be so arranged that the person putting lumber down shall have a clear view of the lower landing. Lumber or timbers shall not be put down until all workers are in the clear.

(25)(a) The under face of all ramp or skidway landings shall be fenced off or other positive means provided to prevent persons from walking out under dropping timber.

(b) Return strands of sorting table ramp chains shall be supported by troughs of sufficient strength to support the weight of a broken chain.

[Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-18-029 (Order 81-21), § 296-78-84001, filed 8/27/81.]

WAC 296-78-84003 Conveyors. (1) Construction, operation, and maintenance of conveyors shall be in accordance with American National Standard B20.1 - 1957, Safety Code for Conveyors, Cableways and related equipment.

(2) Conveyor troughs in which the working strands of a conveyor operate shall be of ample dimension and strength to carry a broken chain and shall afford effective protection to all employees.

(3) When the return strand of a conveyor operates within seven feet of the floor there shall be a trough provided of suf-

ficient strength to carry the weight resulting from a broken chain.

(4) When the return strands of a conveyor pass over passageways or work areas such guards shall be placed under them as will effectively protect workers.

(5) When the working strand of a conveyor crosses within three feet of the floor level in passageways, the trough in which it works shall be bridged the full width of the passageway.

(6) Where conveyor, idler pulleys or other equipment is located over or dangerously near burning refuse, any worker going to such location shall use a safety line which shall be securely fastened to his body and tended by a helper.

(7) Conveyors shall be provided with an emergency panic-type stopping device which can be reached by a person in a sitting position on the conveyor. Such device shall be located near the material entrance to each barker, chipper, hog, saw, or similar type of equipment except where the conveyor leading into such equipment is under constant control of an operator who has full view of the material entrance and is located or restrained where he/she cannot possibly fall onto the conveyor. The device shall stop the conveyor a sufficient distance away from the hazard to prevent injury or further injury by the hazard.

(8) Screw or auger type conveyor troughs and boxes shall be equipped with covers. If it is not practical to cover the troughs or boxes, other equivalent type guards shall be provided.

[Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-18-029 (Order 81-21), § 296-78-84003, filed 8/27/81.]

WAC 296-78-84005 Dry kilns. (1) Transfer, kiln and dolly tracks shall be properly maintained at all times and shall have a grade of not more than one and one-fourth percent. Bumpers or stops shall be installed at the ends of all tracks capable of stopping a normal load for which the track is installed. A means shall be provided for chocking or blocking cars.

(2) Doors.

(a) Main kiln doors. Main kiln doors shall be provided with a method of holding them open while kiln is being loaded.

(b) Counterweights on vertical lift doors shall be boxed or otherwise guarded.

(c) Means shall be provided to firmly secure main doors, when they are disengaged from carriers and hangers, to prevent toppling.

(3) Kilns whose operation requires inside inspection shall be maintained with not less than eighteen inches clearance between loaded cars and the walls of the kiln. The requirements for personal protective equipment specified in WAC 296-800-160, safety and health core rules, and chapter 296-842 WAC, Respirators, shall be complied with.

(4) Kiln loads shall be equipped or arranged for easy attachment and detachment of transfer cables. Means for stopping kiln cars shall be available at all times.

(5) Cars shall not be moved until tracks are clear and workers are out of the bight of transfer lines.

(6) When kiln or dolly loads of lumber are permitted to coast through or adjacent to any work area, audible warning shall be given.

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(7) Stickers shall not be allowed to protrude more than two inches from the sides of kiln stacks.

(8) Yards and storage areas shall be kept reasonably free of debris and unnecessary obstruction. Warning signs shall be conspicuously posted wherever there is danger from moving vehicles or equipment.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. 05-20-055, § 296-78-84005, filed 10/3/05, effective 12/1/05; 05-03-093, § 296-78-84005, filed 1/18/05, effective 3/1/05. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 01-11-038, § 296-78-84005, filed 5/9/01, effective 9/1/01. Statutory Authority: Chapter 49.17 RCW. 96-17-056, § 296-78-84005, filed 8/20/96, effective 10/15/96; 94-20-057 (Order 94-16), § 296-78-84005, filed 9/30/94, effective 11/20/94. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-18-029 (Order 81-21), § 296-78-84005, filed 8/27/81.]

WAC 296-78-84007 Chippers and hogs. (1) Chippers. The feed system to the chipper shall be arranged so the operator does not stand in direct line with the chipper spout (hopper). The chipper spout shall be enclosed to a height or distance of not less than forty inches from the floor or the operator's station. A safety belt and lifeline shall be worn by workers when working at or near the spout unless the spout is guarded. The lifeline shall be short enough to prevent workers from falling into the chipper.

(2) Hog mills shall be provided with feed chutes so designed and arranged that from no position on the rim of the chute shall the distance to the knives or feed roll be less than forty inches. Baffles shall be provided which shall effectively prevent material from being thrown from the mill.

(3) Employees feeding hog mills shall be provided with safety belts and lines, which they shall be required to use at all times, unless otherwise protected from any possibility of falling into the mill.

[Statutory Authority: Chapter 49.17 RCW. 96-17-056, § 296-78-84007, filed 8/20/96, effective 10/15/96. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-18-029 (Order 81-21), § 296-78-84007, filed 8/27/81.]

WAC 296-78-84009 Bins and bunkers. (1) Bins, bunkers, hoppers, and fuel houses. Guarding. Open bins, bunkers, and hoppers whose upper edges extend less than three feet above working level shall be equipped with standard handrails and toeboards, or have their tops covered by a substantial grill or grating with openings small enough to prevent a person from falling through.

(2) Fuel hoppers shall be provided with doors that may be remotely operated.

(3) Fuel hoppers shall be provided with platforms with standard railings and adequately lighted for the protection of workers taking out fuel.

(4)(a) Fuel bins shall be provided with an approved railed platform or walkway near the top or other approved means, for the use of employees engaged in dislodging congested fuel. No employee shall enter any fuel bin except where adequately safeguarded.

(b) Recognizing however, the varying designs of fuel storage vaults and the type of fuel handled and certain peculiar local conditions, the adequacy of safety devices shall be determined by a duly authorized representative of the department of labor and industries, division of industrial safety and health.

(c) During operations when the flow of normal fuel is interrupted but dust from operating sanders is received in the bin, workers shall not enter the fuel bin until the flow of sander dust has been discontinued and the dust has settled.

(d) Use of wheeled equipment to load bins. Where automotive or other wheeled equipment is used to move materials into bins, bunkers, and hoppers, adequate guard rails shall be installed along each side of the runway, and a substantial bumper stop provided when necessary.

[Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-18-029 (Order 81-21), § 296-78-84009, filed 8/27/81.]

WAC 296-78-84011 Burners. (1) Burners and smoke stacks other than the self-supporting type shall be adequately guyed. Buckle guys shall be installed if burner or stack is more than fifty feet in height.

(2) Runway. The conveyor runway to the burner shall be equipped with a standard handrail. If the runway crosses a roadway or thoroughfare, standard toeboards shall be provided in addition.

[Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-18-029 (Order 81-21), § 296-78-84011, filed 8/27/81.]

Chapter 296-79 WAC

SAFETY STANDARDS FOR PULP, PAPER, AND PAPERBOARD MILLS AND CONVERTERS

WAC

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DISPOSITION OF SECTIONS FORMERLY CODIFIED IN THIS CHAPTER

296-79-060	Protection from radiation. [Order 74-24, § 296-79-060, filed 5/6/74; Order 70-6, § 296-79-060, filed 7/10/70, effective 8/10/70.] Repealed by 99-16-083, filed 8/3/99, effective 11/3/99. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050.
296-79-255	Safety procedure for handling liquid sulfur. [Order 74-24, § 296-79-255, filed 5/6/74.] Repealed by 99-16-083, filed 8/3/99, effective 11/3/99. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050.
296-79-27001	Barkers, chippers, and hog feed devices. [Order 74-24, § 296-79-27001, filed 5/6/74.] Repealed by 99-16-083, filed 8/3/99, effective 11/3/99. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050.
296-79-29019	Guarding hand knives and sharpening steels. [Order 74-24, § 296-79-29019, filed 5/6/74.] Repealed by 99-16-083, filed 8/3/99, effective 11/3/99. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050.
296-79-29025	Repairing shredders. [Order 74-24, § 296-79-29025, filed 5/6/74.] Repealed by 99-16-083, filed 8/3/99, effective 11/3/99. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050.
296-79-31005	Adhesive system. [Order 74-24, § 296-79-31005, filed 5/6/74.] Repealed by 99-16-083, filed 8/3/99, effective 11/3/99. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050.
296-79-31007	Printing and cutting. [Order 74-24, § 296-79-31007, filed 5/6/74.] Repealed by 99-16-083, filed 8/3/99, effective 11/3/99. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050.
296-79-31011	Power lifts on gluers, tapers and stitchers. [Order 74-24, § 296-79-31011, filed 5/6/74.] Repealed by 99-16-083, filed 8/3/99, effective 11/3/99. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050.
296-79-31013	Strapping-banding operations. [Order 74-24, § 296-79-31013, filed 5/6/74.] Repealed by 99-16-083, filed 8/3/99, effective 11/3/99. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050.

WAC 296-79-010 Scope and application. (1) This chapter applies to establishments, firms, persons and corporations that manufacture, process, store, finish, or convert pulp, paper or paperboard and includes all buildings, machinery, and equipment.

(2) This chapter shall augment the Washington state general safety and health standards (chapter 296-24 WAC), general occupational health standards (chapter 296-62 WAC), and safety and health core rules (chapter 296-800 WAC). In the event of any conflict between any portion of this chapter and any portion of any of the general application standards, the provisions of this chapter 296-79 WAC, shall prevail.

(3) The rules contained in this chapter are minimum requirements and the use of additional guards, or other

means, methods or procedures may be needed to make the work or place of work safe.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 01-11-038, § 296-79-010, filed 5/9/01, effective 9/1/01; 99-16-083, § 296-79-010, filed 8/3/99, effective 11/3/99; Order 74-24, § 296-79-010, filed 5/6/74; Order 70-6, § 296-79-010, filed 7/10/70, effective 8/10/70.]

WAC 296-79-011 Definitions. "Authorized" - One who is qualified by reason of training and to whom the responsibility to perform a specific assignment has been given by the employer.

"Guarded" - The means to remove the likelihood of approach or contact by persons or objects to a point of danger.

"Knowledgeable" - The demonstrated ability to communicate the safe work practices required to perform a job or task correctly.

"Qualified" - One who is familiar with the construction and operation of the equipment and the duties of the position they may be filling. This includes being aware of the hazards of the job and the means and procedures necessary to eliminate or control those hazards.

"Training" - The procedure that must establish and document the employee's competency in the work practices that they are required to perform.

"Shall" or "must" as used in this standard mean the requirement is compulsory.

"May" or "should" as used in this standard identify recommendations or suggestions only.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-16-083, § 296-79-011, filed 8/3/99, effective 11/3/99.]

WAC 296-79-020 General requirements. (1) House-keeping.

(a) Floors must be kept reasonably clear of spilled or leaking oil, grease, water, broke, etc., that may cause slipping, tripping or falling. Nonskid type surfacing must be installed in vehicular or pedestrian traffic areas where slipping hazards otherwise would exist.

In areas where it is not possible to keep the floor free of materials which cause a slipping hazard, mats, cleats, or other suitable materials which will effectively minimize or eliminate the hazard must be installed.

(b) Hoses, cords, slings or similar items or equipment must be stored in such a manner that they will not create a hazard.

(2) Storage and transportation of materials. Materials, objects or equipment must be stored or transported by methods which will prevent them from falling, tipping or rolling.

(3) Warning of open manholes or excavations. Open manholes or excavations must be:

- Roped off, barricaded, or adequately safeguarded when located in or adjacent to walkways, aiseways, or roadways.
- Provided with warning lights or lanterns during periods of darkness or reduced visibility.

(4) Training. Employees must receive proper instruction and be familiar with safe operating procedures:

- (a) Before they supervise the operation, or make adjustments to any machine or equipment.

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(b) To be able to cope with emergencies arising from breaks, ruptures, or spills which would create a hazardous condition.

(c) For lifting and moving objects. Mechanical devices should be used or employees should ask for assistance in lifting or moving heavy objects.

(d) On prompt reporting of any faulty equipment or hazardous condition to the person in charge.

(5) Working alone. When an employee is assigned to work alone in a remote or isolated area, procedures must be developed to ensure:

- That the employee reports by use of radio or telephone to someone periodically; or
- At reasonable intervals a designated person must check on the employee; and
- All persons involved in working alone are advised of the procedures to be followed.

(6) Exits from hazardous areas. Where physically and reasonably possible, there must be at least two unobstructed exits from any hazardous area. Such exits should be on opposite walls.

(7) Safe work area. Sufficient clearance must be maintained between machines to allow employees a safe work area.

(8) Protection from overhead hazard. Warning signs/devices must be:

- Placed in conspicuous locations below areas where overhead work is being done and
- Removed promptly when work is completed and the overhead hazard no longer exists.

(9) Welding areas protected.

(a) Areas in which welding is being done must be screened or barricaded to protect persons from flash burns, when practical.

(b) If the welding process cannot be isolated, all persons who may be exposed to the hazard of arc flash must be properly protected.

(10) Testing safety devices. Brakes, back stops, anti-run-away devices, overload releases, emergency stops, and other safety devices must be inspected and tested frequently to ensure that all are operative and maintained in good repair.

(11) Starting and stopping devices.

• Electrically or manually operated power starting or stopping devices must be provided within easy reach of the operator from the normal operating position.

• If necessary for safety of the operation, the machine must be so equipped that retarding or braking action can be applied at the time of or after the source of power is deactivated.

(12) Interlocks:

Interlocks that affect the safety of employees must not be bypassed except where the employer demonstrates that alternate procedures or devices provide a level of safety for employees equivalent to that provided by the safety interlock. Interlocks are considered to be bypassed anytime the designed control strategy is bypassed by means including, but not limited to, a temporary wiring change, physical interference or a temporary software change of "force."

Prior to bypassing a safety interlock the employer must:

- Develop a written procedure detailing how the bypass will be accomplished and the alternate means of protecting employees.

- Inform affected employees of all pertinent information including at a minimum the reason for the change, the date of the change, who is responsible for the change, and approximately how long the change will be in effect.

- Post appropriate warning of the change on the equipment or area.

(13) Designing control systems. Employers must ensure that all control systems are designed to:

- Ensure that the system does not create an unsafe state that endangers personnel.

- Ensure that when control systems fail, the equipment being controlled fails to a safe state.

- Have an independent method to safely stop the process or equipment, such as a hardwired emergency stop button or other controls that deenergize the system, or independent methods to force the system to a safe state.

(14) Compressed air.

(a) Compressed air must not be used for cleaning clothing that is being worn, or if it will endanger persons in the area.

(b) Sections of high pressure air hoses must be properly coupled and have safety chains or equivalent safety device attached between the sections (30 psi or more is high pressure air).

(15) Punch bars. Open pipes must not be used as punch bars if the use would create a hazard.

(16) Saw table limit stop or extension. Employees must be protected from contact with the front edge of a circular saw by:

- A limit stop which will prevent the forward swing of the cutting edge from extending beyond the edge of the table or

- Installation of a table extension.

(17) Powder-actuated tools.

- Powder-actuated tool design, construction, operation and use shall comply with all requirements specified in "safety requirements for powder actuated fastening systems," (see chapter 296-24 WAC, Part H-1).

- A careful check must be made to ensure that no cartridges or charges are left where they could enter equipment or be accidentally discharged in any area where they could create a fire or explosion hazard.

(18) Ladders required on waterfront docks. Employers must ensure that either permanent ladders or portable ladders:

- Are readily available for emergency use on all waterfront docks.

- Extend from the face of the dock to the water line at its lowest elevation.

- Are installed at intervals not to exceed 400 feet.

- Are noticeable by painting the dock area immediately adjacent to the ladder with a bright color which contrasts with the surrounding area.

- Have been secured with a suitable method.

Note: When working on or around water also see WAC 296-800-160.

(19) Prevent overhang while removing materials. Extreme care must be taken to prevent material from creating an overhang while removing the materials from piles or bins.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 01-11-038, § 296-79-020, filed 5/9/01, effective 9/1/01; 99-16-083, § 296-79-020, filed 8/3/99, effective 11/3/99. Statutory Authority: RCW 49.17.040 and 49.17.050. 82-13-045 (Order 82-22), § 296-79-020, filed 6/11/82; Order 77-12, § 296-79-020, filed 7/11/77; Order 74-24, § 296-79-020, filed 5/6/74; Order 70-6, § 296-79-020, filed 7/10/70, effective 8/10/70.]

WAC 296-79-030 Guards and guarding. For additional guarding requirements see chapter 296-806 WAC, Machine safety.

(1) Safeguarding specific areas, machines or conditions. Certain equipment, tools, machines, and areas present definite hazards and must be safeguarded by compliance with the following requirements:

(a) Broke shredders. Cutting heads must be completely enclosed except for opening at feed side sufficient only to permit entry of stock. The enclosure must be:

- Bolted or locked in place, and

- Of solid material or with mesh or other openings not exceeding 1/2 inch.

(b) Stitching or sewing machine. Carton or bag stitching machines must be properly safeguarded to prevent persons from coming in contact with the stitching head and other pinch or nip points.

(c) Beaters and pulpers.

(i) A guardrail of standard height must be installed when the top edge of vessels or tubs is less than standard height guardrails above the floor or operator's platform. If necessary for the protection of the person feeding equipment, an intermediate guardrail or other suitable protection shall be installed.

(ii) Beater rolls must be provided with covers.

(d) First dryer. A permanent guard or apron guard, or both, must be installed to protect workers from any exposed ingoing nip of the first dryer drum in each section if the area is accessible to workers while the dryer is in operation.

(e) Floor and drain openings. Floor and drain openings in walkways and general work areas must be covered with material or gratings with openings no larger than 2" in the narrow dimension.

(f) Mechanical devices to dump chip cars, trucks or trailers.

- When using mechanical equipment to elevate the front end of the chip containers for dumping into a hopper, the shear area between the floor and the elevated section must be safeguarded.

- The pit area must be adequately safeguarded or barricaded.

- Safeguards must be installed around the exposed sides of a chip hopper.

(2) Replacing guards. All permanent guards must be replaced or adequate temporary safeguards provided before a machine is put into operation.

(3) Protection from moving materials. When material, such as chunks, slivers, cants, or logs, could be thrown or flipped by a saw, barker, or other machines, adequate barricades, screens, netting, or other safeguards must be provided and maintained.

(4) Protection for areas where guards are impractical. When normal guarding is impractical:

- The hazard must be reduced to a minimum by use of safety chains, lifelines, signs or other reasonable means, and

- Areas which present a hazard which cannot be reasonably safeguarded must be identified by use of paint or other materials.

(5) Knives and scissors.

(a) Knives used for chip or hog fuel machines, or guillotine cutters, must be secured in properly constructed containers during transportation.

(b) Workers must be furnished properly designed and constructed sheaths for safely carrying knives and scissors used for cutting or trimming pulp and paper.

(c) Tables where paper is being cut must be equipped with sheaths or shelves for safe storage of knives and scissors.

(d) Sharp edged slitter knives subject to accidental contact must be effectively guarded. Carriers must be provided and used when transporting or carrying sharp edged slitter knives.

(e) Hand knives and sharpening steels used in paper preparation, must be provided with guards at the junction of the handle and the blade. Utility knives with blade exposure two and one-half inches or less are exempted from this requirement.

(6) Safeguard for foot operated treadle switch used to activate power driven equipment. Foot operated treadle switches used for activation of power driven equipment must be protected by a stirrup type guard or equivalent protection must be provided to prevent accidental activation.

(7) Automatic pressure actuated stopping devices. Hand fed machines and other moving equipment which create shear or pinch points which cannot be reasonably guarded may be safeguarded by the installation of pressure activated bars or sensing devices which, when contacted, will automatically stop the machine or equipment.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060. 04-14-028, § 296-79-030, filed 6/29/04, effective 1/1/05. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-16-083, § 296-79-030, filed 8/3/99, effective 11/3/99; Order 74-24, § 296-79-030, filed 5/6/74; Order 70-6, § 296-79-030, filed 7/10/70, effective 8/10/70.]

WAC 296-79-040 Fire protection, ignition sources and means of egress. For fire protection, ignition source, and means of egress requirements see chapter 296-24 WAC, Parts G-1 and G-3, WAC 296-800-300 of the safety and health core rules, and chapter 296-811 WAC, Fire brigades.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. 06-01-073, § 296-79-040, filed 12/20/05, effective 3/1/06. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 01-11-038, § 296-79-040, filed 5/9/01, effective 9/1/01; 99-16-083, § 296-79-040, filed 8/3/99, effective 11/3/99; Order 74-24, § 296-79-040, filed 5/6/74; Order 70-6, § 296-79-040, filed 7/10/70, effective 8/10/70.]

WAC 296-79-050 Personal protection clothing and equipment. See WAC 296-800-160 for additional personal protective equipment requirements.

(1) Rings or other jewelry that could create a hazard should not be worn by employees while in the performance of their work.

(2) Protective footwear.

- Employees who work in areas where there is a possibility of foot injury due to falling or rolling objects must wear safety type footwear.

- Employers will supply shoe guards and toe protectors.

- Employers must also make safety shoes available for purchase by employees at not more than actual cost to the employer.

(3) Calks or other suitable footwear that will afford reasonable protection from slipping must be:

- Worn while working on logs.

- Made available at not more than actual cost to the employer.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 01-11-038, § 296-79-050, filed 5/9/01, effective 9/1/01; 99-16-083, § 296-79-050, filed 8/3/99, effective 11/3/99. Statutory Authority: Chapter 49.17 RCW. 94-20-057 (Order 94-16), § 296-79-050, filed 9/30/94, effective 11/20/94; 89-11-035 (Order 89-03), § 296-79-050, filed 5/15/89, effective 6/30/89. Statutory Authority: RCW 49.17.040 and 49.17.050. 83-24-013 (Order 83-34), § 296-79-050, filed 11/30/83; 82-13-045 (Order 82-22), § 296-79-050, filed 6/11/82; Order 74-24, § 296-79-050, filed 5/6/74; Order 70-6, § 296-79-050, filed 7/10/70, effective 8/10/70.]

WAC 296-79-070 Illumination. (1) Illumination required. Lighting that is adequately adjusted to provide a margin of safety for all work tasks must be provided and maintained.

(a) The minimum level of task lighting for all indoor activities must be an average of ten-foot candles measured thirty inches above the floor or at the task.

(b) The minimum level of task lighting for all outdoor activities must be an average of five-foot candles measured thirty inches above the working surface or at the task.

(2) If general lighting is not provided throughout the work area, the employer must provide illumination which is adequately adjusted to provide visibility of nearby objects that might be potential hazards or to see to operate emergency control or other equipment. The minimum level of nontask lighting for all indoor and outdoor activities must be an average of three-foot candles measured thirty inches above the floor or working surface.

Note: This section establishes minimal levels of illumination for safety purposes only. Guidelines pertaining to optimal levels of lighting and illumination may be found in practice for Industrial Lighting, ANSI/IES RP7-1979. The minimum levels specified in subsections (1) and (2) of this section represent averages with the lowest level in an area to be no less than fifty percent of the indicated value.

(3) Emergency or secondary lighting system required.

(a) There must be an emergency or secondary lighting system that can be actuated immediately upon failure of the normal power supply system. The emergency or secondary lighting system must provide illumination in the following areas:

- Wherever it is necessary for workers to remain at their machine or station to shut down equipment in case of power failure.

- At stairways and passageways or aisles used by workers as an emergency exit in case of power failure.

(b) Emergency lighting facilities must be checked at least every 30 days for mechanical defects. Defective equipment must be given priority for repair schedule.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-16-083, § 296-79-070, filed 8/3/99, effective 11/3/99; Order 74-24, § 296-79-070, filed 5/6/74; Order 70-6, § 296-79-070, filed 7/10/70, effective 8/10/70.]

WAC 296-79-080 Elevators, manlifts and other lifting devices. (1) All elevators, manlifts or other lifting devices must be installed and maintained in conformity with the requirements specified in the Washington state elevator laws and regulations adopted by the elevator section of the department of labor and industries.

(2) Inspection of elevators, etc., for acid towers.

(a) Outside elevators must be inspected daily during winter months when ice materially affects safety.

(b) Elevators, runways, stairs, etc., for acid towers must be inspected monthly for defects that may occur because of exposure to acid or corrosive gases.

(3) Respirators on elevators. Elevators located in areas where exposure to potentially harmful concentrations of toxic substances may occur must be equipped with an adequate supply of respirators to protect the maximum number of passengers.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-16-083, § 296-79-080, filed 8/3/99, effective 11/3/99; Order 74-24, § 296-79-080, filed 5/6/74; Order 70-6, § 296-79-080, filed 7/10/70, effective 8/10/70.]

WAC 296-79-090 Electrical equipment and distribution. All electrical installations and electrical utilization equipment must comply with chapter 296-24 WAC, Part L, and WAC 296-800-280.

(1) Operator controlled devices. Push buttons, selector switches, remote control switches, automatic circuit activating devices, and other control circuit type devices must be marked to indicate their function and the equipment they control.

(2) Posting equipment automatically activated or remotely controlled. If it will create a hazard to personnel, equipment which is automatically activated or remotely controlled must be posted, warning persons that machine may start automatically.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 01-11-038, § 296-79-090, filed 5/9/01, effective 9/1/01; 99-16-083, § 296-79-090, filed 8/3/99, effective 11/3/99. Statutory Authority: Chapter 49.17 RCW. 91-24-017 (Order 91-07), § 296-79-090, filed 11/22/91, effective 12/24/91; Order 74-24, § 296-79-090, filed 5/6/74; Order 70-6, § 296-79-090, filed 7/10/70, effective 8/10/70.]

WAC 296-79-100 Floors, platforms, stairways, ladders, loading docks. See chapter 296-24 WAC, Part J, and chapter 296-800 WAC.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 01-11-038, § 296-79-100, filed 5/9/01, effective 9/1/01; 99-16-083, § 296-79-100, filed 8/3/99, effective 11/3/99; Order 74-24, § 296-79-100, filed 5/6/74; Order 70-6, § 296-79-100, filed 7/10/70, effective 8/10/70.]

WAC 296-79-110 Elevated runways and ramps used by vehicles. (1) Runways and ramps must:

(a) Be cleated, grooved, rough surfaced, or covered with a material that will minimize the danger of skidding.

(b) Not have a maximum incline exceeding 20° from horizontal if used for wheeled equipment.

(2) Guarding exposed sides.

• Elevated ramps or runways used for the travel of wheeled equipment must have exposed sides guarded with a substantial bull rail or shear rail of sufficient height to prevent wheeled equipment from going over the rail.

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• If elevated ramps or runways are used by pedestrians, standard guardrails must be installed on runways wherever the height exceeds 4 feet above the adjacent area except where used for loading or unloading purposes.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-16-083, § 296-79-110, filed 8/3/99, effective 11/3/99; Order 74-24, § 296-79-110, filed 5/6/74; Order 70-6, § 296-79-110, filed 7/10/70, effective 8/10/70.]

WAC 296-79-120 Scaffolds, construction, use and maintenance. See General safety and health standards, chapter 296-24 WAC, Part J-2 or Safety standards for construction work, chapter 296-155 WAC, Part J-1.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 01-11-038, § 296-79-120, filed 5/9/01, effective 9/1/01; 99-16-083, § 296-79-120, filed 8/3/99, effective 11/3/99; Order 74-24, § 296-79-120, filed 5/6/74; Order 70-6, § 296-79-120, filed 7/10/70, effective 8/10/70.]

WAC 296-79-130 Crossovers, aisles, passages. See chapter 296-24 WAC, Part D, for additional requirements for aisles and passages.

(1) Clearances to be marked. Low clearance areas under conveyors which could present a hazard to mobile equipment operations must be identified by a suitable means, such as signs, contrasting colors, or tell-tales.

(2) Crossovers over obstructions in passageways. Cross-overs must be provided where employees are required to cross over transmission drive lines or other permanent obstructions in passageways or walkways.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-16-083, § 296-79-130, filed 8/3/99, effective 11/3/99; Order 74-24, § 296-79-130, filed 5/6/74; Order 70-6, § 296-79-130, filed 7/10/70, effective 8/10/70.]

WAC 296-79-140 Installation, inspection, and maintenance of pipes, piping systems, and hoses. (1) Definitions applicable to this section.

"Hazardous material system" - any system within the following classifications:

• Flammable or explosive - any system containing materials which are hazardous because they are easily ignited and create a fire or explosion hazard, defined by NFPA as Class I liquids;

• Chemically active or toxic - any system containing material which offers corrosion or toxic hazard in itself or can be productive of harmful gases upon release, defined by NFPA 704M as Class 3 and 4 materials;

• Thermally hazardous - any system above 130°F which exposes persons to potential thermal burns;

• Pressurized - any gaseous system above 200 psig or liquid system above 500 psig.

"Piping system" - any fixed piping, either rigid pipe or flexible hose, including all fittings and valves, in either permanent or temporary application.

(2) Design and installation. All new piping systems intended to be used in hazardous material service must be designed and installed in accordance with applicable provisions of the ASME Code for Pressure Piping or in accordance with applicable provisions of ANSI B31.1-1995 through B31.8-1995.

(2007 Ed.)

(3) Inspection and maintenance.

(a) The employer must develop a formal program of installation inspections and maintenance for all hazardous material piping systems. The program must be:

- Based on sound maintenance engineering principle, and
- Demonstrate due consideration for the manufacturing specifications of the pipe, hose, valves and fittings, the ambient environment of the installation and the corrosive or abrasive effect of the material handled within the system.

(b) Type and frequency of tests and/or inspections and selection of inspection sites must be adequate to give indications that minimum safe design operating tolerances are maintained. The tests may include visual or nondestructive methods.

(4) Inspection records.

(a) Results of inspections and/or tests must be maintained as a record for each system. Portions of systems that are buried or enclosed in permanent structures in such a manner as to prevent exposure to employees even in the event of a failure, may be exempted from the inspection requirements only.

• Past records may be discarded provided the current inspection report and the immediately preceding two reports are maintained.

• When a system is replaced, a new record must be established and all past records may be discarded.

(b) Upon request the records for each system must be made available for review by the department of labor and industries.

(5) Systems or sections of systems found to be below the minimum design criteria requirements for the current service must be repaired or replaced with component parts and methods which equal the requirements for new installations.

(6) Identification of piping systems.

(a) USAS A13.1-1956, "Scheme for Identification of Piping Systems," must be followed.

Positive identification of a piping system content:

• Must have a lettered legend giving the name of the content in full or abbreviated form, or a commonly used identification system.

• Must be made and maintained at suitable intervals and at valves, fittings, and on both sides of walls or floors as needed.

• May have arrows to indicate the direction of flow.

• May provide necessary supplementary information such as hazard of use. This may be done by additional legend or by color applied to the entire piping system or as colored bands. Legends may be placed on colored bands.

Examples of legend which may give both positive identification and supplementary information regarding hazards or use are:

Ammonia	Hazardous liquid or gas
Chlorine	Hazardous liquid or gas
Chlorine dioxide	Hazardous liquid or gas
Sulphur dioxide	Hazardous gas
Liquid caustic	Hazardous liquid
Liquid sulphur	Hazardous liquid
Sulphuric acid	Hazardous liquid

(2007 Ed.)

Sodium chlorate When dry, danger of fire or explosion

Note: Manual L-1, published by Chemical Manufacturers Association, Inc., is a valuable guide in respect to supplementary legend.

• When color, applied to the entire piping system or as colored bands, is used to give supplementary information it should conform to the following:

CLASSIFICATION	PREDOMINANT COLOR
F—Fire-protection equipment	Red
D—Dangerous materials	Yellow (or orange)
S—Safe materials	Green (or the achromatic colors, white, black, gray or aluminum)

and, when required,

P—Protective materials Bright blue

(b) When legend systems are used, legend boards showing the color and identification scheme in use must be prominently displayed at each plant. They must be located so that employees who may be exposed to hazardous material piping systems will have a frequent reminder of the identification program.

(c) All employees who work in the area of hazardous material piping systems must be given training in the color and identification scheme in use.

(7) Steam hoses. Steam hoses must be specifically designed to safely carry steam at any pressures to which they may be subjected.

[Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050, 02-12-098, § 296-79-140, filed 6/5/02, effective 8/1/02; 99-16-083, § 296-79-140, filed 8/3/99, effective 11/3/99. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240, 81-13-053 (Order 81-9), § 296-79-140, filed 6/17/81. Statutory Authority: RCW 49.17.040, 49.17.240, and chapters 43.22 and 42.30 RCW, 81-03-007 (Order 80-31), § 296-79-140, filed 1/8/81; Order 74-24, § 296-79-140, filed 5/6/74; Order 70-6, § 296-79-140, filed 7/10/70, effective 8/10/70.]

WAC 296-79-150 Powered industrial trucks and other equipment. Additional requirements on mobile equipment and lift trucks are in chapter 296-24 WAC, Part D.

(1) The operator of a power-driven vehicle must test the brakes, steering gear, lights, horns, warning devices, clutches, etc., before operating vehicle.

(2) Control levers of lift trucks, front end loaders, or similar types of equipment must not be operated except when the operator is in the proper operating position.

(3) No person may be permitted to ride on a powered hand truck unless it is so designed by the manufacturer. A limit switch must be on the operating handle—30 degrees each way from a 45-degree angle up and down.

(4) Employees must not work below the raised bed of a dump truck, raised buckets of front end loaders, raised blades of tractors or in similar positions without blocking the equipment in a manner that will prevent it from falling.

(5) Reporting suspected defects. If, in the opinion of the operator, a power-driven vehicle is unsafe, the operator must report the suspected defect immediately to the person in charge. Any defect that would make the vehicle unsafe to operate under existing conditions will be cause to take the

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vehicle out of service and it must not be put back into use until it has been made safe.

(6) Vehicle operators must have a reasonably unobstructed view of the direction of travel, or, where this is not possible, the operator must be directed by a person or by a safe guidance means or device. Where practical, mirrors must be installed at blind corners or intersections that will allow operators to observe oncoming traffic.

(7) Vehicles in congested areas must operate with a warning light.

(8) Passengers must not be permitted to ride with legs or arms extending outside any vehicle nor must they be permitted to ride unless a passenger seat or other protective device is provided.

(9) Guard on operator's platform. Every power truck operated from an end platform or standing position must be:

- Equipped with a platform extending beyond the operator's position, and
- Strong enough to withstand a compression load equal to the weight of the loaded vehicle applied along the longitudinal axis of the truck with the outermost projection of the platform against the flat vertical surface.

(10) Cleaning vehicles. All vehicles must be kept free of excessive accumulations of dust and grease that may present a hazard.

(11) Vehicles must be controlled manually while being pushed or towed except when a tow bar is used. Pushing of vehicles or railroad cars with the forks or clamps of a lift truck is prohibited.

(12) Aisles or passageways should be at least three feet wider than the widest vehicle or load traveling the aisle or passageway. When this clearance cannot be maintained, adequate precautions must be taken.

(13) The forks, clamps, or attachments of lift trucks must be kept as low as possible while the vehicle is moving.

(14) The hoisting of personnel by lift trucks must meet the requirements in WAC 296-24-230.

(15) Exhaust systems on lift trucks and jitneys shall be constructed to discharge either within 20 inches from the floor or 84 inches or more above the floor.

(16) Mobile equipment with an enclosed cab must be provided with an escape hatch or other method of exit in case the regular exit cannot be used.

(17) Suitable methods must be used or devices installed which will prevent the trailer from tipping while being loaded or unloaded.

(18) Whenever vehicles using LP gas as a fuel are parked overnight or stored for extended periods of time indoors, with the fuel container in place, the service valve of the fuel container must be closed.

(19) The use of spinners on steering wheels must be prohibited unless an anti-kick device is installed or the equipment has a hydraulic steering system.

(20) Rolls transported with a grab or clamp attachment must be carried with the core in a vertical position.

(21) When traveling empty with a grab or clamp attachment, the jaws or blades of those attachments must remain within the running lines of the lift truck.

(22) When transporting two or more rolls with a roll grab attachment, the bottom roll will have at least sixty percent of the grab attachment on it.

(23) When transporting two or more rolls or bales with a grab or clamp attachment, there must be no rolls or bales unsecured if there is risk of part or all of the load shifting or falling.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-16-083, § 296-79-150, filed 8/3/99, effective 11/3/99; Order 74-24, § 296-79-150, filed 5/6/74; Order 70-6, § 296-79-150, filed 7/10/70, effective 8/10/70.]

WAC 296-79-160 Requirements for cranes and hoists—See general safety and health standards (chapter 296-24 WAC, Part D). Grounding - Where conditions such as corrosive atmospheres, dirt, paint, rust, or other insulating materials prevent reliable metal-to-metal contact for grounding (bridge, wheel and its respective tracks), a separate ground conductor must be provided.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-16-083, § 296-79-160, filed 8/3/99, effective 11/3/99; Order 74-24, § 296-79-160, filed 5/6/74; Order 70-6, § 296-79-160, filed 7/10/70, effective 8/10/70.]

WAC 296-79-170 Requirements for crawler and truck cranes. (1) Boom length indicated. The length must be plainly marked on each boom section of a mobile crane having a sectioned boom.

(2) Radius or boom angle indicator. A radius or boom angle indicator must be installed where it is readily visible to the operator's normal operating position on all cranes having a movable working boom.

(3) Safety device for light fixtures. Any light fixtures attached to crane boom or machinery house must have a safety strap or other device attached which will prevent the fixture from falling.

(4) Boom stops. Boom stops must be:

- Installed to govern the upward travel of the boom to a safe limit.
- Of adequate strength to prevent the boom from traveling past the vertical position.

(5) Controls marked. Crane operating controls must be marked or an explanation of the controls' functions must be posted in full view of the operator.

(6) Locking hydraulic outriggers. Hydraulic outriggers must be:

- Equipped with a pilot operated check valve or
- Installed with a mechanical lock which will prevent outriggers from retracting in case of failure of the hydraulic system.

(7) Top of boom painted. The top six feet of the boom or jib must be painted bright yellow or other bright contrasting color if the boom is yellow.

(8) Warning devices. All cranes must be equipped with a suitable warning device such as a horn or whistle.

(9) Hook safety device. All hooks must be equipped with a safety device or other effective means must be used to prevent accidental unhooking of the load.

(10) Counterweight limited. The amount of crane counterweight must not exceed the maximum amount specified by the crane manufacturer.

(11) Use proper size wire rope for sheaves. The size and diameter of sheaves and wire rope must be compatible and follow the recommendations by the manufacturer, published

by the Wire Rope Institute or other acceptable engineering practices.

(12) Loading or unloading gear. Unloading gear such as grapples, tongs, and buckets, must not be left suspended when not in use or whenever the machine is unattended.

(13) No one under load. Personnel must not position themselves under crane loads and such loads must not be carried over workers.

(14) Operating clearance from stationary objects. Where the area is accessible to workers:

- A distance of 30 inches must be maintained between the outermost part of a revolving crane and any stationary object within the swing radius of the crane or

- The hazardous area must be temporarily guarded or barricaded.

(15) See WAC 296-24-960 when working around energized lines.

(16) Operators must avoid contacting overhead obstructions which may damage the boom or adversely affect stability. In instances where the operator may have difficulty in observing clearances, a signal person must be stationed where they can observe clearances and signal the operator.

(17) Safe travel across thoroughfares or railroad tracks.

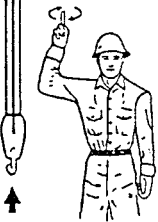
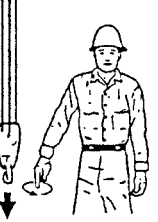

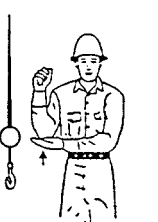
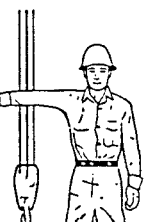
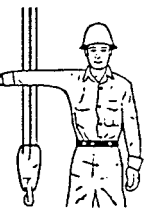
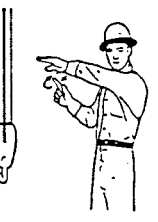
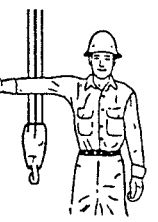
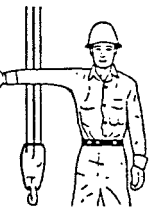
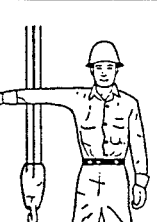
- When moving cranes, shovels or similar types of equipment across thoroughfares or railroad tracks and the operator does not have a clear vision of approaching traffic, a flagperson must be used.

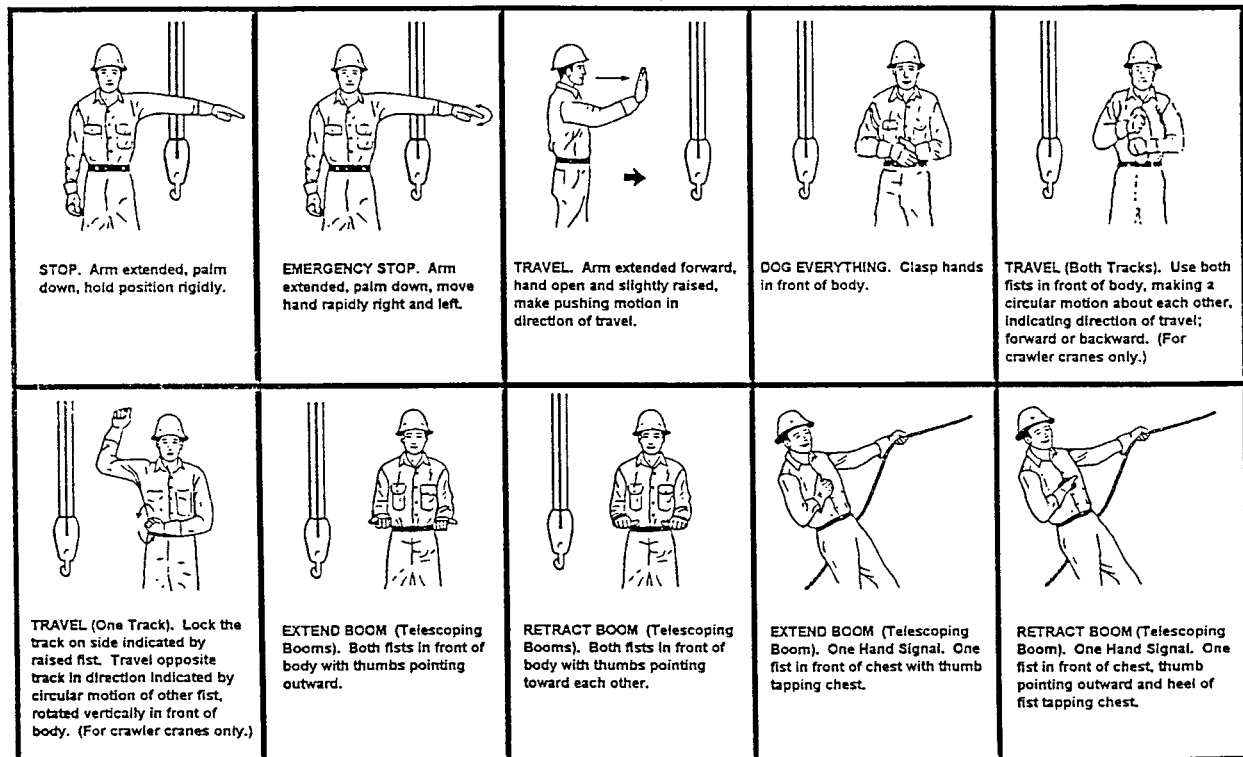
- The flag person must be stationed where the equipment operator can be signaled and other traffic can be controlled.

(18) Only a designated member of the crew may give signals to the crane operator. Exception: Anyone may give an emergency stop signal.

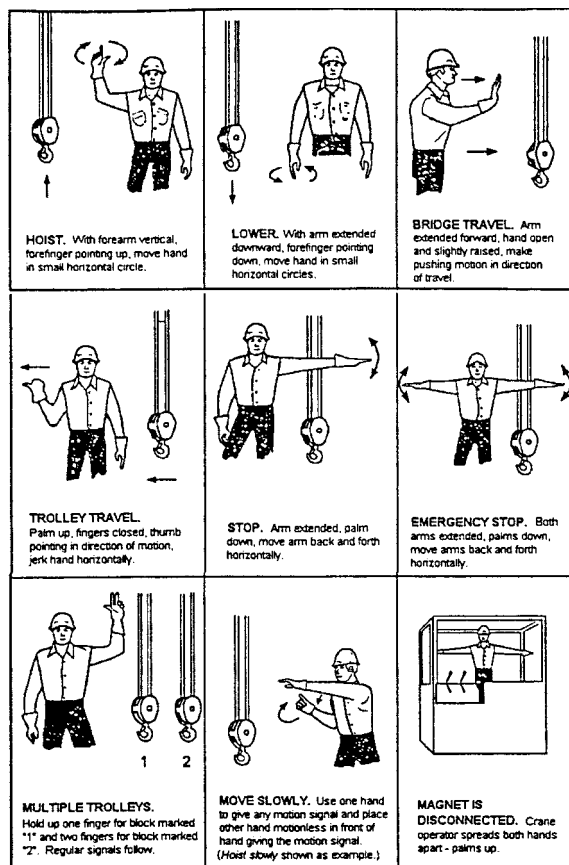
(19) Standard hand signals. When using visual signals, standard hand signals as illustrated, must be used for directing crane operators.

CRAWLER, LOCOMOTIVE, AND TRUCK CRANES STANDARD HAND SIGNALS FOR CRANES

 <p>HOIST. With forearm vertical, forefinger pointing up, move hand in small horizontal circle.</p>	 <p>LOWER. With arm extended downward, forefinger pointing down, move hand in small horizontal circles.</p>	 <p>USE MAIN HOIST. Tap fist on head; then use regular signals</p>	 <p>USE WHIPLINE. (Auxiliary Hoist). Tap elbow with one hand; then use regular signals.</p>	 <p>RAISE BOOM. Arm extended, fingers closed, thumb pointing upward.</p>
 <p>LOWER BOOM. Arm extended, fingers closed, thumb pointing downward.</p>	 <p>MOVE SLOWLY. Use one hand to give any motion signal and place other hand motionless in front of hand giving the motion signal. (Hoist slowly shown as example.)</p>	 <p>RAISE THE BOOM AND LOWER THE LOAD. With arm extended, thumb pointing up, flex fingers in and out as long as load movement is desired.</p>	 <p>LOWER THE BOOM AND RAISE THE LOAD. With arm extended, thumb pointing down, flex fingers in and out as long as load movement is desired.</p>	 <p>SWING. Arm extended, point with finger in direction of swing of boom.</p>



STANDARD HAND SIGNALS FOR CONTROLLING OVERHEAD AND GANTRY CRANES



[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-16-083, § 296-79-170, filed 8/3/99, effective 11/3/99. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-13-053 (Order 81-9), § 296-79-170, filed 6/17/81. Statutory Authority: RCW 49.17.040, 49.17.240, and chapters 43.22 and 42.30 RCW. 81-03-007 (Order 80-31), § 296-79-170, filed 1/8/81; Order 74-24, § 296-79-170, filed 5/6/74; Order 70-6, § 296-79-170, filed 7/10/70, effective 8/10/70.]

WAC 296-79-180 Privately owned standard gauge railroad operations. (1) Blue flag or light for railroad operations.

- A blue signal (blue flag or blue light for nonilluminated areas) must be displayed at one or both ends of an engine, car(s), or train, to indicate that workers are under or about the railway equipment.

- When such warning devices are displayed, the equipment must not be coupled to or moved.

- On a dead end spur, a blue signal may be displayed adjacent to the switch opening while cars are being loaded or unloaded.

(2) Blue signals and derails.

- Work being carried on which subjects employees to the hazard of moving railroad equipment must be protected by blue signals and locked derails set a minimum of 50 feet from one or both ends of the worksite.

- Where the spur track switch is less than 50 feet from the work location, the switch padlocked in the open position will take the place of the derail and the blue signal must be placed at that point.

(3) Signals unobscured. Equipment which would obscure the blue signal must not be placed on the track.

(4) Signals displayed by each maintenance crew. Each maintenance crew must display and remove its own set of blue signals.

(5) Warning device.

- A flashing warning light or other device must be installed near any opening which leads to a passageway crossing railroad tracks adjacent to the building.

- Such light or device must be activated prior to any switching or movement of railroad equipment to warn workers of the dangerous condition in the area.

(6) Cars to be immobilized. Spotted cars must either have brakes set, wheels blocked, or must be coupled to other immobilized cars to prevent each car from rolling.

(7) Crawling under or between coupled cars prohibited. Workers must not crawl under or pass between coupled railroad cars to cross tracks.

(8) Warning at road crossing. An audible whistle, horn or bell must be sounded by the locomotive engineer to give adequate warning prior to switching across any road crossing.

(9) Flying switches. When switching railroad equipment in congested areas or across roadways or walkways "flying switches" must be prohibited.

(10) Car opening devices. All box car doors and associated mechanisms must be carefully inspected before workers attempt to open or close them. If the door is not free and cannot be opened safely by hand, equipment must be provided, where necessary, and a safe method must be used to open or close the door.

(11) Clearance from railroad tracks. Materials must not be stacked or piled closer than 8 1/2' from the center line of a standard gauge railroad track.

(12) Operating under limited visibility conditions.

Unless trains are operated in a manner to allow the operator to see a safe stopping distance in the direction of travel, a flagperson(s) must be positioned in such a manner to safely direct movement of the train.

Flagperson must:

- Remain within sight of the operator, or
- Be equipped to maintain visual or voice communication with the operator as conditions dictate.

(13) A flagperson must direct the movement of trains being moved across main roads or thoroughfares which do not have adequate traffic warning lights, bells or barricades.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-16-083, § 296-79-180, filed 8/3/99, effective 11/3/99. Statutory Authority: RCW 49.17.040, 49.17.240, and chapters 43.22 and 42.30 RCW. 81-03-007 (Order 80-31), § 296-79-180, filed 1/8/81; Order 74-24, § 296-79-180, filed 5/6/74; Order 70-6, § 296-79-180, filed 7/10/70, effective 8/10/70.]

WAC 296-79-190 Loading and unloading materials from railway cars or trucks. (1) Safe access to top of railroad cars or trucks. Platforms with ladders or stairways must be installed or made available when needed so that workers may safely gain access to and perform work on the top of railroad cars or trucks when ladders are not installed on such equipment.

(2) Nets not to cover ladders. Rolled chip nets must not be positioned where they cover the ladders on railroad cars or trucks.

(3) Tipple type unloading device. When a tipple type unloading device is used for removing chips from cars, the cars must be properly secured in place and all employees must be in the clear before dumping operation is started.

(4) Handling pulp chips and hog fuel from trucks and trailers.

(a) Elevating platform-type or cable-lift type unloading devices must have adequate back bumper stops.

(b) Side rails or other positive means to prevent the trailer from falling must be used while unloading single trailer units.

(c) The truck or tractor must be secured when elevating platform lifts are used to elevate both the tractor and trailer or single unit trucks.

(d) All personnel must be clear of all hoisting or elevating mechanisms before dumping commences.

(e) No person is allowed in any truck while the truck is being elevated.

(5) Taking chip samples. A safe area and suitable device must be provided for the chip tester to use while taking chip samples.

(6) Deraill required for hazardous materials. To protect tank cars from being moved while loading or unloading hazardous materials by use of pipes or hoses, a derail and blue flag must be set between the spotted tank cars and any moving railroad equipment.

(7) Moving cars by tugger or powered drums. When rail cars are moved by a tugger or powered drums with cables, a means should be provided or the area barricaded in such a manner that the moving cables do not endanger the workers.

(8) Handling pulpwood from flatcars and all other railroad cars.

(a) Railroad flatcars for the conveyance of pulpwood loaded parallel to the length of the car must be equipped with safety-stake pockets.

(b) Where pulpwood is loaded crosswise on a flatcar sufficient stakes of sizes not smaller than 4 by 4 inches must be used to prevent the load from shifting.

(c) Cutting stakes on log bundles. When it is necessary to cut stakes:

- Those on the unloading side should be partially cut through first, and then the binder wires cut on the opposite side.

- Wire cutters equipped with long extension handles must be used.

- No person is permitted along the dumping side of the car after the stakes have been cut.

(d) Cutting bands on log bundles. When cutting bands on bundled logs, workers must:

- Position themselves in a safe location;
- Not use double bitted axes for cutting bands;
- Use caution to prevent being struck by ends of bands being cut and;

- If needed, wear personal protective equipment.

(e) Flatcars and all other cars must be:

- Chocked during unloading and,
- Rail clamping chocks must be used when equipment is not provided with hand brakes.

(9) Handling pulpwood from trucks.

(a) Cutting of stakes and binder wires must be done in accordance with (8)(c) of this section.

(b) Binders or stakes must not be loosened or removed:

- Until the logs are secured and held by equipment which will prevent them from rolling off the truck, or

- Barricades will prevent logs from striking the person removing the binders or stakes.

(c) Where binder chains and crane slings are used:

- The crane slings must be attached and taut before the binder chains are released and,
- The hooker must see that the helper is clear before signaling for the movement of the load.

(d) The truck driver must:

- Leave the truck cab and remain in the clear, preferably in a designated area, and
- Be in clear view of the unloading equipment operator while the unloader is approaching the loaded truck.
- After a complete load is lifted as a unit and held stationary, the truck driver may enter the cab and drive forward from under the suspended load.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-16-083, § 296-79-190, filed 8/3/99, effective 11/3/99; Order 74-24, § 296-79-190, filed 5/6/74; Order 70-6, § 296-79-190, filed 7/10/70, effective 8/10/70.]

WAC 296-79-200 Bridge and dock plates. Properly constructed bridge or dock plates must be furnished and used to bridge the area between a dock and truck or railroad car. The following requirements must be complied with for construction and use of such bridge or dock plates:

(1) Strength. The plate must be capable of supporting three times the maximum load to which it will be subjected.

(2) Stops. The plates must be provided with positive stops to prevent the plates from shifting or moving.

(3) Plates.

- The plates must bear solidly on the dock and on the floor of the car or truck.

- Plates with excessive teeter or rock must be repaired or replaced.

(4) Upturn or lip on plates. The sides of bridge or dock plates must have an upturn or lip of at least 4 inches covering the area between the edge of the loading dock and edge of car or truck floor whenever this distance exceeds 18 inches to prevent wheeled equipment from running off the sides.

(5) Bearing surface. Bridge or dock plates must have at least 6 inches bearing surface on the loading dock.

(6) Suitable fittings to be used. Bridge or dock plates intended to be moved by mechanized equipment must be designed for this purpose or appropriate fittings or attachments must be used.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-16-083, § 296-79-210, filed 8/3/99, effective 11/3/99; Order 74-24, § 296-79-210, filed 5/6/74; Order 70-6, § 296-79-210, filed 7/10/70, effective 8/10/70.]

WAC 296-79-210 For conveyors, maintenance and inspection. See chapter 296-24 WAC, Part D.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-16-083, § 296-79-210, filed 8/3/99, effective 11/3/99; Order 74-24, § 296-79-210, filed 5/6/74; Order 70-6, § 296-79-210, filed 7/10/70, effective 8/10/70.]

WAC 296-79-220 Deactivating and lockout requirements. (1) Control requirement. Whenever the unexpected startup of machinery, the energizing of electrical circuits, the flow of material in piping systems or the removal of guards would endanger workers, such exposure must be prevented

by deactivating and locking out the controls as required by chapter 296-803 WAC, Lockout/tagout (control of hazardous energy).

EXCEPTION: In instances where any machine must be in motion for proper adjustment, for removal or replacement of materials from the machine, for machine clothing changes or for roping up, the following precautions must be observed:

- The machine must be operated at thread or jog speed;
- Extension tools which minimize personnel exposure must be used where possible;
- The operating controls must at all times be under the control of a qualified operator or craftsman;
- All personnel must remain in view of the operator or other means of communication shall be established;
- All personnel must be beyond the reach of other machine section(s) or element(s) which offer potential exposure. In any instance where such potential exposure exists, such other section(s) or element(s) must be separately locked out.

(2) Group lockout or tagout devices. Procedures must meet the minimum requirements of chapter 296-803 WAC, Lockout/tagout (control of hazardous energy). The employer must develop a specific written group lockout or tagout procedure and review it with the local plant labor/management safety committee before it can be utilized.

(3) Temporary or alternate power.

- Whenever possible, temporary or alternate sources of power to the equipment being worked on must be avoided.

- If the use of such power is necessary, all affected employees must be informed and the source of temporary or alternate power must be identified.

(4) Deactivating piping systems.

(a) Nonhazardous systems must be deactivated by at least locking out either the pump or a single valve.

(b) Lockout of the following hazardous material piping systems must isolate to the worksite and must provide protection against backflow where such potential exists:

- Gaseous systems that are operated at more than 200 psig;

- Systems containing any liquid at more than 500 psig;
- Systems containing any material at more than 130°F;
- Any cryogenic system,
- Systems containing material which is chemically hazardous as defined by NFPA 704 1996 Class 3 and 4;
- Systems containing material classified as flammable or explosive as defined in NFPA Class I.

Such systems must be deactivated by one of the following:

- Locking out both the pump and one valve between the pump and the worksite;

- Locking out two valves between the hazard source and the worksite;

- Installing and locking out a blank flange between the hazard source and worksite. When a blank flange (blind) is used to separate off portions of hazardous material systems from a portion which is in operation, the employer must develop and implement a procedure for installation and removal of the blank flange that will ensure all hazards have been eliminated;

- Line breaking between the hazard and the worksite;

- On hazardous chemical systems where the methods already listed are not feasible, or by themselves create a hazard, single valve closure isolation may be used provided that potentially exposed employees are adequately protected by other means such as personal protective equipment.

- On all steam systems where the methods already listed are not feasible, single valve closure isolation may be used provided that the system is equipped with valves meeting all requirements of ANSI B16.5-1996 and ANSI B16.34-1996. Where single valve isolation is used, the steamline must also be equipped with a bleed valve downstream from the valve closure to prove isolation of the worksite.

Note: Bleeder valves are recommended behind all primary valve closures on hazardous material systems. Consideration should be given to the nature of the material in the system when installing bleeder valves. To assist in preventing plugging, bleeder valves should generally be installed in the top one-third of the pipe. Short exhaust pipes should be installed on bleeder valves to direct the flow of possible escapement away from the position where an employee would normally be when using the bleeder valve.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060, 04-15-105, § 296-79-220, filed 7/20/04, effective 11/1/04. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050, 99-16-083, § 296-79-220, filed 8/3/99, effective 11/3/99. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240, 81-13-053 (Order 81-9), § 296-79-220, filed 6/17/81. Statutory Authority: RCW 49.17.040, 49.17.240, and chapters 43.22 and 42.30 RCW, 81-03-007 (Order 80-31), § 296-79-220, filed 1/8/81; Order 76-7, § 296-79-220, filed 3/1/76; Order 74-24, § 296-79-220, filed 5/6/74; Order 70-6, § 296-79-220, filed 7/10/70, effective 8/10/70.]

WAC 296-79-230 Confined spaces. (1) Entry into confined spaces must be in accordance with chapter 296-62 WAC, Part M.

(2) All equipment necessary to perform the work, including safety equipment, must be at the confined space and must be inspected or tested to assure that it functions properly.

(3) Protective equipment that will afford proper protection to the employee from any condition which may arise based on the hazard assessment, must be available either at the entrance or within the confined space.

(4) Electrical circuits leading into confined spaces where electrical conductive hazards exist must be protected by a ground fault interrupter or the voltage must not exceed 24 volts.

(5) Battery operated flashlights or lantern must be readily available for use by persons working in areas where escape would be difficult if normal lighting system should fail. Only explosion-proof type lights may be taken into any atmosphere which may contain an explosive concentration.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050, 99-16-083, § 296-79-230, filed 8/3/99, effective 11/3/99; Order 74-24, § 296-79-230, filed 5/6/74; Order 70-6, § 296-79-230, filed 7/10/70, effective 8/10/70.]

WAC 296-79-240 Storage of fuel, oil, flammables and chemicals. See chapter 296-24 WAC, Part E.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050, 99-16-083, § 296-79-240, filed 8/3/99, effective 11/3/99; Order 76-7, § 296-79-240, filed 3/1/76; Order 74-24, § 296-79-240, filed 5/6/74; Order 70-6, § 296-79-240, filed 7/10/70, effective 8/10/70.]

WAC 296-79-250 Safety procedure for handling sulfur. (1) Sulfur burners. Sulfur-burner houses must:

- Be safely and adequately ventilated, and

- Every precaution taken to guard against dust, explosion hazards and fires, in accordance with American National Standards Z9.2-1979 (R1991).

(2) Handling/storage of dry sulfur.

(a) Nonsparking tools and equipment must be used in handling dry sulfur.

(b) Sulfur storage bins must be kept free of sulfur dust accumulation, and buildings should be designed with explosion relief, in accordance with the latest revision of American National Standard Z9.2-1979 (R1991).

(c) Sulfur-melting equipment must not be located in the burner room.

(3) Handling/storage of liquid sulfur.

(a) Each facility utilizing liquid sulfur must:

- Carefully examine its own handling system and
- Formulate a written procedure for maintenance, receiving, storing and using this product.

(b) A minimum of two trained employees must be assigned when a tank car is first opened in preparation for venting and unloading.

(c) Approved respiratory protective equipment for H2S exposure, chemical splash goggles and gloves must be worn when performing this work.

(d) Spark producing or electric operated tools must not be used to unplug railroad car vents.

(e) Where venting can cause harmful exposure to other unprotected workers in the area:

- A venting system must be installed which adequately contains any gas escapement from a tank car while venting.
- The vented gas must be carried to a safe location for discharge or circulated through a scrubbing system.
- The venting system must be connected before valves which would allow escapement are opened.

(f) Smoking, open burning or welding must be prohibited while unloading is in process or danger of gas escapement exists.

(4) Acid plant - Protection for employees.

(a) Where lime slaking takes place, employees must be provided with rubber boots, rubber gloves, protective aprons, and eye protection. A deluge shower and eyewash must be provided to flush the skin and eyes to counteract lime and acid burns.

(b) Hoops for acid storage tanks must be:

- (i) Made of round rods rather than flat strips, and
- (ii) Regularly inspected and safety maintained.

(c) Sulphur burner ignitors must have a means to automatically shut off the fuel to the ignitor when the flame has been extinguished.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050, 99-16-083, § 296-79-250, filed 8/3/99, effective 11/3/99. Statutory Authority: Chapter 49.17 RCW, 91-24-017 (Order 91-07), § 296-79-250, filed 11/22/91, effective 12/24/91; Order 76-7, § 296-79-250, filed 3/1/76; Order 74-24, § 296-79-250, filed 5/6/74; Order 70-6, § 296-79-250, filed 7/10/70, effective 8/10/70.]

WAC 296-79-260 Pulpwood storage and handling.

(1) Piling of logs.

- Logs must be piled or removed in an orderly manner.
- The piles must be stable and individual logs properly placed to prevent them from rolling or falling.

- The ends must not project into walkways, roadways or areas reserved for other purposes and
- Sufficient clearance must be maintained for safe travel of all vehicles and loads.

(2) Wire rope doglines used for towing or rafting must not be used when:

- They acquire jiggers to the extent that they present a hazard to the employees handling them; or
- When they are weakened to the extent that they are hazardous.

(3) Boom sticks must be capable of safely supporting the weight imposed upon them.

(4) Stiff booms must be:

- Made by fastening not less than two boom sticks together.
- Not less than 36 inches in width measured from outside to outside of the outer logs.
- Fastened together with not less than 4 inch by 6 inch cross ties or cable lashing properly recessed into notches in the boom sticks and secured.

(5) Pike poles must be kept in good repair. Conductive pike poles must not be used when it is possible that they may come in contact with electrical conductors.

(6) Logs must not be lifted over employees and employees must stay clear of the hazardous area near where logs are being lifted or swung.

(7) Storing or sorting on water or any boom work other than boom boat operations, must require a minimum of two persons.

(8) All mobile equipment used to handle logs, blocks or cants must be provided with adequate overhead protection.

(9) Unloading lines must be so arranged that it is not necessary for the worker to attach them on the pond or dump side of the load.

(10) Unauthorized vehicles and unauthorized foot traffic must not be allowed in any active sorting, storing, loading, or unloading areas.

(11) Log unloaders must not be moved about the premises with loads raised higher than absolutely necessary.

(12) Jackets or vests of fluorescent or other high visibility material must be worn by persons working on dry land log storage.

(13) All log dumps must be periodically cleared of bark and other debris.

(14) Handles of wood hooks must be locked to the shank to prevent them from rotating.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-16-083, § 296-79-260, filed 8/3/99, effective 11/3/99; Order 74-24, § 296-79-260, filed 5/6/74; Order 70-6, § 296-79-260, filed 7/10/70, effective 8/10/70.]

WAC 296-79-270 Pulpwood preparation. (1) Barker feeding devices must be designed in such a manner that the operator will not be required to hold or make any physical contact with any log or bolt during the barking operations.

(2) A dog or locking device in addition to the motor switch, clutch, belt shifter or other power disconnecting device must be installed on all intermittent barking drums to prevent the drum from moving while it is being filled or emptied.

(3) Hydraulic barkers.

(a) The inlet and outlet areas of hydraulic barkers must be equipped with baffles or devices that will reasonably prevent material from flying out while the machine is in operation.

(b) The operator must be protected by at least five-ply laminated glass or material of equivalent strength.

(4) The high pressure hoses of hydraulic barkers must be secured in such a manner that the hose connection ends will be restrained if a hose connection fails.

(5) The feed operator's station must not be in direct line with the chipper blades. Suitable safeguards must be installed to prevent chips or chunks from being thrown out and striking the person feeding the machine.

(6) When the operator cannot readily observe the material being fed into the chipper, a mirror or other device must be installed in such a position that the ingoing material can be monitored.

(7) Metal bars or other nonchippable devices must not be used to clear jams or plug-up at the feed entrance to a chipper or hog while the machine is running.

(8) Water wheel speed governor.

- Water wheels, when directly connected to marker disks or grinders, must be provided with speed governors, if operated with gate wide open.

- Water wheels directly connected to pulp grinders must be provided with speed governors limiting the peripheral speed of the grinder to that recommended by the manufacturer.

(9) Knot cleaners of the woodpecker type.

- The operators of knot cleaners of the woodpecker type must wear eye protection equipment.

- Such knot cleaners should be enclosed to protect passersby from flying chips.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-16-083, § 296-79-270, filed 8/3/99, effective 11/3/99; Order 74-24, § 296-79-270, filed 5/6/74; Order 70-6, § 296-79-270, filed 7/10/70, effective 8/10/70.]

WAC 296-79-27003 Log hauls, slips, and carriages.

(1) Controls must be:

- Arranged to operate from a position where the operator will at all times be in the clear of logs, machinery, lines, and rigging.

- Marked to indicate their function.

(2) Log decks must be provided with effective means to prevent logs from accidentally rolling down the deck and onto the carriage or its runway.

(3) When needed for protection of personnel, an automatic stop or interlocking device must be installed on log hauls or slips. These devices are not a substitute for lockout.

(4) A barricade or other positive stop of adequate strength must be provided to protect the sawyer from rolling logs.

(5) Canting gear or other equipment must not hang over the log deck in such a manner as to endanger employees.

(6) The sawyer shall be primarily responsible for the safety of the carriage crew and offbearers and must exercise due care in the operation of the carriage and log turning devices.

(7) Feed works and log turning control levers must be so arranged that they may be secured when not in use and must be adequately guarded against accidental activation.

(8) A control device must be provided so that the sawyer may stop the head rig section of the mill without leaving the stand.

(9) An effective method of disengaging the head rig saws from the power unit must be installed on all head rigs where the power unit is not directly controlled by the sawyer.

(10) The sawyer must be safeguarded either by location or by use of substantial screens or approved safety glass.

(11) Carriages upon which employees are required to work must be solidly decked over and the employees properly protected.

(12) The feed control lever of friction or belt-driven carriage feed works must be designed to operate away from the saws or carriage track.

(13) A substantial stop or bumper must be installed at each end of the carriage run.

(14) Substantial sweeps must be installed in front of each carriage wheel. Such sweeps must extend to within 1/4 inch of the rails.

(15) Where power-operated log turners are used, carriage knees must be provided with goosenecks or other substantial means of protecting the carriage crew.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-16-083, § 296-79-27003, filed 8/3/99, effective 11/3/99; Order 74-24, § 296-79-27003, filed 5/6/74.]

WAC 296-79-27005 Band saws. (1) Band saws must be given a thorough daily inspection and any deficiency reported and corrected.

(2) Any band saw found to have developed a crack greater than one-tenth the width of the saw must be:

- Removed from service until the width of the saw is reduced to eliminate the crack,
- The cracked section is removed, or
- The development of the crack is arrested by welding.

(3) Band saws must not be continued in use on the head rig for which they have been designed after they have been reduced 40% in width.

(4) Band saw guides must be maintained in good condition and proper alignment at all times.

(5) All head band saw wheels must have a minimum rim thickness of 5/8 inches, except for a distance not to exceed one inch from the front edge of the wheel.

(6) Band saws must not be run at a speed in excess of the manufacturer's recommendations.

(7) A band wheel that has developed a crack in the rim must be immediately removed from service. If a crack has developed in a spoke, the wheel must be removed from service until properly repaired.

(8) All band wheel guards must be constructed of not lighter than ten U.S. Gauge metal, or not less than two-inch wood material or equivalent, attached to substantial frames. Necessary ventilating ports, not larger than two by four inches, and suitable doors or gates for the lubrication and repair of the saw will be permitted.

(9) Every band mill must be equipped with a saw catcher, rest or guard of substantial construction.

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(10) Each gang ripper of band or straight saw type must have the cutting edges of the saw guarded by a hood or screen substantially secured to the framework of the machine.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-16-083, § 296-79-27005, filed 8/3/99, effective 11/3/99; Order 74-24, § 296-79-27005, filed 5/6/74.]

WAC 296-79-27007 Circular saws speeds and repairs. (1) Circular saws must not be operated at speeds in excess of those specified by the manufacturers.

(2) Circular saws must be inspected for cracks each time the teeth are filed or set. They must be discontinued from use until properly repaired when found to have developed a crack exceeding the safe limits specified by the manufacturer.

(3) Damaged saws must be repaired only by persons experienced and knowledgeable in this type of work or by a manufacturers representative.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-16-083, § 296-79-27007, filed 8/3/99, effective 11/3/99; Order 74-24, § 296-79-27007, filed 5/6/74.]

WAC 296-79-27009 Slasher saws-tables. (1) Slasher saws must be guarded in accordance with WAC 296-79-030(3) of this chapter.

(2) Saws must be stopped and locked or tagged out whenever it is necessary for any person to be on the slasher table.

(3) Saws below table where not protected by the frame of the machine, the underside of the slasher saws must be adequately guarded.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-16-083, § 296-79-27009, filed 8/3/99, effective 11/3/99; Order 74-24, § 296-79-27009, filed 5/6/74.]

WAC 296-79-27011 Circular swing saws. (1) Each circular swing saw must be provided with a hood guard that completely encloses the upper half of the saw.

(2) Each swing saw must be equipped with a positive stop at the extent of the swing necessary to cut the material.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-16-083, § 296-79-27011, filed 8/3/99, effective 11/3/99; Order 74-24, § 296-79-27011, filed 5/6/74.]

WAC 296-79-27013 Drag saws—Fixed chain saws—Circular cut-off saws. (1) Saws must be so arranged that they will not project into any passageway when in an idle or working position. When existing conditions do not leave clear passage the saws must be fenced off in order to make it impossible for anyone to walk into them.

(2) Log decks must be equipped with a device to hold the material stable when being cut.

(3) Drag saws and fixed chain saws must be equipped with a device that will safely lock them in an "up" position.

(4) All persons must be in the clear before starting operations.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-16-083, § 296-79-27013, filed 8/3/99, effective 11/3/99; Order 74-24, § 296-79-27013, filed 5/6/74.]

WAC 296-79-27015 Construction and use of pulp-wood splitters. (1) The activating control unit for a splitter

must be of the clutch or positive acting type and must be so arranged and designed that it will not repeat without additional activation before starting a second cycle.

(2) The base or rest upon which the wood seats while being split must have a corrugated surface or other means shall be provided which will prevent the wood block or log from shifting as the pressure is applied.

(3) The splitter base or rest and wood to be split must be free of ice, snow, and chips.

(4) The splitter machine operator must have a clear, unobstructed view of the work area adjacent to the splitting operation when other workers must be in such area while blocks are being split.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-16-083, § 296-79-27015, filed 8/3/99, effective 11/3/99; Order 74-24, § 296-79-27015, filed 5/6/74.]

WAC 296-79-280 Chip and hog fuel storage. (1) Entry into bins and silos.

(a) Entry into chip bins and silos, must be in compliance with the requirements of confined space entry, WAC 296-79-230, of this chapter.

(b) Chip and sawdust bins. Steam or compressed air lances, or other safe methods, must be used for breaking bridges and hangups.

(c) Employees must be prohibited from working under or on top overhangs or bridges. Extreme care must be taken to prevent chips or hog fuel from creating an overhang or bridging.

(d) Hog fuel bins must be provided with an approved railed platform or walkways near the top or other approved means must be provided for use of employees engaged in dislodging hog fuel.

(2) Exterior chip and hog fuel storage.

(a) When mobile equipment is used on top of hog fuel or chip piles, a roll-over protection system must be installed on the equipment.

(b) If the cab is of the enclosed type, windshield wipers must be installed.

(c) If used during hours of darkness the area must be adequately illuminated or the equipment must have adequate lights to provide the operator sufficient illumination to safely perform the work.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-16-083, § 296-79-280, filed 8/3/99, effective 11/3/99; Order 74-24, § 296-79-280, filed 5/6/74; Order 70-6, § 296-79-280, filed 7/10/70, effective 8/10/70.]

WAC 296-79-290 Stock preparation and reprocessing.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-16-083, § 296-79-290, filed 8/3/99, effective 11/3/99; Order 74-24, § 296-79-290, filed 5/6/74; Order 70-6, § 296-79-290, filed 7/10/70, effective 8/10/70.]

WAC 296-79-29001 Digester valves and piping. (1) The blow valve of a digester must be arranged so as to be operated from another room, remote from safety valves.

(2) Heavy duty pipe, valves, and fittings must be used between the digester and blow pit, blowtanks and dumptanks. These valves, fittings, and pipes must be inspected at least

semiannually to determine the degree of deterioration and should be replaced when necessary.

(3) Digester blow valves or controls must be pinned or locked in closed position throughout the entire cooking period.

(4) Test holes in blow lines of piping systems must not be covered with insulation or other materials.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-16-083, § 296-79-29001, filed 8/3/99, effective 11/3/99; Order 74-24, § 296-79-29001, filed 5/6/74.]

WAC 296-79-29003 Warning of digester being blown. (1) Procedures must be developed to ensure that digester operators are aware of personnel entering hazardous areas.

- Audible warning signals and red warning lights must be installed in areas which may be hazardous to personnel while digesters are being blown.

- Such devices must be activated prior to blowing a digester and the warning lights must remain lighted as long as the hazard exists.

(2) Blowing digester. Blow-off valves must be opened slowly.

(3) After the digester has started to be blown, the blow-off valve must be left open, and the hand plate must not be removed until the person responsible signals the blow-pit person that the blow is completed. Whenever it becomes necessary to remove the hand plate to clear stock, operators must wear eye protection equipment and protective clothing to guard against burns from hot stock.

(4) Blow-pit hoops must be maintained in a safe condition.

(5) Where the processes of the sulfate and soda operations are similar to those of the sulfite processes, the standard of WAC 296-79-29001 and 296-79-29003, of this chapter, applies to both processes.

(6) Means must be provided so the digester cook can signal the employee in the chip bin before starting to load the digester.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-16-083, § 296-79-29003, filed 8/3/99, effective 11/3/99; Order 77-12, § 296-79-29003, filed 7/11/77; Order 76-7, § 296-79-29003, filed 3/1/76; Order 74-24, § 296-79-29003, filed 5/6/74.]

WAC 296-79-29005 Unplugging quick lime stoppages. Water must not be used to unplug quick lime stops or plugs in pipes or confined spaces.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-16-083, § 296-79-29005, filed 8/3/99, effective 11/3/99; Order 74-24, § 296-79-29005, filed 5/6/74.]

WAC 296-79-29007 Bleach plant. (1) Work areas used for preparation and processing of bleaching mixtures must be equipped with properly designed exhaust ventilation systems capable of clearing the area of toxic gases. See chapters 296-62 and 296-841 WAC.

(2) Bleaching containers, such as cells, towers, etc., except the Bellmer type, must be completely covered on the top, with the exception of one small opening large enough to allow filling but too small to admit a person.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060, 05-20-055, § 296-79-29007, filed 10/3/05, effective 12/1/05; 05-03-093, § 296-79-29007, filed 1/18/05, effective 3/1/05. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050, 99-16-083, § 296-79-29007, filed 8/3/99, effective 11/3/99; Order 74-24, § 296-79-29007, filed 5/6/74.]

WAC 296-79-29009 Audible alarm in bleach plant.

An audible alarm system must be installed and it must be activated whenever a serious leak or break develops in the bleach plant area which creates a health or fire hazard.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050, 99-16-083, § 296-79-29009, filed 8/3/99, effective 11/3/99; Order 74-24, § 296-79-29009, filed 5/6/74.]

WAC 296-79-29011 Pocket grinder doors. Doors of pocket grinders must be so designed and arranged as to keep them from closing accidentally.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050, 99-16-083, § 296-79-29011, filed 8/3/99, effective 11/3/99; Order 74-24, § 296-79-29011, filed 5/6/74.]

WAC 296-79-29013 Pulping device procedures. Each company must develop a safe procedure which shall be followed for feeding, clearing jams, or removing foreign objects from any pulping device. These procedures must comply with applicable provisions of this standard.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050, 99-16-083, § 296-79-29013, filed 8/3/99, effective 11/3/99; Order 74-24, § 296-79-29013, filed 5/6/74.]

WAC 296-79-29015 Off machine repulping devices.

(1) When fed manually from the floor above, conveniently located emergency stop devices must be provided at the top level.

(2) When fed from floor above:

- The chute opening, if less than standard guardrail height from the feed platform or floor, must be provided with a complete guardrail or other enclosure to standard guardrail height.

- Openings for manual feeding must be sufficient only for entry of stock and must be provided with at least two permanently secured crossrails, in accordance with, the general safety and health standards, WAC 296-24-75003.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050, 99-16-083, § 296-79-29015, filed 8/3/99, effective 11/3/99; Order 74-24, § 296-79-29015, filed 5/6/74.]

WAC 296-79-29017 Pulping device cleaning, inspection and repairing. When cleaning, inspecting or performing other work that requires that persons enter pulping devices, all control devices must be locked or tagged out in accordance with the requirements of this standard.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050, 99-16-083, § 296-79-29017, filed 8/3/99, effective 11/3/99; Order 74-24, § 296-79-29017, filed 5/6/74.]

WAC 296-79-29021 Shredders and blowers. (1) On manually fed broke shredders, the feed table must be of a height and distance from the knives as to prevent the operator from reaching or falling into the knives or the operator must be safeguarded by other acceptable means.

(2) A smooth-pivoted idler roll resting on the stock or feed table must be provided in front of feed rolls except when arrangements prevent the operator from standing closer than 36 inches to any part of the feed rolls.

(3) Any manually fed cutter, shredder, or duster must be provided with an idler roll as specified in (2) of this section or the operator shall use special hand-feeding tools.

(4) Blowers used for transporting materials must be provided with feed hoppers having outer edges located not less than 48 inches from the fan.

(5) The blower discharge outlets and work areas must be arranged to prevent material from falling on workers.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050, 99-16-083, § 296-79-29021, filed 8/3/99, effective 11/3/99; Order 74-24, § 296-79-29021, filed 5/6/74.]

WAC 296-79-29023 Clearing shredder jams. To clear jams or blockage to the machine, the operator must use objects which will not create a hazard. The use of metal bars for such purposes is prohibited.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050, 99-16-083, § 296-79-29023, filed 8/3/99, effective 11/3/99; Order 74-24, § 296-79-29023, filed 5/6/74.]

WAC 296-79-29027 Guillotine type roll splitters. (1)

The engaging control for activating the guillotine blade must be a "deadman type" switch that demands continuous operator activation and must be:

- A positive two-hand operating control, or
- Located far enough from the cutting location so that the operator cannot reach the blade during the cutting process.

(2) Personnel must not position any part of the body under the blade.

(3) Rolls must be in the horizontal position while being split.

(4) Rolls must be centered directly below the blade.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050, 99-16-083, § 296-79-29027, filed 8/3/99, effective 11/3/99; Order 76-7, § 296-79-29027, filed 3/1/76; Order 74-24, § 296-79-29027, filed 5/6/74.]

WAC 296-79-29029 Broke hole. (1) An alarm bell or flashing light must be actuated or other suitable warning must be given before dropping material through a broke hole when persons working below may be endangered.

(2) Broke holes must be guarded to the fullest extent possible consistent with operational necessities. The degree of guarding provided by standard height and strength guardrails will be considered as a minimum acceptable level of protection.

(3) When repulping devices or feed conveyor systems for repulping devices are located beneath broke holes, special precautions must be used.

- The broke hole opening must be reduced to the smallest practical dimension.

- If the broke hole opening is large enough to permit a worker to fall through and is not guarded at least to the equivalent degree of protection provided by standard guardrails, any employee pushing broke down the broke hole must wear a safety belt or harness attached to a lanyard, and

- The lanyard must be fastened in such a manner that it is impossible for the person to fall into the repulping device.

(4) Guarding to the equivalent degree of protection provided by standard guardrails and meeting the requirements of subsections (2) and (3), may be achieved by the use of guard bars separated no more than 15-1/2 inches in a vertical plane and 12 inches in a horizontal plane, or any other location within that segment.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-16-083, § 296-79-29029, filed 8/3/99, effective 11/3/99. Statutory Authority: RCW 49.17.040, 49.17.240, and chapters 43.22 and 42.30 RCW. 81-03-007 (Order 80-31), § 296-79-29029, filed 1/8/81; Order 74-24, § 296-79-29029, filed 5/6/74.]

WAC 296-79-29031 Industrial kiln guns and ammunition. The employer must ensure that there are written instructions, including safety procedures, for storing and operating industrial kiln guns and ammunition. All personnel working with this equipment must be instructed in these procedures and must follow them.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-16-083, § 296-79-29031, filed 8/3/99, effective 11/3/99; Order 74-24, § 296-79-29031, filed 5/6/74.]

WAC 296-79-29033 Chlorine dioxide system. See chapter 296-62 WAC, Part P and chapter 296-67 WAC, process safety management.

(1) Sodium chlorate.

(a) Personnel handling and working with sodium chlorate must be thoroughly instructed in precautions to be used in handling and special work habits.

(b) Facilities for storage and handling of sodium chlorate must be constructed so as to eliminate possible contact of dry or evaporated sodium chlorate with wood or other material which could cause a fire or explosion.

(c) Sodium chlorate facilities should be constructed with a minimum of packing glands, stuffing boxes, etc.

(2) Chlorine dioxide.

Chlorine dioxide generating and storage facilities must be placed in areas which are adequately ventilated and are easily kept clean of wood, paper, pulp, etc., to avoid contamination which might cause a reaction. This can be accomplished by placing these facilities in a separate room or in a designated outside space.

(3) General.

(a) Facilities handling sodium chlorate and chlorine dioxide must be declared "no smoking" areas and must have signs posted accordingly.

(b) Management shall be responsible for developing written instructions including safety procedures for operating and maintaining the generator and associated equipment. All personnel working on this equipment must be thoroughly trained in these procedures and must follow them. A periodic review of these procedures is recommended.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-16-083, § 296-79-29033, filed 8/3/99, effective 11/3/99; Order 74-24, § 296-79-29033, filed 5/6/74.]

WAC 296-79-29035 Piling and unpling pulp. (1) Piles of wet lap pulp (unless palletized) must be stepped back one-half the width of the sheet for each 8 feet of pile height. Sheets of pulp must be interlapped to make the pile secure. Pulp must not be piled over pipelines to jeopardize pipes, or

so as to cause overloading of floors, or to within 18 inches below sprinkler heads.

(2) Piles of pulp must not be undermined when being unpled.

(3) Floor capacities must be clearly marked on all floors.

(4) When sprinklers are used for fire protection in the storage area, baled paper and rags must be stored in stable piles which do not extend into the area necessary for the proper function of sprinkler systems.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-16-083, § 296-79-29035, filed 8/3/99, effective 11/3/99; Order 76-7, § 296-79-29035, filed 3/1/76; Order 74-24, § 296-79-29035, filed 5/6/74.]

WAC 296-79-29037 Chocking rolls. Rolls must be secured by chocks or other means to prevent movement when stored horizontally.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-16-083, § 296-79-29037, filed 8/3/99, effective 11/3/99; Order 74-24, § 296-79-29037, filed 5/6/74.]

WAC 296-79-300 Machine room equipment and procedures. (1) Pulp and paper machines must be equipped with emergency stopping control(s) which can be actuated quickly from all normal operating stations. If useful for the safety of personnel, the stopping control(s) must be interlocked with adequate retarding or braking action to stop the machine as quickly as is practical. The devices must consist of push buttons for electric motive power (or electrically operated engine stops), pull cords connected directly to the prime mover, control clutches, or other devices.

(2) Steps and footwalks along the fourdrinier/forming and press section must have nonslip surfacing and be complete with standard handrails, when practical.

(3) If a machine must be lubricated while in operation an automatic lubricating device must be provided or oil cups and grease fittings must be provided which can be serviced safely without exposing the worker to any hazards.

(4) All levers carrying weights must be so constructed that weights will not slip or fall off.

(5) Guarding inrunning nip points.

(a) The drums on pulp and paper machine winders.

(i) These drums must be provided with suitable guards to prevent a person from being caught between the roll and the front drum on the winder when the pinch point is on the operator's side.

(ii) Such guards must be interlocked with the drive mechanism to prevent the winder from running while the guard is not in place. Except that the winder may be wired to allow it to run at thread or jog speed only for adjustment and start up purposes while the guard is not in position.

(iii) A zero speed switch or locking device must be installed to prevent the guard from being removed while the roll is turning above thread or jog speed.

(b) Rewinders.

When rewinding large rolls and the nip point is adjacent to the normal work area.

- The nip point must be protected by a barrier guard and
- Such guard must be interlocked with the drive mechanism to prevent operating the machine above thread or jog speed without the guard in place and

- A zero speed switch must be installed to prevent the guard from being raised while the roll is turning.

(c) Inrunning nips where paper is not being fed into a calender must be guarded.

(6) An audible alarm must be sounded prior to starting up any section of a pulp or paper machine. Sufficient time must be allowed between activation of the alarm system and start up of the equipment to allow any persons to clear the hazardous area.

(7) When starting up a dryer section, steam to heat the drums must be introduced slowly and while the drums are revolving.

(8) A safe method must be used when starting paper into the nip of drum type reels or calender stacks. This may be accomplished by the use of feeder belts, carrier ropes, air carriage or other device or instrument.

- A rope carrying system should be used wherever possible at points of transfer, or

- Sheaves should be spaced so that they do not create a nip point with each other and the sheave and its support should be capable of withstanding the speed and breaking strength of the rope for which they are intended.

(9) Employees must not feed a stack with any hand held device which is capable of going through the nip.

(10) Employees must not attempt to remove a broken carrier rope from a dryer while the section is running at operating speed.

(11) Employees must stop the dryer to remove a wrap except in cases where it can be safely removed by using air or other safe means.

(12) To remove deposits from rolls, a specially designed scraper or tool shall be used. Scraping of rolls must be performed on the outgoing nip side.

(13) Doctor blades.

(a) Cleaning. Employees must not place their hands between the sharp edge of an unloaded doctor blade and the roll while cleaning the doctor blade.

(b) Doctor blades must have the sharp edges properly guarded during transportation and storage.

(c) Special protective gloves must be provided and must be worn by employees when filing or handling sharp edged doctor blades.

(14) Handling reels.

(a) Reels must stop rotating before being lifted away from reel frame.

Crane hooks must not be used to stop a turning reel.

(b) Exposed rotating reel shafts with square block ends must be guarded.

(c) The crane operator must ascertain that reels are properly seated at winder stand or at reel arms before they disengage the hooks.

(d) On stored reels, a clearance of at least 8 inches between the reels of paper must be maintained.

(15) All winder shafts must be equipped with a winder collar guide. The winder must have a guide rail to align the shaft for easy entrance into the opened rewind shaft bearing housing. If winder shafts are too heavy for manual handling, mechanical equipment must be used.

(16) Shaftless winders must be provided with a barrier guard of sufficient strength and size to confine the rolls in the event they become dislodged while running.

(17) All calender stacks and spreader bars must be grounded according to chapter 296-24 WAC, Part L, and WAC 296-800-280 as protection against shock induced by static electricity.

(18) Nonskid type surface required.

(a) All exposed sole plates between dryers, calenders, reels, and rewinders must have a nonskid type surface.

(b) A nonskid type surface must be provided in the work areas around the winders or rewinders.

(19) If a powered roll ejector is used it should be interlocked to prevent accidental actuation until the receiving platform or roll lowering table is in position to receive the roll.

(20) Employees must keep clear of hazardous areas around the lowerator, especially all lowerator openings in a floor and where roll is being discharged.

(21) Provision must be made to hold the rider roll when in a raised position unless counterbalancing eliminates the hazard.

(22) Drain openings in pits. Flush floor drain openings larger than 3 inches in diameter in the bottom of pits must be guarded to prevent workers from stepping through, while working in this area.

(23) Employees must not enter into or climb on any paper machine roll that is subject to free turning unless a positive locking device has been installed to prevent the roll from turning.

(24) The employer must ensure sufficient inspection and nondestructive examination of reel spool and calender roll journals. The type and frequency of testing must be adequate to detect indications of failure. Any reel spool or calender roll journal found to have an indication of failure must be removed from service. Nondestructive examination personnel must be qualified in accordance with SNT-TC 1A.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 01-11-038, § 296-79-300, filed 5/9/01, effective 9/1/01; 99-16-083, § 296-79-300, filed 8/3/99, effective 11/3/99. Statutory Authority: Chapter 49.17 RCW. 91-24-017 (Order 91-07), § 296-79-300, filed 11/22/91, effective 12/24/91. Statutory Authority: RCW 49.17.040, 49.17.240, and chapters 43.22 and 42.30 RCW. 81-03-007 (Order 80-31), § 296-79-300, filed 1/8/81; Order 76-7, § 296-79-300, filed 3/1/76; Order 74-24, § 296-79-300, filed 5/6/74; Order 70-6, § 296-79-300, filed 7/10/70, effective 8/10/70.]

WAC 296-79-310 Converting operations (bag and container manufacturing, printing, coating, finishing and related processes).

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-16-083, § 296-79-310, filed 8/3/99, effective 11/3/99; Order 74-24, § 296-79-310, filed 5/6/74; Order 70-6, § 296-79-310, filed 7/10/70, effective 8/10/70.]

WAC 296-79-31001 General requirements for converting operations (bag and container manufacturing, printing, coating, finishing and related processes). (1)

Guillotine-type trimmers must be designed in a manner which will require the operator to use both hands simultaneously to activate the cutting blade. If machine helpers are employed in the control function of the cutter, separate two-hand controls must be provided for the control function performed by the helper.

(2) Guillotine-type trimmers must be designed in a manner that the trimming blade will not repeat unless manually reactivated.

(3) Sorting and counting tables must be smooth and free from splinters, with edges and corners rounded.

Paddles must be smooth and free from splinters.

(4) Devices (i.e., mirrors) must be installed to assist the converting machine operator in viewing blind work stations where a hazard exists.

(5) Mechanical lifting devices must be provided for placing and removing rolls from rewinders. Rolls must not be left suspended overhead while the controls are unattended.

(6) When using a crane or hoist to place rolls into a backstand and the operator cannot see both ends of the backstand, assistance will be provided or appropriate devices will be installed to eliminate the hazards involved. The operator must ascertain that rolls are properly seated at winder stand or at roll arms before disengaging the hooks.

(7) Slitters, slotters, and scorers not in use must be properly stored so a hazard is not created.

(8) All power closing sections must be equipped with an audible warning system which will be activated when closing the sections.

(9) Roll-type embosser. The nipping point located on the operator's side must be guarded by either automatic or manually operated barrier guards interlocked with the drive.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-16-083, § 296-79-31001, filed 8/3/99, effective 11/3/99; Order 76-7, § 296-79-31001, filed 3/1/76; Order 74-24, § 296-79-31001, filed 5/6/74.]

WAC 296-79-31003 Corrugator. (1) Every recessed floor conveyor system must be identified by standard color coding, and so designed and installed to minimize tripping hazards.

(2) All areas subject to wet processes must be provided with drains.

- Drain trenches must be provided with gratings flush with the adjoining floor.

- Use of curbing in work areas should be avoided in new installations. If the use of curbing cannot be avoided, the design must be such that the curbs do not constitute a tripping hazard in normal working areas. When curbing exists and constitutes a hazard, it must be color coded.

(3) Rails of rail mounted devices such as roll stands must be flush with the adjacent floor, and so installed to provide a minimum of 18 inches clearance between the equipment and walls or other fixed objects.

(4) All corrugating and pressure rolls must be equipped with appropriately designed and installed threading guides so as to prevent contact with the infeed nip of the various rolls by the operator.

(5) A minimum of 4 inches clearance or effective nip guarding must be maintained between heated drums, idler rolls, and cross shafting on all preheaters and preconditioners.

(6) Lower elevating conveyor belt rolls on the single facer bridge must have a minimum nip clearance of 4 inches or effective nip guarding.

(7) Web shears at the discharge end of the double facer must be equipped with barrier type guards.

(8) Slitter stations not in use must be disconnected from the power source by positive means.

(9) Elevating type conveyors must have the floor area color-coded.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-16-083, § 296-79-31003, filed 8/3/99, effective 11/3/99; Order 74-24, § 296-79-31003, filed 5/6/74.]

WAC 296-79-31009 Die cutting. Bobst type die cutters.

A minimum of 4 inches must be provided between the end of the slat and the guide bar.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-16-083, § 296-79-31009, filed 8/3/99, effective 11/3/99; Order 74-24, § 296-79-31009, filed 5/6/74.]

WAC 296-79-320 Sulfite recovery furnace area requirements. (1) The employer must have a program to train all personnel associated with recovery boiler operations in safe operating procedures and emergency shutdown procedures.

(2) An audible warning system must be installed in kraft and soda base sulfite recovery furnace areas and must be actuated whenever an emergency exists.

(3) All personnel who enter the recovery furnace area must understand the emergency evacuation procedure.

(4) Warning system maintenance. Emergency warning systems in the recovery furnace areas must be kept in proper working condition and must be tested or checked weekly.

(5) Personnel must stand to the side while opening a furnace or boiler firebox door.

[Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-16-083, § 296-79-320, filed 8/3/99, effective 11/3/99; Order 74-24, § 296-79-320, filed 5/6/74; Order 70-6, § 296-79-320, filed 7/10/70, effective 8/10/70.]

Chapter 296-96 WAC

SAFETY REGULATIONS AND FEES FOR ALL ELEVATORS, DUMBWAITERS, ESCALATORS AND OTHER CONVEYANCES

(Formerly chapters 296-81, 296-82, 296-84, 296-85, 296-87, 296-89, 296-91, 296-93A, 296-94, 296-95, and 296-100 WAC)

WAC

PART A - ADMINISTRATIVE

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PART B - LICENSES AND FEES FOR ALL ELEVATORS, DUMBWAITERS, ESCALATORS AND OTHER CONVEYANCES

NOTE: Total fees include the sum of the permit cost plus plan check fees.

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296-96-00918	Who is exempt from the continuing education requirements?	296-96-02306	Is a door reopening device required on automatic-closing car doors?
296-96-00920	When and where are elevator licensing examinations held?	296-96-02310	What is the minimum acceptable initial transfer time for an elevator door?
296-96-00922	What are the fees associated with licensing?	296-96-02315	What are the minimum cab size and other applicable requirements for car interiors?
296-96-00924	What procedures does the department follow when issuing a civil penalty for licensing violations?	296-96-02317	When does the department require a local building official to sign off for the installation of LULAs, stair lifts, inclined wheelchair lifts and vertical wheelchair lifts?
296-96-00926	What are the civil (monetary) penalties for violating the licensing requirements of chapter 70.87 RCW or this chapter?	296-96-02318	What are the general requirements for LULA elevators?
296-96-00930	What if I owe outstanding final judgments to the department?	296-96-02320	What is required for car controls?
PART B-1 - REGULATIONS AND FEES FOR ALL ELEVATORS, DUMBWAITERS, ESCALATORS AND OTHER CONVEYANCES		296-96-02325	What are the location and operation requirements for car position indicators in the car?
296-96-01000	What is the permit process for conveyances?	296-96-02330	What is required for installation and operation of emergency communication systems?
296-96-01005	When do I need a permit?	296-96-02340	What requirements apply to the size and location of car handrails?
296-96-01006	What type of conveyance work requires permitting and inspection?	296-96-02350	What requirements apply to floor designations on elevator door jams?
296-96-01007	What is the inspection and approval process for alterations?	296-96-02355	What are the installation and operation requirements for hall buttons?
296-96-01009	Who can purchase a permit?	296-96-02360	What are the requirements for installation and operation of hall lanterns?
296-96-01010	What are the installation permit fees for conveyances, material lifts, and hoists and how are they calculated?	296-96-02361	What are the requirements for electrical main line disconnects?
296-96-01012	What are the permit fees for alterations to conveyances, material lifts, and hoists and how are they calculated?	296-96-02362	What are the requirements associated with elevator machine rooms?
296-96-01025	What is the permit fee for personnel and material hoists?	296-96-02363	What are the requirements for fire doors installed in front of hoistway doors?
296-96-01027	Are initial installation permit fees refundable?	296-96-02364	What are the requirements for accessing elevated elevator pit equipment?
296-96-01030	What is the process for installation and alteration plan approval?	296-96-02366	What are the requirements for submersible pumps or sumps?
296-96-01035	Are there inspection fees?	296-96-02367	What are the requirements for top of car lighting for freight and passenger elevators?
296-96-01040	What is the fee for testing and inspecting regular elevators used as temporary elevators to provide transportation for construction personnel, tools, and materials only?	296-96-02370	What is required for physically handicapped lifts?
296-96-01045	What are the inspection requirements and fees for conveyances in private residences?	296-96-02371	Are private residence inclined stairway chairlifts required to be permanently wired?
296-96-01050	How do I get a supplemental inspection?	PART C1 - MINIMUM STANDARDS FOR ALL MATERIAL LIFTS	
296-96-01055	Are technical services available and what is the fee?	296-96-05010	What are the department's rules on material lifts?
296-96-01060	Can I request an after hours inspection and what is the fee?	296-96-05020	What requirements apply to the construction and fire safety of hoistway enclosures?
296-96-01065	What are the annual operating permits fees?	296-96-05030	What are the construction requirements for hoistway enclosure gates and doors?
296-96-01070	What are the civil (monetary) penalties for violating the conveyance permit and operation requirements of chapter 70.87 RCW and this chapter?	296-96-05040	What requirements apply to a hoistway that does not extend to the lowest levels of a building or structure?
296-96-01075	How does an owner or licensee receive a variance from the installation and alteration requirements of chapter 70.87 RCW and this chapter?	296-96-05050	What requirements apply to lift hoist driving machines?
PART C - REGULATIONS FOR NEW AND ALTERED ELEVATORS AND LIFTING DEVICES		296-96-05070	What car enclosure requirements apply to lifts?
NOTE: The following rules set the minimum standard for all new installations and, where applicable, alterations.		296-96-05080	How much running clearance is permitted between a car sill and a hoistway?
296-96-02230	When must the department be notified for a new or altered inspection?	296-96-05090	What requirements apply to car and counterweight guides?
296-96-02232	What are the conditions for obtaining a temporary operating permit?	296-96-05100	How much weight can be placed on a car frame and platform during loading and unloading?
296-96-02235	What are the requirements for temporary operating permits?	296-96-05120	What requirements apply to car operating devices, terminal stopping devices and electrical protective devices?
296-96-02240	Where is a shut-off valve required for hydraulic elevators?	296-96-05140	What requirements apply to car safeties?
296-96-02275	What are the requirements for Fireman's Service Phase I and Phase II recall?	296-96-05150	What requirements apply to lift brakes?
296-96-02276	What are the requirements for sprinklers in hoistways and machine rooms?	296-96-05160	What types of ropes, chains, and rope connections must be used on a lift?
296-96-02277	How does the department enforce ASME requirements for sprinklers, smoke detectors, and heat detectors in hoistways and machine rooms?	296-96-05170	What requirements apply to lift control stations?
296-96-02278	Are keys required to be onsite?	296-96-05190	How must lift pits be constructed?
296-96-02280	Can pipes and ducts be installed above a machine room?	296-96-05200	Which lift landings must be illuminated?
296-96-02281	What is required for emergency escape hatches?	296-96-05210	What signs must be posted on landings and lifts?
296-96-02282	What is required for fire fighters' service?	296-96-05220	What electrical wiring standards apply to lifts?
		296-96-05230	What safety regulations apply to exposed equipment?
		296-96-05240	What are the minimum maintenance requirements for lifts?
		296-96-05260	When are inspections required?
		296-96-05290	Under what conditions is a five-year test administered?

PART C2 - CONSTRUCTION, OPERATION, MAINTENANCE AND INSPECTION OF INCLINED PRIVATE RESIDENCE ELEVATOR FOR TRANSPORTING PERSON(S) FOR RESIDENTIAL USE

296-96-07010	What is the scope of Part C-2?
296-96-07020	What is the definition for inclined private residence elevator?
296-96-07021	What are the requirements for existing inclined private residence elevators?
296-96-07024	What rules apply to alterations of inclined private residence elevators?
296-96-07030	Does the department approve private residence elevator plans and specifications?
296-96-07035	What are the minimum maintenance requirements for inclined private residence elevators?
296-96-07040	What are the clearance requirements for an incline runway?
296-96-07050	What are the construction requirements for car landing enclosures and gates for inclined private residence elevators?
296-96-07060	What types of bumpers and buffers must be installed on inclined private residence elevators?
296-96-07070	What are the requirements for machinery beams and supports?
296-96-07080	What are the load and size requirements for car platforms?
296-96-07090	What is the maximum rated speed of an incline elevator?
296-96-07100	What construction requirements apply to inclined private residence elevators?
296-96-07110	What construction requirements apply to car enclosures?
296-96-07120	What construction requirements apply to car doors and gates?
296-96-07130	What type of glass or plastic can be used in a car enclosure?
296-96-07140	Are capacity and data plates required?
296-96-07150	What are the construction requirements for guide rails, track supports and fastenings?
296-96-07160	What construction requirements apply to counterweights?
296-96-07170	What are the requirements of safeties and governors?
296-96-07171	How and when are safeties and governors tested?
296-96-07180	What are the construction requirements for driving machines and sheaves?
296-96-07190	What construction requirements apply to terminal stopping switches?
296-96-07200	What are the requirements for operation of an inclined private residence elevator?
296-96-07210	What are the construction requirements for suspension methods?
296-96-07215	What are the requirements for controllers?
296-96-07220	What are the requirements for traveling cables?
296-96-07230	What requirements apply to electrical wiring?
296-96-07240	What are the requirements for track supporting structures?
296-96-07250	What additional requirements apply to inclined private residence elevators?

PART C3 - CONSTRUCTION, OPERATION, MAINTENANCE AND INSPECTION OF PRIVATE RESIDENCE CONVEYANCES FOR TRANSPORTING PROPERTY FOR RESIDENTIAL USE

296-96-08010	What is the scope of Part C-3?
296-96-08020	What is the definition for inclined private residence conveyances for transporting property?
296-96-08022	What are the requirements for existing inclined private residence conveyances for transporting property?
296-96-08024	What rules apply to alterations of inclined private residence conveyances for transporting property?
296-96-08030	Does the department approve elevators plans and specifications for inclined private residence conveyances for transporting property?
296-96-08035	What are the minimum maintenance requirements for inclined private residence elevators for transporting property?
296-96-08050	What are the construction requirements for inclined private residence conveyances for transporting property for cars, landing gates, and enclosures?
296-96-08060	What types of bumpers and buffers must be installed on inclined private residence conveyances for transporting property?
296-96-08070	What are the requirements for machinery beams and supports?

296-96-08080	What are the load and size requirements for car platforms?
296-96-08090	What is the maximum rated speed of an inclined conveyance?
296-96-08100	What requirements apply to inclined conveyance?
296-96-08110	What requirements apply to car enclosures?
296-96-08140	Are capacity and data plates required on inclined private residence conveyances for transporting property?
296-96-08150	What are the requirements for guide rails, track supports and fastenings?
296-96-08160	What requirements apply to counterweights?
296-96-08170	What are the requirements of safeties and governors?
296-96-08175	How and when are conveyance safeties tested?
296-96-08180	What are the requirements for driving machines and sheaves?
296-96-08190	What requirements apply to terminal stopping switches?
296-96-08200	What are the requirements for the activation and operation of an inclined private residence conveyances for transporting property?
296-96-08210	What are the requirements for suspension methods?
296-96-08215	What are the requirements for controllers?
296-96-08220	What are the requirements for traveling cables?
296-96-08230	What requirements apply to electrical wiring?
296-96-08240	What are the requirements for track supporting structures?
296-96-08250	What additional requirements apply to inclined private residence conveyances for transporting property?

PART C4 - TEMPORARY HOISTS

Personnel Hoists

296-96-09001	What regulations apply to personnel hoists?
296-96-09002	May a drop plate be used for temporary hoists?
296-96-09003	What are the requirements for landing gates?
296-96-09004	Do jumps (increased travel) have to be inspected?

Material Hoists

296-96-10001	What regulations apply to material hoists?
296-96-10002	Do jumps (increased travel) have to be inspected?

PART C5 - ADDITIONAL TYPES OF CONVEYANCES

Belt Manlifts

296-96-11001	What regulations apply to belt manlifts?
296-96-11010	What are the definitions for belt manlifts?
296-96-11016	What general requirements apply to belt manlift landings?
296-96-11019	What requirements apply to the guards and cones of belt manlift landings?
296-96-11022	What requirements apply to guarding lift entrances and exits?
296-96-11025	What structural requirements apply to floor opening guards?
296-96-11028	What structural requirements apply to floor landing guards?
296-96-11031	What requirements apply to bottom landings?
296-96-11034	What requirements apply to top clearance?
296-96-11037	What requirements apply to emergency exit ladders?
296-96-11040	What lighting requirements apply to belt manlifts?
296-96-11045	What drive machine requirements apply to belt manlifts?
296-96-11048	What is an acceptable operating speed for a belt manlift?
296-96-11051	What are the construction requirements for steps?
296-96-11054	What requirements apply to the location and construction of handholds?
296-96-11057	What requirements apply to "up-limit stops"?
296-96-11060	What requirements apply to emergency stops?
296-96-11066	What are the warning sign requirements?
296-96-11070	Can you carry tools and materials on a belt manlift?
296-96-11078	What is required for belt manlift inspections?
296-96-11080	Under what conditions is a five-year test administered?

Electric Manlifts

296-96-13135	What are the requirements for electric manlifts?
296-96-13139	What structural requirements apply to hoistway enclosures and landings?
296-96-13143	What structural requirements apply to hoistway gates and doors?
296-96-13145	What structural requirements apply to elevator cars?
296-96-13147	What structural requirements apply to elevator doors?
296-96-13149	What are the structural requirements for counterweights, counterweight enclosures, and counterweight fastenings?

296-96-13151	What construction requirements apply to car guide rails?
296-96-13153	What construction requirements apply to hoisting ropes?
296-96-13155	What are the requirements for a hoistway space?
296-96-13157	What requirements apply to car safeties?
296-96-13159	What requirements apply to brakes?
296-96-13161	What requirements apply to car controls and safety devices?
296-96-13167	What requirements apply to elevator driving machines?
296-96-13169	What requirements apply to car and counterweight buffers?
296-96-13171	What other requirements apply to electric manlifts?
	Hand-Powered Manlifts
296-96-14010	What is the scope and application of the department's hand-powered manlift rules?
296-96-14020	What construction requirements apply to hoistway landings and entrances?
296-96-14025	What are acceptable hoistway clearances?
296-96-14030	Can there be a habitable space beneath an elevator hoistway or counterweight shaft?
296-96-14035	What construction requirements apply to hoistway guide rails?
296-96-14040	What installation requirements apply to buffer springs?
296-96-14045	What construction specifications apply to hoistway cars?
296-96-14050	What are the requirements for assembly, installation, and operation of sectional counterweights?
296-96-14055	What is the minimum acceptable sheave diameter?
296-96-14060	What requirements apply to hoisting ropes?
296-96-14065	What requirements apply to operating ropes?
296-96-14070	Where must hoistway lights be located?
296-96-14075	What is the factor of safety for overhead supports?
296-96-14080	What additional requirements apply to the installation and operation of hand powered manlifts?
	Casket Lifts
296-96-16010	What is the scope of the department's casket lift regulations?
296-96-16020	What requirements apply to the location and operation of machine rooms and machinery space?
296-96-16030	What equipment can be located in a machine room?
296-96-16040	What requirements apply to the location of electrical wiring, pipes and ducts in hoistways and machine rooms?
296-96-16050	Is a pit required in a casket lift hoistway?
296-96-16060	What requirements apply to the size and location of hoistway door openings?
296-96-16070	How must hoistway doors be hung?
296-96-16080	Where must hoistway doors be located?
296-96-16090	What requirements apply to hoistway doors locks?
296-96-16100	How should space beneath a hoistway be protected?
296-96-16110	What requirements apply to car doors and gates?
296-96-16120	What requirements apply to car enclosures?
296-96-16130	What requirements apply to the construction of car frames and platforms?
296-96-16140	How must car frames and platforms be connected?
296-96-16150	What is the load capacity of a casket lift car?
296-96-16160	What types of casket lift driving machines are allowed?
296-96-16170	What material and grooving is required for sheaves and drums?
296-96-16180	What types of brakes must be used on the driving machine?
296-96-16190	Where must terminal stopping devices be located?
296-96-16200	What are the specifications for casket lift ropes and rope connections?
296-96-16210	What specific requirements apply to hydraulic elevators?
296-96-16220	What requirements apply to valves, supply piping, and fittings?
296-96-16230	What type of stopping devices must be installed?
296-96-16240	What type of operating devices must be used?
	Boat Launching Elevators
296-96-18010	What are the definitions for boat launching elevators?
296-96-18020	Must boat launching elevator cars and platforms be enclosed?
296-96-18030	What electrical wiring requirements apply to boat launching elevators?
296-96-18040	What type of brakes must be used on boat launching elevators?

296-96-18050	What types of stop switches and protective devices are required on boat launching elevators?
296-96-18060	When must hoisting cables be reshackled or refastened?
296-96-18070	What requirements apply to hoistway gates and doors?
296-96-18080	Must boat launching elevator hoistways be enclosed?

Mechanized Parking Garage Equipment

296-96-20005	What national safety codes has the department adopted for mechanized parking garage equipment?
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PART D - REGULATIONS FOR EXISTING ELEVATORS, DUMBWAITERS, AND ESCALATORS

Regulations for Existing Electric Elevators, Direct Plunger and Roped Hydraulic Elevators, Escalators used to transport passengers, Electric and Hand-powered Dumbwaiters, Hand-powered Elevators, Inclined Stairway Chairlifts, Inclined and Vertical Wheelchair Lifts, and Sidewalk Elevators

NOTE: The following rules set the minimum standard for existing elevators, dumbwaiters, and escalators, and, where applicable, alterations.

296-96-23100	Are keys required to be on-site?
	Subpart I Hoistways and Related Construction for Electric and Hydraulic Elevators
296-96-23101	What is the scope of Subpart I?
	Section 1 Hoistways
296-96-23110	What structural requirements apply to hoistway enclosures?
296-96-23111	Are guards required for windows in hoistway enclosures?
296-96-23113	What are the requirements for pipes in hoistways that convey gases, vapors, or liquids?
296-96-23115	What safety requirements apply to inspecting and maintaining overhead sheaves?
296-96-23116	What requirements apply to car numbers?
296-96-23117	What requirements apply to top of car railings for traction elevators?
296-96-23118	What requirements apply to top of car railings for hydraulic elevators in unenclosed hoistways?
296-96-23119	What signage requirements apply to traction elevators with minimal overhead clearance?
	Section 2 Machine Rooms and Machinery Spaces
296-96-23121	What are the requirements for machine room and machinery space access?
296-96-23122	What type of lighting must be installed in machine rooms and machinery space?
296-96-23123	What type of service outlets must be installed in elevator cars, hoistways and machinery spaces?
296-96-23124	What installation requirements apply to pipes conveying gases, vapors, or liquids in machine rooms and machinery spaces?
296-96-23125	Must elevator machines and control equipment be protected from the weather?
296-96-23126	What protective measures should be taken in hoistways, machine rooms and machinery spaces to insure safety?
	Section 3 Pits
296-96-23130	What requirements apply to pit access?
296-96-23131	What requirements apply to pit drains?
296-96-23132	What lighting requirements apply to pits?
296-96-23133	What requirements apply to counterweight pit guards?
	Section 4 Protection of Space Below Hoistways
296-96-23140	What requirements apply to any space below a hoistway that is not permanently protected from access?
	Section 5 Hoistway Entrances
296-96-23150	Are hoistway doors (gates) required?
296-96-23151	What requirements apply to hoistway door closing devices?
296-96-23152	What requirements apply to hoistway door vision panels?

296-96-23153	What requirements apply to door hangers for horizontal slide doors?		Section 8 Driving Machines and Sheaves
296-96-23154	Are astragals required?	296-96-23250	What general requirements apply to driving machines and sheaves?
296-96-23155	What requirements apply to pull straps?	296-96-23255	What requirements apply to winding drum machines?
296-96-23156	What requirements apply to landing sill clearances?	296-96-23256	What requirements apply to indirect-drive machines?
296-96-23157	What is the maximum allowable threshold clearance?	296-96-23260	What requirements apply to driving machine brakes?
296-96-23158	What requirements apply to elevator floor numbers?	296-96-23261	What requirements apply to the application and release of driving machine brakes?
	Section 6 Hoistway Door Locking Devices, Parking Devices, and Access		Section 9 Terminal Stopping Devices
296-96-23160	What requirements apply to hoistway door (gate) locking devices?	296-96-23262	What requirements apply to normal terminal stopping devices?
296-96-23161	What requirements apply to elevator parking devices?	296-96-23264	What requirements apply to final terminal-stopping devices?
296-96-23162	What requirements apply to hoistway door unlocking devices?		Section 10 Operating Devices and Control Equipment
	Section 7 Power Operation of Doors and Gates		
296-96-23165	What requirements apply to reopening devices for power-operated car doors and gates?	296-96-23266	What types of operating devices must not be used?
296-96-23166	What requirements apply to photo electric or electric eye door reopening devices?	296-96-23268	What requirements apply to car-switch operation elevators?
	Subpart II Machinery and Equipment for Electric Elevators	296-96-23269	What requirements apply to passenger elevator emergency stop buttons?
296-96-23200	What is the scope of Subpart II?	296-96-23270	What requirements apply to car top operating devices?
	Section 1 Buffers and Bumpers	296-96-23272	What electrical protective devices are required?
296-96-23203	What requirements apply to buffers and bumpers?	296-96-23274	What requirements apply to the power supply line disconnect?
	Section 2 Counterweights	296-96-23276	What requirements apply to phase reversal and failure protection methods?
296-96-23205	What requirements apply to counterweights?	296-96-23277	What requirements apply to grounding and overcurrent protections?
	Section 3 Car Frames and Platforms	296-96-23278	What requirements apply to the absorption of regenerated power?
296-96-23206	What requirements apply to car platforms and frames?	296-96-23279	What requirements apply to door by-pass systems?
296-96-23207	What requirements apply to platform guards (aprons)?		Section 11 Emergency Operation and Signaling Devices
296-96-23208	What requirements apply to hinged platform sills?	296-96-23280	What requirements apply to all car emergency signaling devices in all buildings?
296-96-23209	What requirements apply to floating (movable) platforms?		Section 12 Suspension Systems and Their Connections
	Section 4 Car Enclosures	296-96-23282	What requirements apply to suspension systems?
296-96-23215	What requirements apply to car enclosures?	296-96-23283	What requirements apply to rope data tags?
296-96-23216	What requirements apply to the lining materials used on passenger car enclosures?	296-96-23284	What is the factor of safety for wire suspension ropes?
296-96-23220	What requirements apply to car doors and gates?	296-96-23285	What is the minimum number of suspension ropes allowed?
296-96-23221	What requirements apply to the location of car doors and gates?	296-96-23287	What requirements apply to suspension rope equalizers?
296-96-23222	What control requirements apply to operating circuits?	296-96-23288	What requirements apply to securing suspension wire ropes to winding drums?
296-96-23225	What requirements apply to car emergency exits?	296-96-23289	What requirements apply to spare rope turns on winding drum machines?
296-96-23226	What requirements apply to car lighting?	296-96-23290	What requirements apply to suspension rope fastenings?
	Section 5 Safeties	296-96-23291	What requirements apply to auxiliary rope fastening devices?
296-96-23227	What requirements apply to car safeties?		Subpart III Hydraulic Elevators
296-96-23228	What is the maximum amount of governor rope movement allowed when operating a safety mechanism?	296-96-23300	What is the scope of Subpart III, Hydraulic Elevators?
296-96-23229	What requirements apply to rail lubricants and lubrication plates?		Section 1 Hoistways, Hoistway Enclosures, and Related Construction
	Section 6 Speed Governors	296-96-23302	What requirements apply to hoistways, hoistway enclosures and related construction?
296-96-23235	What requirements apply to speed governors?	296-96-23303	What requirements apply to hydraulic elevators without safety bulkheads?
296-96-23236	What requirements apply to speed governor overspeed and car safety mechanism switches?		Section 2 Mechanical Equipment
	Section 7 Capacity and Loading	296-96-23304	What requirements apply to buffers and bumpers?
296-96-23240	What is the minimum rated load for passenger elevators?	296-96-23307	What requirements apply to car frames and platforms?
296-96-23241	What requirements apply to the use of partitions that reduce inside net platform area?	296-96-23309	What requirements apply to car enclosures?
296-96-23243	What is the minimum rated load for freight elevators?	296-96-23311	What requirements apply to capacity and loading?
296-96-23244	What requirements apply to capacity plates?		Section 3 Driving Machines
296-96-23245	What requirements apply to signs on freight elevators?	296-96-23313	What requirements apply to driving machine connections?
		296-96-23316	What requirements apply to plunger stops?

<p align="center">Section 4 Valves, Supply Piping, and Fittings</p>		<p align="center">Subpart V Dumbwaiters and Hand-Powered Elevators</p>	
296-96-23318	What requirements apply to pump relief valves?	296-96-23500	What is the scope of Subpart V, Dumbwaiters and Hand-powered elevators?
296-96-23321	What requirements apply to check valves?	296-96-23510	What requirements apply to electric and electro-hydraulic dumbwaiters?
296-96-23322	What requirements apply to supply piping and fittings?	296-96-23540	What requirements apply to hand-power elevators and dumbwaiters?
296-96-23323	What requirements apply to flexible hydraulic connections?		
<p align="center">Section 5 Tanks</p>		<p align="center">Subpart VI Alterations, Repairs and Maintenance</p>	
296-96-23324	What general requirements apply to tanks?	296-96-23600	What is the scope of Part VI, Alterations, Repairs and Maintenance?
296-96-23325	What requirements apply to pressure tanks?	296-96-23610	What requirements apply to routine periodic inspections and tests?
<p align="center">Section 6 Terminal Stopping Devices</p>		296-96-23620	What requirements apply to alterations, repairs and maintenance?
296-96-23326	What requirements apply to terminal stopping devices?	296-96-23630	What requirements apply to elevator equipment displaced by seismic activity?
<p align="center">Section 7 Operating Devices and Control Equipment</p>		<p align="center">Subpart VII Lifts for Physically Handicapped</p>	
296-96-23328	What requirements apply to operating devices?	296-96-23700	What is the scope of Subpart VII, Lifts for Physically Handicapped?
296-96-23330	What requirements apply to car top operating devices?	296-96-23710	What requirements apply to lifts for the physically handicapped?
296-96-23332	What requirements apply to anti-creep leveling devices?		
296-96-23334	What requirements apply to electrical protective devices?		
296-96-23336	What requirements apply to power supply line disconnects?		
296-96-23338	What requirements apply to devices that make hoistway door interlocks or electric contacts and car door (gate) electric contacts inoperative?		
296-96-23340	What requirements apply to control and operating circuits?		
296-96-23342	What requirements apply to emergency operation and signaling devices?	296-96-23800	What is the scope of Subpart VIII, Sidewalk Elevators?
		296-96-23810	What requirements apply to electrically-operated sidewalk elevators?
<p align="center">Section 8 Additional Requirements for Counterweighted Hydraulic Elevators</p>		<p align="center">DISPOSITION OF SECTIONS FORMERLY CODIFIED IN THIS CHAPTER</p>	
296-96-23344	What additional requirements apply to counterweighted hydraulic elevators?	296-96-01015	What are the permit fees for material lifts and how are they calculated? [Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-01015, filed 12/22/00, effective 1/22/01.] Repealed by 02-12-022, filed 5/28/02, effective 6/28/02. Statutory Authority: RCW 43.22.350, 43.22.434, 43.22.480, 43.22.500, 18.27.040, 18.27.070, 18.27.075, 70.87.030, 19.28.041, 19.28.051, 19.28.101, 19.28.121, 19.28.161, 19.28.201, 19.28.211, 19.28.341, 2001 c 7, 2002 c 249, and chapters 19.28, 43.22, 18.27, and 70.87 RCW.
<p align="center">Subpart IV Escalators</p>			
296-96-23400	What is the scope of Subpart IV, Escalators?	296-96-01080	How do you appeal a notice of violation? [Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-01080, filed 12/22/00, effective 1/22/01.] Repealed by 04-12-047, filed 5/28/04, effective 6/30/04. Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185, 70.87.190, 2002 c 98, 2003 c 143 and 2004 c 66.
<p align="center">Section 1 Construction</p>		296-96-02365	What is required for physically handicapped lifts? [Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-02365, filed 12/22/00, effective 1/22/01.] Repealed by 04-12-047, filed 5/28/04, effective 6/30/04. Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185, 70.87.190, 2002 c 98, 2003 c 143 and 2004 c 66.
296-96-23405	What requirements apply to balustrades?		
296-96-23408	How much clearance is required between skirt panels and step treads?		
296-96-23410	What requirements apply to guards at ceiling or soffit intersections?		
296-96-23412	What requirements apply to anti-slide devices?		
296-96-23414	What requirements apply to handrails?		
296-96-23416	What requirements apply to handrail guards?		
296-96-23418	What requirements apply to step riser slotting?		
296-96-23420	What requirements apply to step tread slotting?		
296-96-23422	What requirements apply to combplates?		
<p align="center">Section 2 Brakes</p>		296-96-11000	What regulations apply to belt manlifts after 1974? [Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-11000, filed 12/22/00, effective 1/22/01.] Repealed by 04-12-047, filed 5/28/04, effective 6/30/04. Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185, 70.87.190, 2002 c 98, 2003 c 143 and 2004 c 66.
296-96-23424	What general requirements apply to escalator brakes?		
296-96-23427	What requirements apply to main drive shaft brakes?		
<p align="center">Section 3 Operating and Safety Devices</p>			
296-96-23429	What requirements apply to starting switches?		
296-96-23431	What requirements apply to emergency stop buttons?		
296-96-23432	What requirements apply to speed governors?		
296-96-23434	What requirements apply to broken step-chain devices?		
296-96-23436	What requirements apply to brake applications?		
296-96-23438	What requirements apply to broken drive-chain devices?		
296-96-23440	What requirements apply to skirt obstruction devices?		
296-96-23442	What requirements apply to rolling shutter devices?		
296-96-23444	What requirements apply to reversal stop device?		
296-96-23446	What requirements apply to tandem operations?		
296-96-23448	What requirements apply to caution signs?		
<p align="center">Section 4 Lighting of Step Treads</p>			
296-96-23450	What requirements apply to step tread lighting?		

PART A - ADMINISTRATIVE

WAC 296-96-00500 Scope, purpose, and authority.
This chapter is authorized by chapter 70.87 RCW covering elevators, lifting devices, moving walks, and other conveyances. The purpose of this chapter is to:

(1) Provide for the safe design, mechanical and electrical operation, and inspection of conveyances, and performance of conveyance work;

(2) Ensure that all such operation, design inspection, and conveyance work subject to the provisions of this chapter will be reasonably safe to persons and property and in conformity with the provisions of this chapter and the applicable statutes of the state of Washington.

(3) Establish and ensure compliance with the minimum standards for becoming a licensed elevator contractor and/or licensed elevator mechanic performing work on elevators or other conveyances covered by chapter 70.87 RCW and this chapter.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185, 70.87.190, 2002 c 98, 2003 c 143 and 2004 c 66. 04-12-047, § 296-96-00500, filed 5/28/04, effective 6/30/04. Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-00500, filed 12/22/00, effective 1/22/01.]

WAC 296-96-00600 What rules apply to your conveyance? Elevators and other conveyances must comply with the rules adopted by the department that were in effect at the time the conveyance was permitted, regardless of whether the rule(s) has been repealed, unless any new rule specifically states that it applies to all conveyances, regardless of when the conveyance was permitted. Copies of previous rules adopted by the department are available upon request.

Please note, if the conveyance is altered the components associated with the alteration must comply with all of the applicable rules adopted by the department in effect at the time the conveyance was altered. If the department determines that a conveyance was altered without a permit and inspection, the alteration will be required to comply with the applicable rules adopted by the department at the time the noncompliant alteration was identified.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185, 70.87.190, 2002 c 98, 2003 c 143 and 2004 c 66. 04-12-047, § 296-96-00600, filed 5/28/04, effective 6/30/04. Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-00600, filed 12/22/00, effective 1/22/01.]

WAC 296-96-00650 Which National Elevator Codes and Supplements has the department adopted?

NATIONAL ELEVATOR CODES AND SUPPLEMENTS ADOPTED				
TYPE OF CONVEYANCE	NATIONAL CODE AND SUPPLEMENTS	DATE INSTALLED		COMMENTS
		FROM	TO	
Elevators, Dumbwaiters, Escalators	American Standard Safety Code (ASA) A17.1, 1960	Prior to 11/1/1963		Adopted Standard Part X of ASA applies to all installations in existence prior to 11/1/63.
Elevators, Dumbwaiters, Escalators	American Standard Safety Code (ASA) A17.1, 1960	11/1/1963	12/29/1967	Adopted Standard
Moving Walks	American Safety Association A17.1.13, 1962	11/1/1963	12/29/1967	Adopted Standard
Elevators, Dumbwaiters, Escalators, and Moving Walks	U.S.A. Standards (USAS) USAS A17.1, 1965; Supplements A17.1a, 1967; A17.1b, 1968; A17.1c, 1969;	12/30/1967	2/24/1972	Adopted Standard USAS 1965 includes revision and consolidation of A17.1-1, 1960, A17.1a, 1963, and A17.1-13, 1962. Adopted code and supplements, excluding Appendix E and ANSI 17.1d, 1970.
Elevators, Dumbwaiters, Escalators, and Moving Walks	American National Standard Institute ANSI A17.1, 1971	2/25/1972	6/30/1982	Adopted Standard as amended and revised through 1971.
Elevators, Dumbwaiters, Escalators, and Moving Walks	ANSI A17.1, 1971; A17.1a, 1972	2/25/1972	6/30/1982	Adopted Supplement
Elevators, Dumbwaiters, Escalators, and Moving Walks	ANSI A17.1, 1981	7/1/1982	1/9/1986	Adopted Standard
Elevators, Dumbwaiters, Escalators, and Moving Walks	ANSI A17.1a, 1982	3/1/1984	1/9/1986	Adopted Supplement
Elevators, Dumbwaiters, Escalators, and Moving Walks	ANSI A17.1b, 1983	12/1/1984	1/9/1986	Adopted Supplement, except portable escalators covered by Part VIII of A17.1b, 1983.
Elevators, Dumbwaiters, Escalators, and Moving Walks	ANSI A17.1, 1984	1/10/1986	12/31/1988	Adopted Standard Except Part XIX. After 11/1/1988 Part II, Rule 211.3b was replaced by WAC 296-81-275.
Elevators, Dumbwaiters, Escalators, and Moving Walks	ANSI A17.1a, 1985	1/10/1986	12/31/1988	Adopted Supplement
Elevators, Dumbwaiters, Escalators, and Moving Walks	ANSI A17.1b, 1985; A17.1c, 1986; A17.1d, 1986; and A17.1e, 1987	12/6/1987	12/31/1988	Adopted Supplement

NATIONAL ELEVATOR CODES AND SUPPLEMENTS ADOPTED				
TYPE OF CONVEYANCE	NATIONAL CODE AND SUPPLEMENTS	DATE INSTALLED		COMMENTS
		FROM	TO	
Elevators, Dumbwaiters, Escalators, and Moving Walks	ANSI A17.1, 1987	1/1/1989	12/31/1992	Adopted Standard Except Part XIX and Part II, Rule 211.3b. WAC 296-81-275 replaced Part II, Rule 211.3b.
Elevators, Dumbwaiters, Escalators, and Moving Walks	ANSI A17.1, 1990	1/1/1993	2/28/1995	Adopted Standard Except Part XIX and Part V, Section 513. Chapter 296-94 WAC replaced Part V, Section 513.
Elevators, Dumbwaiters, Escalators, and Moving Walks	ANSI A17.1, 1993	3/1/1995	6/30/1998	Adopted Standard Except Part XIX and Part V, Section 513. Chapter 296-94 WAC replaced Part V, Section 513.
Elevators, Dumbwaiters, Escalators, and Moving Walks	ASME A17.1, 1996	6/30/1998	Effective date of these rules	Adopted Standard Except Part V, Section 513.
Elevators, Dumbwaiters, Escalators, and Moving Walks	ASME A17.1, 2000; A17.1a, 2002; A17.1b, 2003	Effective date of these rules	Current	Adopted Standards and Addenda Except Rules 2.4.12.2, 8.6.5.8 and Sections 5.4, 7.4, 7.5, 7.6, 7.9, 7.10, 8.10.1.1.3 and 8.11.1.1.
Safety Standards for Platform Lifts and Stairway Chairlifts	ASME A18.1, 1999; A18.1a, 2001; A18.1b, 2001	Effective date of these rules	Current	Adopted Standards and Addenda.
Note: Copies of codes and supplements can be obtained from The American Society of Mechanical Engineers, Order Department, 22 Law Drive, Box 2900, Fairfield, New Jersey, 07007-2900 or by visiting www.asme.org .				

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185, 70.87.190, 2002 c 98, 2003 c 143 and 2004 c 66. 04-12-047, § 296-96-00650, filed 5/28/04, effective 6/30/04. Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-00650, filed 12/22/00, effective 1/22/01.]

WAC 296-96-00700 Chapter definitions. The following definitions apply to this chapter (see RCW 70.87.010 for additional definitions necessary for use with this chapter):

"ANSI" means the American National Standard Institute.

"ASA" means the American Safety Association.

"ASME" means the American Society of Mechanical Engineers.

"Acceptable proof" refers to the documentation that must be provided to the department during the elevator contractor and mechanic license application and renewal process. Acceptable proof may include department-approved forms documenting years of experience, affidavits, letters from previous employers, declarations of experience, education credits, copies of contractor registration information, etc. Additional documentation may be requested by the department to verify the information provided on the application.

"Code" refers to nationally accepted codes (i.e., ASME, ANSI, ASA, and NEC) and/or the Washington Administrative Code.

"Decommissioned conveyance" means an installation whose power feed lines have been disconnected and:

(a) A traction elevator, dumbwaiter, or material lift whose suspension ropes have been removed, whose car and counterweight rests at the bottom of the hoistway, and whose hoistway doors have been permanently barricaded or sealed in the closed position on the hoistway side;

(b) A hydraulic elevator, dumbwaiter, or material lift whose: Car rests at the bottom of the hoistway, pressure piping has been disassembled and a section removed from the premises, hoistway doors have been permanently barricaded or sealed in the closed position on the hoistway side, suspension ropes have been removed and counterweights, if provided, landed at the bottom of the hoistway; or

(c) An escalator or moving walk whose entrances have been permanently barricaded.

"Final judgment" means any money that is owed the department as the result of an individual's or firm's unsuccessful appeal of a civil penalty. Final judgment also includes any penalties assessed against an individual or firm owed the department as a result of an unappealed civil penalty or any outstanding fees due under chapter 70.87 RCW and this chapter.

"General direction—Installation and alteration work" means the necessary education, assistance, and supervision provided by a licensed elevator mechanic (in the appropriate category) who is on the same job site as the helper/apprentice at least seventy-five percent of each working day. The ratio of helper to mechanic shall be one-to-one.

"General direction—Maintenance work" means the necessary education, assistance, and supervision provided by a licensed elevator mechanic (in the appropriate category) to ensure that the maintenance work is performed safely and to code.

"Lockout" means the placement of a lockout device on an energy isolating device, in accordance with an established procedure, ensuring that the energy isolating device and the equipment being controlled cannot be operated until the lockout device is removed.

"Primary point of contact" is the designated individual employed by a licensed elevator contractor.

"Red tag" or "red tag status" means an elevator or other conveyance that has been removed from service and operation because of noncompliance with chapter 70.87 RCW and this chapter or at the request of the owner.

"Private residence elevator" (residential elevator) means a power passenger elevator which is limited in size, capacity, rise and speed and is installed in a private residence

or multiple dwelling as a means of access to a private residence provided the elevators are so installed that they are not accessible to the general public or to other occupants in the building.

"RCW" means the Revised Code of Washington.

"Tagout" means the placement of a tagout device on an energy isolating device, in accordance with an established procedure, to indicate that the energy isolating device and the equipment being controlled may not be operated until the tagout device is removed.

"Traction elevator" means an elevator in which the friction between the hoist ropes and the machine sheave is used to move the elevator car.

"USAS" means the U.S.A. Standards.

"WAC" means the Washington Administrative Code.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185, 70.87.190, 2002 c 98, 2003 c 143 and 2004 c 66. 04-12-047, § 296-96-00700, filed 5/28/04, effective 6/30/04. Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-00700, filed 12/22/00, effective 1/22/01.]

WAC 296-96-00800 Advisory committee on conveyances. (1) The purpose of the advisory committee is to advise the department on the adoption of regulations that apply to conveyances; methods of enforcing and administering the elevator law, chapter 70.87 RCW; and matters of concern to the conveyance industry and to the individual installers, owners and users of conveyances.

(2) The advisory committee consists of seven members appointed by the director or his or her authorized representative.

(3) The committee members shall serve four years. However, if a member is unable to fulfill his or her obligations, a new member may be appointed.

(4) The committee shall meet on the third Tuesday of February, May, August, and November of each year, and at other times at the discretion of the chief of the elevator section.

(5) The chief of the elevator section shall be the secretary for the advisory committee.

(6) An advisory committee member may appoint an alternate to attend meetings in case of conflict or illness.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185, 70.87.190, 2002 c 98, 2003 c 143 and 2004 c 66. 04-12-047, § 296-96-00800, filed 5/28/04, effective 6/30/04. Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-00800, filed 12/22/00, effective 1/22/01.]

WAC 296-96-00805 Appeal rights and hearings. (1) Chapter 70.87 RCW provides the authority for the duties and responsibilities of the department. Except as provided in chapter 70.87 RCW and this chapter, all appeals and hearings will be conducted according to chapter 34.05 RCW, the Administrative Procedure Act and chapter 10-08 WAC, Model Rules of Procedure.

(2) A person who contests a notice of violation or infraction issued by the department may request a hearing. The request for a hearing must be:

(a) In writing;

(b) Accompanied by a certified or cashier's check, payable to the department, for two hundred dollars; and

(c) Postmarked or received by the department within fifteen days after the person receives the department's violation notice.

(3) In all appeals of chapter 70.87 RCW and this chapter the appellant has the burden of proof by a preponderance of the evidence.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185, 70.87.190, 2002 c 98, 2003 c 143 and 2004 c 66. 04-12-047, § 296-96-00805, filed 5/28/04, effective 6/30/04.]

PART B - LICENSES AND FEES FOR ALL ELEVATORS, DUMBWAITERS, ESCALATORS AND OTHER CONVEYANCES

NOTE: Total fees include the sum of the permit cost plus plan check fees.

WAC 296-96-00900 In general, who is required to be licensed under this chapter? (1) Any person, firm, or company wishing to engage in the business of conveyance work regulated under chapter 70.87 RCW and this chapter must be a licensed elevator contractor.

(2) Any person wishing to perform conveyance work regulated under chapter 70.87 RCW and this chapter must be a licensed elevator mechanic employed by a licensed elevator contractor.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185, 70.87.190, 2002 c 98, 2003 c 143 and 2004 c 66. 04-12-047, § 296-96-00900, filed 5/28/04, effective 6/30/04.]

WAC 296-96-00902 Are there exceptions from the elevator mechanic licensing requirements? Yes.

(1) Elevator mechanic licenses issued under chapter 70.87 RCW and this chapter are not required for:

(a) Individuals who install signal systems, fans, electric light fixtures, illuminated thresholds and feed wires to the terminals on the elevator main line control provided that the individual does not require access to the pit, hoistway, or top of the car for the installation of these items.

(b) An owner or regularly employed employee of the owner performing only maintenance work of conveyances in accordance with RCW 70.87.270.

(2) Elevator mechanic licenses may not be required for certain types of incidental work that is performed on conveyances when the appropriate lockout and tagout procedures have been performed by a licensed elevator mechanic in the appropriate category. The department must be notified and must approve the scope of work prior to it being performed.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185, 70.87.190, 2002 c 98, 2003 c 143 and 2004 c 66. 04-12-047, § 296-96-00902, filed 5/28/04, effective 6/30/04.]

WAC 296-96-00903 Are there exceptions from the elevator contractor licensing requirements? Yes. Elevator contractor licenses issued under chapter 70.87 RCW and this chapter are not required for:

(1) An owner or regularly employed employee of the owner performing only maintenance work of conveyances in accordance with RCW 70.87.270.

(2) A public agency that employs licensed elevator mechanics to perform maintenance.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185, 70.87.190, 2002 c 98, 2003 c 143 and 2004 c 66. 04-12-047, § 296-96-00903, filed 5/28/04, effective 6/30/04.]

WAC 296-96-00904 What must you do to become and remain a licensed elevator contractor? (1) Obtain and maintain a valid specialty or general contractor registration under chapter 18.27 RCW to engage in the business of conveyance work.

(2) Complete and submit a department-approved application. As part of the application:

(a) Specify the employee who is the licensed elevator contractor's primary point of contact.

(b) The person, firm or company who is applying for the elevator contractor's license must:

(i) Provide acceptable proof to the department that shows that the person, firm, or company has five years of work experience in performing conveyance work as verified by current and previous elevator contractor licenses to do business; or

(ii) Pass a written examination administered by the department on chapter 70.87 RCW and this chapter. (In the case of a firm or company, the exam will be administered to the designated primary point of contact.)

(iii) Failure to pass the examination will require the submittal of a new application.

(3) Pay the fees specified in WAC 296-96-00922.

(4) The department may deny application of a license under this section if the applicant owes outstanding final judgments to the department.

(5) If the primary point of contact identified in subsection (2)(a) of this section separates employment, his/her relationship or designation is terminated, or death of the designated individual occurs, the elevator contractor must, within ninety days, designate a new individual who has successfully completed the elevator contractor examination and inform the department of the change in writing or the elevator contractor license will be automatically suspended.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185, 70.87.190, 2002 c 98, 2003 c 143 and 2004 c 66. 04-12-047, § 296-96-00904, filed 5/28/04, effective 6/30/04.]

WAC 296-96-00906 What must you do to become a licensed elevator mechanic? (1) Qualify for licensing:

(a) For conveyance work covered by all categories identified in WAC 296-96-00910 except material lifts (05), residential conveyances (06), residential inclined elevators (07) and temporary licenses (09), the applicant must comply with the applicable mechanic licensing requirements as follows:

(i) Test.

(A) The applicant must provide acceptable proof to the department that shows the necessary combination of documented experience and education credits in the applicable license category (see WAC 296-96-00910) of not less than three years' work experience in the elevator industry performing conveyance work as verified by current and previous employers licensed to do business in this state or as an employee of a public agency; and

(B) Pass an examination administered by the department on chapter 70.87 RCW and this chapter.

(ii) Grandfather.

(2007 Ed.)

(A) Before October 1, 2004, the applicant must provide acceptable proof to the department that shows the necessary combination of documented experience and education credits in the applicable license category (see WAC 296-96-00910) of not less than three years' work experience in the elevator industry, performing conveyance work, as verified by current and previous employers licensed to do business in this state or as an employee of a public agency; and

(B) Have worked without direct and immediate supervision for an elevator contractor licensed to do business in this state or as an employee of a public agency. This employment may not be less than three years immediately before March 1, 2004.

(iii) National exam/education.

(A) Have obtained a certificate of completion and successfully passed the mechanic examination of a nationally recognized training program for the elevator industry such as the National Elevator Industry Educational Program or its equivalent; or

(B) Have obtained a certificate of completion of an apprenticeship program for an elevator mechanic, having standards substantially equal to those of chapter 70.87 RCW and this chapter, and registered with the Washington state apprenticeship and training council under chapter 49.04 RCW.

(iv) Reciprocity. The applicant must provide acceptable proof to the department that shows that the applicant is holding a valid license from a state having entered into a reciprocal agreement with the department and having standards substantially equal to those of chapter 70.87 RCW and this chapter.

(b) For conveyance work performed on material lifts as identified in WAC 296-96-00910(5):

(i) Test.

(A) The applicant and the licensed elevator contractor/employer must comply with the provisions of RCW 70.87.245; and

(B) The applicant must pass an examination administered by the department on chapter 70.87 RCW and this chapter;

(ii) Grandfather.

(A) Before October 1, 2004, the applicant must provide acceptable proof to the department that shows the necessary combination of documented experience and education credits in the material lift license category (see WAC 296-96-00910) performing conveyance work on material lifts, as verified by current and previous employers licensed to do business in this state; and

(B) Worked without direct and immediate supervision for an elevator contractor licensed to do business in this state. This employment may not be less than three years immediately before March 1, 2004.

(c) For residential conveyance work covered by category (06) as identified in WAC 296-96-00910:

(i) Test.

(A) The applicant must provide acceptable proof to the department that shows the necessary combination of documented experience and education credits in the applicable license category (see WAC 296-96-00910) of not less than two years' work experience in the elevator industry perform-

ing conveyance work as verified by current and previous employers licensed to do business in this state; and

(B) Pass an examination administered by the department on chapter 70.87 RCW and this chapter.

(ii) Grandfather.

(A) Before October 1, 2004, the applicant must provide acceptable proof to the department that shows the necessary combination of documented experience and education credits in the residential conveyance license category (see WAC 296-96-00910) performing conveyance work on residential inclined and vertical wheelchair lifts and stair chairlifts, as verified by current and previous employers licensed to do business in this state; and

(B) Worked without direct and immediate supervision for an elevator contractor licensed to do business in this state. This employment may not be less than two years immediately before March 1, 2004.

(d) For residential inclined conveyance work covered by category (07) as identified in WAC 296-96-00910;

(i) Test.

(A) The applicant must provide acceptable proof to the department that shows the necessary combination of documented experience and education credits in the applicable license category (see WAC 296-96-00910) of not less than one year's work experience in the elevator industry or not less than three years' documented experience and education credits in conveyance work as described in category (01) performing conveyance work as verified by current and previous employers licensed to do business in this state; and

(B) Pass an examination administered by the department on chapter 70.87 RCW and this chapter.

(ii) Grandfather.

(A) Before October 1, 2004, the applicant must provide acceptable proof to the department that shows the necessary combination of documented experience and education credits in the residential inclined conveyance license category (see WAC 296-96-00910) performing conveyance work on residential inclined conveyances, as verified by current and previous employers licensed to do business in this state; and

(B) Worked without direct and immediate supervision for an elevator contractor licensed to do business in this state. This employment may not be less than one year immediately before March 1, 2004.

(e) For temporary mechanic licenses as identified in WAC 296-96-00910 category (09) the applicant must provide acceptable proof from a licensed elevator contractor that attests that the temporary mechanic is certified as qualified and competent to perform work under chapter 70.87 RCW and this chapter.

(2) Complete and submit a department-approved application.

(a) **Applications received before October 1, 2004.** If an applicant who meets subsection (1)(d)(i)(A) of this section, who applies before October 1, 2004, and is required to take an examination under the provisions of this section, the applicant may perform the duties of a licensed elevator mechanic until the applicant has been provided notice by the department of the results of his/her examination.

(b) **Applications received on or after October 1, 2004.** An applicant who is required to take an examination under the provisions of this section may not perform the duties of a

licensed elevator mechanic until the applicant has been notified by the department that he/she has passed the examination.

(3) Pay the fees specified in WAC 296-96-00922.

(4) The department may deny application of a license under this section if the applicant owes outstanding final judgments to the department.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185, 70.87.190, 2002 c 98, 2003 c 143 and 2004 c 66. 04-12-047, § 296-96-00906, filed 5/28/04, effective 6/30/04.]

WAC 296-96-00910 What are the elevator mechanic license categories? The following are the licensing categories for qualified elevator mechanics or temporary elevator mechanics:

(1) **Category (01):** A general elevator mechanic license encompasses mechanical and electrical operation, construction, installation, alteration, maintenance, inspection, relocation, and repair of all types of elevators and other conveyances in any location covered under chapter 70.87 RCW and this chapter.

(2) **Category (02):** This license is limited to the mechanical and electrical operation, construction, installation, alteration, maintenance, inspection, relocation, and repair of the following commercial and residential conveyances:

- (a) Wheelchair lifts;
- (b) Dumbwaiters; and
- (c) Incline chairlifts.

Note: Work experience on residential conveyances in (a)(i), (ii), and (iii) of this subsection may not be applied toward the category (02) license requirements.

(3) **Category (03):** This license is limited to the mechanical and electrical operation, construction, installation, alteration, maintenance, inspection, relocation, and repair of the following conveyances in industrial sites and grain terminals:

- (a) Electric and hand powered manlifts;
- (b) Special purpose elevators; and
- (c) Belt manlifts.

(4) **Category (04):** This license is limited to the mechanical and electrical operation, construction, installation, alteration, maintenance, inspection, relocation, and repair of the following conveyances:

- (a) Temporary personnel hoists;
- (b) Temporary material hoists; and
- (c) Special purpose elevators.

(5) **Category (05):** This license is limited to the mechanical and electrical operation, construction, installation, alteration, maintenance, inspection, relocation, and repair of material lifts.

(6) **Category (06):**

(a) This license is limited to the mechanical and electrical operation, construction, installation, alteration, maintenance, inspection, relocation, and repair of the following conveyances:

- (i) Residential wheelchair lifts;
- (ii) Residential dumbwaiters; and
- (iii) Residential incline chairlifts.

(b) Work experience on conveyances in (a)(i), (ii), and (iii) of this subsection may not be applied toward the category (02) license requirements.

Note: Maintenance work performed by the owner or at the direction of the owner is exempted from licensing requirements provided that the owner resides in the residence at which the conveyance is located and the conveyance is not accessible to the general public. Such exempt work does not count toward work experience for licensure.

(7) Category (07): This license is limited to the mechanical and electrical operation, construction, installation, alteration, maintenance, inspection, relocation, and repair of residential inclined elevators.

Note: Maintenance work performed by the owner or at the direction of the owner is exempted from licensing requirements provided that the owner resides in the residence at which the conveyance is located and the conveyance is not accessible to the general public. Such exempt work does not count toward work experience for licensure.

(8) Category (08): This license is limited to maintenance of all conveyances and is further limited to employees of public agencies to obtain and maintain the license. This work should not count towards other licenses.

(9) Category (09): This temporary license is limited to the mechanical and electrical operation, construction, installation, alteration, maintenance, inspection, relocation, and repair of conveyances. This license is limited to individuals that are certified as qualified and competent by licensed elevator contractors. The individual must be an employee of the licensed elevator contractor. The contractor shall furnish acceptable proof of competency as the department may require. Each license must recite that it is valid for a period of thirty days from the date of issuance and for such particular elevators or geographical areas as the department may designate, and otherwise entitles the licensee to the rights and privileges of an elevator mechanic license issued under chapter 70.87 RCW and this chapter.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185, 70.87.190, 2002 c 98, 2003 c 143 and 2004 c 66. 04-12-047, § 296-96-00910, filed 5/28/04, effective 6/30/04.]

WAC 296-96-00912 How long is the elevator contractor, elevator mechanic, and temporary mechanics licensing period and what is required for renewal? (1) Elevator contractors.

(a) The renewal period is two years from the date of issuance.

(b) As part of the renewal process the elevator contractor must:

(i) Complete and submit a department-approved application.

(ii) Designate an employee as a primary point of contact.

(iii) Pay the fees specified in WAC 296-96-00922.

(2) Elevator mechanics.

(a) The renewal period is two years from the date of your birthday. The initial license may be for a shorter period as follows. If your birth year is:

(i) In an even-numbered year, your certificate will expire on your birth date in the next even-numbered year.

(ii) In an odd-numbered year, your certificate will expire on your birth date in the next odd-numbered year.

(b) As part of the renewal process you must:

(i) Complete and submit a department-approved application.

(ii) Have attended an approved continuing education course and submitted a certificate of completion for the course. The course must consist of not less than eight hours of instruction that must have been attended and completed within one year immediately preceding any license renewal.

(iii) Pay the fees specified in WAC 296-96-00922.

(3) Temporary elevator mechanics.

(a) The renewal period is thirty days from the date of issuance.

(b) As part of the renewal process you must:

(i) Complete and submit a department-approved application.

(ii) Pay the fees specified in WAC 296-96-00922.

(4) The department may deny renewals of licenses under this section if the applicant owes outstanding final judgments to the department.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185, 70.87.190, 2002 c 98, 2003 c 143 and 2004 c 66. 04-12-047, § 296-96-00912, filed 5/28/04, effective 6/30/04.]

WAC 296-96-00914 Where can you obtain information regarding department-approved continuing education course providers? The department will produce a list of all approved training course providers and/or course contact persons that provide continuing education courses required under chapter 70.87 RCW and this chapter. This list will be available to all renewal applicants who request it.

The department may also provide continuing education training.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185, 70.87.190, 2002 c 98, 2003 c 143 and 2004 c 66. 04-12-047, § 296-96-00914, filed 5/28/04, effective 6/30/04.]

WAC 296-96-00916 Who approves and what is the process for becoming a continuing education course provider? (1) The department approves continuing education course providers.

(2) The department will review and approve courses.

(a) All providers seeking course approval must submit the required information to the department on a form provided by the department.

(b) The courses must be taught by instructors through continuing education providers; courses may include but are not limited to, association seminars and labor training programs.

(c) All instructors must be approved by the department and are exempt from the requirements of WAC 296-96-00912 (2)(b)(ii) with regard to his or her application for license renewal, provided that such applicant was qualified as an instructor at any time during the one year immediately preceding the scheduled date for such renewal and the instructor must teach two or more courses in the year preceding the renewal.

(d) All training courses must conform to and be based upon current standards and requirements governing the operation, construction, installation, alteration, inspection and repair of elevators and other conveyances.

(e) All course approval requests must include:

(i) A general description of the course, including its scope, the instructional materials to be used and the instructional methods to be followed;

(ii) A detailed course outline;

(iii) The name and qualifications of the course instructor(s);

(iv) The locations where the course will be taught;

(v) The days and hours the course will be offered; and

(vi) The specific fees associated with the course, as well as, the total cost of the course.

(f) Training courses will be approved for a two-year period.

(g) It is the responsibility of the provider to annually review and update its courses and to notify the department of any changes.

(h) The department may withdraw its approval of any training course if it determines the provider is no longer in compliance with the requirements of this chapter. If the department withdraws its approval of a training course, it will give the provider written notification of the withdrawal, specifying the reasons for its decision.

(i) Approved training providers must keep uniform records, for a period of ten years, of attendance of licensees and these records must be available for inspection by the department at its request. The provider must submit a list of names of the attendees to the department on or before thirty days after the date of the course being held. Approved training providers are responsible for the security of all attendance records and certificates of completion. Falsifying or knowingly allowing another to falsify attendance records or certificates of completion constitutes grounds for suspension or revocation of the approval required under this section.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185, 70.87.190, 2002 c 98, 2003 c 143 and 2004 c 66. 04-12-047, § 296-96-00916, filed 5/28/04, effective 6/30/04.]

WAC 296-96-00918 Who is exempt from the continuing education requirements? The following individuals are exempt from continuing education requirements:

(1) A licensee who is unable to complete the continuing education course required under this section before the expiration of his or her license due to a temporary disability may apply for a waiver from the department. Application shall be made on a form provided by the department and signed under the penalty of perjury and accompanied by a certified statement from a competent physician attesting to the temporary disability. Upon the termination of the temporary disability, the licensee must submit to the department a certified statement from the same physician, if practicable, attesting to the termination of the temporary disability at which time a waiver sticker, valid for ninety days, must be issued to the licensee and affixed to his or her license.

The licensee can work during the time that a certified statement from the physician is submitted to the department. The licensee has ninety days from this date to take the required courses in order to renew his/her license. If the licensee has not taken the required courses on or before the ninetieth day from the date the certified statement was sent in to the department, he/she will no longer be able to perform work.

(2) Approved instructors under WAC 296-96-00916 with regard to his or her application for license renewal, provided that such applicant was qualified as an instructor at any time during the one year immediately preceding the scheduled date for such renewal and that the instructor must teach two or more courses in the year preceding the renewal.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185, 70.87.190, 2002 c 98, 2003 c 143 and 2004 c 66. 04-12-047, § 296-96-00918, filed 5/28/04, effective 6/30/04.]

WAC 296-96-00920 When and where are elevator licensing examinations held? Examinations shall be held at locations and times when considered necessary by the department. The department will notify qualified applicants of the date, time, and location of the examination.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185, 70.87.190, 2002 c 98, 2003 c 143 and 2004 c 66. 04-12-047, § 296-96-00920, filed 5/28/04, effective 6/30/04.]

WAC 296-96-00922 What are the fees associated with licensing? The following are the department's elevator license fees:

Type of Fee	Period Covered by Fee	Dollar Amount of Fee
Elevator contractor/mechanic application fee (not required for renewal of valid license)	Per application	\$52.90
Elevator contractor/mechanic examination fee	Per application	\$158.80
Reciprocity application fee*	Per application	\$52.90
Elevator mechanic license	2 years	\$105.90
Elevator contractor license	2 years	\$105.90
Temporary elevator mechanic license	30 days	\$26.40
Elevator mechanic/contractor timely renewal fee**	2 years	\$105.90
Elevator mechanic/contractor late renewal fee***	2 years	\$211.80
Training provider application/renewal fee	2 years	\$105.90
Continuing education course fee by approved training provider****	1 year	Not applicable
Replacement of any licenses		\$15.80
Refund processing fee		\$31.70

* Reciprocity application is only allowed for applicants who are applying for licensing based upon possession of a valid license that was obtained in state(s) with which the department has a reciprocity agreement.

- ** Renewals will be considered "timely" when the renewal application is received on or prior to the expiration date of the license.
- *** Late renewal is for renewal applications received no later than ninety days after the expiration of the licenses. If the application is not received within ninety days from license expiration, the licensee must reapply and pass the competency examination.
- **** This fee is paid directly to the continuing education training course provider approved by the department.

[Statutory Authority: Chapters 18.106, 43.22, and 70.87 RCW. 06-10-066, § 296-96-00922, filed 5/2/06, effective 6/30/06. Statutory Authority: Chapters 18.27, 43.22, and 70.87 RCW. 05-12-032, § 296-96-00922, filed 5/24/05, effective 6/30/05. Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185, 70.87.190, 2002 c 98, 2003 c 143 and 2004 c 66. 04-12-047, § 296-96-00922, filed 5/28/04, effective 6/30/04.]

WAC 296-96-00924 What procedures does the department follow when issuing a civil penalty for licensing violations? (1) If the department determines that an individual has violated the licensing requirements of chapter 70.87 RCW or this chapter, the department may issue a civil penalty describing the reasons for the violation(s). The department may issue a civil penalty to:

(a) A person who is advertising, offering to do work or submitting a bid to perform conveyance work, or employing elevator mechanics and does not have a valid elevator contractor's license as required under chapter 70.87 RCW or this chapter; or

(b) An individual who is working under chapter 70.87 RCW or this chapter and does not have a valid elevator mechanic license.

(2) A person may appeal a civil penalty issued under chapter 70.87 RCW or this chapter.

(3) The following enforcement schedule will be used for licenses issued under chapter 70.87 RCW and this chapter:

(a) **July 1, 2004, through September 30, 2004.** Any individual, firm, or company that is found in violation of the licensing requirements will be notified of the violation and be allowed ten calendar days to make application with the department to avoid being issued a civil penalty. If the individual, firm, or company does not make application within ten calendar days they will be issued a civil penalty.

(b) **On or after October 1, 2004.** Any individual, firm, or company that is found in violation of the licensing requirements may be issued a civil penalty.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185, 70.87.190, 2002 c 98, 2003 c 143 and 2004 c 66. 04-12-047, § 296-96-00924, filed 5/28/04, effective 6/30/04.]

WAC 296-96-00926 What are the civil (monetary) penalties for violating the licensing requirements of chapter 70.87 RCW or this chapter? (1) A person cited for a violation under chapter 70.87 RCW or this chapter may be assessed a civil (monetary) penalty based upon the following schedule:

First Violation	\$500.00
Each additional Violation	\$500.00

(2) Each day a person, firm or company is in violation may be considered a separate violation.

(3) Each job site at which a person is in violation may be considered a separate violation.

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(4) The department must serve notice by certified mail to a person for a violation of chapter 70.87 RCW or this chapter.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185, 70.87.190, 2002 c 98, 2003 c 143 and 2004 c 66. 04-12-047, § 296-96-00926, filed 5/28/04, effective 6/30/04.]

WAC 296-96-00930 What if I owe outstanding final judgments to the department? The department may deny renewal or application of, or suspend your license if you have an outstanding final judgment.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185, 70.87.190, 2002 c 98, 2003 c 143 and 2004 c 66. 04-12-047, § 296-96-00930, filed 5/28/04, effective 6/30/04.]

PART B-1 - REGULATIONS AND FEES FOR ALL ELEVATORS, DUMBWAITERS, ESCALATORS AND OTHER CONVEYANCES

WAC 296-96-01000 What is the permit process for conveyances? (1) Prior to the start of the construction, alteration, or relocation of all conveyances (this includes both private residence and commercial conveyances) plans must be submitted to and approved by the department. See WAC 296-96-01030.

(2) Prior to construction, alteration, or relocation of any conveyance, you must get an installation permit from the department. See WAC 296-96-01010 through 296-96-01025.

(3) Your conveyance must be inspected upon completion of the construction, alteration, or relocation. See WAC 296-96-01035.

(4) You must obtain and renew an annual operating permit for each conveyance that you own, except for residential conveyances. See WAC 296-96-01065.

(5) After initial purchase and inspection private residence conveyance(s) do not require an annual permit. However, annual inspections may be conducted upon request. See WAC 296-96-01065 for the associated fees.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185, 70.87.190, 2002 c 98, 2003 c 143 and 2004 c 66. 04-12-047, § 296-96-01000, filed 5/28/04, effective 6/30/04. Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-01000, filed 12/22/00, effective 1/22/01.]

WAC 296-96-01005 When do I need a permit? (1) You must obtain a permit from the department before you begin constructing, altering or relocating any conveyance. To obtain your permit, you need to complete the permit application and pay the appropriate fee. Once your application is approved, a permit will be issued and you may begin work on your project.

(2) Construction and alteration permits are valid for one year from the date of issue. However, permits may be renewed if you:

(a) Apply for a renewal permit before your current permit expires;

(b) The department approves your request for a renewal permit; and

(c) You pay a fifty-dollar renewal fee to the department for each permit you renew;

(3) If your permit has expired you must reapply for a new permit.

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(4) You are not required to obtain permits and pay fees for repairs and replacement associated with normal functions and necessary maintenance done with parts of equivalent materials, strength and design; or for any conveyance exempted by RCW 70.87.200.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185, 70.87.190, 2002 c 98, 2003 c 143 and 2004 c 66. 04-12-047, § 296-96-01005, filed 5/28/04, effective 6/30/04. Statutory Authority: RCW 43.22.350, 43.22.434, 43.22.480, 43.22.500, 70.87.030, 18.106.070, 18.106.125, 2001 c 7, and chapters 18.106, 43.22, and 70.87 RCW. 03-12-045, § 296-96-01005, filed 5/30/03, effective 6/30/03. Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-01005, filed 12/22/00, effective 1/22/01.]

WAC 296-96-01006 What type of conveyance work requires permitting and inspection? (1) All installations and relocation of conveyances requires permitting and inspection. All conveyance work must be performed by an elevator mechanic licensed to perform work in the appropriate category. (See WAC 296-96-00910).

(2) All alterations and other conveyance work requires permitting and inspection and includes but is not limited to:

(a) Items identified in ASME A17.1.

(b) Any conveyance work that requires the conveyance to be tested prior to being returned to service, including:

(i) The replacement or repair of any parts, the installation of which would require recalibration or testing (e.g., brakes, hydraulic valves and piping, safeties, door reopening devices, governors, communication systems, cab interiors, car/hall buttons, etc.); or

(ii) Work performed on components or equipment affecting or necessary for fire and life safety (e.g., cab interiors, systems associated with fire recall, etc.).

Contact the department if you have any questions or need assistance determining if a permit and inspection are required.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185, 70.87.190, 2002 c 98, 2003 c 143 and 2004 c 66. 04-12-047, § 296-96-01006, filed 5/28/04, effective 6/30/04.]

WAC 296-96-01007 What is the inspection and approval process for alterations? (1) The following process must be followed when performing alterations:

(a) Obtain a permit from the department prior to performing the alteration. The permit application must include detailed information on the scope of the alteration.

(b) Take the conveyance out-of-service and perform the alteration.

(c)(i) If the conveyance requires an inspection prior to being returned to service (as identified on the alteration permit), you must contact the department to perform an inspection and:

(A) If the conveyance passes the inspection, the conveyance may be placed back into service.

(B) If the conveyance fails the inspection, the conveyance must remain out-of-service until the corrections are made and approved by the department.

(ii) If the conveyance is not required to be inspected prior to being returned to service, you must contact the department to perform an inspection and:

(A) If the conveyance passes the inspection, the conveyance may remain in service.

(B) If the conveyance fails the inspection, the conveyance will be placed out-of-service until the corrections are made and approved by the department.

(2) For certain types of alterations additional work may be required as part of the alteration and prior to approval of the conveyance. These alterations include, but are not limited to:

(a) Replacements of controllers:

(i) Fire fighter service requirements must be met in accordance with the most recent code adopted by the department.

(ii) Seismic requirements ("ring and string" or "shaker box") must be met in accordance with the most recent code adopted by the department. In addition, the car must be capable of moving away from the floor.

(iii) Lighting in the machine room and pit must comply with the most recent code adopted by the department.

(iv) Electrical outlets in the machine room and pit must be of the ground fault interrupter type.

(b) Replacement of controllers and a car operating panel and/or hall fixtures:

(i) The requirements of (a) of this subsection must be met.

(ii) All panels and fixtures must meet the applicable (e.g., height, sound, Braille, etc.) requirements in accordance with the Americans with Disabilities Act.

(c) Replacement of door operators and/or door equipment: Any changes to these items require the installation of door restrictors:

(d) Hydraulic piping: Replacement, repair, or relocation of hydraulic piping will require the installation of a rupture valve.

Note: The department may grant exceptions to the requirements identified in this section.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185, 70.87.190, 2002 c 98, 2003 c 143 and 2004 c 66. 04-12-047, § 296-96-01007, filed 5/28/04, effective 6/30/04.]

WAC 296-96-01009 Who can purchase a permit? The department may only issue a permit for conveyance work to a licensed elevator contractor.

Permits are only required for alterations and installations. Beginning with the effective date of these rules, the homeowner will no longer be allowed to purchase a permit.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185, 70.87.190, 2002 c 98, 2003 c 143 and 2004 c 66. 04-12-047, § 296-96-01009, filed 5/28/04, effective 6/30/04.]

WAC 296-96-01010 What are the installation permit fees for conveyances, material lifts, and hoists and how are they calculated? Installation permit fees are based on the total cost of the conveyance and the labor to install the conveyance. The following permit fees apply to the construction or relocation of all conveyances and material lifts:

TOTAL COST OF CONVEYANCE	FEE
\$0 to and including \$1,000	\$52.90
\$1,001 to and including \$5,000	79.30
\$5,001 to and including \$7,000	132.30
\$7,001 to and including \$10,000	158.80
\$10,001 to and including \$15,000	211.80
OVER \$15,000	296.50 plus
Each additional \$1,000 or fraction thereof	7.40

[Statutory Authority: Chapters 18.106, 43.22, and 70.87 RCW. 06-10-066, § 296-96-01010, filed 5/2/06, effective 6/30/06. Statutory Authority: Chapters 18.27, 43.22, and 70.87 RCW. 05-12-032, § 296-96-01010, filed 5/24/05, effective 6/30/05. Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185, 70.87.190, 2002 c 98, 2003 c 143 and 2004 c 66, 04-12-047, § 296-96-01010, filed 5/28/04, effective 6/30/04. Statutory Authority: RCW 43.22.350, 43.22.434, 43.22.480, 43.22.500, 18.27.040, 18.27.070, 18.27.075, 70.87.030, 19.28.041, 19.28.051, 19.28.101, 19.28.121, 19.28.161, 19.28.201, 19.28.211, 19.28.341, 2001 c 7, 2002 c 249, and chapters 19.28, 43.22, 18.27, and 70.87 RCW. 02-12-022, § 296-96-01010, filed 5/28/02, effective 6/28/02. Statutory Authority: RCW 43.22.350, 43.22.434, 43.22.480, 43.22.500, 18.27.070, 18.27.075, 70.87.030, 19.28.041, 19.28.051, 19.28.101, 19.28.121, 19.28.161, 19.28.201, 19.28.211, 19.28.341, 2001 c 159, and chapters 43.22, 19.28, 18.27, and 70.87 RCW. 01-12-035, § 296-96-01010, filed 5/29/01, effective 6/29/01. Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-01010, filed 12/22/00, effective 1/22/01.]

WAC 296-96-01012 What are the permit fees for alterations to conveyances, material lifts, and hoists and how are they calculated? Permit fees are based on the total cost of the equipment, materials and labor to perform the alteration. The following permit fees apply to the alteration of all conveyances and material lifts:

TOTAL COST OF ALTERATION	FEE
\$0 to and including \$1,000	\$52.90
\$1,001 to and including \$5,000	79.30
\$5,001 to and including \$7,000	132.30
\$7,001 to and including \$10,000	158.80
\$10,001 to and including \$15,000	211.80
OVER \$15,000	211.80
Each additional \$1,000 or fraction thereof	\$7.40

[Statutory Authority: Chapters 18.106, 43.22, and 70.87 RCW. 06-10-066, § 296-96-01012, filed 5/2/06, effective 6/30/06. Statutory Authority: Chapters 18.27, 43.22, and 70.87 RCW. 05-12-032, § 296-96-01012, filed 5/24/05, effective 6/30/05. Statutory Authority: RCW 43.22.350, 43.22.434, 43.22.480, 43.22.500, 18.27.040, 18.27.070, 18.27.075, 70.87.030, 19.28.041, 19.28.051, 19.28.101, 19.28.121, 19.28.161, 19.28.201, 19.28.211, 19.28.341, 2001 c 7, 2002 c 249, and chapters 19.28, 43.22, 18.27, and 70.87 RCW. 02-12-022, § 296-96-01012, filed 5/28/02, effective 6/28/02.]

WAC 296-96-01025 What is the permit fee for personnel and material hoists? The fee for each personnel hoist or material hoist installation is \$200.00

Note: An operating permit is also required for these types of conveyances.

[Statutory Authority: RCW 43.22.350, 43.22.434, 43.22.480, 43.22.500, 18.27.040, 18.27.070, 18.27.075, 70.87.030, 19.28.041, 19.28.051, 19.28.101, 19.28.121, 19.28.161, 19.28.201, 19.28.211, 19.28.341, 2001 c 7, 2002 c 249, and chapters 19.28, 43.22, 18.27, and 70.87 RCW. 02-12-022, § 296-96-01025, filed 5/28/02, effective 6/28/02. Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-01025, filed 12/22/00, effective 1/22/01.]

WAC 296-96-01027 Are initial installation permit fees refundable? Your initial installation permit fees are refundable if the installation work has not been performed minus a processing fee unless your permits have expired. No refunds will be issued for expired permits. All requests for refunds must be submitted in writing to the elevator section and must identify the specific permits and the reasons for which the refunds are requested.

The processing fee for each refund is \$31.70

[Statutory Authority: Chapters 18.106, 43.22, and 70.87 RCW. 06-10-066, § 296-96-01027, filed 5/2/06, effective 6/30/06. Statutory Authority: Chapters 18.27, 43.22, and 70.87 RCW. 05-12-032, § 296-96-01027, filed

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5/24/05, effective 6/30/05. Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185, 70.87.190, 2002 c 98, 2003 c 143 and 2004 c 66, 04-12-047, § 296-96-01027, filed 5/28/04, effective 6/30/04. Statutory Authority: RCW 43.22.350, 43.22.434, 43.22.480, 43.22.500, 18.27.040, 18.27.070, 18.27.075, 70.87.030, 19.28.041, 19.28.051, 19.28.101, 19.28.121, 19.28.161, 19.28.201, 19.28.211, 19.28.341, 2001 c 7, 2002 c 249, and chapters 19.28, 43.22, 18.27, and 70.87 RCW. 02-12-022, § 296-96-01027, filed 5/28/02, effective 6/28/02. Statutory Authority: RCW 43.22.350, 43.22.434, 43.22.480, 43.22.500, 18.27.070, 18.27.075, 70.87.030, 19.28.041, 19.28.051, 19.28.101, 19.28.121, 19.28.161, 19.28.201, 19.28.211, 19.28.341, 2001 c 159, and chapters 43.22, 19.28, 18.27, and 70.87 RCW. 01-12-035, § 296-96-01027, filed 5/29/01, effective 6/29/01. Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-01027, filed 12/22/00, effective 1/22/01.]

WAC 296-96-01030 What is the process for installation and alteration plan approval? Prior to the start of construction, you must submit to the department for approval two copies of plans for new installations or major alterations. To be approved, the plan must comply with the latest adopted edition of the American Society of Mechanical Engineers (ASME), the National Electrical Code (NEC) and applicable Washington Administrative Codes (WAC). In addition, the plans must include all information necessary in determining whether each installation/alteration complies with all applicable codes. You must keep a copy of the approved plan on the job site until the department has witnessed all acceptance tests. Any alterations to the approved plan must be submitted to the department for approval before a final inspection will be conducted. The nonrefundable fees for reviewing your plans are:

For each installation/major alteration \$26.40
If more than two sets of plans are submitted, the fee for each additional set \$10.50

[Statutory Authority: Chapters 18.106, 43.22, and 70.87 RCW. 06-10-066, § 296-96-01030, filed 5/2/06, effective 6/30/06. Statutory Authority: Chapters 18.27, 43.22, and 70.87 RCW. 05-12-032, § 296-96-01030, filed 5/24/05, effective 6/30/05. Statutory Authority: RCW 43.22.350, 43.22.434, 43.22.480, 43.22.500, 70.87.030, 18.106.070, 18.106.125, 2001 c 7, and chapters 18.106, 43.22, and 70.87 RCW. 03-12-045, § 296-96-01030, filed 5/30/03, effective 6/30/03. Statutory Authority: RCW 43.22.350, 43.22.434, 43.22.480, 43.22.500, 18.27.040, 18.27.070, 18.27.075, 70.87.030, 19.28.041, 19.28.051, 19.28.101, 19.28.121, 19.28.161, 19.28.201, 19.28.211, 19.28.341, 2001 c 7, 2002 c 249, and chapters 19.28, 43.22, 18.27, and 70.87 RCW. 02-12-022, § 296-96-01030, filed 5/28/02, effective 6/28/02. Statutory Authority: RCW 43.22.350, 43.22.434, 43.22.480, 43.22.500, 18.27.070, 18.27.075, 70.87.030, 19.28.041, 19.28.051, 19.28.101, 19.28.121, 19.28.161, 19.28.201, 19.28.211, 19.28.341, 2001 c 159, and chapters 43.22, 19.28, 18.27, and 70.87 RCW. 01-12-035, § 296-96-01030, filed 5/29/01, effective 6/29/01. Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-01030, filed 12/22/00, effective 1/22/01.]

WAC 296-96-01035 Are there inspection fees? Yes. The initial inspection of a conveyance or for the initial inspection of construction, alteration or relocation of a conveyance is included with your permit fee. Once the department has approved the initial installation of the conveyance you will be issued a temporary operating permit that is valid for 30 days. Prior to the expiration of the 30-day permit the application for an annual operating permit and the appropriate fees must be paid to the department. Once the department has received the appropriate fees and application you will be issued your first annual operating permit. You are required to renew your annual operating permit yearly.

The following inspections require an additional inspection fee:

(1) **Reinspection.** If a conveyance does not pass an initial inspection and an additional inspection is required, the fee for each reinspection of a conveyance is \$105.90 per conveyance plus \$51.40 per hour for each hour in addition to the first hour.

The department may waive reinspection fees.

(2) **Inspecting increases in the height (jumping) of personnel and material hoists.**

The fee for inspecting an increase in the height (jumping) of each personnel hoist or material hoist is \$105.90 plus \$52.90 per hour for each hour in addition to 2 hours. This fee is for inspections occurring during regular working hours.

(3) **Variance inspections.**

(a) The fee for an on-site variance inspection is \$158.80 per conveyance plus \$52.90 per hour for each hour in addition to 2 hours. This fee is for inspections occurring during regular working hours.

(b) The fee for a variance that does not require an on-site inspection is \$52.90 per conveyance. The individual requesting the variance must provide the department with pictures, documentation, or other information necessary for the department to review the variance. The department may conduct an on-site variance inspection to verify the information provided or if it determines that an inspection is necessary. If an on-site variance inspection is performed, the fees in (a) of this subsection will apply.

(4) **"Red tag" status fee.** The annual fee for a conveyance in "Red tag" status is \$26.40.

Note: You must provide the department with written approval from the building official, indicating that the conveyance is not required for building occupancy, when you apply to have the conveyance placed in voluntary red tag status.

(5) **Decommission inspection.** The fee for performing a decommission inspection is \$52.90. Once the decommission inspection has been performed and approved, the conveyance will no longer require annual inspections until such time that the conveyance is brought back into service. Prior to operating the conveyance, a new inspection and annual operating permit must be obtained.

(6) **Voluntary inspections by request.** The owner or potential purchaser of a building within the department's jurisdiction may request a voluntary inspection of a conveyance. The fee for this inspection will be \$105.90 per conveyance and \$52.90 per hour for each hour in addition to 2 hours plus the standard per diem and mileage allowance granted to department inspectors. The owner/potential purchaser requesting the voluntary inspection will not be subject to any penalties based on the inspector's findings.

[Statutory Authority: Chapters 18.106, 43.22, and 70.87 RCW. 06-10-066, § 296-96-01035, filed 5/2/06, effective 6/30/06. Statutory Authority: Chapters 18.27, 43.22, and 70.87 RCW. 05-12-032, § 296-96-01040, filed 5/24/05, effective 6/30/05. Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185, 70.87.190, 2002 c 98, 2003 c 143 and 2004 c 66. 04-12-047, § 296-96-01035, filed 5/28/04, effective 6/30/04. Statutory Authority: RCW 43.22.350, 43.22.434, 43.22.480, 43.22.500, 18.27.040, 18.27.070, 18.27.075, 70.87.030, 19.28.041, 19.28.051, 19.28.101, 19.28.121, 19.28.161, 19.28.201, 19.28.211, 19.28.341, 2001 c 7, 2002 c 249, and chapters 19.28, 43.22, 18.27, and 70.87 RCW. 02-12-022, § 296-96-01035, filed 5/28/02, effective 6/28/02. Statutory Authority: RCW 43.22.350, 43.22.434, 43.22.480, 43.22.500, 18.27.070, 18.27.075, 70.87.030, 19.28.041, 19.28.051, 19.28.101, 19.28.121, 19.28.161, 19.28.201, 19.28.211, 19.28.341, 2001 c 159, and chapters 43.22, 19.28,

18.27, and 70.87 RCW. 01-12-035, § 296-96-01035, filed 5/29/01, effective 6/29/01. Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-01035, filed 12/22/00, effective 1/22/01.]

WAC 296-96-01040 What is the fee for testing and inspecting regular elevators used as temporary elevators to provide transportation for construction personnel, tools, and materials only? (1) The fee for the inspecting and testing of regular elevators used as temporary elevators is \$84.70, in addition to any other fees required in this chapter. This fee purchases a 30-day temporary use permit that may be renewed at the department's discretion.

(2) When this temporary use permit is purchased, a notice declaring that the equipment has not received final approval from the department must be conspicuously posted in the elevator.

[Statutory Authority: Chapters 18.106, 43.22, and 70.87 RCW. 06-10-066, § 296-96-01040, filed 5/2/06, effective 6/30/06. Statutory Authority: Chapters 18.27, 43.22, and 70.87 RCW. 05-12-032, § 296-96-01040, filed 5/24/05, effective 6/30/05. Statutory Authority: RCW 43.22.350, 43.22.434, 43.22.480, 43.22.500, 18.27.040, 18.27.070, 18.27.075, 70.87.030, 19.28.041, 19.28.051, 19.28.101, 19.28.121, 19.28.161, 19.28.201, 19.28.211, 19.28.341, 2001 c 7, 2002 c 249, and chapters 19.28, 43.22, 18.27, and 70.87 RCW. 02-12-022, § 296-96-01040, filed 5/28/02, effective 6/28/02. Statutory Authority: RCW 43.22.350, 43.22.434, 43.22.480, 43.22.500, 18.27.070, 18.27.075, 70.87.030, 19.28.041, 19.28.051, 19.28.101, 19.28.121, 19.28.161, 19.28.201, 19.28.211, 19.28.341, 2001 c 159, and chapters 43.22, 19.28, 18.27, and 70.87 RCW. 01-12-035, § 296-96-01040, filed 5/29/01, effective 6/29/01. Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-01040, filed 12/22/00, effective 1/22/01.]

WAC 296-96-01045 What are the inspection requirements and fees for conveyances in private residences? (1) Chapter 70.87 RCW requires the department to inspect all new, altered or relocated conveyances operated exclusively for single-family use in private residences. Prior to inspection, you must complete a permit application as described in WAC 296-96-01005 and pay the appropriate fee listed in WAC 296-96-01010.

(2) Chapter 70.87 RCW allows the department to inspect conveyances operated exclusively for single-family use in private residences when the department is investigating an accident or an alleged or apparent violation of the statute or these rules.

(3) No annual inspection and operating permit is required for a private residence conveyance operated exclusively for single-family use unless the owner requests it. When an owner requests an inspection and an annual operating permit, the following fee must be paid prior to an inspection:

TYPE OF CONVEYANCE	FEE
Each inclined stairway chair lift in private residence	\$24.70
Each inclined wheel chair lift in a private residence	24.70
Each vertical wheel chair lift in a private residence	31.20
Each dumbwaiter in a private residence.	24.70
Each inclined elevator at a private residence	88.10
Each private residence elevator	56.70

TYPE OF CONVEYANCE	FEE
Duplication of a lost, damaged or stolen operating permit	10.50

[Statutory Authority: Chapters 18.106, 43.22, and 70.87 RCW. 06-10-066, § 296-96-01045, filed 5/2/06, effective 6/30/06. Statutory Authority: Chapters 18.27, 43.22, and 70.87 RCW. 05-12-032, § 296-96-01045, filed 5/24/05, effective 6/30/05. Statutory Authority: RCW 43.22.350, 43.22.434, 43.22.480, 43.22.500, 18.27.040, 18.27.070, 18.27.075, 70.87.030, 19.28.041, 19.28.051, 19.28.101, 19.28.121, 19.28.161, 19.28.201, 19.28.211, 19.28.341, 2001 c 7, 2002 c 249, and chapters 19.28, 43.22, 18.27, and 70.87 RCW. 02-12-022, § 296-96-01045, filed 5/28/02, effective 6/28/02. Statutory Authority: RCW 43.22.350, 43.22.434, 43.22.480, 43.22.500, 18.27.070, 18.27.075, 70.87.030, 19.28.041, 19.28.051, 19.28.101, 19.28.121, 19.28.161, 19.28.201, 19.28.211, 19.28.341, 2001 c 159, and chapters 43.22, 19.28, 18.27, and 70.87 RCW. 01-12-035, § 296-96-01045, filed 5/29/01, effective 6/29/01. Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-01045, filed 12/22/00, effective 1/22/01.]

WAC 296-96-01050 How do I get a supplemental inspection? Any person, firm, corporation or governmental agency can request a supplemental inspection from the department by paying a fee of \$63.50 per hour (including travel time) plus the standard per diem and mileage allowance granted to department inspectors. This fee is for inspections occurring during regular working hours.

[Statutory Authority: Chapters 18.106, 43.22, and 70.87 RCW. 06-10-066, § 296-96-01050, filed 5/2/06, effective 6/30/06. Statutory Authority: Chapters 18.27, 43.22, and 70.87 RCW. 05-12-032, § 296-96-01050, filed 5/24/05, effective 6/30/05. Statutory Authority: RCW 43.22.350, 43.22.434, 43.22.480, 43.22.500, 70.87.030, 18.106.070, 18.106.125, 2001 c 7, and chapters 18.106, 43.22, and 70.87 RCW. 03-12-045, § 296-96-01050, filed 5/30/03, effective 6/30/03. Statutory Authority: RCW 43.22.350, 43.22.434, 43.22.480, 43.22.500, 18.27.040, 18.27.070, 18.27.075, 70.87.030, 19.28.041, 19.28.051, 19.28.101, 19.28.121, 19.28.161, 19.28.201, 19.28.211, 19.28.341, 2001 c 7, 2002 c 249, and chapters 19.28, 43.22, 18.27, and 70.87 RCW. 02-12-022, § 296-96-01050, filed 5/28/02, effective 6/28/02. Statutory Authority: RCW 43.22.350, 43.22.434, 43.22.480, 43.22.500, 18.27.070, 18.27.075, 70.87.030, 19.28.041, 19.28.051, 19.28.101, 19.28.121, 19.28.161, 19.28.201, 19.28.211, 19.28.341, 2001 c 159, and chapters 43.22, 19.28, 18.27, and 70.87 RCW. 01-12-035, § 296-96-01050, filed 5/29/01, effective 6/29/01. Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-01050, filed 12/22/00, effective 1/22/01.]

WAC 296-96-01055 Are technical services available and what is the fee? You may request elevator field technical services from the department by paying a fee of \$63.50 per hour (including travel time) plus the standard per diem and mileage allowance granted to department inspectors. These field technical services may include code evaluation, code consultation, plan examination, code interpretation and clarification of technical data relating to the application of the department's conveyance rules. Field technical services do not include inspections.

[Statutory Authority: Chapters 18.106, 43.22, and 70.87 RCW. 06-10-066, § 296-96-01055, filed 5/2/06, effective 6/30/06. Statutory Authority: Chapters 18.27, 43.22, and 70.87 RCW. 05-12-032, § 296-96-01055, filed 5/24/05, effective 6/30/05. Statutory Authority: RCW 43.22.350, 43.22.434, 43.22.480, 43.22.500, 70.87.030, 18.106.070, 18.106.125, 2001 c 7, and chapters 18.106, 43.22, and 70.87 RCW. 03-12-045, § 296-96-01055, filed 5/30/03, effective 6/30/03. Statutory Authority: RCW 43.22.350, 43.22.434, 43.22.480, 43.22.500, 18.27.040, 18.27.070, 18.27.075, 70.87.030, 19.28.041, 19.28.051, 19.28.101, 19.28.121, 19.28.161, 19.28.201, 19.28.211, 19.28.341, 2001 c 7, 2002 c 249, and chapters 19.28, 43.22, 18.27, and 70.87 RCW. 02-12-022, § 296-96-01055, filed 5/28/02, effective 6/28/02. Statutory Authority: RCW 43.22.350, 43.22.434, 43.22.480, 43.22.500, 18.27.070, 18.27.075, 70.87.030, 19.28.041, 19.28.051, 19.28.101, 19.28.121, 19.28.161, 19.28.201, 19.28.211, 19.28.341, 2001 c

(2007 Ed.)

159, and chapters 43.22, 19.28, 18.27, and 70.87 RCW. 01-12-035, § 296-96-01055, filed 5/29/01, effective 6/29/01. Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-01055, filed 12/22/00, effective 1/22/01.]

WAC 296-96-01060 Can I request an after hours inspection and what is the fee? You may request an inspection outside of normal business hours, which are 7:00 a.m. to 5:00 p.m., if an inspector is available and the inspection is authorized by the department. The minimum fee for an after-hours inspection is \$79.30 and \$79.30 per hour for each hour in addition to the first hour plus the standard per diem and mileage allowance granted to department inspectors. This fee is in addition to any other fees required for your project.

[Statutory Authority: Chapters 18.106, 43.22, and 70.87 RCW. 06-10-066, § 296-96-01060, filed 5/2/06, effective 6/30/06. Statutory Authority: Chapters 18.27, 43.22, and 70.87 RCW. 05-12-032, § 296-96-01060, filed 5/24/05, effective 6/30/05. Statutory Authority: RCW 43.22.350, 43.22.434, 43.22.480, 43.22.500, 18.27.040, 18.27.070, 18.27.075, 70.87.030, 19.28.041, 19.28.051, 19.28.101, 19.28.121, 19.28.161, 19.28.201, 19.28.211, 19.28.341, 2001 c 7, 2002 c 249, and chapters 19.28, 43.22, 18.27, and 70.87 RCW. 02-12-022, § 296-96-01060, filed 5/28/02, effective 6/28/02. Statutory Authority: RCW 43.22.350, 43.22.434, 43.22.480, 43.22.500, 18.27.070, 18.27.075, 70.87.030, 19.28.041, 19.28.051, 19.28.101, 19.28.121, 19.28.161, 19.28.201, 19.28.211, 19.28.341, 2001 c 159, and chapters 43.22, 19.28, 18.27, and 70.87 RCW. 01-12-035, § 296-96-01060, filed 5/29/01, effective 6/29/01. Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-01060, filed 12/22/00, effective 1/22/01.]

WAC 296-96-01065 What are the annual operating permits fees? An annual operating permit will be issued to you upon payment of the appropriate fee:

TYPE OF CONVEYANCE	FEE
Each hydraulic elevator	\$105.90
Each roped-hydraulic elevator	132.30
plus for each hoistway opening in excess of two	10.50
Each cable elevator	132.30
plus for each hoistway opening in excess of two	10.50
Each cable elevator traveling more than 25 feet without an opening—for each 25 foot traveled	10.50
Each limited-use/limited-application (—LULA) elevator	105.90
Each escalator	88.00
Each dumbwaiter in other than a private residence	56.70
Each material lift	105.90
Each incline elevator in other than a private residence	113.80
Each belt manlift	105.90
Each stair lift in other than a private residence	56.70
Each wheel chair lift in other than a private residence	56.70
Each personnel hoist	105.90
Each grain elevator personnel lift	88.00
Each material hoist	105.90
Each special purpose elevator	105.90
Each private residence elevator installed in other than a private residence	105.90

Each casket lift	88.00
Each sidewalk freight elevator	88.00
Each hand-powered manlift or freight elevator	59.60
Each boat launching elevator	88.00
Each auto parking elevator	88.00
Each moving walk	88.00
Duplication of a damaged, lost or stolen operating permit	10.50

[Statutory Authority: Chapters 18.106, 43.22, and 70.87 RCW. 06-10-066, § 296-96-01065, filed 5/2/06, effective 6/30/06. Statutory Authority: Chapters 18.27, 43.22, and 70.87 RCW. 05-12-032, § 296-96-01065, filed 5/24/05, effective 6/30/05. Statutory Authority: RCW 43.22.350, 43.22.434, 43.22.480, 43.22.500, 18.27.040, 18.27.070, 18.27.075, 70.87.030, 19.28.041, 19.28.051, 19.28.101, 19.28.121, 19.28.161, 19.28.201, 19.28.211, 19.28.341, 2001 c 7, 2002 c 249, and chapters 19.28, 43.22, 18.27, and 70.87 RCW. 02-12-022, § 296-96-01065, filed 5/28/02, effective 6/28/02. Statutory Authority: RCW 43.22.350, 43.22.434, 43.22.480, 43.22.500, 18.27.070, 18.27.075, 70.87.030, 19.28.041, 19.28.051, 19.28.101, 19.28.121, 19.28.161, 19.28.201, 19.28.211, 19.28.341, 2001 c 159, and chapters 43.22, 19.28, 18.27, and 70.87 RCW. 01-12-035, § 296-96-01065, filed 5/29/01, effective 6/29/01. Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-01065, filed 12/22/00, effective 1/22/01.]

WAC 296-96-01070 What are the civil (monetary) penalties for violating the conveyance permit and operation requirements of chapter 70.87 RCW and this chapter? (1) Any licensee, installer, owner or operator of a conveyance who violates a provision of chapter 70.87 RCW or this chapter shall be subject to the following civil penalties:

(a) Operation of a conveyance without a permit:	
First violation	\$158.80
Second violation	317.70
Each additional violation	500.00
(b) Installation of a conveyance without a permit:	
First violation	\$158.80
Second violation	317.70
Each additional violation	500.00
(c) Relocation of a conveyance without a permit:	
First violation	\$158.80
Second violation	317.70
Each additional violation	500.00
(d) Alteration of a conveyance without a permit:	
First violation	\$158.80
Second violation	317.70
Each additional violation	500.00
(e) (i) Operation of a conveyance for which the department has issued a red tag or has revoked or suspended an operating permit or operation of a decommissioned elevator.	\$500.00
(ii) Removal of a red tag from a conveyance	\$500.00
(f) Failure to comply with a correction notice:	
Within 90 days	\$105.90
Between 91 and 180 days	264.70
Between 181 and 270 days	423.70
Between 271 and 360 days	500.00
Each 30 days after 360 days	500.00
Note: Penalties are cumulative	
(g) Failure to submit official written notification that all corrections have been completed:	

Within 90 days	\$105.90
Between 91 and 180 days	264.70
Between 181 and 270 days	423.70
Between 271 and 360 days	500.00
Each 30 days after 360 days	500.00

Note: Penalties are cumulative

- (h) Failure to notify the department of each accident to a person requiring the services of a physician or resulting in a disability exceeding one day may result in a \$500.00 penalty per day. The conveyance must be removed from service until the department authorizes the operation of the conveyance. This may require an inspection and the applicable fees will be applied. Failure to remove the conveyance from service may result in an additional \$500.00 penalty per day.

(2) A violation as described in subsection (1)(a), (b), (c), and (d) of this section will be a "second" or "additional" violation only if it occurs within one year of the first violation.

(3) The department must serve notice by certified mail to an installer, licensee, owner, or operator for a violation of chapter 70.87 RCW, or this chapter.

[Statutory Authority: Chapters 18.106, 43.22, and 70.87 RCW. 06-10-066, § 296-96-01070, filed 5/2/06, effective 6/30/06. Statutory Authority: Chapters 18.27, 43.22, and 70.87 RCW. 05-12-032, § 296-96-01070, filed 5/24/05, effective 6/30/05. Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185, 70.87.190, 2002 c 98, 2003 c 143 and 2004 c 66. 04-12-047, § 296-96-01070, filed 5/28/04, effective 6/30/04. Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-01070, filed 12/22/00, effective 1/22/01.]

WAC 296-96-01075 How does an owner or licensee receive a variance from the installation and alteration requirements of chapter 70.87 RCW and this chapter? Variances from the installation and alteration requirements of this chapter may be requested. The variance request shall be in writing on a form approved by the department accompanied with the required fee. The individual requesting the variance must provide the department with pictures, documentation, or other information necessary for the department to review the variance. The department may conduct an on-site variance inspection to verify the information provided or if it determines that an inspection is necessary. If an on-site variance inspection is performed, the fees in WAC 296-96-01035 will also apply.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185, 70.87.190, 2002 c 98, 2003 c 143 and 2004 c 66. 04-12-047, § 296-96-01075, filed 5/28/04, effective 6/30/04.]

PART C - REGULATIONS FOR NEW AND ALTERED ELEVATORS AND LIFTING DEVICES

NOTE: The following rules set the minimum standard for all new installations and, where applicable, alterations.

WAC 296-96-02230 When must the department be notified for a new or altered inspection? (1) The person or firm installing, relocating, or altering a conveyance shall notify the department in writing, at least seven days before requesting any inspection of the work, and shall subject the

new, moved, or altered portions of the conveyance to the acceptance tests.

(2) The department may grant exceptions to this notice requirement.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185, 70.87.190, 2002 c 98, 2003 c 143 and 2004 c 66. 04-12-047, § 296-96-02230, filed 5/28/04, effective 6/30/04.]

WAC 296-96-02232 What are the conditions for obtaining a temporary operating permit? (1) Hydraulic elevators with less than four stops may not be issued a temporary operating permit unless preapproved by the department. In order to obtain a permit:

(a) The elevator must pass load tests and safety circuit inspections.

(b) Temporary or permanent lights in the cab, machine room and at the landings must be provided.

(c) Machine rooms must be fully enclosed and have a lockable door.

(d) Hoistways must be fully enclosed.

(e) A single means of disconnecting the elevator must be provided and related equipment must be identified by the use of numbers or letters on the disconnect, the controller, the drive machine, the cross head, and the car operating panel.

(f) Elevator cab interiors must be completed. Temporary cabs may be used and walls must be covered with fire retardant materials.

(g) The key operation of Phase I must recall the elevator.

(h) A means of emergency communication with the elevator must be provided. If there is no permanent method of emergency communication an operator with communication equipment must be provided.

(2) The person operating the permitted conveyance under this section must be properly trained in operation and safety and:

(a) The operator must be on the elevator whenever it is in use. The operator may be one of your employees.

(b) He or she must be designated to be the sole operator of the elevator.

(c) The operator must be trained in the proper operation of the elevator, the proper procedure to handle an emergency and must know who to contact in the event of an emergency involving the operation of the elevator.

(d) The operator must carry a means of two-way communication on his/her person at all times. (This may be in the form of a cell-phone, walkie-talkie, etc., providing proper reception is obtainable at all times.)

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185, 70.87.190, 2002 c 98, 2003 c 143 and 2004 c 66. 04-12-047, § 296-96-02232, filed 5/28/04, effective 6/30/04.]

WAC 296-96-02235 What are the requirements for temporary operating permits? (1) A thirty-day temporary operating permit is for transportation of construction personnel and materials only, not for the transportation by the general public.

(2) Temporary operating permits are valid for thirty days.

(3) You must contact the department for a reinspection to renew the permit.

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(4) All elevators with expired temporary operating permits that have not passed a final inspection may not be operated.

(5) Renewal of a temporary operating permit is at the discretion of the department.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185, 70.87.190, 2002 c 98, 2003 c 143 and 2004 c 66. 04-12-047, § 296-96-02235, filed 5/28/04, effective 6/30/04.]

WAC 296-96-02240 Where is a shut-off valve required for hydraulic elevators? Two shut-off valves may be required.

(1) ASME requires that a shut-off valve be installed in the machine room.

(2) When the pit is lower than the machine a shut-off valve must be installed in the pit. A separate shut-off valve is not required in the pit for hydraulic elevators equipped with a safety/rupture valve that rotates no more than 180 degrees to stop the flow of hydraulic fluid and has a safety shut-off handle capable of being grasped.

EXCEPTION: Limited use/limited application (LULA), special purpose and residential elevators are exempt from this section.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185, 70.87.190, 2002 c 98, 2003 c 143 and 2004 c 66. 04-12-047, § 296-96-02240, filed 5/28/04, effective 6/30/04. Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-02240, filed 12/22/00, effective 1/22/01.]

WAC 296-96-02275 What are the requirements for Fireman's Service Phase I and Phase II recall? Devices for deactivating recall must be in the line of sight of the elevator; be secure from tampering; and must be accessible to fire, inspection, and elevator service personnel only. Owner-designated patient express and emergency hospital service elevators may have a manual control in the car for use by authorized patient care personnel. When activated, it shall preclude Phase I recall.

The illuminated visual signal in the car that indicates when Phase I Emergency Recall Operation is in effect must stay illuminated until the car is taken off Phase I operation.

Once the car returns to the designated landing on Phase I recall and the doors have reached their full open position, the buzzer must be silenced within ten seconds.

Groups of elevators containing four or more cars shall be provided with two, three-position key switches per group. For purposes of this section, a group shall be defined as all elevators serving the same portion of a building. Hall call buttons common to a group will remain in service unless both Phase I recall switches of a four car or larger group are placed in the recall mode or a fire alarm recall signal is initiated.

EXCEPTION: Limited use/limited application (LULA), special purpose, and residential elevators are exempt from this section.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185, 70.87.190, 2002 c 98, 2003 c 143 and 2004 c 66. 04-12-047, § 296-96-02275, filed 5/28/04, effective 6/30/04. Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-02275, filed 12/22/00, effective 1/22/01.]

WAC 296-96-02276 What are the requirements for sprinklers in hoistways and machine rooms? (1) The machine room sprinkler piping must terminate in the machine

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room. The sprinkler piping must not run through the machine room to other spaces.

(2) The hoistway must not be used to supply sprinkler runs to more than one floor.

(3) The pit will be considered as a floor level.

(4) Sprinkler heads at the top of the shaft must terminate in the shaft. The sprinkler must not run through the hoistway to other spaces. "Other spaces" includes the machine room.

(5) All risers and returns must be located outside of the hoistway and machine room.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185, 70.87.190, 2002 c 98, 2003 c 143 and 2004 c 66. 04-12-047, § 296-96-02276, filed 5/28/04, effective 6/30/04.]

WAC 296-96-02277 How does the department enforce ASME requirements for sprinklers, smoke detectors, and heat detectors in hoistways and machine rooms? ASME A17.2.8.2.3.2 states: "Means shall be provided to automatically disconnect the mainline power supply to the affected elevator upon or prior to the application of water from sprinklers located in the machine room or in the hoistway more than 600 mm (24 inches) above the pit floor. This means shall be independent of the elevator control and shall not be self-resetting. The activation of sprinklers outside the hoistway or machine room shall not disconnect the main line power supply." This section applies to both new and altered elevators when sprinklers have been installed in the elevator machine room and/or hoistway.

(1) The department enforces this rule as follows:

(a) When sprinkler systems are installed in an elevator hoistway, fixed temperature heat detectors, set only at 135°F, must be located at the top of the hoistway. If sprinklers are installed in the machine room, the same rule applies to heat detectors in the machine room. If heat detectors are installed, smoke detectors must also be installed for elevator recall. The purpose of the heat detector is to automatically disconnect mainline power to the elevator before water flows from any sprinkler associated with the elevator system.

(b) Activation of a smoke detector or other initiating device at the top of the hoistway shall cause all elevators having any equipment in that hoistway, and any associated elevators of a group automatic operation, to be returned nonstop to the designated level.

(c) Heat detectors must be:

(i) Located within 18 inches of each sprinkler head, as required by the local building official, or as required by NFPA 13.

(ii) Ceiling mounted. However, pit detectors, if installed, may only be used as a signaling device and wall-mounted if they are so designed.

(iii) Heat detectors are not required in pits provided the automatic sprinkler heads are installed in such a way that the water spray pattern does not spray higher than three feet above the pit floor with a spray pattern directed level and down. The shunt trip disconnect must be installed in the machine room or machinery space and it must be easily identifiable.

(d) The shunt trip disconnect must be installed in the machine room or machinery space and it must be easily identifiable.

(e) Power for the automatic disconnect control circuit must be derived from a 120 volt separate branch circuit. Circuit location must be identified on or next to the elevator disconnects. An illuminated visual device must be installed in the machine room adjacent to each elevator's disconnect. The purpose of this visual device is to indicate that power is available to the shunt trip activation mechanism.

(f) All electrical equipment and wiring associated with shunt trip devices must conform to the applicable ANSI/NFPA 70.

(g) The department does not require sprinkler shut-off valves. However, where they are installed, they must be located in an accessible place outside the hoistway, machine room or machinery space with their handles placed at no more than 6 feet above the floor.

(h) Emergency return units must be disabled when the shunt trip is activated.

(2) Alternative methods used to achieve ASME A17.2.8.2.3.2 must be approved by the department prior to installation.

EXCEPTION: Limited use/limited application (LULA), special purpose, and residential elevators are exempt from this section.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185, 70.87.190, 2002 c 98, 2003 c 143 and 2004 c 66. 04-12-047, § 296-96-02277, filed 5/28/04, effective 6/30/04. Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-02277, filed 12/22/00, effective 1/22/01.]

WAC 296-96-02278 Are keys required to be on-site?

Yes. The keys to the machine room and the keys that are necessary to operate the elevator must be located in a locked key retainer box in the elevator lobby at the designated level above the hall buttons; or located by machine room doors at no more than six feet above the floor, provided access to the key box doesn't require passage through locked doors. The key retainer box must be:

- Readily accessible to authorized personnel;
 - Clearly labeled "elevator";
 - Securely mounted; and
 - Equipped with a 1-inch cylinder cam lock key #39504 and securely mounted.
- Further:
- Keys for access to elevator machine rooms and for operating elevator equipment must be tagged and kept in the key box.
 - The key box must contain all keys necessary for inspection of the elevator.
 - Mechanical hoistway access devices must be located in the key box or machine room.

EXCEPTION: Residential elevators are exempt from this section.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185, 70.87.190, 2002 c 98, 2003 c 143 and 2004 c 66. 04-12-047, § 296-96-02278, filed 5/28/04, effective 6/30/04. Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-02278, filed 12/22/00, effective 1/22/01.]

WAC 296-96-02280 Can pipes and ducts be installed above a machine room? Electric conduit, pipes, and ducts may be installed in the upper space ("upper space" is defined as the space above the fire-rated ceiling) of the elevator machine room as long as they are installed above the required seven-foot clearance and they do not interfere with the eleva-

tor equipment which also must be installed to allow a seven-foot head clearance.

(1) Straight through runs of electrical conduit without junction boxes may be installed in this space.

(2) Pipes and ducts conveying gases, vapor, or liquids may be installed in the space above the machine room provided they are encased in a noncombustible secondary pipe without joints, or a moisture barrier without penetration.

EXCEPTION: Residential elevators are exempt from this section.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185, 70.87.190, 2002 c 98, 2003 c 143 and 2004 c 66. 04-12-047, § 296-96-02280, filed 5/28/04, effective 6/30/04. Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-02280, filed 12/22/00, effective 1/22/01.]

WAC 296-96-02281 What is required for emergency escape hatches? Emergency escape hatches must be hinged and secured from the car top so that the cover opens from the top of the car only. The hatch must be able to be opened without the use of tools.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185, 70.87.190, 2002 c 98, 2003 c 143 and 2004 c 66. 04-12-047, § 296-96-02281, filed 5/28/04, effective 6/30/04. Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-02281, filed 12/22/00, effective 1/22/01.]

WAC 296-96-02282 What is required for fire fighters' service? It is the owner's responsibility to test fire fighters' service operation of Phase I and Phase II key switches quarterly. A log with dates and the initials of the person performing the test must be posted in the machine room.

EXCEPTION: Limited use/limited application (LULA), special purpose, and residential elevators are exempt from this section.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185, 70.87.190, 2002 c 98, 2003 c 143 and 2004 c 66. 04-12-047, § 296-96-02282, filed 5/28/04, effective 6/30/04.]

WAC 296-96-02283 What is the minimum working space required in machine rooms? (1) In machine rooms with equipment requiring maintenance and inspection, an eighteen-inch working space must be established.

(2) There must be a minimum of eighteen inches working space (other than the required controller panel clearances) on either side of the hydraulic tank.

(3) The requirements in subsections (1) and (2) of this section do not supersede NFPA 70.

(4) The side with the hydraulic outlet pipe is not considered usable working space.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185, 70.87.190, 2002 c 98, 2003 c 143 and 2004 c 66. 04-12-047, § 296-96-02283, filed 5/28/04, effective 6/30/04.]

WAC 296-96-02285 Are there exceptions for correction facility elevators? Facilities that require special consideration to ensure the safety of security personnel and to prevent escapes must meet the relevant requirements of ASME A17.1, except that accessible "in-car" stop switches and signaling devices are not required when the elevator operation is:

- (1) Continually monitored by audio-visual equipment; and
- (2) Remotely controlled from a single location.

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(3) Controls necessary for an elevator's operation may be located inside a car when the operating panel has a locked cover.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185, 70.87.190, 2002 c 98, 2003 c 143 and 2004 c 66. 04-12-047, § 296-96-02285, filed 5/28/04, effective 6/30/04.]

WAC 296-96-02290 What are the requirements for underground hydraulic elevator pipes, fittings, and cylinders? All newly installed underground pressure cylinders and pipes containing hydraulic elevator fluids shall be encased in an outer plastic containment.

(1) The plastic casing shall be constructed of polyethylene or polyvinyl chloride (PVC). The plastic pipe wall thickness must not be less than 0.125 inches (3.175 mm). The casing shall be capped at the bottom and all joints must be solvent or heat welded.

(2) The casing shall be sealed and dry around hydraulic pipe and cylinder to contain any leakage into the ground and to prevent electrolysis to the hydraulic pipe and the cylinder. Dry sand may be used to stabilize the hydraulic cylinder.

(3) A one-half inch pipe nipple with a one-way check valve shall be located between the casing and cylinder for monitoring purposes.

(4) Alternate methods must receive approval from the department prior to installation.

(5) This rule shall apply to all conveyances with installation permits issued by the department on or after the effective date of these rules.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185, 70.87.190, 2002 c 98, 2003 c 143 and 2004 c 66. 04-12-047, § 296-96-02290, filed 5/28/04, effective 6/30/04.]

WAC 296-96-02300 Are self-leveling devices required? Automatic elevators must be equipped with a self-leveling device that:

- (1) Operates automatically;
- (2) Stops the car at each floor landing within a tolerance of plus or minus 1/2 inch under normal loading and unloading conditions;
- (3) Functions independently of the car's operating device;
- (4) Corrects for over-travel and under-travel; and
- (5) Always maintains the car within a tolerance of plus or minus 1/2 inch with the landing regardless of load.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-02300, filed 12/22/00, effective 1/22/01.]

WAC 296-96-02306 Is a door reopening device required on automatic-closing car doors? (1) If an elevator car door closes automatically, a door reopening device must be installed that:

- (a) Stops and reopens the car door and the adjacent hoistway door whenever the car door is obstructed while closing;
- (b) Is activated by a sensor, not physical contact;
- (c) Is capable of sensing an object or a person in the path of the closing car door; and
- (2) The sensing device can be located along the entire edge of the door. When used with a manually operated device

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(safety edge), a minimum of two sensing devices must be installed between 5 and 29 inches above the floor.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-02306, filed 12/22/00, effective 1/22/01.]

WAC 296-96-02310 What is the minimum acceptable initial transfer time for an elevator door? "Initial transfer time" refers to the period of time between an elevator car receiving a call for service and when the car door begins to close. The minimum acceptable initial transfer time for an elevator is:

(1) For HALL CALLS, minimum acceptable initial transfer time is based upon the distance between a point in the center of the corridor or lobby (maximum 5 feet) that is directly opposite the farthest hall button controlling the car and the centerline of the hoist-way entrance. Minimum acceptable times for specific distances are:

- (a) 0-5 feet: 4 seconds;
- (b) 10 feet: 7 seconds;
- (c) 15 feet: 10 seconds; and
- (d) 20 feet: 13 seconds.

(2) For CAR CALLS, the minimum acceptable initial transfer time for doors to remain fully open is 3 seconds.

EXCEPTION: Limited use/limited application (LULA), special purpose, and residential elevators are exempt from this section.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185, 70.87.190, 2002 c 98, 2003 c 143 and 2004 c 66. 04-12-047, § 296-96-02310, filed 5/28/04, effective 6/30/04. Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-02310, filed 12/22/00, effective 1/22/01.]

WAC 296-96-02315 What are the minimum cab size and other applicable requirements for car interiors? (1) All car interiors must be constructed to allow wheelchair users to enter the car, to maneuver within reach of the control panel and to exit the car.

(2) Minimum door width must be 36 inches.

(3) Minimum cab depth:

- (a) From the rear wall to the return panel must be 51 inches; and
- (b) From the rear wall to the inside face of the cab door must be 54 inches.

(4) For cabs with side-opening doors, the minimum cab width is 68 inches;

(5) For cabs with center-opening doors, the minimum cab width is 80 inches;

(6) Maximum clearance between a car platform sill and the edge of a hoistway landing sill must be 1 1/4 inch; and

(7) If the building official having jurisdiction determines the elevator must comply with accessibility requirements, the elevator must comply with subsections (1) through (6) of this section.

EXCEPTION 1: Elevators located in existing school buildings or other buildings specifically identified by local authorities may have a minimum clear distance between walls or between a wall and the door, including the return panel, of 54 inches, and a minimum distance from the wall to the return panel of 51 inches.

EXCEPTION 2: LULA, special purpose, and residential elevators must meet the specifications in ASME A17.1 pertaining to car size.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185, 70.87.190, 2002 c 98, 2003 c 143 and 2004 c 66. 04-12-047, §

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296-96-02315, filed 5/28/04, effective 6/30/04. Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-02315, filed 12/22/00, effective 1/22/01.]

WAC 296-96-02317 When does the department require a local building official to sign off for the installation of LULAs, stair lifts, inclined wheelchair lifts and vertical wheelchair lifts? In existing buildings where LULAs, stair lifts, inclined wheelchair lifts and vertical wheelchair lifts are to be installed, the local building official must signify that he/she is allowing this type of conveyance on a form provided by the department.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185, 70.87.190, 2002 c 98, 2003 c 143 and 2004 c 66. 04-12-047, § 296-96-02317, filed 5/28/04, effective 6/30/04.]

WAC 296-96-02318 What are the general requirements for LULA elevators? (1) LULAs may be permitted in churches, private clubs, and buildings listed on the historical register that are not required to comply with accessibility requirements.

(2) Installation of LULAs in existing buildings that are not required to comply with accessibility requirements, will be considered on a case-by-case basis by the department.

(3) For LULAs installed according to subsections (1) and (2) of this section a form provided by the department must be signed by the local building official.

(4) LULAs must be equipped with an emergency communication device meeting the requirements of WAC 296-96-02330.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185, 70.87.190, 2002 c 98, 2003 c 143 and 2004 c 66. 04-12-047, § 296-96-02318, filed 5/28/04, effective 6/30/04.]

WAC 296-96-02320 What is required for car controls? (1) The following requirements apply to the location of car controls:

(a) Upon entering an elevator, at least one set of controls must be readily accessible from a wheelchair;

(b) The centerline of the alarm button and emergency stop switch must be 35 inches;

(c) Where a side approach is used, the highest floor buttons must be no higher than 54 inches from the floor;

(d) Where a forward approach is used, the highest floor buttons must be no higher than 48 inches from the floor;

(e) Emergency controls must be grouped together at the bottom of the control panel and centered at 35 inches; and

(f) Controls unessential to the elevator's operation may be located in a convenient place.

(2) The following requirements apply to the construction of control panels:

(a) Raised or flush floor registration buttons, exclusive of the panel border, must be at least 3/4 inch and arranged from left to right in ascending order.

(b) When pushed, the depth of flush buttons must not exceed 3/8 inch.

(c) Indicator lights must be installed to show each call registered and they must extinguish when a call is answered.

(d) All markings must be located to the left of and adjacent to the car controls on a contrasting color background.

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(e) All letters or numbers must be at least 5/8 inches high and must be raised .030 of an inch.

(f) Braille must be used to identify all control buttons. Permanently attached plates are acceptable.

(g) Standard ASME A17.1 symbols must be used to identify essential controls.

EXCEPTION: Special purpose and residential elevators are exempt from this section.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185, 70.87.190, 2002 c 98, 2003 c 143 and 2004 c 66. 04-12-047, § 296-96-02320, filed 5/28/04, effective 6/30/04. Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-02320, filed 12/22/00, effective 1/22/01.]

WAC 296-96-02325 What are the location and operation requirements for car position indicators in the car?

(1) A visual car position indicator must be located either above the car control panel or above the car door.

(2) As the car passes or stops at a floor, the corresponding floor numbers must light up and a signal must sound.

(3) All numerals must be at least 1/2 inch high.

(4) All audible signals must be at least 20 decibels with a frequency no higher than 1500 Hz.

(5) The automatic announcement of a floor number may be substituted for an audible signal.

EXCEPTION: Limited use/limited application (LULA), special purpose, and residential elevators are exempt from this section.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185, 70.87.190, 2002 c 98, 2003 c 143 and 2004 c 66. 04-12-047, § 296-96-02325, filed 5/28/04, effective 6/30/04. Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-02325, filed 12/22/00, effective 1/22/01.]

WAC 296-96-02330 What is required for installation and operation of emergency communication systems?

Every elevator must contain an emergency two-way communication system. The installation and operation of this emergency communication system must comply with the ASME A17.1 code in effect when the department issued the elevator's installation permit. In addition to the appropriate ASME A17.1 code, the following department requirements apply:

(1) The communication device located in the elevator car must comply with the following:

(a) The maximum height of any operable part of the communication system is 48 inches above the floor.

(b) Raised symbols and letters must identify the communication system. These symbols and letters must be located adjacent to the communication device. The characters used must be:

- (i) At least 5/8 inches but no more than 2 inches high;
- (ii) Raised 1/32 inch;
- (iii) Upper case;
- (iv) Sans serif or simple serif type; and
- (v) Accompanied by Grade 2 Braille.

(c) If the system is located in a closed compartment, opening the door to the compartment must:

- (i) Require the use of only one hand without tight grasping, pinching, or twisting of the wrist; and
- (ii) Require a maximum force of 5 pounds.

(d) The emergency communication system must not be based solely upon voice communication since voice-only systems are inaccessible to people with speech or hearing

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impairments. An indicator light must be visible when the telephone is activated. This nonverbal means must enable the message recipient to determine the elevator's location address and, when more than one elevator is installed, the elevator's number.

(e) The emergency communication system must use a line that is capable of communicating with and signaling to a person or service that can respond appropriately to the emergency at all times.

(2) A communication device must be installed in the lobby adjacent to the Phase I key switch. This device must be a two-way communication device used to communicate with individuals in the elevator.

(a) The height of any communication device(s) located in the lobby must be located between 48-60 inches above the floor.

(b) Additional communication device(s) may also be located in other parts of the building in addition to the one located in the lobby.

(c) Exception: Elevators that have less than sixty feet of travel do not require an intercom.

(3) Subsections (1) and (2) of this section do not apply to special purpose elevators. However, residential, and special purpose elevators must have a means of communication located inside the elevator cab. This communication device must be available at all times.

EXCEPTION: Residential inclined elevators are exempt from this section.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185, 70.87.190, 2002 c 98, 2003 c 143 and 2004 c 66. 04-12-047, § 296-96-02330, filed 5/28/04, effective 6/30/04. Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-02330, filed 12/22/00, effective 1/22/01.]

WAC 296-96-02340 What requirements apply to the size and location of car handrails? (1) A handrail must be installed on all car walls not used for normal exits. The hand rails must be:

(a) Attached to the wall at a height of between 32 and 35 inches from the floor.

(b) Attached to the wall with a 1 1/2 inch space between the wall and the rail;

(c) Constructed with the hand grip portion not less than 1 1/4 inches but not more than 2 inches wide;

(d) Constructed with a cross-section shape that is substantially oval or round;

(e) Constructed with smooth surfaces and no sharp corners.

Approaching handrail ends on a blank wall in the interior corners of a car do not have to return to the wall. However, if the handrail is located on the closing door wall of a single-slide or two-speed entrance elevator and it projects an abrupt end towards people entering the car, the handrail end must return to the wall.

(2) Residential elevators must have at least one handrail. The handrail must be installed on a car wall not used for normal exits.

EXCEPTION: Special purpose elevators are exempt from this section.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185, 70.87.190, 2002 c 98, 2003 c 143 and 2004 c 66. 04-12-047, § 296-96-02340, filed 5/28/04, effective 6/30/04. Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-02340, filed 12/22/00, effective 1/22/01.]

WAC 296-96-02350 What requirements apply to floor designations on elevator door jambs? Floor designations must be:

- (1) Located on both sides of the doorjamb at each hoistway entrance;
- (2) Visible from within the car and from the lobby;
- (3) Positioned on a centerline height of 60 inches above the floor;
- (4) Two inches high and raised 3/10 inch;
- (5) Placed on a contrasting color background; and
- (6) Accompanied by Grade 2 Braille. Permanently attached plates are acceptable.

EXCEPTION: Special purpose and residential elevators are exempt from this section.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185, 70.87.190, 2002 c 98, 2003 c 143 and 2004 c 66. 04-12-047, § 296-96-02350, filed 5/28/04, effective 6/30/04. Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-02350, filed 12/22/00, effective 1/22/01.]

WAC 296-96-02355 What are the installation and operation requirements for hall buttons? (1) The centerline of all hall call buttons must be 42 inches above the floor.

- (2) The "UP" direction button must be on top.
- (3) Raised or flush direction buttons, exclusive of the panel border, must be a minimum of 3/4 inch in size.
- (4) Indicator lights must be installed to show each call registered and they must extinguish when the call is answered.
- (5) When pushed, the depth of flush buttons must not exceed 3/8 inch.

Exception: Special purpose and residential elevators are exempt from this section.

Note: The exception becomes effective August 20, 2004.

[Statutory Authority: Chapter 70.87 RCW. 04-15-104, § 296-96-02355, filed 7/20/04, effective 8/20/04. Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-02355, filed 12/22/00, effective 1/22/01.]

WAC 296-96-02360 What are the requirements for installation and operation of hall lanterns? (1) A visual and audible signal must be installed at each hoistway entrance. These signals must indicate, to the prospective passenger, which car is responding to the call and the direction the car is traveling.

- (2) The visual signal for each direction must be at least 2 1/2 inches in size and must be visible from the vicinity of the hall call button.
- (3) The audible signal must sound once for "up" and twice for "down."
- (4) The centerline of the lantern fixture must be located at least 6 feet above the floor.
- (5) Car lanterns may be located either on the jamb or in the car.

EXCEPTION: Limited use/limited application (LULA), special purpose, and residential elevators are exempt from this section.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185, 70.87.190, 2002 c 98, 2003 c 143 and 2004 c 66. 04-12-047, § 296-96-02360, filed 5/28/04, effective 6/30/04. Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-02360, filed 12/22/00, effective 1/22/01.]

[Title 296 WAC—p. 1742]

WAC 296-96-02361 What are the requirements for electrical main line disconnects? (1) The main line disconnect switch(es) or circuit breaker must be located inside the machine room door on the lock jamb side of the machine room door and not more than twenty-four inches from the jamb to the operating handle; and it must be at a height of not more than sixty-six inches above the finish floor.

(2) For multicar machine rooms the switches shall be grouped together as close as possible to that location.

(3) For machine rooms with double swing doors, the doors must swing out and the switch(es) must be on the wall adjacent to the hinge side of the active door panel.

(4) The switch(es) must be designed so that they may be locked out and tagged in the open position.

EXCEPTION: Special purpose and residential inclined elevators are exempt from this section.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185, 70.87.190, 2002 c 98, 2003 c 143 and 2004 c 66. 04-12-047, § 296-96-02361, filed 5/28/04, effective 6/30/04.]

WAC 296-96-02362 What are the requirements associated with elevator machine rooms? (1) Panels or doors for the purpose of accessing nonelevator equipment are not permitted in elevator machine rooms. Passage through the machine room may not be used to gain access to other parts of the building that do not contain elevator equipment.

(2) The lighting control switch must be located inside the machine room within twenty-four inches of the lock jamb side of the machine room door.

(3) Cooling or venting of the elevator machine room:

(a) When solid state equipment is used to operate the elevators, the elevator machine room must be provided with an independent ventilation or air conditioning system to prevent overheating of the electrical equipment.

(b) The operating temperature shall be established by the elevator equipment manufacturer's specifications. Where no specifications are available, the machine room temperature shall be maintained at no less than fifty-five degrees Fahrenheit and no more than one hundred degrees Fahrenheit.

(c) When standby power is connected to the elevators, the machine room ventilation or air conditioning system shall be connected to the standby power.

(i) All cooling and heating systems must be independent.

(ii) If air conditioners are used, they must service the elevator machine room only. If the air conditioner is mounted overhead, seven feet of headroom clearance must be provided from the underside of the unit to the machine room floor.

(iii) If air exchange is used, it must not draw air from or exhaust air into other parts of the building.

(d) Machine rooms located in underground parking garages must have a means to exchange the air in the machine room. An "exchange of air" is completed through separate intake and exhaust systems.

EXCEPTION: The air in an underground parking garage machine room can be exchanged directly into the parking garage area.

(4) All elevators that are provided with remote elevator machine and/or control rooms must be provided with a permanent means of communication between the elevator car and the remote machine room and/or control room.

(2007 Ed.)

(5) Elevator machine room doors must have signs with lettering at least two inches in height with "elevator equipment room authorized personnel only - no storage."

EXCEPTION: Residential conveyances, LULAs and special purpose elevators are exempted from these requirements.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185, 70.87.190, 2002 c 98, 2003 c 143 and 2004 c 66. 04-12-047, § 296-96-02362, filed 5/28/04, effective 6/30/04.]

WAC 296-96-02363 What are the requirements for fire doors installed in front of hoistway doors? If fire and/or smoke doors are required to be installed by the International Building Code or the local building official they must not:

(1) Be permanently attached to the hoistway door assembly.

(2) Encroach upon the full width and height of the hoistway door opening.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185, 70.87.190, 2002 c 98, 2003 c 143 and 2004 c 66. 04-12-047, § 296-96-02363, filed 5/28/04, effective 6/30/04.]

WAC 296-96-02364 What are the requirements for accessing elevated elevator pit equipment? Where elevated pit equipment requires assisted vertical access of more than five feet, a permanent noncombustible working platform shall be provided. Access to the platform must be by a fixed ladder or stair conforming to ANSI A14.3. The platform shall be of sufficient strength to support personnel and may be of open grillwork.

In residential installations where the pit depth exceeds three feet, a fixed vertical ladder, designed to the current adopted rules for commercial installations, must be provided.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185, 70.87.190, 2002 c 98, 2003 c 143 and 2004 c 66. 04-12-047, § 296-96-02364, filed 5/28/04, effective 6/30/04.]

WAC 296-96-02366 What are the requirements for submersible pumps or sumps? Sump pumps and drains are not required in elevator pits. Sump holes must be installed and measure a minimum of 18" x 18" x 18". If drains or sump pumps are installed they must not be directly connected to sewers and/or storm drains. P-traps and check valves are not allowed. All installations must meet the NEC and all plumbing codes.

Sump hole covers must be designed to withstand a load of three hundred pounds per square foot.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185, 70.87.190, 2002 c 98, 2003 c 143 and 2004 c 66. 04-12-047, § 296-96-02366, filed 5/28/04, effective 6/30/04.]

WAC 296-96-02367 What are the requirements for top of car lighting for freight and passenger elevators? A permanently wired work light and outlet shall be installed on the top of freight and passenger elevators. The light(s) shall provide illumination of 10-foot candles across the entire horizontal plane of the top of the car up to a height of six feet. The fixture(s) shall be protected from accidental breakage.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185, 70.87.190, 2002 c 98, 2003 c 143 and 2004 c 66. 04-12-047, § 296-96-02367, filed 5/28/04, effective 6/30/04.]

(2007 Ed.)

WAC 296-96-02370 What is required for physically handicapped lifts? (1) All inclined stairway chairlifts and inclined and vertical wheelchair lifts installed in buildings where the conveyance is not visible at all times must be equipped with a standard electric switch Chicago style lock and #2252 key.

(2) All inclined stairway chairlifts and inclined and vertical wheelchair lifts installed in residences licensed as group homes must be equipped with a standard electric key switch Chicago style lock and #2252 key.

(3) All inclined stairway chairlifts and inclined and vertical wheelchair lifts installed in schools, day care centers, churches and other facilities which typically accommodate or provide services for children must also be equipped with a standard electric key switch Chicago style lock and #2252 key.

(4) Where these conveyances are installed outdoors, they must be equipped with either a standard electric key switch Chicago style lock and #2252 key or a timing device. The timing device must not allow the conveyance to run outside of normal business hours.

(5) In locations where the conveyance is not visible at all times, the conveyance must be equipped with a means of two-way communication that is capable of communicating with and signaling to a person or service that can respond appropriately at all times.

EXEMPTION: Inclined stairway chairlifts and inclined and vertical wheelchair lifts in private residences are not required to be equipped with key switches.

(6) Beginning July 1, 2004, vertical wheelchair lifts in commercial installations must be equipped with low energy power-operated doors or gates complying with ANSI/BHMA A156.19. Doors and gates shall remain open for twenty seconds minimum. End doors shall be thirty-two inches minimum clear width. Side doors shall be forty-two inches minimum clear width.

EXCEPTION: Lifts having doors or gates on opposite sides shall be permitted to have manual doors and gates.

(7) For purposes of this section, "not visible at all times" includes, but is not limited to, conveyances located in stairwells, auditoriums, and other areas which are not generally in the normal path of travel during the hours that the building is occupied.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185, 70.87.190, 2002 c 98, 2003 c 143 and 2004 c 66. 04-12-047, § 296-96-02370, filed 5/28/04, effective 6/30/04.]

WAC 296-96-02371 Are private residence inclined stairway chairlifts required to be permanently wired? No. Private residence inclined stairway chairlifts are not required to be permanently wired into a structure. These conveyances may be equipped with a cord and plug. The plug must be directly inserted into a wall receptacle that is protected by a fuse or a circuit breaker at its source and is capable of supporting the additional load on the circuit. The source must be identified either at the receptacle or at the feeder panel. The cord must be secured in a manner that will not create any tripping hazards.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185, 70.87.190, 2002 c 98, 2003 c 143 and 2004 c 66. 04-12-047, § 296-96-02371, filed 5/28/04, effective 6/30/04.]

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PART C1 - MINIMUM STANDARDS FOR ALL MATERIAL LIFTS

WAC 296-96-05010 What are the department's rules on material lifts? (1) These rules define a "material lift" as a fixed stationary conveyance that:

- (a) Has a car or platform moving in guides;
- (b) Serves two or more floors of a building or structure;
- (c) Has a vertical rise of at least 5 feet and no more than 60 feet;
- (d) Has a maximum speed of 50 feet per minute;
- (e) Is not part of a conveying system but is an isolated self-contained lift;
- (f) Travels only in an inclined or vertical direction;
- (g) Is operated or supervised by an individual designated by the employer;
- (h) Is installed in a commercial or industrial area not accessible to the general public; and
- (i) May not be operated from within the car.

(2) Material lifts must not carry people so their operation or failure will not endanger people working near them. WAC 296-96-05010 through 296-96-05290 establishes requirements for the construction, installation, and operation of material lifts. These rules allow certain conveyances designed solely to transport material and equipment to be constructed to less stringent and costly standards than ASME A17.1.

These rules do not apply to conveyances that lack a car (platform) and use rollers, belts, tracks, power conveyors, or similar carrying (loading) surfaces. (See ASME/ANSI B20.1.)

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185, 70.87.190, 2002 c 98, 2003 c 143 and 2004 c 66. 04-12-047, § 296-96-05010, filed 5/28/04, effective 6/30/04. Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-05010, filed 12/22/00, effective 1/22/01.]

WAC 296-96-05020 What requirements apply to the construction and fire safety of hoistway enclosures? Generally, local codes and ordinances govern hoistway enclosure construction. When not in conflict with a local code requirement, the enclosure must:

- (1) Be built to a height of 7 feet above each floor, landing and adjacent stairway tread;
- (2) Extend (adjacent to the counterweights) the full height of the floor and 8 inches beyond the counterweight raceway;
- (3) Be constructed of either solid material or material with openings that will reject a 2-inch diameter ball; and
- (4) Be supported and braced so that it does not deflect more than 1 inch when subjected to a force of 100 pounds applied perpendicular at any point.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-05020, filed 12/22/00, effective 1/22/01.]

WAC 296-96-05030 What are the construction requirements for hoistway enclosure gates and doors? Enclosure gates (doors) must be constructed according to the following standards:

- (1) The gate must guard the full width of each opening on every landing.
- (2) It must be built in one of the following styles:
 - (a) Vertically sliding;
 - (b) Biparting;
 - (c) Counter-balanced;
 - (d) Horizontally swinging; or
 - (e) Horizontally sliding.
- (3) Be constructed of either solid material or material with openings that will reject a 2-inch diameter ball.
- (4) Be constructed with a distance of not more than 2 1/2 inches between a hoistway gate or hoistway door face and a landing sill edge.
- (5) Be designed and guided to withstand (without being broken, permanently deformed, or displaced from its guides or tracks) a 100 pound lateral pressure applied near its center.
- (6) Be equipped with labeled and listed electrical interlock(s) that prevents the operation of the lift when the doors or gates are open.
- (7) Be constructed with balanced type vertically sliding gates that extend no more than 2 inches vertically from the landing threshold and no less than 66 inches above it.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185, 70.87.190, 2002 c 98, 2003 c 143 and 2004 c 66. 04-12-047, § 296-96-05030, filed 5/28/04, effective 6/30/04. Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-05030, filed 12/22/00, effective 1/22/01.]

WAC 296-96-05040 What requirements apply to a hoistway that does not extend to the lowest levels of a building or structure? If the space directly below the hoistway is accessible, the following requirements apply:

- (1) All lift counterweights must have safeties.
- (2) All cars and counterweights must have either spring or oil buffers.
- (3) Spring buffers must not fully compress when struck by a car carrying its rated load or by the counterweights when they are moving at the following speeds:
 - (a) For safeties operated by a governor, the tripping speed of the governor is the maximum striking speed.
 - (b) For safeties not operated by a governor, 125 percent of the rated speed is the maximum striking speed.
- (4) Car and counterweight-buffer supports must be able to withstand any impact upon the buffer (without permanent deformation) while occurring at the following speeds:
 - (a) For safeties operated by a governor, the tripping speed of the governor at the rated capacity is the maximum impact speed.
 - (b) For safeties not operated by a governor, 125 percent of the rated speed is the maximum impact speed.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-05040, filed 12/22/00, effective 1/22/01.]

WAC 296-96-05050 What requirements apply to lift hoist driving machines? (1) Lift hoist driving machines must be one of the following types:

- (a) Winding drum.
- (b) Traction.
- (c) Direct plunger.
- (d) Hydraulic.

- (e) Roped or chained hydraulic.
- (f) Rack and pinion.
- (g) Roller chain drive.
- (h) Scissors.
- (i) Screw.

(2) Overhead mounted driving machines must either be secured to the top of overhead beams or supported by the floor above. Hooks, cables, chains or similar devices cannot suspend driving machines.

(3) For traction machines, the diameter of drive sheaves cannot be less than 30 times the diameter of the hoisting cables. The diameters of all other sheaves cannot be less than 21 times this diameter.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-05050, filed 12/22/00, effective 1/22/01.]

WAC 296-96-05070 What car enclosure requirements apply to lifts? Lift cars must have their sides enclosed with solid panels or openwork that will reject a 2-inch diameter ball. On the car sides where there is no gate (door), the enclosure must extend to a height of at least 48 inches from the floor or to a height necessary to enclose the materials that are being moved. On the car side next to the counterweight runway, the enclosure must extend vertically to the car top or underside of the car crosshead and horizontally to at least 6 inches on each side of the runway. Material lifts in unenclosed hoistways must have a car gate that is constructed of the same material as the car enclosure. The gate must be the same height as the sidewalls of the car enclosure and must be provided with a latching device.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185, 70.87.190, 2002 c 98, 2003 c 143 and 2004 c 66. 04-12-047, § 296-96-05070, filed 5/28/04, effective 6/30/04. Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-05070, filed 12/22/00, effective 1/22/01.]

WAC 296-96-05080 How much running clearance is permitted between a car sill and a hoistway? Running clearance between a car sill and a hoistway must not exceed 2 inches.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-05080, filed 12/22/00, effective 1/22/01.]

WAC 296-96-05090 What requirements apply to car and counterweight guides? Car and counterweight guide rails must be fastened so they will not deflect more than 1/8 inch. They must also be strong enough to withstand, without deformation, the application of a car safety when the car is carrying its rated load and traveling at its rated speed.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-05090, filed 12/22/00, effective 1/22/01.]

WAC 296-96-05100 How much weight can be placed on a car frame and platform during loading and unloading? Car frames and platforms must be designed and constructed per manufacturers' specifications to withstand the impact of the maximum weight encountered during loading and unloading.

(2007 Ed.)

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-05100, filed 12/22/00, effective 1/22/01.]

WAC 296-96-05120 What requirements apply to car operating devices, terminal stopping devices and electrical protective devices? If electrically operated, such devices must be enclosed. On lifts driven by winding drum machines, there must be a slack rope device employing an enclosed electric switch (manually reset type) which halts power to the drum and brake when the hoisting rope becomes slack.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-05120, filed 12/22/00, effective 1/22/01.]

WAC 296-96-05140 What requirements apply to car safeties? Car safeties must be used on all material lifts that are suspended by wire ropes or chains. They must be able to stop and sustain a car carrying 125 percent of its rated load. On lifts driven by rack and pinion machines:

(1) Car safeties will consist of a freely rotating safety pinion, an overspeed governor and a safety device which may be mounted on the car.

(2) The rotating pinion driving an overspeed governor will travel on a stationary rack which is vertically mounted in the hoistway.

(3) The governor will actuate the safety device when the downward speed of the car reaches the tripping speed and will bring the car to a gradual stop.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-05140, filed 12/22/00, effective 1/22/01.]

WAC 296-96-05150 What requirements apply to lift brakes? On electric lifts, brakes must engage by springs and must release electronically. All brakes must have the ability to stop a car and hold it at rest while the car is carrying 125 percent of its rated load. At least one brake must be mounted on the load side of the driving machine's worm shaft. On indirectly driven lifts, brakes must engage when the driving mechanism fails.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-05150, filed 12/22/00, effective 1/22/01.]

WAC 296-96-05160 What types of ropes, chains, and rope connections must be used on a lift? (1) The following general requirements apply:

(a) Iron (low carbon steel) or steel wire ropes with fiber cores must be used to suspend cars and counterweights.

(b) The minimum safety factor for suspension ropes must be 6 times the manufacturers rated breaking strength per rope.

(c) The car, the counterweight end of the car and the counterweight wire ropes (or the stationary hitch ends where multiple roping is used) must be fastened so that the looped ends of the turned back portion in the rope sockets are clearly visible. Fastenings must either be:

(i) Individual tapered, babbitted rope sockets; or

(ii) Other types of department approved rope fastenings.

(d) Rope sockets must develop at least 80 percent of the breaking strength of the strongest rope used in the sockets.

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(e) U-bolt rope clips (clamps) cannot be used for load fastenings.

(f) A metal or plastic data tag must be securely attached to one of the wire rope fastenings each time the ropes are replaced or reshackled. The data tag must include:

- (i) The diameter of the ropes in inches; and
- (ii) The manufacturer's rated breaking strength.
- (iii) All replacements of wire rope or chain must be in accordance with the lift manufacturer's specifications.

(2) The following requirements apply to specific types of material lifts:

(a) Traction type lifts must use at least three hoisting ropes.

(b) Lifts suspended by hoisting chains must comply with the chain manufacturer's specifications for maintenance, inspection, and application.

(c) Lifts using roller chain type lifting chains must use chains with a six to one safety factor based on ASME/ANSI B-29.1M minimum (not average) chain strength.

(d) Drum type lifts, must use either at least two hoisting ropes or a secondary as well as a primary load path to the hoist must be employed. Also, the cable secured to the drum must be at least one and one-half turns around the drum when the carrier is at its extreme limit of travel.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185, 70.87.190, 2002 c 98, 2003 c 143 and 2004 c 66. 04-12-047, § 296-96-05160, filed 5/28/04, effective 6/30/04. Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-05160, filed 12/22/00, effective 1/22/01.]

WAC 296-96-05170 What requirements apply to lift control stations? Lift control stations must be located at each landing out of reach but within sight of the car. They must have controls that are permanently and clearly labeled by function. The controls must have a stop switch that will halt electrical power to the driving machine and brake. This stop switch must:

- (1) Be manually operated;
- (2) Have red operating handles or buttons;
- (3) Be conspicuously and permanently marked "STOP"; and
- (4) Clearly indicate the stop and run position.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185, 70.87.190, 2002 c 98, 2003 c 143 and 2004 c 66. 04-12-047, § 296-96-05170, filed 5/28/04, effective 6/30/04. Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-05170, filed 12/22/00, effective 1/22/01.]

WAC 296-96-05190 How must lift pits be constructed? Lift pits must:

- (1) Have noncombustible floors;
- (2) Be designed to prevent the entry of ground water into the pit;
- (3) Have floors that are substantially level;
- (4) Have drains that are not directly connected to sewers;
- (5) Provide safe and convenient access to the pit;
- (6) Provide an approved ladder for pits deeper than 3 feet; and
- (7) Have nonperforated metal guards installed on the open sides of the counterweights where spring, solid or oil type buffers are attached. These guards must:

(a) Extend from a point not more than 12 inches above the pit floor to a point at least 7 feet but not more than 8 feet above the floor;

(b) Be fastened to a properly reinforced and braced metal frame which will be at least equal in strength and stiffness to No. 14 U.S. gauge sheet steel; and

(c) Be omitted on the pit side where compensating chains or ropes are attached to the counterweight.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-05190, filed 12/22/00, effective 1/22/01.]

WAC 296-96-05200 Which lift landings must be illuminated? All lift landings must be illuminated.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-05200, filed 12/22/00, effective 1/22/01.]

WAC 296-96-05210 What signs must be posted on landings and lifts? Each lift must have the following two signs:

(1) A "CAPACITY" sign permanently fastened in the lift car and on each landing. This sign must indicate the rated load of the lift in pounds and be made of metal with 2-inch high black letters on a yellow background.

(2) A "NO RIDERS" sign conspicuously and permanently fastened on the landing side of all hoistway gates (doors) and in the enclosure of each car. This sign must be made of metal with 2-inch high black letters on a red background.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-05210, filed 12/22/00, effective 1/22/01.]

WAC 296-96-05220 What electrical wiring standards apply to lifts? All electrical wiring, installations, and equipment in a hoistway, machine room or machinery space must conform to the National Electrical Code in effect at the time of installation or major alteration.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-05220, filed 12/22/00, effective 1/22/01.]

WAC 296-96-05230 What safety regulations apply to exposed equipment? All exposed gears, sprockets, sheaves, drums, ropes and chains must be guarded to protect against accidental contact as required General safety and health standards adopted according to chapter 49.17 RCW.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185, 70.87.190, 2002 c 98, 2003 c 143 and 2004 c 66. 04-12-047, § 296-96-05230, filed 5/28/04, effective 6/30/04. Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-05230, filed 12/22/00, effective 1/22/01.]

WAC 296-96-05240 What are the minimum maintenance requirements for lifts? All owners, or designated owner representatives, of material lifts described in this chapter are responsible for the maintenance of their lifts and parts. Minimum maintenance requirements are:

- (1) All lifts described in this chapter and their parts must be maintained in a safe condition; and
- (2) All devices and safeguards that are required by this chapter must be maintained in good working order.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-05240, filed 12/22/00, effective 1/22/01.]

WAC 296-96-05260 When are inspections required?

Inspections are required for each lift installation, alteration or relocation and must be conducted at the completion of the job before the lift is placed into service. The inspection must include a safety test at 125 percent of rated load.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-05260, filed 12/22/00, effective 1/22/01.]

WAC 296-96-05290 Under what conditions is a five-year test administered? A five-year test of the material lift car and counterweight safety devices must be conducted, and the test must be administered under the following conditions:

(1) Qualified people will conduct the test. A qualified person is either:

(a) An elevator mechanic licensed in the appropriate category for the conveyance being tested;

(b) The representative of a firm that manufactured the particular material lift, and who holds a current temporary mechanic's license in this state;

(c) The representative of a firm that manufactured the particular material lift who is working under the direct supervision of an elevator mechanic licensed in the appropriate category for the conveyance being tested.

(2) The car safety devices must be tested while the car is carrying a 100 percent rated load and the counterweight is at no load.

(3) A report of the test results must be submitted to the department for approval.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185, 70.87.190, 2002 c 98, 2003 c 143 and 2004 c 66. 04-12-047, § 296-96-05290, filed 5/28/04, effective 6/30/04. Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-05290, filed 12/22/00, effective 1/22/01.]

PART C2 - CONSTRUCTION, OPERATION, MAINTENANCE AND INSPECTION OF INCLINED PRIVATE RESIDENCE ELEVATOR FOR TRANSPORTING PERSON(S) FOR RESIDENTIAL USE

WAC 296-96-07010 What is the scope of Part C-2?

The rules in this part are the minimum standard for all new inclined private residence elevators for single family use. The purpose of this part is to provide for the safety of all persons riding in or operating an inclined private residence elevator to ensure that no person in proximity of the elevator will be endangered by its operation or failure.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185, 70.87.190, 2002 c 98, 2003 c 143 and 2004 c 66. 04-12-047, § 296-96-07010, filed 5/28/04, effective 6/30/04. Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-07010, filed 12/22/00, effective 1/22/01.]

WAC 296-96-07020 What is the definition for inclined private residence elevator? "Inclined private residence elevator" means a device constructed and operated for transporting people or property from one elevation to another

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at an angle of inclination of seventy degrees or less from the horizontal. Essentially, it is a car or platform traveling on guides or guiding members in an inclined plane.

NOTE: For purposes of this chapter, devices installed indoors on stairways that utilize chairs to carry passengers are not considered "inclined passenger elevators."

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-07020, filed 12/22/00, effective 1/22/01.]

WAC 296-96-07021 What are the requirements for existing inclined private residence elevators? Inclined private residence elevators must comply with the rules adopted by the department that were in effect at the time the elevator was permitted, regardless of whether the rule(s) has been repealed, unless any new rule specifically states that it applies to all conveyances, regardless of when the conveyance was permitted. Copies of previous rules adopted by the department are available upon request.

If the department determines that an inclined private residence elevator was installed without a permit and/or without an inspection the conveyance will be required to comply with the current rules adopted by the department unless you are able to provide documentation determining the date the conveyance was installed (e.g., sales receipts, building permits, or other appropriate documentation).

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185, 70.87.190, 2002 c 98, 2003 c 143 and 2004 c 66. 04-12-047, § 296-96-07021, filed 5/28/04, effective 6/30/04.]

WAC 296-96-07024 What rules apply to alterations of inclined private residence elevators? If the inclined private residence elevator is altered only the component(s) that was altered must comply with the applicable rules adopted by the department in effect at the time the conveyance was altered. If the department determines that an elevator was altered without a permit and inspection, the conveyance will be required to comply with the applicable rules adopted by the department at the time the noncompliant alteration was identified.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185, 70.87.190, 2002 c 98, 2003 c 143 and 2004 c 66. 04-12-047, § 296-96-07024, filed 5/28/04, effective 6/30/04.]

WAC 296-96-07030 Does the department approve private residence elevator plans and specifications? Yes.

(1) Before commencing construction of any inclined private residence elevator the owner must submit complete plans and specifications to the department for approval.

(2) Plans and specifications covering the installation of an inclined private residence elevator must be endorsed by a professional engineer before the department will approve the plans.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-07030, filed 12/22/00, effective 1/22/01.]

WAC 296-96-07035 What are the minimum maintenance requirements for inclined private residence elevators? Owners of inclined private residence elevator are responsible for the following:

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(1) Maintaining elevators and mechanical parts in a safe condition; and

(2) Ensuring that all devices and safeguards required by these regulations are maintained in good working order.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-07035, filed 12/22/00, effective 1/22/01.]

WAC 296-96-07040 What are the clearance requirements for an incline runway? (1) If the car sides extend less than 6 feet above the floor of the car, there must be no obstruction along the runway within 24 inches of the car sides. EXCEPTION: When solid guards are installed on the obstruction in both directions of travel which project at least 14 inches in line with the direction of travel, the running clearance may be reduced to 7 inches. The guard must be arched and the edges rounded to eliminate shear hazard.

(2) Guiding members and moving parts of the inclined private residence elevator must be kept free of brush and other types of material that might either impede the travel or cause deterioration of the equipment over time.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-07040, filed 12/22/00, effective 1/22/01.]

WAC 296-96-07050 What are the construction requirements for car landing enclosures and gates for inclined private residence elevators? Any landing enclosures and gates must have:

(1) A railing at least 42 inches high to protect all landing platforms and those areas of a building used as landing platforms; and

(2) A gate whose height is equal to the height of the railing to protect the passenger landing opening.

(a) Gates may either be a horizontally sliding type or a swing type; and

(b) All gates must be equipped with a latch that holds the gate closed and an electrical contact to prevent movement of the car when a gate is open.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-07050, filed 12/22/00, effective 1/22/01.]

WAC 296-96-07060 What types of bumpers and buffers must be installed on inclined private residence elevators? (1) If spring or equivalent type buffers are not being used and rated speeds do not exceed 50 feet per minute, solid bumpers must be installed. Solid bumpers must:

(a) Be built of wood or other suitable resilient material;

(b) Have the ability to resist deterioration from weather;

(c) Have sufficient strength to withstand, without failure, the impact of a descending car carrying its rated load or counterweight and traveling at 115 percent of its rated speed.

(2) Spring type buffers must be installed when speeds exceed 50 feet per minute. Spring buffers must:

(a) Be built with a minimum stroke of 3/4 inch and with a maximum stroke of 1 1/2 inches;

(b) Not fully compress when struck by a car carrying its rated load or counterweight and traveling at 115 percent of its rated speed.

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(3) Inclined private residence elevators are not required to have bumpers and buffers except when obstructions are encountered.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-07060, filed 12/22/00, effective 1/22/01.]

WAC 296-96-07070 What are the requirements for machinery beams and supports? (1) All machinery and sheaves must be sufficiently secured and supported to prevent any part from becoming loose or displaced. Beams directly supporting machinery must be made of steel, sound timber or reinforced concrete.

(2) Beams and support loads must be computed as follows:

(a) The total load on the beams must be equal to the weight of all apparatus resting on the beams plus twice the maximum load suspended from the beams.

(b) The load resting on the beams must include the complete weights of the driving machine, sheaves, controller, etc.

(c) The load suspended from the beams must include the sum of the tensions in all ropes suspended from the beams.

(3) The elevator driving machine or sheaves must not be fastened to the underside of the supporting beams at the top of the hoistway. EXCEPTION: Cast iron in tension must not be used for supporting members for idler and deflecting sheaves where hung beneath beams.

(4) The factor of safety for beams and supports must be no less than:

(a) Five for steel; and

(b) Six for timber and reinforced concrete.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-07070, filed 12/22/00, effective 1/22/01.]

WAC 296-96-07080 What are the load and size requirements for car platforms? The minimum rated load shall be not less than the following:

(1) For net platform areas up to and including twelve square feet, the rated load shall be not less than forty pounds per square foot or three hundred fifty pounds whichever is greater.

(2) For net platform areas greater than twelve square feet, the rated load shall be based upon sixty-two and one-half pounds per square foot.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185, 70.87.190, 2002 c 98, 2003 c 143 and 2004 c 66. 04-12-047, § 296-96-07080, filed 5/28/04, effective 6/30/04. Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-07080, filed 12/22/00, effective 1/22/01.]

WAC 296-96-07090 What is the maximum rated speed of an incline elevator? The maximum rated speed of an incline elevator, measured along the incline, is 75 feet per minute.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-07090, filed 12/22/00, effective 1/22/01.]

WAC 296-96-07100 What construction requirements apply to inclined private residence elevators? (1) All of the components associated with inclined private resi-

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dence elevators must be built to a minimum safety factor of five, unless otherwise specified in this part.

(2) Inclined private residence elevator car frames and platforms must:

(a) Be built of metal, a combination of metal and wood or other materials of equal strength;

(b) Be suitably prepared and/or protected for exposure to weather.

(3) Incline car chassis must:

(a) Be built of metal, except for the guiding members, and

(b) Chassis guiding members must be retained and/or enclosed in guides so that the chassis cannot be derailed.

(4) Cast iron may not be used in the construction of a car frame or chassis.

(5) A car may have only one compartment.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185, 70.87.190, 2002 c 98, 2003 c 143 and 2004 c 66. 04-12-047, § 296-96-07100, filed 5/28/04, effective 6/30/04. Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-07100, filed 12/22/00, effective 1/22/01.]

WAC 296-96-07110 What construction requirements apply to car enclosures? Car enclosures must be:

(1) Enclosed on all sides, except at the entrance, to a height of at least 42 inches;

(2) Enclosed with a type of material that will reject a 1 1/2 inch diameter ball;

(3) Securely fastened to the car platform so that it cannot become loose or displaced due to ordinary service, application of the car safety, or car contact with a buffer.

(4) Built to withstand a 75 pound pressure, horizontally applied at any point on the wall, without causing a wall deflection that reduces running clearance below 3/4 inch or above 1 inch.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-07110, filed 12/22/00, effective 1/22/01.]

WAC 296-96-07120 What construction requirements apply to car doors and gates? (1) All car entrances must be protected by a door or gate. The height of the door or gate must be at least 42 inches and equal to the height of the car enclosure. Doors and gates may be either of a solid design or an openwork design. If of an openwork design, the door or gate must be able to reject a 3-inch diameter ball.

(2) Car doors or gates must be equipped with an electric contact that prevents the elevator from operating unless the door or gate is securely closed. If the gate is a swing type opening outward from the car, the electric contact must not be made until the gate is securely latched.

(3) All car doors or gates must be manually operated.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-07120, filed 12/22/00, effective 1/22/01.]

WAC 296-96-07130 What type of glass or plastic can be used in a car enclosure? Weather resistant plastic and tempered safety glass may be used in car enclosures.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-07130, filed 12/22/00, effective 1/22/01.]

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WAC 296-96-07140 Are capacity and data plates required? (1) The manufacturer must install a weather resistant capacity plate. It must be securely fastened to the car in a conspicuous place and state the car's rated load in pounds using letters at least 1/4 inch high.

(2) The manufacturer must install a metal data plate showing the car's weight, speed, suspension means data, manufacturer's name and date of installation. The data plate must be securely fastened in a conspicuous place in the machine area.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-07140, filed 12/22/00, effective 1/22/01.]

WAC 296-96-07150 What are the construction requirements for guide rails, track supports and fastenings? (1) Guides, guide rails, guide rail brackets, splice plates, and fastenings must be made of steel or other metals conforming to the requirements of this section.

(2) Guides, guide rails, guide rail brackets, and their fastenings and supports must, at the point of support, deflect 1/8 inch or less while resisting horizontal forces encountered during loading. When horizontal force is measured at a mid-point between brackets, guide rails must deflect 1/4 inch or less in any direction.

(3) The top and bottom of each guide or guide rail run must not allow a car and counterweight guiding members to travel beyond the guide rail ends.

(4) Guides for inclined private residence elevators must have no more stresses and deflection than allowed by the manufacturer's specifications.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-07150, filed 12/22/00, effective 1/22/01.]

WAC 296-96-07160 What construction requirements apply to counterweights? (1) Counterweights, where used, must be in a guide or guiding members.

(2) Counterweights must not be of sufficient weight to cause undue slackening of any car hoisting rope or chain during acceleration or retardation of the car. Counterweight weight section must be mounted in structural or formed metal frames which are designed to retain weights securely in place.

EXCEPTION: Counterweights may be constructed of a single metal plate.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-07160, filed 12/22/00, effective 1/22/01.]

WAC 296-96-07170 What are the requirements of safeties and governors? (1) All inclined private residence elevators must be equipped with a safety capable of stopping and sustaining a car carrying its rated load.

(a) Elevator safeties must be type "A" or "B" or other devices approved by the department and must be operated by a speed governor.

(b) Elevator safeties must operate independently of governor speed action and without delay when a hoist rope breaks.

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(2) Governors shall operate to set the safety at a maximum of 140 percent of rated speed. Upon slackening of the hoist ropes the safety shall set without appreciable delay and independently of the speed governor. The governor shall be located where:

- (a) If over-travel occurs, the governor will not be struck by the car or counterweight;
- (b) All parts can freely and fully move;
- (c) The governor is accessible for a complete examination;
- (d) Governors are required to be of the mechanical type; and
- (e) Belt driven governors must be monitored. In the case of belt breakage or disengagement, the car must be shut down.

(3) If ropes are used, the ropes must be made of iron, steel, Monel metal or phosphor bronze and be at least 1/4 inch in diameter. Tiller rope construction must not be used.

(4) Motor-control circuits and brake-control circuits must be opened either before the safety applies or at the time the safety applies.

(5) All safeties must apply mechanically. Electrically operated safeties must not be used.

(6) All winding drum type inclined elevators that use rope suspensions must be equipped with a manually reset slack-rope device. During a car's descent, if the travel of the car is obstructed and the hoisting ropes go slack, the slack-rope device must stop power to the elevator motor and brake.

(7) Cast iron must not be used to build any elevator safety part that stops and sustains the elevator.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185, 70.87.190, 2002 c 98, 2003 c 143 and 2004 c 66. 04-12-047, § 296-96-07170, filed 5/28/04, effective 6/30/04. Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-07170, filed 12/22/00, effective 1/22/01.]

WAC 296-96-07171 How and when are safeties and governors tested? (1) A safety must be tested before the inclined private residence elevator is put into service. It must be tested while the elevator is carrying its rated load.

(2) Governors on instantaneous type safeties must be tested by hand tripping the governor while the elevator is traveling at its rated speed. Creating sufficient slack in the rope and dropping the elevator is the method of testing speed governors located on a elevator or chassis.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-07171, filed 12/22/00, effective 1/22/01.]

WAC 296-96-07180 What are the construction requirements for driving machines and sheaves? (1)(a) Winding drums, traction sheaves, overhead sheaves and deflecting sheaves must:

- (i) Be made of cast iron or steel;
 - (ii) Have diameters at least 30 times the diameter of the wire hoisting ropes; and
 - (iii) Have machined rope grooves.
- (b) EXCEPTION:
- (i) If 8 x 19 steel ropes are used, drum and sheave diameters may be reduced to 21 times the diameter of the hoisting rope.

(ii) Existing incline lifts suspended by cables are not required to have machine grooves, except for the first row of cables wrapped on the drum and shall be required to have a tracking device.

(iii) On existing inclined lifts suspended by cables that do not have machine grooves on the drum, the first layer of ropes will be recognized as providing the same traction as grooves, provided that this layer remains on the drum at all times and is not allowed to wind out. Such lifts must be provided with a tracking device to ensure that the rope does not wind over itself on the drum.

(2) The factor of safety, based on the static load (the rated load plus the weight of the car, ropes, counterweights, etc.) to be used in the design of driving machines and sheaves, must be at least:

(a) Eight for driving machines and sheaves built of wrought iron and steel; or

(b) Ten for driving machines built of cast iron, cast steel or other materials.

(3) Set screw type fastenings must not be substituted for keys or pins if connections are subject to torque or tension.

(4) Gears:

(a) When connecting drums or sheaves to the main driving gear, friction gears, clutch mechanisms or couplings must not be used.

(b) Worm gears having cast iron teeth must not be used.

(5) Brakes:

(a) Electric brakes must be of the friction type set by springs and must release electrically.

(b) All brakes must be able to stop and hold a elevator carrying 125 percent of its rated load.

(c) At least one brake must be mounted so that in the case of gearbox failure, the drum will hold the rated load.

(d) If a single ground or short-circuit, a counter-voltage or a motor field discharge occurs and the operating device is set in the stop position, the brake magnet must set the brake.

(6) Driving machines:

(a) A driving machine may be mounted on a elevator chassis or in a remote location. However, if mounted in a remote location, all sheaves and sprockets must be guarded and positioned so the hoisting ropes and chains remain properly aligned while the elevator is in use.

(b) Screw type machines must not be used.

(c) Hydraulic driving machines must conform to ASME A17.1.

(d) Roped-hydraulic machines may be used.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185, 70.87.190, 2002 c 98, 2003 c 143 and 2004 c 66. 04-12-047, § 296-96-07180, filed 5/28/04, effective 6/30/04. Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-07180, filed 12/22/00, effective 1/22/01.]

WAC 296-96-07190 What construction requirements apply to terminal stopping switches? A hoistway must be equipped with normal upper and lower terminal stopping switches that are activated by a elevator chassis. Normal upper and lower terminal stopping switches must stop the elevator at the normal top and bottom terminals of travel.

(1) A hoistway must be equipped with final terminal stopping switches that are activated by a elevator chassis. These switches must stop the elevator if the elevator travels

beyond the normal terminals and prevent the elevator from moving in either direction.

(2) Winding drum machines may use a slack cable switch instead of a bottom final terminal switch.

(3) Normal and final terminal stopping switches must not control the same switches on the controller unless at least two separate and independent switches are used. At least two of these separate switches must be closed in order to complete the motor and brake circuits for each direction of travel.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185, 70.87.190, 2002 c 98, 2003 c 143 and 2004 c 66. 04-12-047, § 296-96-07190, filed 5/28/04, effective 6/30/04. Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-07190, filed 12/22/00, effective 1/22/01.]

WAC 296-96-07200 What are the requirements for operation of an inclined private residence elevator? (1) If the activation of the elevator is by key switch or key pad it must conform to the requirements of (a) and (b) of this subsection. The department may approve alternative methods of equal security such as key card or magnetic swipe card. Methods must conform to the following:

(a) The key or code must be entered each time to move the elevator.

(b) Key-operated switches must be of the spring return type and must be operated by a weatherproof cylinder type lock having not less than five pin or five disc combination with the key removable only when the switch is in the off position.

(2) If activation of the elevator is provided by a timing circuit that only allows the circuits to be initiated or unlocked for a sufficient amount of time to allow passengers to board the elevator and begin transit, a separate activation switch on the car is not required. The operating circuits must automatically reload:

(a) If the elevator is not activated within its preset period of time;

(b) When any landing stop button is activated;

(c) When the preset timing period has expired and the car has completed transit to another landing or returns to the departure landing.

(3) Emergency stop switches must be provided on or adjacent to the operating station.

(a) Stop switches in the car must:

(i) Be of a manually opened and manually closed type;

(ii) Have red handles or buttons and be conspicuously marked "STOP";

(iii) Open even if springs fail when springs are used.

(b) Stop switch at other operating stations:

(i) May be of a momentary type;

(ii) Must have red handles or buttons and be conspicuously marked "stop";

(iii) Must open even if springs fail when springs are used;

(iv) After initiation of stopping, the car may not automatically restart. Run condition must be manually initiated.

(4) Design and installation of control and operating circuits must meet the following:

(a) Control systems based upon the completion or maintenance of an electric circuit must not be used for interrupting power and applying machine brakes at terminals; stopping

elevators when an emergency stop switch is open or when any electrical protective device operates; stopping a machine when the safety applies.

(b) If springs are used to activate switches, contact, or circuit breaking relays to stop the elevator at a terminal, the springs must be of the restrained compression type.

(5) Hand rope operation must not be used.

(6) Radio controls may be used in lieu of wiring for all car controls provided:

(a) The system is set up so that it is fail safe (if contact is lost, the unit will stop);

(b) In such installations, the stop button in the car shall interrupt the circuit of frequency; and

(c) The controls are permanently mounted and conform to code.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185, 70.87.190, 2002 c 98, 2003 c 143 and 2004 c 66. 04-12-047, § 296-96-07200, filed 5/28/04, effective 6/30/04. Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-07200, filed 12/22/00, effective 1/22/01.]

WAC 296-96-07210 What are the construction requirements for suspension methods? (1) When a chassis is suspended from a driving machine by a wire rope, a single method of suspension may be used. The suspension means may be any one of the following:

(a) Steel elevator wire rope;

(b) Steel aircraft cable; or

(c) Roller chain conforming to ANSI transmission roller chains and sprocket teeth.

(2) Steel tapes must not be used as a suspension method.

(3) The minimum diameter of hoist ropes or cables must be 1/4 inch for elevator wire rope and 3/16 inch for galvanized aircraft cable.

(4) Factor of safety:

(a) The minimum factor of safety for a suspension method is 8 based upon the rope tension while elevating a car carrying its rated load.

(b) In no case, must the rated breaking strength of the rope be less than 4,000 pounds.

(5) The contact arc of a wire rope on a traction sheave must be sufficient to produce adequate traction under all load conditions.

(6) All wire ropes anchored to a winding drum must have at least one full turn of rope on the drum when the car or counterweight reaches its over-travel limit.

(7) The winding-drum ends of car and counterweight wire ropes must be secured by:

(a) Clamps on the inside of the drum; or

(b) Return loop; or

(c) Properly made individual tapered babbitted sockets; or

(d) Properly attached fittings recommended by wire rope manufacturers.

(e) U-bolt type clamps must not be used.

(8) The ends of wire ropes must be fastened to cars or counterweights by:

(a) Return loop; or

(b) Properly made individual tapered babbitted sockets that conform to ASME A17.1 requirements. (The diameter of the hole in the small end of the socket must not exceed the

nominal diameter of the rope by more than 3/32 inch.); or properly attached fittings recommended by wire rope manufacturers.

(c) U-bolt type clamps must not be used.

(9) Rope repair:

(a) Car and counterweight wire ropes cannot be lengthened or repaired by splicing.

(b) If a single wire rope in a set is worn or damaged and needs to be replaced, the entire set must be replaced.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-07210, filed 12/22/00, effective 1/22/01.]

WAC 296-96-07215 What are the requirements for controllers? All controllers must be labeled and listed. In addition, controller covers must be locked.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185, 70.87.190, 2002 c 98, 2003 c 143 and 2004 c 66. 04-12-047, § 296-96-07215, filed 5/28/04, effective 6/30/04.]

WAC 296-96-07220 What are the requirements for traveling cables? (1) All traveling cables must conform to the National Electrical Code (NEC) in effect at the time of installation or major alteration.

(2) Where circuits through the traveling cable(s) exceed 30 volts, a means must be provided to stop the power automatically if the traveling cables part.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-07220, filed 12/22/00, effective 1/22/01.]

WAC 296-96-07230 What requirements apply to electrical wiring? (1) All wiring must conform to the National Electrical Code (NEC) in effect at the time of installation or major alteration.

(2) If a driving machine is mounted on the elevator chassis, the electrical connections between the elevator and the power source must be able to stop power if a traveling cable parts.

(3) All electrical connections between the elevator and the stationary connections must be insulated flexible conductors conforming to the applicable articles in the NEC relating to Elevators, Dumbwaiters, Escalators, Moving Walks, Wheelchair Lifts, and Stairway Chair Lifts.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185, 70.87.190, 2002 c 98, 2003 c 143 and 2004 c 66. 04-12-047, § 296-96-07230, filed 5/28/04, effective 6/30/04. Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-07230, filed 12/22/00, effective 1/22/01.]

WAC 296-96-07240 What are the requirements for track supporting structures? All supporting structures must meet the local building codes.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-07240, filed 12/22/00, effective 1/22/01.]

WAC 296-96-07250 What additional requirements apply to inclined private residence elevators? (1) All inclined private residence elevators must be equipped with:

(a) A Manual method of moving the elevator in accordance with ASME A17.1; and

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(b) A machine brake with a lever to release the brake allowing use of the manual method.

(2) Machinery spaces must be protected from weather and accidental contact. Machinery spaces must be locked.

(3) Guiding members and moving parts of the inclined private residence elevator must be free of brush and other types of material that might either impede the travel or cause deterioration of the equipment over time.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185, 70.87.190, 2002 c 98, 2003 c 143 and 2004 c 66. 04-12-047, § 296-96-07250, filed 5/28/04, effective 6/30/04. Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-07250, filed 12/22/00, effective 1/22/01.]

PART C3 - CONSTRUCTION, OPERATION, MAINTENANCE AND INSPECTION OF PRIVATE RESIDENCE CONVEYANCES FOR TRANSPORTING PROPERTY FOR RESIDENTIAL USE

WAC 296-96-08010 What is the scope of Part C-3?

The rules in this section are the minimum standard for all new and existing inclined private residence conveyances for transporting property for single family use in a private residence. The purpose of this section is to ensure that inclined private residence conveyances will be used only for transporting materials and goods, not people, and that no person in proximity of the conveyance will be endangered by its operation or failure.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185, 70.87.190, 2002 c 98, 2003 c 143 and 2004 c 66. 04-12-047, § 296-96-08010, filed 5/28/04, effective 6/30/04. Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-08010, filed 12/22/00, effective 1/22/01.]

WAC 296-96-08020 What is the definition for inclined private residence conveyances for transporting property? "Inclined private residence conveyances for transporting property" means a device constructed and operated for transporting property from one elevation to another at an angle of inclination of 70 degrees or less from the horizontal. Essentially, it is a car or platform traveling on guides or guiding members in an inclined plane.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185, 70.87.190, 2002 c 98, 2003 c 143 and 2004 c 66. 04-12-047, § 296-96-08020, filed 5/28/04, effective 6/30/04. Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-08020, filed 12/22/00, effective 1/22/01.]

WAC 296-96-08022 What are the requirements for existing inclined private residence conveyances for transporting property? Inclined private residence conveyances for transporting property must comply with the rules adopted by the department that were in effect at the time the conveyance was permitted, regardless of whether the rule(s) has been repealed, unless any new rule specifically states that it applies to all conveyances, regardless of when the conveyance was permitted. Copies of previous rules adopted by the department are available upon request.

If the department determines that an inclined private residence conveyance for transporting property was installed without a permit and inspection the conveyance will be required to comply with the current rules adopted by the

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department unless you are able to provide documentation determining the date the conveyance was installed (e.g., sales receipts, building permits, or other appropriate documentation).

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185, 70.87.190, 2002 c 98, 2003 c 143 and 2004 c 66. 04-12-047, § 296-96-08022, filed 5/28/04, effective 6/30/04.]

WAC 296-96-08024 What rules apply to alterations of inclined private residence conveyances for transporting property? If the inclined private residence conveyance for transporting property is altered only the component(s) that was altered must comply with the applicable rules adopted by the department in effect at the time the conveyance was altered.

If the department determines that a conveyance was altered without a permit and inspection, the conveyance will be required to comply with the applicable rules adopted by the department at the time the noncompliant alteration was identified.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185, 70.87.190, 2002 c 98, 2003 c 143 and 2004 c 66. 04-12-047, § 296-96-08024, filed 5/28/04, effective 6/30/04.]

WAC 296-96-08030 Does the department approve elevators plans and specifications for inclined private residence conveyances for transporting property? Yes. (1) Before commencing construction of any inclined private residence elevator for transporting property the owner must submit complete plans and specifications to the department for approval.

(2) Plans and specifications covering the installation of an inclined private residence conveyance for transporting property must be endorsed by a professional engineer before the department will approve the plans.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185, 70.87.190, 2002 c 98, 2003 c 143 and 2004 c 66. 04-12-047, § 296-96-08030, filed 5/28/04, effective 6/30/04. Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-08030, filed 12/22/00, effective 1/22/01.]

WAC 296-96-08035 What are the minimum maintenance requirements for inclined private residence elevators for transporting property? Owners of inclined private residence elevators for transporting property are responsible for ensuring that:

(1) Elevators and their parts are maintained in a safe condition; and

(2) All devices and safeguards required by these regulations are maintained in good working order.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-08035, filed 12/22/00, effective 1/22/01.]

WAC 296-96-08050 What are the construction requirements for inclined private residence conveyances for transporting property for cars, landing gates, and enclosures? (1) Any landing enclosure must have a railing at least 42 inches high to protect all landing platforms and those areas of a building used as landing platforms.

(2) Where gates are not provided at the entrance to the platform, a chain with a sign must be provided to block the

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landing entrance. The sign must state "Keep off landing until elevator has stopped at platform."

(3) If gates are provided, they must be:

(a) Either a horizontally sliding type or a swing type; and

(b) Equipped with a latch that holds the gate closed and an electrical contact to prevent movement of the elevator when a gate is open.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185, 70.87.190, 2002 c 98, 2003 c 143 and 2004 c 66. 04-12-047, § 296-96-08050, filed 5/28/04, effective 6/30/04. Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-08050, filed 12/22/00, effective 1/22/01.]

WAC 296-96-08060 What types of bumpers and buffers must be installed on inclined private residence conveyances for transporting property? Solid bumpers or spring type buffers may be used.

(1) Solid bumpers must:

(a) Be built of wood or other suitable resilient material;

(b) Have the ability to resist deterioration from weather; and

(c) Have sufficient strength to withstand, without failure, the impact of a descending conveyance carrying its rated load or counterweight and traveling at 115 percent of its rated speed.

(2) Spring type buffers, if used, must:

(a) Be built with a minimum stroke of 3/4 inch and with a maximum stroke of 1 1/2 inches; and

(b) Not fully compress when struck by the conveyance carrying its rated load or counterweight and traveling at 115 percent of its rated speed.

(3) Inclined private residence conveyances for transporting property are not required to have bumpers and buffers except when obstructions are encountered.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185, 70.87.190, 2002 c 98, 2003 c 143 and 2004 c 66. 04-12-047, § 296-96-08060, filed 5/28/04, effective 6/30/04. Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-08060, filed 12/22/00, effective 1/22/01.]

WAC 296-96-08070 What are the requirements for machinery beams and supports? (1) All machinery and sheaves must be sufficiently secured and supported to prevent any part from becoming loose or displaced. Beams directly supporting machinery must be made of steel, sound timber or reinforced concrete.

(2) Beams and support loads must be computed as follows:

(a) The total load on the beams must be equal to the weight of all apparatus resting on the beams plus twice the maximum load suspended from the beams.

(b) The load resting on the beams must include the complete weights of the driving machine, sheaves, controller, etc.

(c) The load suspended from the beams must include the sum of the tensions in all ropes suspended from the beams.

(3) The elevator driving machine or sheaves shall not be fastened to the underside of the supporting beams at the top of the hoistway. EXCEPTION: Cast iron in tension must not be used for supporting members for idler and deflecting sheaves where they are hung beneath beams.

(4) The factor of safety for beams and supports must be no less than:

- (a) Five for steel; or
- (b) Six for timber and reinforced concrete.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-08070, filed 12/22/00, effective 1/22/01.]

WAC 296-96-08080 What are the load and size requirements for car platforms? (1) The rated load of a platform must not exceed 5,000 pounds.

(2) The rated load of the platform must be no less than the load to be carried and must not exceed 50 pounds per square foot of inside net platform area.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-08080, filed 12/22/00, effective 1/22/01.]

WAC 296-96-08090 What is the maximum rated speed of an inclined conveyance? The maximum rated speed of an inclined conveyance, measured along the incline, is 75 feet per minute.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185, 70.87.190, 2002 c 98, 2003 c 143 and 2004 c 66. 04-12-047, § 296-96-08090, filed 5/28/04, effective 6/30/04. Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-08090, filed 12/22/00, effective 1/22/01.]

WAC 296-96-08100 What requirements apply to inclined conveyance? (1) Inclined conveyance elevator frames and platforms must:

- (a) Be built of metal, a combination of metal and wood or other materials of equal strength;
- (b) Have a safety factor of at least 5; and
- (c) Be suitably prepared and/or protected from exposure to weather.

(2) Inclined conveyance chassis must:

- (a) Be built of metal, except for the guiding members;
- (b) Have a safety factor of at least 5, based upon the conveyance's rated load; and
- (c) Have the chassis guiding members retained and/or enclosed in guides so that the chassis cannot be derailed.

(3) Cast iron may not be used in the construction of the conveyance frame or chassis.

(4) A car may have only one compartment.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185, 70.87.190, 2002 c 98, 2003 c 143 and 2004 c 66. 04-12-047, § 296-96-08100, filed 5/28/04, effective 6/30/04. Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-08100, filed 12/22/00, effective 1/22/01.]

WAC 296-96-08110 What requirements apply to car enclosures? (1) Car enclosures are not required; however, if provided, the car enclosure must be:

(a) Securely fastened to the car platform so that it cannot become loose or displaced due to ordinary service, application of the conveyance safety, or from the conveyance coming into contact with the buffer.

(b) Built to withstand a 75 pound pressure, horizontally applied at any point on the wall, without causing a wall deflection that reduces running clearance below 3/4 inch or above 1 inch.

(2) If glass or plastic is used in the car enclosure, it must be weather resistant plastic or tempered safety glass.

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(3) Where there is no car enclosure, a means must be provided to secure all materials to the platform.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185, 70.87.190, 2002 c 98, 2003 c 143 and 2004 c 66. 04-12-047, § 296-96-08110, filed 5/28/04, effective 6/30/04. Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-08110, filed 12/22/00, effective 1/22/01.]

WAC 296-96-08140 Are capacity and data plates required on inclined private residence conveyances for transporting property? (1) The manufacturer must install a weather resistant capacity plate. It must be securely fastened to the conveyance in a conspicuous place and state the conveyance's rated load in pounds using letters at least 1/4 inch high.

(2) The manufacturer must install a metal data plate showing the conveyance's weight, speed, suspension means data, manufacturer's name and date of installation. The data plate must be securely fastened in a conspicuous place in the machine area.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185, 70.87.190, 2002 c 98, 2003 c 143 and 2004 c 66. 04-12-047, § 296-96-08140, filed 5/28/04, effective 6/30/04. Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-08140, filed 12/22/00, effective 1/22/01.]

WAC 296-96-08150 What are the requirements for guide rails, track supports and fastenings? (1) Guides, guide rails, guide rail brackets, splice plates, and fastenings must be made of steel or other metals conforming to the requirements of this section.

(2) Guides, guide rails, guide rail brackets, and their fastenings and supports must, at the point of support, deflect 1/8 inch or less while resisting horizontal forces encountered during loading. When horizontal force is measured at a midpoint between brackets, guide rails must deflect 1/4 inch or less in any direction.

(3) The top and bottom of each guide or guide rail run must not allow the conveyance and counterweight guiding members to travel beyond the guide rail ends.

(4) Guides for inclined private residence conveyances must have no more stresses and deflection than allowed by the manufacturer's specifications.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185, 70.87.190, 2002 c 98, 2003 c 143 and 2004 c 66. 04-12-047, § 296-96-08150, filed 5/28/04, effective 6/30/04. Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-08150, filed 12/22/00, effective 1/22/01.]

WAC 296-96-08160 What requirements apply to counterweights? (1) Counterweights, where used, must be in a guide or track.

(2) Counterweights must not be of sufficient weight to cause undue slackening of any conveyance hoisting rope or chain during acceleration or retardation of the conveyance. Counterweight weight section must be mounted in structural or formed metal frames which are designed to retain weights securely in place.

EXCEPTION: Counterweights may be constructed of a single metal plate.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185, 70.87.190, 2002 c 98, 2003 c 143 and 2004 c 66. 04-12-047, § 296-96-08160, filed 5/28/04, effective 6/30/04. Statutory Authority: RCW

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70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-08160, filed 12/22/00, effective 1/22/01.]

WAC 296-96-08170 What are the requirements of safeties and governors? (1) All inclined private residence conveyances for transporting property must have a slack cable safety device capable of stopping and sustaining a car carrying its rated load.

(2) Other types of approved safety devices may be used. If so, such devices must meet the requirements of WAC 296-96-07170.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185, 70.87.190, 2002 c 98, 2003 c 143 and 2004 c 66. 04-12-047, § 296-96-08170, filed 5/28/04, effective 6/30/04. Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-08170, filed 12/22/00, effective 1/22/01.]

WAC 296-96-08175 How and when are conveyance safeties tested? The safeties must be tested before the inclined private residence conveyances for transporting property is put into service. Safeties must be tested while the conveyance is carrying its rated load.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185, 70.87.190, 2002 c 98, 2003 c 143 and 2004 c 66. 04-12-047, § 296-96-08175, filed 5/28/04, effective 6/30/04. Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-08175, filed 12/22/00, effective 1/22/01.]

WAC 296-96-08180 What are the requirements for driving machines and sheaves? (1) All new winding drums, traction sheaves, overhead sheaves and deflecting sheaves must:

- (a) Be made of cast iron or steel;
- (b) Have diameters at least 30 times the diameter of the wire hoisting ropes. EXCEPTION: If 8 x 19 steel ropes are used, drum and sheave diameters may be reduced to 21 times the diameter of the hoisting rope; and
- (c) Have machined rope grooves.
- (2) The factor of safety, based on the static load (the rated load plus the weight of the car, ropes, counterweights, etc.) to be used in the design of driving machines and sheaves, must be at least 5.
- (3) Set screw type fastenings must not be substituted for keys or pins if connections are subject to torque or tension.
- (4) Gears:
 - (a) When connecting drums or sheaves to the main driving gear, friction gears, clutch mechanisms or couplings must not be used.
 - (b) Worm gears having cast iron teeth must not be used.
- (5) Brakes:
 - (a) Electric brakes must be of the friction type set by springs and must release electrically.
 - (b) All brakes must be able to stop and hold a car carrying 125 percent of its rated load.
 - (c) At least one brake must be mounted on the load side of the driving machine's worm shaft. On indirectly driven lifts, brakes must engage when the driving machine fails.
 - (d) If a single ground or short-circuit, a counter-voltage or a motor field discharge occurs and the operating device is set in the stop position, the brake magnet must set the brake.
- (6) Driving machines:

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(a) A driving machine may be mounted on a conveyance chassis or in a remote location. However, if mounted in a remote location, all sheaves and sprockets must be guarded and positioned so the hoisting ropes and chains remain properly aligned while the conveyance is in use.

(b) Screw type machines must not be used.

(c) Hydraulic driving machines must conform to ASME A17.1.

(d) Roped-hydraulic machines may be used.

(e) Rack and pinion drive may be used.

EXCEPTION: Existing inclined private residence conveyances for transporting property may use wrapped cable drums as long as they do not show signs of excessive wear.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185, 70.87.190, 2002 c 98, 2003 c 143 and 2004 c 66. 04-12-047, § 296-96-08180, filed 5/28/04, effective 6/30/04. Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-08180, filed 12/22/00, effective 1/22/01.]

WAC 296-96-08190 What requirements apply to terminal stopping switches? A hoistway must be equipped with normal upper and lower terminal stopping switches that are activated by the conveyance chassis. These switches must stop the conveyance at the normal top and bottom terminals of travel.

(1) Winding drum machines may use a slack cable switch as a bottom final terminal switch.

(2) Normal and final terminal stopping switches must not control the same switches on the controller unless at least two separate and independent switches are used. At least two of these separate switches must be closed in order to complete the motor and brake circuits for each direction of travel.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185, 70.87.190, 2002 c 98, 2003 c 143 and 2004 c 66. 04-12-047, § 296-96-08190, filed 5/28/04, effective 6/30/04. Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-08190, filed 12/22/00, effective 1/22/01.]

WAC 296-96-08200 What are the requirements for the activation and operation of an inclined private residence conveyances for transporting property? (1) If activation of the conveyance is by key switch, key pad or swipe card, the activation and operation must conform to the requirements of (a) and (b) of this subsection. The department may approve alternative methods of equal security.

(a) The key or code must be entered each time to move the conveyance.

(b) Key-operated switches must be of the spring return type and must be operated by a weatherproof cylinder type lock having not less than five pin or five disc combination with the key removable only when the switch is in the off position.

(2) If activation is provided by a timing circuit that only permits the circuits to be initiated or unlocked for a sufficient amount of time to allow the loading of materials, the operating circuits must automatically reload:

(a) If the conveyance is not activated within its preset period of time;

(b) When any landing stop button is activated; or

(c) When the car has completed transit to another landing or returns to the departure landing.

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(3) Emergency stop switches must be provided on or adjacent to the operating station. Stop switches:

- (a) May be of a momentary type;
 - (b) Must have red handles or buttons and be conspicuously marked "STOP"; and
 - (c) Must open even if springs fail when springs are used.
- (4) After initiation of stopping, the car may not automatically restart. Run condition must be manually initiated.
- (5) Design and installation of control and operating circuits must meet the following:

(a) Control systems based upon the completion or maintenance of an electric circuit must not be used for interrupting power and applying machine brakes at terminals, stopping elevators when an emergency stop switch is open or when any electrical protective device operates, or for stopping a machine when the safety applies.

(b) If springs are used to activate switches, contact, or circuit breaking relays to stop the elevator at a terminal, the springs must be a restrained compression type.

(6) Hand rope operation must not be used.

(7) Radio controls may be used in lieu of wiring for all car controls provided:

(a) The system is set up so that it is fail safe (if radio contact is lost, the unit will stop);

(b) In such installations, the stop button in the car shall interrupt the circuit of frequency; and

(c) The controls are permanently mounted and comply with the applicable rules.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185, 70.87.190, 2002 c 98, 2003 c 143 and 2004 c 66. 04-12-047, § 296-96-08200, filed 5/28/04, effective 6/30/04. Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-08200, filed 12/22/00, effective 1/22/01.]

WAC 296-96-08210 What are the requirements for suspension methods? (1) When a chassis is suspended from a driving machine by a wire rope, a single method of suspension may be used. The suspension means may be any one of the following:

- (a) Steel elevator wire rope;
- (b) Steel aircraft cable; or
- (c) Roller chain conforming to ANSI transmission roller chains and sprocket teeth.

(2) Steel tapes must not be used as a suspension method.

(3) The minimum diameter of hoist ropes or cables must be 3/8 inch for elevator wire rope and 3/16 inch for galvanized aircraft cable.

(4) Factor of safety:

(a) The minimum factor of safety for a suspension method is 5 based upon the rope tension while elevating the elevator carrying its rated load.

(b) In no case, must the rated breaking strength of the rope be less than 4,000 pounds.

(5) The contact arc of a wire rope on a traction sheave must be sufficient to produce adequate traction under all load conditions.

(6) All wire ropes anchored to a winding drum must have at least one full turn of rope on the drum when the car or counterweight reaches its over-travel limit.

(7) The winding-drum ends of car and counterweight wire ropes must be secured by:

- (a) Clamps on the inside of the drum;
 - (b) Return loop;
 - (c) Properly made individual tapered babbitted sockets;
- or

(d) Properly attached fittings recommended by wire rope manufacturers. U-bolt type clamps must not be used.

(8) The ends of wire ropes must be fastened to cars or counterweights by:

- (a) Return loop;
- (b) Properly made individual tapered babbitted sockets that conform to ASME A17.1 requirements (The diameter of the hole in the small end of the socket must not exceed the nominal diameter of the rope by more than 3/32 inch.); or
- (c) Properly attached fittings recommended by wire rope manufacturers. U-bolt type clamps must not be used.

(9) Rope repair:

(a) Car and counterweight wire ropes cannot be lengthened or repaired by splicing.

(b) If a single wire rope in a set is worn or damaged and needs to be replaced, the entire set must be replaced.

(10) A metal or plastic data tag must be securely attached to one of the wire rope fastenings each time the ropes are replaced or reshackled. The data tag must include:

- (a) The diameter of the ropes in inches; and
- (b) The manufacturer's rated breaking strength.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-08210, filed 12/22/00, effective 1/22/01.]

WAC 296-96-08215 What are the requirements for controllers? All controllers must be labeled and listed. In addition, controller covers must be locked.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185, 70.87.190, 2002 c 98, 2003 c 143 and 2004 c 66. 04-12-047, § 296-96-08215, filed 5/28/04, effective 6/30/04.]

WAC 296-96-08220 What are the requirements for traveling cables? (1) All traveling cables must conform to the NEC in effect at the time of installation or major alteration.

(2) Where circuits through the traveling cable(s) exceed 30 volts, a means must be provided to stop the power automatically if the traveling cables part.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185, 70.87.190, 2002 c 98, 2003 c 143 and 2004 c 66. 04-12-047, § 296-96-08220, filed 5/28/04, effective 6/30/04. Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-08220, filed 12/22/00, effective 1/22/01.]

WAC 296-96-08230 What requirements apply to electrical wiring? (1) All wiring must conform to the NEC in effect at the time of installation or major alteration.

(2) If a driving machine is mounted on the conveyance chassis, the electrical connections between the conveyance and the power source must be able to stop power if a traveling cable parts.

(3) All electrical connections between the conveyance chassis and the stationary connections must be insulated flexible conductors conforming to the applicable articles of the NEC relating to Elevators, Dumbwaiters, Escalators, Moving Walks, Wheelchair Lifts, and Stairway Chair Lifts.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185, 70.87.190, 2002 c 98, 2003 c 143 and 2004 c 66. 04-12-047, § 296-96-08230, filed 5/28/04, effective 6/30/04. Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-08230, filed 12/22/00, effective 1/22/01.]

WAC 296-96-08240 What are the requirements for track supporting structures? All supporting structures must meet the local building codes.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-08240, filed 12/22/00, effective 1/22/01.]

WAC 296-96-08250 What additional requirements apply to inclined private residence conveyances for transporting property? (1) All inclined private residence conveyances for transporting property must be equipped with:

(a) A manual method capable of moving the conveyance in accordance with ASME A17.1; and

(b) A machine brake with a lever to release the brake allowing use of the manual method.

(2) Machinery spaces must be protected from weather and accidental contact. Machinery space must be locked.

(3) Metal signs stating "NO RIDERS" in two-inch letters must be conspicuously posted and permanently attached to the conveyance and at each landing.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185, 70.87.190, 2002 c 98, 2003 c 143 and 2004 c 66. 04-12-047, § 296-96-08250, filed 5/28/04, effective 6/30/04. Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-08250, filed 12/22/00, effective 1/22/01.]

PART C4 - TEMPORARY HOISTS

Personnel Hoists

WAC 296-96-09001 What regulations apply to personnel hoists? All personnel hoists installed must comply with the American National Standard Institute ANSI A10.4-1990 edition or the latest published edition adopted by ANSI, Safety Requirements for Personnel Hoists and Employee Elevators for Construction and Demolition Operations.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-09001, filed 12/22/00, effective 1/22/01.]

WAC 296-96-09002 May a drop plate be used for temporary hoists? Drop plates for temporary hoists may be allowed provided that they are permanently attached to the elevator and the elevator may not operate unless the drop plate is retracted.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185, 70.87.190, 2002 c 98, 2003 c 143 and 2004 c 66. 04-12-047, § 296-96-09002, filed 5/28/04, effective 6/30/04. Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-09002, filed 12/22/00, effective 1/22/01.]

WAC 296-96-09003 What are the requirements for landing gates? Landing gates must be provided with electrical gate switches.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185, 70.87.190, 2002 c 98, 2003 c 143 and 2004 c 66. 04-12-047, § 296-96-09003, filed 5/28/04, effective 6/30/04.]

(2007 Ed.)

WAC 296-96-09004 Do jumps (increased travel) have to be inspected? Yes. Personnel hoists that have been increased in height (jumped) must be inspected before being allowed to run to the new landings.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185, 70.87.190, 2002 c 98, 2003 c 143 and 2004 c 66. 04-12-047, § 296-96-09004, filed 5/28/04, effective 6/30/04.]

Material Hoists

WAC 296-96-10001 What regulations apply to material hoists? All material hoists must comply with the American National Standard Institute ANSI A10.5-1992 edition or the latest published edition adopted by ANSI, Safety Requirements for Material Hoists.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-10001, filed 12/22/00, effective 1/22/01.]

WAC 296-96-10002 Do jumps (increased travel) have to be inspected? Yes. Material hoists that have been increased in height (jumped) must be inspected before being allowed to run to the new landings.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185, 70.87.190, 2002 c 98, 2003 c 143 and 2004 c 66. 04-12-047, § 296-96-10002, filed 5/28/04, effective 6/30/04.]

PART C5 - ADDITIONAL TYPES OF CONVEYANCES

Belt Manlifts

WAC 296-96-11001 What regulations apply to belt manlifts? WAC 296-96-11010 through 296-96-11078 applies to all existing belt manlifts. After the effective date of these rules all belt manlifts must be installed according to Belt Manlifts USAS A90.1-1997.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185, 70.87.190, 2002 c 98, 2003 c 143 and 2004 c 66. 04-12-047, § 296-96-11001, filed 5/28/04, effective 6/30/04. Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-11001, filed 12/22/00, effective 1/22/01.]

WAC 296-96-11010 What are the definitions for belt manlifts? "Closed type handhold" a cup-shaped handhold with the handgrip surface uncovered in the direction of travel and covered on the opposite run.

"Factor of safety" is the ratio of the ultimate strength of the material used to manufacture a part to the allowable stress on that part when it is subjected to full load operating conditions.

"Handhold" or "Handgrip" is the device attached to the manlift belt to assist a passenger in maintaining balance when using the manlift. For the purposes of this chapter, the word "handhold" is used for both "handhold" and "handgrip."

"Limit switch" is a safety device that stops power to the manlift motor and applies the brakes if a loaded step passes the top terminal landing.

"Manlift" is a device using a power-driven, endless belt with attached handholds and steps or platforms to transport people from floor to floor.

"Open type handhold" is a handhold with a fully uncovered handgrip surface.

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"Rated speed" is the operating speed for which a manlift is designed and installed.

"Step" or **"Platform"** is the passenger carrying part of a manlift. For the purposes of this chapter, the word "step" is used for both "step" and "platform."

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-11010, filed 12/22/00, effective 1/22/01.]

WAC 296-96-11016 What general requirements apply to belt manlift landings? (1) Vertical clearance between the floor or mounting platform and the lower edge of the conical guard above it must be at least 7 feet, 6 inches. When this clearance is not possible, access to the manlift must be prohibited and the space where the runway passes through the platform floor must be enclosed.

(2) Floor space adjacent to floor openings must be kept clear and free of obstructions at all times.

(3) Adequate lighting (not less than 5 foot-candle power) must be provided at each floor landing whenever the lift is in use.

(4) The landing surfaces at all entrances and exits must provide safe footing and must have a coefficient of friction of at least 0.5 to help insure safe footing.

(5) Emergency landings must be provided so that the maximum distance a person must travel on the emergency ladder between an emergency landing and a floor landing is 25 feet. Emergency landings must:

- (a) Be accessible from both runs of the lift;
- (b) Give access to the emergency ladder; and
- (c) Be completely enclosed with a standard railing and toeboard.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185, 70.87.190, 2002 c 98, 2003 c 143 and 2004 c 66. 04-12-047, § 296-96-11016, filed 5/28/04, effective 6/30/04. Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-11016, filed 12/22/00, effective 1/22/01.]

WAC 296-96-11019 What requirements apply to the guards and cones of belt manlift landings? (1) On the ascending side of the lift, all landings must have a beveled guard or cone that meets the following requirements:

(a) Where possible, a cone must make an angle with the horizontal of at least 45 degrees. A cone angle of 60 degrees or more must be used where ceiling heights permit.

(b) Where possible, the guard or cone must extend at least 42 inches outward from any belt handhold. A guard or cone must not extend beyond the upper surface of the floor above.

(c) A cone must be built of sheet steel (at least No. 18 U.S. gauge) or any material of equivalent strength or stiffness. The lower edge of a cone must be rolled to a minimum diameter of 1/2 inch. The interior of a cone must be smooth with no protruding rivets, bolts or screws.

(2) All obstructions must be guarded just like floor openings with the same minimum distances observed.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185, 70.87.190, 2002 c 98, 2003 c 143 and 2004 c 66. 04-12-047, § 296-96-11019, filed 5/28/04, effective 6/30/04. Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-11019, filed 12/22/00, effective 1/22/01.]

WAC 296-96-11022 What requirements apply to guarding lift entrances and exits? (1) All manlift floor or landing entrances and exits must be guarded by either a maze (staggered railing) or a handrail equipped with self-closing gates.

(2) When a maze is used:

(a) Maze or staggered openings must not allow direct passage between a platform enclosure and the outer floor space;

(b) Rails must be located between 2 and 4 feet from the edge of the opening as measured at right angles to the face of the belt; and

(c) At openings, the intersection of the top rail and the end post must form a bend or standard long sweep "ell."

(3) When a handrail is used:

(a) Rails must be standard guardrails with rounded corners, toeboards and meet the guard rail requirements adopted according to chapter 49.17 RCW; and

(b) Gates must have rounded corners, open outward, and be self-closing.

(4) Unless prevented by building design, all entrances and exits at all landings must be in the same relative location.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185, 70.87.190, 2002 c 98, 2003 c 143 and 2004 c 66. 04-12-047, § 296-96-11022, filed 5/28/04, effective 6/30/04. Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-11022, filed 12/22/00, effective 1/22/01.]

WAC 296-96-11025 What structural requirements apply to floor opening guards? Except on the entrance or exit side, floor openings at each landing must be guarded.

(1) The guards must be constructed by one of the following methods:

(a) A standard railing and toeboard;

(b) Panels of wire mesh (not less than No. 10 U.S. gauge);

(c) Panels of expanded metal (not less than No. 13 U.S. gauge);

(d) Panels of sheet metal (not less than No. 13 U.S. gauge); or

(e) Metal on a frame of either angle iron (at least 1 1/4 by 1 1/8 inch) or 1 1/4 inch iron pipe.

(2) When a belt manlift is installed in a stairwell, a standard guardrail must be placed between the floor openings and the stairway.

(3) Rails or guards must be:

(a) At least 42 inches high on the up-running side and 66 inches high on the down-running side; and

(b) Be located not more than one foot from the edge of the floor opening.

(4) If a guardrail is used, the section of the guard above the rail may be constructed:

(a) According to WAC 296-96-10025(1); or

(b) Using either vertical or horizontal bars capable of rejecting a 6-inch diameter ball.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-11025, filed 12/22/00, effective 1/22/01.]

WAC 296-96-11028 What structural requirements apply to floor landing guards? Expanded metal, sheet metal or wooden guards must be installed on each floor landing to

prevent people from placing their hands in areas where step-rollers operate. These guards must be installed on each exposed side of the lift and extend from the floor to a height of 7 feet.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-11028, filed 12/22/00, effective 1/22/01.]

WAC 296-96-11031 What requirements apply to bottom landings? (1) Bottom landing clear areas:

(a) Where possible, the clear area of a bottom landing must be at least the size of the area enclosed by guardrails on the floors above;

(b) A clear area must be free of stairs and ladders; and

(c) If a wall on the bottom landing is located in front of the down-running side of the belt, it must be installed at least 48 inches away from the belt face.

(2) The lowest landing served by the lift must support the lower (boot) pulley installation.

(3) A mounting platform must be installed on the lowest landing unless the landing floor is at or above the point at which the upper surface of the belt steps assume or leave a horizontal position.

(4) If a mounting platform is installed, it must be located in front of or to one side of the up/down run.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-11031, filed 12/22/00, effective 1/22/01.]

WAC 296-96-11034 What requirements apply to top clearance? (1) When the center of the head pulley is more than 6 feet above the top landing, an emergency landing and ladder must be installed.

(2) The location of the emergency landing must be 24 inches below the center of the head pulley.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-11034, filed 12/22/00, effective 1/22/01.]

WAC 296-96-11037 What requirements apply to emergency exit ladders? Emergency exit ladders must be:

(1) A fixed metal type;

(2) Accessible from either the "up" or "down" path of the lift;

(3) Installed when the vertical distance between landings exceeds 20 feet; and

(4) Constructed to comply with current general safety standards except enclosed cages need not be built.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-11037, filed 12/22/00, effective 1/22/01.]

WAC 296-96-11040 What lighting requirements apply to belt manlifts? (1) When a lift is in operation, both runs must be illuminated at all points with an intensity of at least one foot-candle.

(2) Lighting control in runways must be:

(a) Circuits tied permanently into the building circuits (no switches);

(b) Near the starting switch that controls the lift motor; or

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(c) Separate switches located on every landing and with each switch having the capability of turning on all lights throughout the entire runway.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-11040, filed 12/22/00, effective 1/22/01.]

WAC 296-96-11045 What drive machine requirements apply to belt manlifts? (1) Belt manlifts must be driven either by directly connected machines or by multiple "V" belts.

(2) Cast iron gears must not be used.

(3) Brakes:

(a) On direct connected machines, the brake must be mechanically applied to the motor shaft and released electronically.

(b) On "V" belt driven machines, the brake must be mechanically applied to the input shaft and released electronically.

(c) All brakes must be capable of stopping and holding the lift while carrying its rated capacity.

(4) Belts:

(a) Belts may not have more than one splice per belt.

(b) There shall not be more than one inch of space between the opposing ends of the belt.

(c) A belt manlift that has evidence of severe belt damage must be removed from service immediately. Belts with severe belt damage may not be repaired and/or returned to service. "Severe belt damage" means that the protective outer cover of a belt becomes cut, cracked or separated exposing damaged inner fabric, and such damage extends across the full width of the belt, spans between adjacent bolt holes, or damage goes through the entire thickness of the inner fabric. A torn belt is also considered severe.

Exception: A lap splice that has become cracked or damaged may be converted to a butt splice and returned to service, provided that the damaged area on the splice is completely removed.

(d) The conversion of a lap splice to a butt splice does not constitute a repair.

(e) A belt that has evidence of superficial belt cover damage while in use on a manlift is not required to be replaced. "Superficial belt cover damage" means that the protective outer cover of a belt becomes scratched, cut or cracked exposing the inner fabric. Such damage may not be continuous across the full width of the belt.

(5) Belts fastening:

(a) Belts must be fastened either by a lap splice or a butt splice with a strap on the belt side opposite the pulley.

(b) For lapped splices on manlifts with travel distances not exceeding 100 feet, the overlap of the belt at the splice must be at least 3 feet; or

(c) For lapped splices exceeding 100 feet, the overlap at the splice must be at least 4 feet.

(d) For butt splices on manlifts with travel distances not exceeding 100 feet, the strap must extend at least 3 feet on one side of the butt; or

(e) For butt splices not exceeding 100 feet, the strap must extend at least 4 feet on one side of the butt.

(f) For 12-inch belts, the joint must be fastened with a minimum of 20 special elevator bolts with minimum diame-

ters of 1/4 inch. To effectively cover the belt joint area, these bolts must be arranged symmetrically in 5 rows.

(g) For a 14-inch belt, the minimum number of bolts is 23.

(h) For a 16-inch belt, the minimum number of bolts is 27.

(6) All installations must use machines designed and constructed to hold the driving pulley when there is shaft failure or overspeed.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185, 70.87.190, 2002 c 98, 2003 c 143 and 2004 c 66. 04-12-047, § 296-96-11045, filed 5/28/04, effective 6/30/04. Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-11045, filed 12/22/00, effective 1/22/01.]

WAC 296-96-11048 What is an acceptable operating speed for a belt manlift? The maximum belt speed of a belt manlift is 80 feet per minute. No belt manlift may be installed that exceeds this maximum speed limit, and all belt manlifts in a given location should run at approximately the same speed.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-11048, filed 12/22/00, effective 1/22/01.]

WAC 296-96-11051 What are the construction requirements for steps? (1) Measured from the belt to the edge of the step, the minimum depth of a step is 12 inches and the maximum depth is 14 inches.

(2) Step width cannot be less than the width of the belt to which it is attached.

(3) Measured from the upper surface of one step to the upper surface of the next step above, the distance between steps must be at least 16 feet and the steps must be equally spaced along the belt.

(4) A step must be attached to the belt so its surface approximates a right angle with the face of the belt enabling the step to travel in basically a horizontal position with the "up" and "down" path of the belt.

(5) The working (upper) surface of a step must be made of either a material having nonslip characteristics (possessing a coefficient of friction of not less than 0.5) or be completely covered with a securely attached nonslip tread.

(6) Step supports (frames) and guides must be sufficiently strong to prevent:

- (a) The disengagement of any step roller;
 - (b) Any appreciable misalignment; or
 - (c) Any visible deformation of the step or its support.
- (7) Steps must have corresponding handholds.

(8) If a step is removed for any reason, the handholds immediately above and below it must be removed before the lift resumes operation.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-11051, filed 12/22/00, effective 1/22/01.]

WAC 296-96-11054 What requirements apply to the location and construction of handholds? (1) Handholds attached to the belt must be provided and installed so that they are not less than 4 feet nor more than 4 feet 8 inches

above the step tread. These handholds must be available on both the "up" and "down" run of the belt.

(2) All handhold grab surfaces must be at least 4 1/2 inches in width. Fastenings must not come within one inch of the belt edge.

(3) All handholds must be capable of withstanding, without damage, a 300 pound load applied parallel to the belt run.

(4) All handholds must have corresponding steps. When a handhold is removed for any reason, the corresponding step and handhold for the opposite direction of travel must also be removed before the lift resumes operation.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-11054, filed 12/22/00, effective 1/22/01.]

WAC 296-96-11057 What requirements apply to "up-limit stops"? (1) Two separate automatic stop devices must be provided to cut off the power and apply the brake when a loaded step passes the upper terminal landing. One of these devices must consist of a switch mechanically operated by the belt or stop roller. The second device must consist of any of the following:

(a) A roller switch located above but not in line with the first switch;

(b) A photocell and light source (an "electric eye"); or

(c) A switch activated by a lever, bar, rod or plate.

(i) If a plate is used, it should be positioned above the head pulley so it barely clears a passing step.

(ii) If a bar is used, the bar must be of the "breakaway" type.

(2) The stop device must stop the lift before a loaded step reaches a point 24 inches above the top terminal landing.

(3) Once the lift has stopped, the automatic stop device must be manually reset. Therefore, this device must be located on the top landing where the reset person has a clear view of both the "up" and "down" runs of the lift; and it must be impossible to reset from a step.

(4) Electric stop devices must meet the following requirements:

(a) All electric switches that directly open the main motor circuit must be multiple type switches;

(b) Photoelectric devices must be designed and installed so that failure of the light source, the light sensitive element or any vacuum tube used in the circuit will result in shutting off power to the driving motor;

(c) In areas where flammable vapors or dust may be present, all electrical installations must be in accordance with the NEC requirements for those installations; and

(d) All controller contacts carrying main motor current must be copper to carbon types unless the circuit is simultaneously broken at two or more points or the contacts are immersed in oil.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185, 70.87.190, 2002 c 98, 2003 c 143 and 2004 c 66. 04-12-047, § 296-96-11057, filed 5/28/04, effective 6/30/04. Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-11057, filed 12/22/00, effective 1/22/01.]

WAC 296-96-11060 What requirements apply to emergency stops? All belt manlifts must have emergency stop devices that:

(1) Are located within easy reach of the "up" and "down" run of the belt;

(2) Stop power to the lift and apply the lift brake when pulled in the direction of travel;

(3) Have a treadle switch (manual reset type) that is located below the lowest landing on the belt's "down" side and, if a person fails to get off at the lowest landing, stops the lift and ejects the person from the step as it approaches the boot pulley;

(4) Are made of cotton rope with a wire center, manila or sisal rope, or metal pipe or tubing. Wire rope cannot be used, unless covered with marlin. Rope stops must be at least 3/8 inch in diameter; and

(5) An emergency stop may be used for normal stopping and starting if the lift does not run continuously.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-11060, filed 12/22/00, effective 1/22/01.]

WAC 296-96-11066 What are the warning sign requirements? (1) Instructional signs explaining how to use the belt lift must be:

(a) Conspicuously posted on each landing or stenciled on the belt;

(b) Printed in an easily read style with letters at least one inch in height;

(c) Printed in a color that clearly contrasts with the background surface (for example, white or yellow on black or black on white or gray); and

(d) Examples of instructional signs are:

"Face the belt"

"Use the handhold"

"To stop - pull rope"

(2) Warning signs and/or lights must include an illuminated sign or red warning light announcing the top floor and must be within easy view of an ascending passenger.

(a) If a sign, it must be located no more than 2 feet above the top terminal landing and printed in block letters (at least 2-inches in height) displaying the words, "Top floor - get off."

(b) If a red light, it must have at least a 40-watt rating and be located immediately below the upper terminal landing where it will shine in the belt passenger's face.

(3) There must be conspicuous signs on each landing that read, "Employees only - Visitors keep off," printed in block letters (at least 2-inches in height) in a color that sharply contrasts with the background.

(4) A sign or red light must be conspicuously posted above the bottom landing announcing its approach. These must be:

(a) If a sign, printed in block letters (at least two-inches in height) that sharply contrast with the background and reads, "Bottom floor - get off."

(b) If a light, rated at least forty watts.

(5) An electronic warning buzzer must be installed 5 feet above the bottom landing on the down side of the belt to warn belt riders of the approaching landing. This warning buzzer must be automatically activated by load weight on a step.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-11066, filed 12/22/00, effective 1/22/01.]

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WAC 296-96-11070 Can you carry tools and materials on a belt manlift? (1) No freight or packaged goods may be carried on any manlift;

(2) No pipe, lumber, or other construction materials may be handled on any manlift; and

(3) No tools except those which will fit entirely within a pocket of ordinary working clothes may be carried on any manlift, except as follows:

(a) Tools may be carried in a canvas bag not larger than 11 inches by 13 inches;

(b) The bag must have a leather bottom; and

(c) The bag must have loops or handles to be carried in the passenger's hand while riding the manlift. Shoulder straps are prohibited.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-11070, filed 12/22/00, effective 1/22/01.]

WAC 296-96-11078 What is required for belt manlift inspections? (1) All manlifts must be inspected by a qualified person, designated by the lift's owner, at least once every 30 days.

(2) The inspection must cover (but is not limited to) the following items:

- Belt and belt tension
- Bottom (boot) and pulley
- Brake
- Clearance
- Drive pulley
- Driving mechanism
- Electrical switches
- Guardrails
- Handholds and fastenings
- Lubrication
- Motor
- Pulley supports
- Rails, rail supports and fastenings
- Rollers and slides
- Signal equipment
- Steps and fastenings
- Warning signs and lights

(3) A written record must be kept of results of each inspection, and it must be made available to all inspectors. This information must be recorded under the monthly portion of the test log required by Appendix A of ASME A90.1-1997.

(4) For purposes of this section "adequate lighting" means five-foot candles.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185, 70.87.190, 2002 c 98, 2003 c 143 and 2004 c 66. 04-12-047, § 296-96-11078, filed 5/28/04, effective 6/30/04. Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-11078, filed 12/22/00, effective 1/22/01.]

WAC 296-96-11080 Under what conditions is a five-year test administered? A five-year test of the belt manlift must be conducted, and the test must be administered under the following conditions:

(1) Qualified people will conduct the test. A qualified person is either:

(a) An elevator mechanic licensed in the appropriate category of the conveyance being tested;

(b) The representative of a firm that manufactured the particular belt manlift who holds a current temporary mechanic's license in this state; or

(c) The representative of a firm that manufactured the particular belt manlift who is working under the direct supervision of an elevator mechanic licensed in the appropriate category of the conveyance being tested.

(2)(a) The up capacity of the belt manlift must be tested with two hundred pounds on each horizontal step. During the up-run portion of the test the belt manlift must not show appreciable slip of the belt when standing or running at rated speed.

(b) The down capacity of the belt manlift must be tested with two hundred pounds on each horizontal step. During the down-run portion of the test the belt manlift must not show appreciable slip of the belt when standing or running at the rated speed.

The brake shall stop and hold the belt with test load within a maximum of twenty-four inches of travel.

(3) After the five-year test has been performed a tag indicating the date of the test and name of the company performing the test must be attached in a visible area of the drive motor machine.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185, 70.87.190, 2002 c 98, 2003 c 143 and 2004 c 66. 04-12-047, § 296-96-11080, filed 5/28/04, effective 6/30/04.]

Electric Manlifts

WAC 296-96-13135 What are the requirements for electric manlifts? WAC 296-96-13135 through 296-96-13171 are the minimum requirements for all existing electric manlifts.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185, 70.87.190, 2002 c 98, 2003 c 143 and 2004 c 66. 04-12-047, § 296-96-13135, filed 5/28/04, effective 6/30/04.]

WAC 296-96-13139 What structural requirements apply to hoistway enclosures and landings? (1) A hoistway must be fully enclosed, or enclosed on all landings to a height of six feet above the landing floor or six feet above the highest working level or stair level adjacent to the hoistway.

(2) Perforated enclosures can be used where fire resistance is not required. However, such an enclosure must use at least No. 13 U.S. gauge steel wire, if a steel wire grill or expanded metal grill type, and it must have openings that reject a one-inch diameter ball.

(3) All landings must be properly and adequately lighted.

(4) For purposes of this section "adequate lighting" means five-foot candles.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185, 70.87.190, 2002 c 98, 2003 c 143 and 2004 c 66. 04-12-047, § 296-96-13139, filed 5/28/04, effective 6/30/04.]

WAC 296-96-13143 What structural requirements apply to hoistway gates and doors? (1) Gates may be constructed of wood slat, steel wire grill, expanded metal or solid material provided that all openings reject a two-inch diameter ball and resist a two hundred fifty pound horizontal thrust.

(a) Steel wire and expanded metal gates must be constructed of at least No. 13 U.S. gauge steel.

(b) Wood slat gates must have slats at least two inches wide and one-half inch thick, nominal size.

(c) Solid material gates must be constructed of at least one-eighth inch reinforced sheet steel or one-half inch plywood.

(2) Gates may be horizontal swinging, vertical or horizontal sliding or biparting types, and must:

(a) Span the full width of the elevator car;

(b) Extend from one inch above the landing floor to at least six feet above it;

(c) Not swing into the hoistway; and

(d) Be equipped with interlocks or mechanical locks and electric contacts that prevent the gate from opening when a car is away from a landing.

(3) Hoistway doors must be closed before the car can leave the landing. Once the car leaves the landing, the door must be latched so that it will not open when the elevator is not at the landing.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185, 70.87.190, 2002 c 98, 2003 c 143 and 2004 c 66. 04-12-047, § 296-96-13143, filed 5/28/04, effective 6/30/04.]

WAC 296-96-13145 What structural requirements apply to elevator cars? Elevator cars must be fully enclosed to the car height or to a height of at least six feet six inches, whichever is greater.

(1) If constructed of solid materials, cars must be capable of withstanding a horizontal thrust of seventy-five pounds while deflecting no more than one-quarter inch.

(2) If constructed of perforated materials, all openings must be capable of rejecting at least a one-inch diameter ball.

(3) Cars frames must be of substantial metal or wood construction.

(a) Metal frames must have a safety factor of four.

(b) Wood frames must have a safety factor of six.

(c) Wood frames must be constructed with gussets and bolts secured with large washers, lock washers and nuts.

(4) Cars must have platforms whose inside dimensions do not exceed thirty inches on each side (six and one-quarter square feet area).

(5) Cars must have substantial protective tops. These tops:

(a) May have hinged front halves;

(b) May be made of No. 9 U.S. wire-gauge screen, No. 11 gauge expanded metal, No. 14 gauge sheet steel, or one-quarter inch or heavier plywood.

(c) If made of wire screen or metal with openings, must reject a one-half inch diameter ball.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185, 70.87.190, 2002 c 98, 2003 c 143 and 2004 c 66. 04-12-047, § 296-96-13145, filed 5/28/04, effective 6/30/04.]

WAC 296-96-13147 What structural requirements apply to elevator doors? All elevators must have car doors, except on fully enclosed hoistways equipped with hoistway gates and enclosed from the top of the hoistway opening to the ceiling on the landing side.

(1) Car doors must be:

(a) Constructed of solid or perforated material which is capable of resisting a seventy-five pound thrust without

deflecting one-quarter inch. If perforated material is used, it must reject a one-inch diameter ball.

(b) Biparting or otherwise horizontally swung provided the door swings within the elevator car.

(c) Equipped with a positive locking latch device that resists a two hundred fifty pound thrust.

(2) Interlocks or a combination consisting of mechanical locks and electric contacts must be provided for all elevators having car doors. An electrical/mechanical interlock must be provided on car gates on elevators in unenclosed hoistways unless a safe means of self-evacuation is provided. Such means must be approved by the department.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185, 70.87.190, 2002 c 98, 2003 c 143 and 2004 c 66. 04-12-047, § 296-96-13147, filed 5/28/04, effective 6/30/04.]

WAC 296-96-13149 What are the structural requirements for counterweights, counterweight enclosures, and counterweight fastenings? All counterweights must be fully enclosed at landings or at the path of travel.

(1) At the bottom of a counterweight enclosure, there must be an inspection opening large enough to allow the inspection of cable fastenings, counterweight and buffer.

(2) Rectangular shaped counterweights must be secured by at least two and one-half inch mild steel bolts with lock nuts.

(3) Round counterweights must be fastened with a center bolt at least three quarter inch in diameter and secured with a lock nut.

(4) All bolt eyes must be welded closed.

(5) Cable fastenings shall be by babbitted tapered elevator sockets or other acceptable methods. If cable clamps are used, a minimum of three cable clamps must be provided. U-shaped clamps shall not be acceptable.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185, 70.87.190, 2002 c 98, 2003 c 143 and 2004 c 66. 04-12-047, § 296-96-13149, filed 5/28/04, effective 6/30/04.]

WAC 296-96-13151 What construction requirements apply to car guide rails? Each electric manlift must be equipped with at least two guide rails. Guide rails must:

(1) Extend at least six inches beyond the maximum travel distance of the car with the buffers compressed.

(2) Be securely fastened to a vertical support for the full length of the elevator's travel.

(3) Be constructed of vertical grain fir, angle iron:

(a) If constructed with vertical grain fir, the rails must be at least one and one-half inch by one and one-half inch and not vary in thickness by more than three-sixteenths inch on brake surfaces.

(b) If constructed with angle iron, the angle iron must be at least one-quarter inch by two inch by two inch.

(4) Be able to resist a two hundred fifty pound horizontal thrust.

(5) Be able to resist more than one-half inch total deflection when the car safety is applied.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185, 70.87.190, 2002 c 98, 2003 c 143 and 2004 c 66. 04-12-047, § 296-96-13151, filed 5/28/04, effective 6/30/04.]

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WAC 296-96-13153 What construction requirements apply to hoisting ropes? There must be at least two hoisting ropes. Each rope must be:

(1) Made of a good grade of elevator traction wire rope;

(2) At least three-eighths inches in diameter and possessing a safety factor of five;

(3) Fastened by babbitted tapered elevator sockets or other acceptable methods. If cable clamps are used, a minimum of three cable clamps must be provided. U-shaped clamps shall not be acceptable.

(4) Long enough so the car platform will be no more than six inches above the top landing when the counterweight buffer is fully compressed, and at least six inches from the counterbalance sheave when the car buffer is fully compressed.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185, 70.87.190, 2002 c 98, 2003 c 143 and 2004 c 66. 04-12-047, § 296-96-13153, filed 5/28/04, effective 6/30/04.]

WAC 296-96-13155 What are the requirements for a hoistway space? There must not be habitable space below an elevator hoistway or counterweight shaft unless the floor above the space can withstand an impact one hundred twenty-five percent greater than the impact generated by a free falling car or counterweight falling from the full height of the hoistway.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185, 70.87.190, 2002 c 98, 2003 c 143 and 2004 c 66. 04-12-047, § 296-96-13155, filed 5/28/04, effective 6/30/04.]

WAC 296-96-13157 What requirements apply to car safeties? All cars suspended or operated from overhead machinery must be equipped with an approved car safety capable of stopping and holding the car while carrying its rated load.

(1) Car safeties must be mechanically operated and not be affected by any interruptions in the electrical circuit.

(2) Car safeties and governor controlled safeties must operate automatically and the control circuit must be broken in the event of cable breakage.

(3) A no-load annual safety test must be performed and a tag with the date and company conducting the test must be attached to the governor with a wire and seal. A safety tag must also be permanently affixed to the inside of the car.

(4) A five-year full load test must be performed and a safety tag with the date and company conducting the test must be permanently attached to the governor with a wire and seal. A safety tag must also be permanently affixed to the inside of the car. Documentation must be submitted to the department.

Qualified people will conduct the test. A qualified person is either:

(a) An elevator mechanic licensed in the appropriate category for the conveyance being tested;

(b) The representative of a firm that manufactured the particular material lift and who holds a current temporary mechanic's license in this state; or

(c) The representative of a firm that manufactured the particular material lift who is working under the direct supervision of an elevator mechanic licensed in the appropriate category for the conveyance being tested.

(5) Separate safety tags must be used to distinguish the no-load annual safety test and the five-year full load test.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185, 70.87.190, 2002 c 98, 2003 c 143 and 2004 c 66. 04-12-047, § 296-96-13157, filed 5/28/04, effective 6/30/04.]

WAC 296-96-13159 What requirements apply to brakes? All elevators must be equipped with brakes that engage mechanically and release electrically.

(1) Brakes must be located on the final drive of all elevator machines.

(2) The brake activating circuit must be designed so that interruption of power by the slack cable switch, control switch, and limit switches activate the brake.

(3) The brakes must activate under short circuit, phase failure, or reverse phase conditions.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185, 70.87.190, 2002 c 98, 2003 c 143 and 2004 c 66. 04-12-047, § 296-96-13159, filed 5/28/04, effective 6/30/04.]

WAC 296-96-13161 What requirements apply to car controls and safety devices? (1) Car controls may be automatic push button, constant pressure push button or momentary push button types. **Hand rope and car switch controls must not be used.**

(2) If a car is not equipped with constant pressure push button controls, then it must be equipped with a manually operated emergency stop switch that is clearly marked "emergency stop."

(3) Terminal limiting devices must operate independently of car controls and must automatically stop the car at the top and bottom terminal landings.

(4) All winding drum machine type elevators must be equipped with top and bottom final limit switches.

(5) A manual-reset slack rope device that breaks the circuit to the drive motor and brake must be installed on all winding drum type machines.

(6) All electric manlifts lifts must be equipped with an overspeed governor that must not exceed one hundred seventy-five feet per minute and must deenergize the brake control and motor drive circuits simultaneously when the car safety mechanism is activated.

(7) Car speeds for electric lifts must not exceed one hundred twenty-five feet per minute.

(8) Elevator controls and disconnects must be accessible and marked.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185, 70.87.190, 2002 c 98, 2003 c 143 and 2004 c 66. 04-12-047, § 296-96-13161, filed 5/28/04, effective 6/30/04.]

WAC 296-96-13167 What requirements apply to elevator driving machines? (1) Elevator machines must be driven by approved-type units.

(a) On direct drive or approved worm gear driven type, a mechanically actuated, electrically released brake must be installed on the driving unit.

(b) On V belt driven types, a minimum of four belts, one-half inch minimum size, must be used to transmit power from the motor to the drive shaft and a mechanically activated, electrically released brake must be installed on the final drive shaft.

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(2) Wherever practical, elevator machines must be installed on the top side of the supporting structure.

(3) All components of the driving mechanism and parts subject to stress involved in suspending the load or related equipment must be designed to withstand eight times the total weight to be suspended, including load, counterweight, car and cables.

(4) Gears must be made of steel or equivalent material. Cast iron gears are prohibited.

(5) A working platform, with railings complying with the applicable requirements adopted according to chapter 49.17 RCW, shall be provided to allow for safely working on equipment.

(6) A light with a switch must be located near the elevator driving machine or the machinery space.

(7) A means to lockout/tagout the elevator equipment must be located near the elevator driving machine or the machinery space.

(8) The elevator machinery shall be protected from the weather.

(9) All sheaves must be appropriately guarded per the requirements adopted according to chapter 49.17 RCW.

(10) Changes based on the requirement found in subsections (5) through (9) of this section must be completed within two years of the effective date of these rules.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185, 70.87.190, 2002 c 98, 2003 c 143 and 2004 c 66. 04-12-047, § 296-96-13167, filed 5/28/04, effective 6/30/04.]

WAC 296-96-13169 What requirements apply to car and counterweight buffers? (1) All elevator cars must be equipped with adequate car buffers.

(2) All elevators using counterweights must be equipped with adequate counterweight buffers.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185, 70.87.190, 2002 c 98, 2003 c 143 and 2004 c 66. 04-12-047, § 296-96-13169, filed 5/28/04, effective 6/30/04.]

WAC 296-96-13171 What other requirements apply to electric manlifts? (1) Adequate lighting must be provided at each landing and in the shaftway.

(2) A sign bearing the following information must be posted in a conspicuous place within the car:

(a) Total load limit in pounds;

(b) "Maximum capacity-one person"; and

(c) "For authorized personnel use only."

(3) A properly working fire extinguisher must be present in each car.

(4) For purposes of this section "adequate lighting" means five-foot candles.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185, 70.87.190, 2002 c 98, 2003 c 143 and 2004 c 66. 04-12-047, § 296-96-13171, filed 5/28/04, effective 6/30/04.]

Hand-Powered Manlifts

WAC 296-96-14010 What is the scope and application of the department's hand-powered manlift rules? WAC 296-96-14010 through 296-96-14080 apply to the installation, design, and use of all one-person capacity, hand

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powered, counterweighted elevators that must be inspected according to chapter 70.87 RCW.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-14010, filed 12/22/00, effective 1/22/01.]

WAC 296-96-14020 What construction requirements apply to hoistway landings and entrances? (1) Every hoistway landing must be protected on all sides other than the landing opening side with a standard guard rail and intermediate guard rail. All landing except the bottom landing must have a toe board installed on all sides except the landing opening side.

(2) All hoistway entrances must be not less than 6 feet 6 inches in height and in no case may the width exceed the corresponding car dimensions.

(3) All hoistway entrances must be provided with an approved maze or with a hoistway gate which must:

- (a) Be at least 36 inches in height;
- (b) Extend downward to within one inch of the landing sill;
- (c) Be of the self-closing type, designed to swing horizontally out from the hoistway and closing against a full jam stop;
- (d) Be located within 4 inches of the edge of the landing sill;

(e) Have a "DANGER" sign conspicuously posted on the landing side of the hoistway gate; and

(f) Withstand a 250 pound horizontal thrust.

(4) On new installations, all projections extending inwardly from a hoistway enclosure at the entrance side of the car platform must be beveled and guarded on their underside by a smooth solid material set at an angle of not less than 60 degrees nor more than 75 degrees from the horizontal when cars are not equipped with gates.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-14020, filed 12/22/00, effective 1/22/01.]

WAC 296-96-14025 What are acceptable hoistway clearances? (1) The minimum clearance between a car side and the hoistway enclosure is one inch.

(2) The clearance between a car platform and a landing sill must be at least 1/2 inch but not more than 1 1/2 inches.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-14025, filed 12/22/00, effective 1/22/01.]

WAC 296-96-14030 Can there be a habitable space beneath an elevator hoistway or counterweight shaft? There must not be habitable space below an elevator hoistway or counterweight shaft unless the floor above the space can withstand the impact of a freely falling hoistway car or counterweight dropping on it.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-14030, filed 12/22/00, effective 1/22/01.]

WAC 296-96-14035 What construction requirements apply to hoistway guide rails? (1) There must be a minimum of two opposing guide rails extending to a point six

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inches beyond the full height of travel of the car when the counterweight buffer is fully compressed.

(2) All rails must be attached by bolts, lag screws or other approved methods to a vertical supporting member which must not exceed 1/2 inch deflection with the application of a 250 pound horizontal thrust at any point.

(3) Wood guide rails must be at least 1 1/2 inch by 1 1/2 inch vertical grain fir or equivalent and must not vary more than 3/16 inch in thickness on the sides which the brakes contact. All joints must be kept smooth and even.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-14035, filed 12/22/00, effective 1/22/01.]

WAC 296-96-14040 What installation requirements apply to buffer springs? (1) All new installations must have spring buffers installed below the car and counterweights.

(2) All installations must have spring buffers attached below the counterweights.

(3) Hoisting ropes must not allow a car platform to be more than 8 inches above the top landing when the counterweight buffer spring is fully compressed.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-14040, filed 12/22/00, effective 1/22/01.]

WAC 296-96-14045 What construction specifications apply to hoistway cars? (1) The car must be built to the following specifications:

(a) The car platform must be no greater than 30 inches on either side (6.25 square feet area).

(b) The car frame and platform must be of steel or sound seasoned wood construction and be designed with a safety factor of not less than 4 for metal and 6 for wood, based on a maximum capacity of 250 pounds.

(c) All frame members must be securely bolted, riveted or welded and braced. If bolted, lock washers or lock nuts must be used.

(d) Where wooden frame members are bolted, large washers or metal plates must be used to minimize the possibility of splitting or cracking the wood.

(2) The sides of the car must be enclosed by a minimum of 2 safety guard rails with the top rail not less than 36 inches nor more than 42 inches from the car floor. Rails must sustain a horizontal thrust of 250 pounds. If solid material is used, it must be smooth surfaced and not less than 1/2 inch thickness, if wood; not less than 16 gauge thickness, if steel; and must be constructed from the car floor to a height of not less than 3 feet.

(a) Where the hoistway is not enclosed on the entrance side of the car, a self-locking or drop bar gate must be provided. The car gate may be of the folding type, horizontally swung, provided it swings into the car enclosure. Drop bar gates must be of two bar construction, parallelogram type, and conform to requirements specified for car guard rails.

(b) The car gate must drop into locking slots or be provided with a positive locking type latch capable of withstanding 250 pounds horizontal thrust.

(3) Every car must have a substantial protective top. The front half may be hinged. The protective top may be made from No. 9 U.S. wire gauge screen, No. 11 gauge expanded

metal, No. 14 gauge sheet steel, 3/4 inch or heavier plywood. If made of wire screen or metal, the openings must reject a 1/2 inch diameter ball.

(4) Every car must have a proper rack to hold the balance weights. Weights must be contained in the proper rack when the car is in motion.

(5) A sign bearing the following information must be conspicuously posted within the car:

- (a) Total load limit in pounds;
- (b) "Maximum capacity one person"; and
- (c) "For authorized personnel use only."

(6) Every car must be equipped with a spring loaded foot brake which:

- (a) Operates independently of the car safeties;
- (b) Operates in both directions and will stop and hold the car and its load; and
- (c) Locks the car in its position automatically whenever the operator releases the pressure on the foot pedal.

(7) Every car must be equipped with a car safety device which:

- (a) Applies to the sides of the main guide rails; and
- (b) Stops and holds the car and its load immediately when the hoisting rope breaks.

(8) Every car must have a minimum clearance of 6 feet 6 inches from the top of the car platform to the bottom edge of the crosshead or any other obstruction.

(9) A tool box with minimum dimensions of 4 inches long by 3 inches deep must be provided and firmly attached to the car structure.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185, 70.87.190, 2002 c 98, 2003 c 143 and 2004 c 66. 04-12-047, § 296-96-14045, filed 5/28/04, effective 6/30/04. Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-14045, filed 12/22/00, effective 1/22/01.]

WAC 296-96-14050 What are the requirements for assembly, installation, and operation of sectional counterweights? (1) The assembly of sectional counterweights must conform to the following requirements:

(a) Rectangular counterweights must be held together by at least two tie rods 1/2 inch in diameter fastened with lock washers and double nuts or other approved means.

(b) One 3/4 inch rod may be used to hold the sections of a round counterweight together. Any additional sections or weights must be secured by an approved means.

(2) The eye bolt for the rope hitch must be attached to the counterweight in a manner that will prevent the eye bolt from coming loose. The eye of eye bolts must be welded to prevent it from opening.

(3) Every counterweight runway must be enclosed with substantial unperforated material for its full distance of travel. Inspection openings must be provided at either the top or bottom of the counterweight runway. These openings must be substantially covered at all times except when actually being used for inspection of counterweight fastenings.

(4) Workers must load the counterweight for the proper balance of the heaviest person using the elevator and others must use compensating weights, which must be available, to maintain a balance.

(5) On elevators with travel of 75 feet or more, a compensating chain or cable must be installed to maintain the

proper balance of the counterweight to the car and load in all positions.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-14050, filed 12/22/00, effective 1/22/01.]

WAC 296-96-14055 What is the minimum acceptable sheave diameter? The minimum sheave diameter must be 40 times the diameter of the rope used. For example, a 3/8 inch rope requires a 15 inch sheave.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-14055, filed 12/22/00, effective 1/22/01.]

WAC 296-96-14060 What requirements apply to hoisting ropes? (1) Hoisting ropes must be of good grade traction elevator wire rope and must:

- (a) Be not less than 3/8 inch in diameter.
- (b) Provide a safety factor of 5 based on the maximum weight supported.

(c) Be of sufficient length to prevent the counterweight from striking the overhead structure when car is at the bottom, and prevent the car from striking the overhead before the counterweight is at its lower limit of travel.

(d) Cable fastenings shall be by babbitted tapered elevator sockets or other acceptable methods approved by the department. If cable clamps are used, a minimum of three cable clamps must be provided. U-shaped clamps shall not be acceptable.

(e) Where passed around a metal or other object less than three times the diameter of the cable, have a thimble of the correct size inserted in the eye.

(2) Approved sockets or fittings with the wire properly turned back and babbitted may be used in place of clamps noted in subsection (1)(d) of this section.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185, 70.87.190, 2002 c 98, 2003 c 143 and 2004 c 66. 04-12-047, § 296-96-14060, filed 5/28/04, effective 6/30/04. Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-14060, filed 12/22/00, effective 1/22/01.]

WAC 296-96-14065 What requirements apply to operating ropes? The operating rope must be of soft hemp or cotton at least 3/4 inch in diameter. It must be securely fastened at each end and must be in proper vertical alignment to prevent bending or cutting where it passes through the openings in the platform or the protective top of the car.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-14065, filed 12/22/00, effective 1/22/01.]

WAC 296-96-14070 Where must hoistway lights be located? Adequate lighting must be installed and operating at each landing and in the shaftway.

For purposes of this section "adequate lighting" means five-foot candles.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185, 70.87.190, 2002 c 98, 2003 c 143 and 2004 c 66. 04-12-047, § 296-96-14070, filed 5/28/04, effective 6/30/04. Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-14070, filed 12/22/00, effective 1/22/01.]

WAC 296-96-14075 What is the factor of safety for overhead supports? The overhead supporting members must be designed, based upon impact loads, with a safety factor of:

- (1) Nine if wood; and
- (2) Five if steel.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-14075, filed 12/22/00, effective 1/22/01.]

WAC 296-96-14080 What additional requirements apply to the installation and operation of hand powered manlifts? (1) Only employees and other authorized personnel may ride in a lift car.

(2) Escape ladders must be installed extending the full length of the hoistway and must be located in a position so that in an emergency a person can safely transfer from the car platform to the ladder. Transfer is considered safe when a person can maintain three points of contact while making the transfer. An "IMPAIRED CLEARANCE" sign must be posted at the bottom of a ladder when the face of the ladder is less than 30 inches from any structure.

(3) An automatic safety device which will prevent the car from leaving the landing until manually released by the operator must be installed at the bottom landing.

(4) A fire extinguisher in proper working condition must be available in the car.

(5) A five-year full load test must be performed and a tag indicating the date and the company conducting the test must be permanently attached with a wire and a seal. Documentation of the test submitted to the department. Manlifts with wooden rails must have a no-load drop test performed on the equipment.

Qualified people will conduct the test. A qualified person is either:

(a) An elevator mechanic licensed in the appropriate category for the conveyance being tested;

(b) The representative of a firm that manufactured the particular material lift and who holds a current temporary mechanic's license in this state; or

(c) The representative of a firm that manufactured the particular material lift who is working under the direct supervision of an elevator mechanic licensed in the appropriate category for the conveyance being tested.

(6) A no load annual safety test must be performed and a tag indicating the date and company conducting the test must be attached to the conveyance with a wire and seal. A safety tag must also be permanently affixed to the inside of the car.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185, 70.87.190, 2002 c 98, 2003 c 143 and 2004 c 66. 04-12-047, § 296-96-14080, filed 5/28/04, effective 6/30/04. Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-14080, filed 12/22/00, effective 1/22/01.]

Casket Lifts

WAC 296-96-16010 What is the scope of the department's casket lift regulations? (1) The rules in this section, WAC 296-96-16010 through 296-96-16240, apply to hoisting and lowering mechanisms equipped with cars that:

(a) Move within guides in a substantially vertical direction;

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(b) Have a maximum net inside area of 28 square feet;

(c) Have a maximum total internal height of 4 feet and a maximum total internal width of 3 1/2 feet; and

(d) Utilize a series of rollers as a platform to exclusively carry caskets.

(2) A hoistway, hoistway enclosure, and related construction that are in substantial compliance with Part 1, Section 100 of the American Standard Safety Code for Elevators, Dumbwaiters, Escalators and Moving Walks A17.1 and meet the requirements of these casket lift rules.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-16010, filed 12/22/00, effective 1/22/01.]

WAC 296-96-16020 What requirements apply to the location and operation of machine rooms and machinery space? (1) Machines and control equipment can be located:

(a) Inside a hoistway enclosure, at the top or bottom, without enclosures or platforms; or

(b) Outside a hoistway if enclosed with a noncombustible material to a height of at least 6 feet.

(2) Machines and control equipment located outside the hoistway must be enclosed in enclosures of incombustible material not less than 6 feet high and have a self-closing and locking door. Control equipment located outside the hoistway may be enclosed in metal cabinet equipped with a self-closing and locking door to prevent access by unauthorized persons.

(3) Permanent electric lighting must be provided in all machine rooms and machinery spaces.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-16020, filed 12/22/00, effective 1/22/01.]

WAC 296-96-16030 What equipment can be located in a machine room? Only machinery and equipment required for the operation of the elevator is permitted in the elevator machine room.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-16030, filed 12/22/00, effective 1/22/01.]

WAC 296-96-16040 What requirements apply to the location of electrical wiring, pipes and ducts in hoistways and machine rooms? (1) Only electrical wiring raceways and cables directly related to an elevator's operation may be installed inside the hoistway.

(2) Pipes or ducts that convey gases, vapors, or liquids and are not used in connection with the elevator must not be installed in any hoistway, machine room, or machinery space.

(3) Machinery and sheave beams, supports, and foundations must comply with the American Standard Safety Code for Elevators, Dumbwaiters, Escalators and Moving Walks A17.1, Section 2.9.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185, 70.87.190, 2002 c 98, 2003 c 143 and 2004 c 66. 04-12-047, § 296-96-16040, filed 5/28/04, effective 6/30/04. Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-16040, filed 12/22/00, effective 1/22/01.]

WAC 296-96-16050 Is a pit required in a casket lift hoistway? A pit is not required in a casket lift hoistway.

[Title 296 WAC—p. 1767]

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-16050, filed 12/22/00, effective 1/22/01.]

WAC 296-96-16060 What requirements apply to the size and location of hoistway door openings? (1) The width and height of door openings must not exceed the width and height of the elevator car by more than one inch in each dimension; except one door opening may be of sufficient size to permit installing and removing the car, but must not be more than 4 feet 9 inches in height.

(2) The bottom of the door opening must be not less than 24 inches above the floor.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-16060, filed 12/22/00, effective 1/22/01.]

WAC 296-96-16070 How must hoistway doors be hung? Hoistway doors must be hung and guided in such a manner that the doors will not be displaced from the guides or tracks when in normal service nor when the doors are subjected to a constant horizontal force of 250 pounds applied at right angles to and approximately the center of the door or to the center of each door section where multisection doors are used.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-16070, filed 12/22/00, effective 1/22/01.]

WAC 296-96-16080 Where must hoistway doors be located? Hoistway doors must be located so that the distance from the hoistway face of the doors to the landing sill must not be more than 2 1/2 inches.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-16080, filed 12/22/00, effective 1/22/01.]

WAC 296-96-16090 What requirements apply to hoistway doors locks? All hoistway doors must be equipped with a combination mechanical lock and electric contact.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-16090, filed 12/22/00, effective 1/22/01.]

WAC 296-96-16100 How should space beneath a hoistway be protected? Where the space below the hoistway is used for a passageway or is occupied by a people, or if unoccupied is not secured against unauthorized access, the cars and counterweights must be equipped with safeties which may be operated as a result of the breaking of the suspension means. Safeties may be of the inertia type without governors.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-16100, filed 12/22/00, effective 1/22/01.]

WAC 296-96-16110 What requirements apply to car doors and gates? There must not be more than two entrances to the car.

(1) Each entrance must be provided with a car door or gate which when in a fully-closed position must protect the full width and height of the car entrance opening.

[Title 296 WAC—p. 1768]

(2) Collapsible type gates, when in a fully closed position, must reject a 4 1/2 inch diameter ball.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-16110, filed 12/22/00, effective 1/22/01.]

WAC 296-96-16120 What requirements apply to car enclosures? (1) Elevator cars must be permanently enclosed on all sides and the top.

(2) The enclosure must be securely fastened to the car platform and so supported that it cannot loosen or become displaced in ordinary service.

(3) The enclosure walls must be of sufficient strength and designed and supported so that when subjected to a pressure of 75 pounds applied horizontally at any point on the walls of the enclosure, the deflection will not reduce the running clearance to exceed one inch.

(4) The top of the car enclosure must be designed and installed so as to be capable of sustaining a load of 300 pounds on any square area 2 feet on a side and 100 pounds applied at any point. Simultaneous application of these loads is not required.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-16120, filed 12/22/00, effective 1/22/01.]

WAC 296-96-16130 What requirements apply to the construction of car frames and platforms? (1) Every elevator suspended by wire ropes must have a car frame consisting of a crosshead, uprights (stiles), and a plank located approximately at the middle of the car platform and in no case farther from the middle than one-eighth of the distance from the front of the platform.

(2) Car frames must be guided on each guide rail by upper and lower guiding members attached to the frame.

(3) Car frames and outside members of the platform must be made of steel.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-16130, filed 12/22/00, effective 1/22/01.]

WAC 296-96-16140 How must car frames and platforms be connected? Connections between members of the car frames and platform must be riveted, bolted, or welded and must meet the following specifications:

(1) Bolts where used through sloping flanges of structural members must have boltheads of the tipped head type or must be fitted with beveled washers.

(2) Nuts used on sloping flanges of structural members must seat on beveled washers.

(3) Welding of parts upon which safe operation depends must be done in accordance with the appropriate standards established by the American Welding Society.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-16140, filed 12/22/00, effective 1/22/01.]

WAC 296-96-16150 What is the load capacity of a casket lift car? (1) Driving machines, car and counterweight suspension mechanisms, and overhead beams and supports must be able to sustain a car with a structural load capacity

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based upon its inside net platform area as shown in American Standard Safety Code for Elevators, Dumbwaiters, Escalators and Moving Walks A17.1, Table 216.1.

(2) A metal plate which gives the rated load in letters and figures not less than 1/4 inch high stamped, etched or raised on the surface of the plate must be fastened in a conspicuous place in the car.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185, 70.87.190, 2002 c 98, 2003 c 143 and 2004 c 66. 04-12-047, § 296-96-16150, filed 5/28/04, effective 6/30/04. Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-16150, filed 12/22/00, effective 1/22/01.]

WAC 296-96-16160 What types of casket lift driving machines are allowed? Only drum, traction or plunger type driving machines may be used.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-16160, filed 12/22/00, effective 1/22/01.]

WAC 296-96-16170 What material and grooving is required for sheaves and drums? Material and grooving for sheaves and drums must be of metal finished grooves and have a pitch diameter not less than 40 times the diameter of the rope.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-16170, filed 12/22/00, effective 1/22/01.]

WAC 296-96-16180 What types of brakes must be used on the driving machine? Elevator driving machines must be equipped with a friction brake applied by a spring or springs and released electrically. The brake must be designed to have a capacity sufficient to hold the car at rest with its rated load.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-16180, filed 12/22/00, effective 1/22/01.]

WAC 296-96-16190 Where must terminal stopping devices be located? (1) Upper and lower normal stopping devices must be provided at the top and bottom of the hoistway.

(2) Final terminal stopping devices must be provided and arranged to stop electric power to the elevator driving machine motor and brake after the car has passed a terminal landing but so that under normal operating conditions it will not function when the car is stopped by the normal terminal stopping device.

(3) Elevators having traction machines must have final terminal stopping switches located in the hoistway and operated by cams attached to the car.

(4) Elevators having winding-drum machines must have terminal stopping switches located on and operated by the driving machine, which must not be driven by chain, rope or belt. Also, stopping switches must be installed in the hoistway and operated by cams attached to the car or counterweights.

(5) All elevators having winding-drum machines must have a slack rope device with an electric switch of the enclosed manually reset type which will cause the electric

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power to be removed from the driving machine motor and brake if the hoisting ropes become slack.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-16190, filed 12/22/00, effective 1/22/01.]

WAC 296-96-16200 What are the specifications for casket lift ropes and rope connections? (1) Elevator cars and counterweights must be suspended by steel wire ropes. Only iron (low carbon steel) or steel wire ropes with fibre cores, having the commercial classification of "elevator wire rope" may be used for the suspension of elevator cars and for the suspension of counterweights.

(2) The minimum number of hoisting ropes is:

(a) Three 1/2 inch ropes for traction elevators; and

(b) Two 1/2 inch ropes for drum type elevators.

(3) Fastenings must be by individual tapered babbitted rope sockets or by other department-approved types.

(4) The rope sockets must be of a type which will develop at least 80 percent of the braking strength of the strongest rope to be used in such fastenings, and U-bolt type rope clips (clamps) must not be used for load line fastenings.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-16200, filed 12/22/00, effective 1/22/01.]

WAC 296-96-16210 What specific requirements apply to hydraulic elevators? (1) All hydraulic elevators must be a plunger type with the plunger securely attached to the car platform.

(2) Plungers composed of more than one section must have the joints designed and constructed to carry in tension the weight of all plunger sections below the joints.

(3) Plungers must be provided with solid metal stops to prevent the plunger from traveling beyond the limits of the cylinder. Stops must be designed and constructed so as to stop the plunger from maximum speed in the "up" direction under full pressure without damage to the hydraulic system.

(4) Any leaking hydraulic oil must be collected.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-16210, filed 12/22/00, effective 1/22/01.]

WAC 296-96-16220 What requirements apply to valves, supply piping, and fittings? (1) Valves, piping and fittings must not be subjected to working pressures that exceed manufacturer recommendations.

(2) Pipes, especially those that may vibrate, must be sufficiently supported at each joint and fitting so undue stress is eliminated.

(3) A shut-off valve must be installed in the pit.

(4) Each pump must be equipped with a relief valve and all relief valves must be:

(a) Located between the pump and check valve in a bypass connection;

(b) A type that cannot be shut off from the hydraulic system; and

(c) Pre-set to open at a pressure not greater than 125 percent of the working pressure at the pump.

EXCEPTION: Relief valves are not required for centrifugal pumps driven by an induction motor when the shutoff or

maximum pressure that the pump develops is no more than 135 percent of the working pressure at the pump.

(5) A check valve must be installed that will hold a car and its rated load at any point whenever a pump stops or pump operating pressure drops below the required minimum.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-16220, filed 12/22/00, effective 1/22/01.]

WAC 296-96-16230 What type of stopping devices must be installed? Normal stopping devices operated by cams attached to the car must be installed at the top and bottom of the hoistway. Final terminal stopping devices and anticreep leveling devices are not required.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-16230, filed 12/22/00, effective 1/22/01.]

WAC 296-96-16240 What type of operating devices must be used? Only constant pressure or automatic type operating devices located outside the hoistway may be used.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-16240, filed 12/22/00, effective 1/22/01.]

Boat Launching Elevators

WAC 296-96-18010 What are the definitions for boat launching elevators? "Boat launching elevator" is a device that:

- (1) Is equipped with a car or platform;
- (2) Moves in guides in a substantially vertical direction;
- (3) Serves to connect one or more floors or landings of a boat launching structure with a beach or water surface; and
- (4) Is used for carrying or handling boats in which people ride.

"Boat launching structure" is any structure that houses and supports any boat launch elevator.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-18010, filed 12/22/00, effective 1/22/01.]

WAC 296-96-18020 Must boat launching elevator cars and platforms be enclosed? All boat launching elevator cars or platforms must be enclosed to a height of at least 6 feet from the floor on all sides where there are no hoistway doors or gates. Enclosures may be built as solid panels or open work which will reject a two inch diameter ball.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-18020, filed 12/22/00, effective 1/22/01.]

WAC 296-96-18030 What electrical wiring requirements apply to boat launching elevators? (1) All electric wiring used in boat launching elevators, except the traveling cable, must be enclosed in rigid metal conduit.

(2) The traveling cable, which is required between the car mounted terminal stopping switch and the hoistway, must be made of flexible, nonmetallic, moisture-retardant, flame-retardant material.

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(3) All electrical outlets, switches, junction boxes and fittings used in boat launching elevators must be weather proof.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-18030, filed 12/22/00, effective 1/22/01.]

WAC 296-96-18040 What type of brakes must be used on boat launching elevators? All electric boat launching elevators must be equipped with effective brakes that are applied by springs and released electrically. Brake capacity must be sufficient to hold the elevator and its rated load at rest.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-18040, filed 12/22/00, effective 1/22/01.]

WAC 296-96-18050 What types of stop switches and protective devices are required on boat launching elevators? (1) All electric boat launching elevators must be equipped with:

(a) A bottom terminal stop switch operated by the traveling cable and a float or some other department approved mechanism;

(b) A top terminal stop switch that is located in the hoistway and is operated either by a cam attached to the car or some other department approved mechanism; and

(c) Key-operated, continuous pressure type operating switches that are located outside the hoistway but within sight of the elevator car or platform.

(2) All boat launching elevators operated by a winding drum, must be equipped with a final stop switch that is located on and operated directly by the driving machine. Chains, ropes or belts must not drive final stop switches.

(3) All boat launching elevators driven by a polyphase alternating current motor must be equipped with the following approved relays:

(a) A reverse phase relay that prevents the driving machine motor from starting when either the phase rotation is in the wrong direction or there is a phase failure; and

(b) A main line relay or contact that automatically stops power to the driving machine motor and brake, activating the brake when any safety device is activated.

(4) Hand rope controls must not be used on any boat launch elevator.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-18050, filed 12/22/00, effective 1/22/01.]

WAC 296-96-18060 When must hoisting cables be reshackled or refastened? The load end of a hoisting cable on all boat launching elevators must be reshackled or refastened every 12 months.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-18060, filed 12/22/00, effective 1/22/01.]

WAC 296-96-18070 What requirements apply to hoistway gates and doors? (1) All boat launching elevators must have gate-protected hoistway entrances at every landing

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except those landings located on the beach or at the water surface.

(2) All gates must comply with the following minimum requirements:

(a) There must be a full-bodied, balanced type safety gate that protects the full width of the hoistway and must hang, at all points along the gate, within two inches of the landing threshold;

(b) The minimum gate height on top landings is 42 inches and 66 inches on all intermediate landings;

(c) Gates must be constructed of either metal or wood;

(d) Gates must be capable of withstanding a lateral pressure, applied at any point, of 250 pounds without breaking, becoming permanently deformed or being displaced from their guides or tracks;

(e) The openings in grille, lattice or other openwork designed gate bodies, must reject a two-inch diameter ball; and

(f) Gates must be equipped with a department approved combination electric contact and mechanical lock.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-18070, filed 12/22/00, effective 1/22/01.]

WAC 296-96-18080 Must boat launching elevator hoistways be enclosed? The sides of elevator hoistways adjacent to a dock area platform, walkway or ramp must be enclosed. The enclosures must comply with the hoistway safety gate dimension and pressure requirements in WAC 296-96-18070.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-18080, filed 12/22/00, effective 1/22/01.]

Mechanized Parking Garage Equipment

WAC 296-96-20005 What national safety codes has the department adopted for mechanized parking garage equipment? The department has adopted USASI Standard A113.1-1964 "Safety Code for Mechanized Parking Garage Equipment."

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-20005, filed 12/22/00, effective 1/22/01.]

PART D - REGULATIONS FOR EXISTING ELEVATORS, DUMBWAITERS, AND ESCALATORS

Regulations for Existing Electric Elevators, Direct Plunger and Roped Hydraulic Elevators, Escalators used to transport passengers, Electric and Hand-powered Dumbwaiters, Hand-powered Elevators, Inclined Stairway Chairlifts, Inclined and Vertical Wheelchair Lifts, and Sidewalk Elevators

NOTE: The following rules set the minimum standard for existing elevators, dumbwaiters, and escalators, and, where applicable, alterations.

WAC 296-96-23100 Are keys required to be on-site? Yes. The keys to the machine room and the keys that are necessary to operate the elevator must be located in a locked key (2007 Ed.)

retainer box in the elevator lobby; or located by machine room doors at no more than six feet above the floor, provided access to the key box doesn't require passage through locked doors. The key retainer box must be:

- Readily accessible to authorized personnel;
- Clearly labeled "Elevator"; and
- Equipped with a 1-inch cylinder cam lock key #39504.

Further:

• Keys for access to elevator machine rooms and for operating elevator equipment must be tagged and kept in the key box.

• The key box must contain all keys necessary for inspections of the elevator.

• Mechanical hoistway access devices must be kept in the key box or machine room.

The department may approve existing retainer boxes provided they are:

- Readily accessible to authorized personnel;
- Clearly labeled "elevator"; and
- The lock must be either a 1-inch cylinder cam lock key #39504 or a combination lock. The combination for the lock must be on record with the department.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185, 70.87.190, 2002 c 98, 2003 c 143 and 2004 c 66. 04-12-047, § 296-96-23100, filed 5/28/04, effective 6/30/04. Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-23100, filed 12/22/00, effective 1/22/01.]

Subpart I Hoistways and Related Construction for Electric and Hydraulic Elevators

WAC 296-96-23101 What is the scope of Subpart I?

(1) Subpart I, Hoistways and Related Construction for Electric and Hydraulic Elevators, is the minimum standard for all existing hydraulic and electric elevators. It applies to other equipment only as referenced in the applicable part.

(2) This subpart does not apply to elevators located in grain terminals, residential elevators, or special purpose elevators.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185, 70.87.190, 2002 c 98, 2003 c 143 and 2004 c 66. 04-12-047, § 296-96-23101, filed 5/28/04, effective 6/30/04. Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-23101, filed 12/22/00, effective 1/22/01.]

Section 1 Hoistways

WAC 296-96-23110 What structural requirements apply to hoistway enclosures? (1) Local laws and ordinances establish fire-resistant requirements for hoistway enclosures.

(2) When doors and hoistway enclosures are not required to be fire resistant, the hoistway must be enclosed:

(a) With a solid material or a material with openings that will reject a 1/2 inch diameter ball; and

(b) To a height at least 6 feet above each floor or landing and any adjacent stairways treads.

(3) Hoistway enclosures must be supported and braced so as to deflect no more than one inch when subjected to a 100 pound force perpendicularly applied at any point.

(4) Hoistway enclosures adjacent to counterweights must extend the full height of the floor and 6 inches past the counterweight raceway.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-23110, filed 12/22/00, effective 1/22/01.]

WAC 296-96-23111 Are guards required for windows in hoistway enclosures? (1) Guards are required on outside hoistway windows if the windows are located:

- (a) Ten stories or less above a thoroughfare; or
- (b) Three stories or less above the roof of an adjacent building.

(2) Hoistway windows can be guarded by one of the following methods:

(a) By vertical bars at least 5/8 inch in diameter or equivalent, spaced no more than 10 inches apart, permanently and securely fastened in place; and

(b) By metal-sash windows having solid section steel muntins of no less than 1/8 inch thickness, spaced no more than 8 inches apart.

(3) Exterior hoistway windows must be identified with 4-inch high letters marked "elevator."

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-23111, filed 12/22/00, effective 1/22/01.]

WAC 296-96-23113 What are the requirements for pipes in hoistways that convey gases, vapors, or liquids?

(1) All steam and hot water pipes in a hoistway must be covered to prevent direct spray onto the elevator car if ruptured, as required in ASME A17.1, Rule 102.2.

(2) All other pipes or ducts currently in a hoistway must be securely fastened to prevent excessive vibration.

(3) Future pipes or ducts must not be installed in a hoistway unless they directly pertain to the elevator's operation.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-23113, filed 12/22/00, effective 1/22/01.]

WAC 296-96-23115 What safety requirements apply to inspecting and maintaining overhead sheaves? (1) Overhead sheave spaces requiring inspection and maintenance must be located so adequate access and decking is available to insure the safety of inspection and maintenance personnel.

(2) Guardrails must be installed where decking does not cover the complete hoistway.

(3) Guardrail and deck supports must be similar to those required for the top of an elevator car and may be made of either wood or metal compatible with the existing hoistway construction.

(4) Inspections and maintenance may be performed from the top of an elevator car if a ladder is not required to perform these functions.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-23115, filed 12/22/00, effective 1/22/01.]

WAC 296-96-23116 What requirements apply to car numbers? In any building with more than one elevator, num-

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bers at least two inches in height identifying each car must be located at the main lobby entrance, inside the car, on the machine, and on the disconnect switch.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-23116, filed 12/22/00, effective 1/22/01.]

WAC 296-96-23117 What requirements apply to top of car railings for traction elevators?

A standard railing must be installed on the top of all traction elevators where the perpendicular distance between the edges of the car top and the adjacent hoistway enclosure exceeds twelve inches horizontal clearance. The railing shall be substantially constructed of metal and shall consist of a top rail, intermediate rail and post. The top rail shall have a smooth surface and the upper surface shall be located at a vertical height of forty-two inches. The intermediate rail shall be located approximately halfway between the top rail and the car top. There must be a minimum of six inches of clearance above the top rail when the car is at its furthest point of travel on inspection mode.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185, 70.87.190, 2002 c 98, 2003 c 143 and 2004 c 66. 04-12-047, § 296-96-23117, filed 5/28/04, effective 6/30/04.]

WAC 296-96-23118 What requirements apply to top of car railings for hydraulic elevators in unenclosed hoistways?

A standard railing must be installed on the top of hydraulic elevators installed in unenclosed hoistways. The railing shall be substantially constructed of metal and shall consist of a top rail, intermediate rail and post. The top rail shall have a smooth surface and, where practical, the upper surface shall be located at a vertical height of forty-two inches. The intermediate rail shall be located approximately halfway between the top rail and the car top. There must be a minimum of six inches of clearance above the top rail when the car is at its furthest point of travel on inspection mode.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185, 70.87.190, 2002 c 98, 2003 c 143 and 2004 c 66. 04-12-047, § 296-96-23118, filed 5/28/04, effective 6/30/04.]

WAC 296-96-23119 What signage requirements apply to traction elevators with minimal overhead clearance?

Traction elevators that do not have a minimum of twenty-four inches of clearance from the crosshead, or any equipment mounted on the crosshead, to the lowest member of the overhead structure in the hoistway when the car has reached its maximum upward movement must have signage. A sign must be located near the top of car inspection station. An additional sign must be posted on the hoistway wall. This sign must be visible when accessing the car top. The sign shall consist of alternating four-inch diagonal red and white stripes and must clearly state "danger low clearance" in lettering not less than four inches in height.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185, 70.87.190, 2002 c 98, 2003 c 143 and 2004 c 66. 04-12-047, § 296-96-23119, filed 5/28/04, effective 6/30/04.]

Section 2

Machine Rooms and Machinery Spaces

WAC 296-96-23121 What are the requirements for machine room and machinery space access? Access doors to machine rooms and machinery spaces must be kept closed and locked. The lock must be a spring type which is installed to permit the door to be opened from the inside without a key.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-23121, filed 12/22/00, effective 1/22/01.]

WAC 296-96-23122 What type of lighting must be installed in machine rooms and machinery space? Permanent electric lighting must be provided in all machine rooms and machinery spaces. The illumination must be at least 10 foot-candles at floor level.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-23122, filed 12/22/00, effective 1/22/01.]

WAC 296-96-23123 What type of service outlets must be installed in elevator cars, hoistways and machinery spaces? Service outlets, where provided, must be permanently grounded.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-23123, filed 12/22/00, effective 1/22/01.]

WAC 296-96-23124 What installation requirements apply to pipes conveying gases, vapors, or liquids in machine rooms and machinery spaces? (1) All pipes or ducts currently in machine rooms and machinery spaces must be securely fastened to prevent excessive vibration.

(2) Future pipes or ducts must not be installed in machine rooms and machinery spaces.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-23124, filed 12/22/00, effective 1/22/01.]

WAC 296-96-23125 Must elevator machines and control equipment be protected from the weather? Elevator machines and control equipment must be protected from the weather.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-23125, filed 12/22/00, effective 1/22/01.]

WAC 296-96-23126 What protective measures should be taken in hoistways, machine rooms and machinery spaces to insure safety? (1) Gears, sprockets, sheaves, cables, tapes, belts and chains must be fitted with suitable guards to prevent accidental contact, where feasible.

(2) Openings in machine room floors above the hoistway must be guarded to prevent tools from falling into the hoistway below.

(3) Ventilation grids where exposed to the hoistway below must be firmly bolted or secured to prevent accidental removal and must be fitted with 1/2 inch wire mesh under the grid.

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[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-23126, filed 12/22/00, effective 1/22/01.]

Section 3

Pits

WAC 296-96-23130 What requirements apply to pit access? (1) Pits must be accessible to all authorized personnel.

(2) Access doors, if provided, must be kept closed and locked.

(3) Access ladders must be installed in elevator pits 3 feet or deeper.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-23130, filed 12/22/00, effective 1/22/01.]

WAC 296-96-23131 What requirements apply to pit drains? (1) Pit drains directly connected to sewers are prohibited.

(2) Sumps, with or without pumps, are permitted.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-23131, filed 12/22/00, effective 1/22/01.]

WAC 296-96-23132 What lighting requirements apply to pits? (1) A permanent lighting fixture producing at least 5 foot-candle at the pit floor must be installed in all pits.

(2) A light switch must be installed and must be accessible from the pit access door.

(3) A permanent grounded outlet must be provided in all pits.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-23132, filed 12/22/00, effective 1/22/01.]

WAC 296-96-23133 What requirements apply to counterweight pit guards? (1) Where feasible, unperforated metal guards must be installed in the pit on the open side or sides on all counterweights where spring or solid-type buffers are used or where oil buffers attached to the counterweights are used. Except, where compensating chairs or ropes are attached to the counterweight the guard may be omitted on the side facing the car to which the chains or ropes are attached.

(2) Guards must extend from a point no more than 12 inches above the pit floor to a point at least 7 feet but not more than 8 feet above the floor; and be fastened to a properly reinforced and braced metal frame that is at least equal in strength and stiffness to No. 14 U.S. gauge sheet steel.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-23133, filed 12/22/00, effective 1/22/01.]

Section 4

Protection of Space Below Hoistways

WAC 296-96-23140 What requirements apply to any space below a hoistway that is not permanently protected from access? When space below a hoistway is not perma-

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nently protected from access, the following requirements apply:

- (1) Counterweights must be equipped with safeties.
- (2) The cars and counterweight must be equipped with spring or oil buffers.
- (3) The car and counterweight buffer supports must be sufficiently strong to withstand without permanent deformation contact with buffers traveling at the following speeds:
 - (a) The governor tripping speed where the safety is governor operated; or
 - (b) 125 percent of the rated speed when the safety is not operated by a governor.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-23140, filed 12/22/00, effective 1/22/01.]

Section 5 Hoistway Entrances

WAC 296-96-23150 Are hoistway doors (gates) required? (1) Passenger elevators. Hoistway landing openings must have entrances which guard the full width and height of the openings. The panels of entrances used with automatic-operation passenger elevators must not have hand latches or other hand operated door fastening devices, nor must such panels

(2) Freight elevators. Hoistway landing openings for freight elevators must have entrances which guard the full width of the opening. Gates and doors must meet the following requirements:

(a) Balanced type vertically sliding hoistway gates must extend from a point not more than 2 inches from the landing threshold to a point at least 66 inches above the threshold.

(b) Gates must be solid or openwork of a design that will reject a 2 inch diameter ball and be located so that the distance from the hoistway face of the gate to the hoistway edge of the landing sill is no more than 2 1/2 inches.

(c) Gates must be constructed of metal or wood and be designed and guided so as to withstand a lateral pressure of 100 pounds applied at approximately the center without breaking or becoming permanently deformed and without displacing the gate from its guides or tracks.

(d) At the top landing, a gate 66 inches high may be used if there is not sufficient clearance for a 6 feet high gate. When the requirements of WAC 296-96-23110 allow nonfire-resistive hoistway enclosures, a gate may be used.

(e) Gates must be constructed of either metal or wood.

(f) Gates must withstand a lateral pressure of 100 pounds, applied at approximately their center, without breaking, being permanently deformed or being displaced from their guides or tracks.

(g) The maximum vertical opening between a landing sill and a door or gate is 2 inches.

(h) The distance between the gate's hoistway face and the hoistway landing edge must not exceed 2 1/2 inches.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-23150, filed 12/22/00, effective 1/22/01.]

WAC 296-96-23151 What requirements apply to hoistway door closing devices? (1) Horizontally sliding

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doors on automatic-operation elevators must be equipped with door closers that automatically close an open door if the car for any reason leaves the landing zone.

(2) Horizontal swinging single or center-opening doors on automatic-operation elevators must be self-closing.

(3) Door closers are not required for the swinging portion of combination horizontally sliding and swinging doors.

(4) On center-opening doors that utilize relating cables if the cabling fails or when the cabling is replaced a method shall be provided to ensure that both doors automatically close if the car for any reason leaves the landing zone.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185, 70.87.190, 2002 c 98, 2003 c 143 and 2004 c 66. 04-12-047, § 296-96-23151, filed 5/28/04, effective 6/30/04. Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-23151, filed 12/22/00, effective 1/22/01.]

WAC 296-96-23152 What requirements apply to hoistway door vision panels? (1) Manually operated or self-closing hoistway doors of the vertically or horizontally sliding type for elevators with automatic or continuous-pressure operation must be provided with a vision panel except at landings of automatic-operation elevators where a hall position indicator is provided.

(2) In multisection doors, the vision panel is required in one section only but may be placed in all sections.

(3) All horizontally swing doors must have vision panels.

(4) Vision panels may be provided in any type of hoistway door regardless of the type of operation of the elevator. Where provided, vision panels must meet the following requirements:

(a) The area of any single vision panel must be at least 25 square inches with the total area of one or more panels in any hoistway door not exceeding 80 square inches.

(b) Each clear panel opening must reject a 6 inch diameter ball.

(c) Muntins between panel sections must be made of a noncombustible material and of substantial construction. If located on the landing side, they must be flush with the surface of the landing side of the door.

(d) Panel openings must be glazed with clear wire glass at least 1/4 inch thick.

(e) A panel's center must be located at least 54 inches but no more than 66 inches above the landing except, for vertically sliding, biparting, counterbalanced doors it must be located to conform with the dimensions specified to the extent that the door design will permit.

(f) Vision panels in horizontally swing doors must be located for convenient vision when opening the door from the car side.

(g) Wire-glass panels in power-operated doors must be substantially flush with the surface of the landing side of the door.

(h) Vision panel frames must be secured by means of nonreversible screws or other tamper proof fasteners.

(i) Vision panels which do not meet the requirements of (a) through (h) of this section must be protected by protective grilles made of No. 15 gauge stainless or galvanized steel in accordance with the following specifications:

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(i) Grilles must be sized to fit within or over the vision panel frame and completely cover the vision panel opening in the hoistway door.

(ii) Grilles must be secured by means of nonreversible screws or other tamper proof fasteners.

(iii) Grilles must contain openings which are no larger than 3 inches by 3/4 inch, or 3 inches in diameter.

(iv) All edges must be beveled and free of burrs.

(v) Grilles must be installed on the hoistway side of the door.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-23152, filed 12/22/00, effective 1/22/01.]

WAC 296-96-23153 What requirements apply to door hangers for horizontal slide doors? Door hangers for horizontal slide type entrances must meet the following requirements:

(1) Means must be provided to prevent the hangers from jumping the track.

(2) Stops must be provided in the entrance assembly to prevent hangers from overrunning the end of the track.

(3) Power-operated doors must be built to withstand, without damage or appreciable deflection, an imposed static load equal to four times the weight of each panel. This static load must be applied successively downward and upward along the vertical centerline of the panel.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-23153, filed 12/22/00, effective 1/22/01.]

WAC 296-96-23154 Are astragals required? On a vertically sliding, biparting, counterbalanced hoistway door, a fire-resistive, nonshearing and noncrushing member of either the meeting or overlapping type must be provided on the upper panel to close the distance between the rigid door sections when in contact with the stops. Rigid members which overlap the meeting edge and center-latching devices are prohibited.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-23154, filed 12/22/00, effective 1/22/01.]

WAC 296-96-23155 What requirements apply to pull straps? Manually operated, vertical slide, biparting elevators doors which can be operated from the landings must be provided with pull straps on the inside and outside of the upper panel where the lower edge of the upper panel is more than 6 feet 6 inches above the landing when the panel is in the fully open position. The length of the pull straps must be as follows:

(1) The bottom of the strap must be not more than 6 feet 6 inches above the landing when the panel is in the fully opened position.

(2) The length of the strap must not be extended by means of ropes or other materials.

(3) Where pull straps are provided on the car side of doors of elevators which can be operated from the car only, the length of the pull straps must conform to the requirements specified in (1) and (2) of this section.

(2007 Ed.)

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-23155, filed 12/22/00, effective 1/22/01.]

WAC 296-96-23156 What requirements apply to landing sill clearances? The clearance between the car-platform sill and the hoistway edge of any landing sill, or the hoistway side of any vertically sliding counterweighted, or of any vertically sliding counterbalanced biparting hoistway door, must be:

(1) At least 1/2 inch where side car guides are used.

(2) At least 3/4 inch where corner car guides are used.

(3) In all cases, the maximum clearance must not be more than 1 1/2 inch.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-23156, filed 12/22/00, effective 1/22/01.]

WAC 296-96-23157 What is the maximum allowable threshold clearance? The maximum distance from the hoistway door or gate face to the hoistway edge of the threshold must not exceed 2 1/4 inches.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-23157, filed 12/22/00, effective 1/22/01.]

WAC 296-96-23158 What requirements apply to elevator floor numbers? Elevator hoistways must have floor numbers at least 4 inches high and placed on the walls and/or doors of hoistways at intervals so that a person in a stalled elevator, upon opening the car door 4 inches, could determine the floor position.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-23158, filed 12/22/00, effective 1/22/01.]

Section 6

Hoistway Door Locking Devices, Parking Devices, and Access

WAC 296-96-23160 What requirements apply to hoistway door (gate) locking devices? (1) Passenger elevator hoistway doors or gates must be equipped with hoistway-unit system door interlocks.

(2) Freight elevator hoistway doors or gates must be equipped with hoistway-unit system door interlocks or an approved type combination electric contact and mechanical lock.

(3) Combination locks and electric contacts or interlocks must be located so not to be accessible from the landing side when the hoistway doors or gates are closed.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-23160, filed 12/22/00, effective 1/22/01.]

WAC 296-96-23161 What requirements apply to elevator parking devices? (1) Elevators that are operated from within the car only must have elevator parking devices installed at every landing that is equipped with an unlocking device.

(2) On elevators that are not operated from within the car only, a parking device must be provided at one landing and

may be provided at other landings. This device must be located at a height no greater than 6 feet 11 inches above the floor.

(3) Parking devices are not required for elevators with hoistway doors that automatically unlock when the car is within the landing zone.

(4) Parking devices must conform to the following specifications:

(a) They must be mechanically or electrically operated.

(b) They must be designed and installed so that friction or sticking or the breaking of any springs used in the device will not permit opening or unlocking a door when the car is outside the landing zone of that floor.

(c) Where springs are used, they must be of the restrained compression type which will prevent separation of the parts in case a spring breaks.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-23161, filed 12/22/00, effective 1/22/01.]

WAC 296-96-23162 What requirements apply to hoistway door unlocking devices? Hoistway door unlocking devices or hoistway access switches must be provided on all elevators at one upper landing to permit access to the top of the car and at the lowest landing if this landing is the normal point of access to the pit. Hoistway door unlocking devices may be provided at all landings for emergency use.

(1) Hoistway door unlocking devices must conform to the following specifications:

(a) The device must unlock and permit the opening of the hoistway door from the access landing regardless of the position of the car.

(b) The device must be designed to prevent unlocking the door with common tools.

(c) The operating means for unlocking the door must be available to and used only by inspectors, elevator maintenance and repair personnel, and qualified emergency personnel.

(d) The unlocking-device keyway must be located at a height no greater than 6 feet 11 inches above the floor.

(2) Hoistway access switches must conform to the following specifications:

(a) The switch must be installed only at the access landings.

(b) The switch must be installed adjacent to the hoistway entrance at the access landing with which it is identified.

(c) The switch must be of the continuous-pressure spring-return type and must be operated by a cylinder-type lock having not less than five-pin or five-disk combination with the key removable only when the switch is in the "off" position. The lock must not be operable by any key which will operate locks or devices used for other purposes in the building. The key or combination must be available to and used only by inspectors and elevator maintenance and repair personnel.

(d) The operation of the switch at either access landing must permit and may initiate and maintain movement of the car with the hoistway door at this landing unlocked or not in the closed position, and with the car door or gate not in the closed position, subject to the following:

(i) The operation of the switch must not render ineffective the hoistway door interlock or electric contact at any other landing.

(ii) The car must not be operated at a speed greater than 150 feet per minute.

(iii) For automatic and continuous-pressure operation elevators: Landing operating devices of continuous-pressure operation elevators and car and landing operating devices of automatic operation elevators must first be made inoperative by means other than the access switch; and power operation of the hoistway door and/or car door or gate is inoperative.

(iv) Automatic operation by a car-leveling device is inoperative.

(v) The top-of-car operating device is inoperative.

(vi) The movement of the car initiated and maintained by the upper access switch must be limited in the down direction to a travel not greater than the height of the car crosshead above the car platform, and limited in the up direction above the upper access landing to the distance the car apron extends below the car platform. Where electrically operated switches, relays, or contractors are used to render inoperative the hoistway-door interlock or electric contact or the car door or gate electric contact, the control circuits must be arranged to conform to the requirements of WAC 296-96-23221 and in addition, to render the normal car and hall operation ineffective in any such switch, relay, or contractor fails to function in the intended manner.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-23162, filed 12/22/00, effective 1/22/01.]

Section 7

Power Operation of Doors and Gates

WAC 296-96-23165 What requirements apply to reopening devices for power-operated car doors and gates? (1) A power-operated car door or gate must have a reopening device that stops and reopens the door or gate and the adjacent hoistway door if the car door or gate is obstructed while closing. If the closing kinetic energy is reduced to 2 1/2 feet-lbf or less, the reopening device may be rendered inoperative.

(2) For center opening doors or gates, the reopening device must be designed and installed so that obstruction of either door or gate panel when closing will cause the reopening device to function.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-23165, filed 12/22/00, effective 1/22/01.]

WAC 296-96-23166 What requirements apply to photo electric or electric eye door reopening devices? An elevator equipped with a photo electric or electric eye device for reopening of the car and hoistway doors must be provided with a means that will automatically time-out and close the door if it has been obstructed for 20 seconds. The photo electric or electric eye device must not be reactivated until the doors have fully closed. There are two exceptions to this requirement:

(1) The department may authorize hospitals or nursing homes to allow obstructed doors to close within 35 seconds after the expiration of the normal door open time.

(2) When smoke detectors are used to bypass photo electric or electric eye devices the doors are not required to time-out and close except under phase I conditions as authorized by ANSI A17.1-211.3A.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-23166, filed 12/22/00, effective 1/22/01.]

Subpart II Machinery and Equipment for Electric Elevators

WAC 296-96-23200 What is the scope of Subpart II? Subpart II, Machinery and Equipment for Electric Elevators, is a minimum standard for all existing electric elevators. It applies to other equipment only as referenced in the applicable Subpart.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-23200, filed 12/22/00, effective 1/22/01.]

Section 1 Buffers and Bumpers

WAC 296-96-23203 What requirements apply to buffers and bumpers? Car and counterweight buffers or bumpers must be provided. Solid bumpers may be used in lieu of buffers where:

- (1) The rated speed is 50 feet per minute or less; or
- (2) Type C safeties are used.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-23203, filed 12/22/00, effective 1/22/01.]

Section 2 Counterweights

WAC 296-96-23205 What requirements apply to counterweights? On rod type counterweights, the rod nuts must be cotter-pinned and the tie rods must be protected so that the head weight cannot crush the tie rods on buffer engagement.

- (1) The weights must be protected so that they cannot be dislodged.
- (2) Compensating chains or ropes must be fastened to the counterweight from directly or to a bracket fastened to the frame and must not be fastened to the tie rods.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-23205, filed 12/22/00, effective 1/22/01.]

Section 3 Car Frames and Platforms

WAC 296-96-23206 What requirements apply to car platforms and frames? Every elevator car must have a platform consisting of a nonperforated floor attached to a platform frame supported by the car frame and extending over the entire area within the car enclosure.

(2007 Ed.)

(1) Holes in the floor for the safety plank wrench, etc., must be covered and secured.

(2) The platform frame members and the floor must be designed to withstand the forces developed under the loading conditions for which the elevator is designed and installed.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-23206, filed 12/22/00, effective 1/22/01.]

WAC 296-96-23207 What requirements apply to platform guards (aprons)? The entrance side of the platform of passenger and freight elevators equipped with leveling devices or truck-zoning devices must have smooth metal guard plates of not less than 0.0598 inch thick steel, or material of equivalent strength and stiffness, adequately reinforced and braced to the car platform and conforming to the following:

- (1) The guard plate must extend no less than the full width of the widest hoistway door opening.
- (2) It must have a straight vertical face, extending below the floor surface of the platform, of no less than the depth of the leveling of truck zone, plus 3 inches.
- (3) If new guards are installed, the lower portion of the guard must be bent back at an angle of not less than 60 degrees nor more than 75 degrees from the horizontal.
- (4) The guard plate must be securely braced and fastened in place to withstand a constant force of not less than 15-lbf applied at right angles to and at any position on its face without permanent deformation.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-23207, filed 12/22/00, effective 1/22/01.]

WAC 296-96-23208 What requirements apply to hinged platform sills? Hinged platform sills, where provided, must have electric contacts which will prevent operation of the elevator by the normal operating device unless the hinged sill is within 2 inches of its fully retracted position. The elevator may be operated by the leveling device in the leveling zone with the sill in any position.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-23208, filed 12/22/00, effective 1/22/01.]

WAC 296-96-23209 What requirements apply to floating (movable) platforms? Floating (movable) platforms which permit operation of the elevator when the car door or gate is not in the closed position are prohibited.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-23209, filed 12/22/00, effective 1/22/01.]

Section 4 Car Enclosures

WAC 296-96-23215 What requirements apply to car enclosures? Car enclosures for freight and passenger cars must meet the following specifications:

- (1) Freight elevator cars:
 - (a) Cars must be enclosed to a height of at least 6 feet from the floor on the sides where there are no hoistway doors

[Title 296 WAC—p. 1777]

or gates with solid panel or openwork which will reject a 2 inch diameter ball.

(b) On the side of the car adjacent to the counterweight runway and extending 6 inches each side of the counterweight runway, the enclosure must extend to the car top or underside of car crosshead.

(c) If overhead protection is of openwork material, it must reject a 1 1/2 inch ball and shall be sufficiently strong to support 300 pounds applied at any point. Simultaneous application of these loads is not required.

(d) Suitable overhead protection may be installed directly over the area where the operator runs the controls, providing the overhead protection covers sufficient area for safe protection of the operator.

(2) Passenger elevator cars:

(a) Passenger elevator cars must be fully enclosed on all sides and the top, except the opening for entrances

(b) Enclosures must be of metal or wood in conformity with the local fire regulations.

(c) The car top must be sufficiently strong to support a load of 300 pounds applied at any point. Simultaneous application of these loads is not required.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-23215, filed 12/22/00, effective 1/22/01.]

WAC 296-96-23216 What requirements apply to the lining materials used on passenger car enclosures? Materials used for passenger car linings must meet the following specifications:

(1) Carpeting without padding may be used for interior finishes provided that it has a Class I rating, a flame spread of 25 or less which must include all assembly components except the adhesive. The adhesive must be a slow-burning type.

(2) Slow-burning combustible materials, other than carpet, may be used for interior finishes provided the materials have a Class II rating or better (flame spread of 75 or less), which must include all assembly components other than the adhesive. Materials must be firmly bonded flat to the enclosure and must not be padded. Fabric with spray-type fireproofing must not be installed in elevators.

(a) Equivalent ratings in watts per centimeter squared as derived in the radiant panel test are also acceptable.

(b) .45 watts/cm squared or higher is equivalent to Class I or better.

(c) .22 watts/cm squared or higher is equivalent to Class II or better.

(d) In the radiant test, the higher the number the better the flame resistance.

(e) In the Class I and II system, the lower the number, the better the flame resistance.

(f) Smoke density of materials must be less than 450 when tested in accordance with UBC Standard No. 42.-1.

(3) Certification that the materials and assembly meet these requirements must be submitted to the building official.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-23216, filed 12/22/00, effective 1/22/01.]

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WAC 296-96-23220 What requirements apply to car doors and gates? Car doors or gates are required at each entrance to the elevator car.

(1) Car doors or gates may be horizontal or vertical sliding.

(2) Gates, except collapsible, may be solid or may be openwork of a design to reject a 2 inch diameter ball. Gates must be:

(a) Constructed of metal or wood; and

(b) Designed so as to withstand a lateral pressure of 100 pounds applied at approximately the center without breaking or being permanently deformed and without displacing the gate from its guides or tracks.

(3) Collapsible gates must reject a 3 inch diameter ball when fully closed (extended position) when installed on passenger cars and must reject a 4 1/2 inch ball when fully extended when installed on freight cars. Such gates must not be power-opened for more than one-third of their clear opening distance or for a maximum power opening distance not to exceed 10 inches. Collapsible gates must have at least every fourth vertical member guided at the top and every second vertical member guided at the bottom.

(4) Handles of manually operated collapsible gates nearest the car operating device on elevators operated from the car only must be located so that the nearest handle is not more than 48 inches from the car operating device when the gate is closed and not more than 48 inches above the car floor. Gate handles must be provided with finger guard.

(5) Car doors and gates when in the fully closed position must meet the following specifications:

(a) For passenger cars, they must protect the full width and height of the car entrance opening provided that vertically sliding gates may extend from a point not more than 1 inch above the car floor to a point not less than 6 feet above the floor.

(b) For freight elevators, they must protect the full width of the car entrance opening. Car doors must extend from the car floor to a height of not less than 6 feet above the car floor. Vertically sliding gates must extend from a point not more than 1 inch above the car floor to a point not less than 6 feet above the car floor.

(6) Car doors and gates of electric and electro-hydraulic elevators must be equipped with approved car door or gate electric contacts which will prevent operation of the elevator by the normal operating device unless the car door or gate is in the closed position.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-23220, filed 12/22/00, effective 1/22/01.]

WAC 296-96-23221 What requirements apply to the location of car doors and gates? This section does not apply to freight elevators with horizontally swinging doors that are inaccessible to the general public and located in factories, warehouses, garages, and other similar buildings. All other elevators must meet the following requirements:

(1) Doors or gates for automatic or continuous-pressure operation elevators must be located so that the distance from the face of the car door or gate to the face of the hoistway door is no more than the following:

(2007 Ed.)

(a) Where a swinging-type hoistway door and a car gate are used, 4 inches.

(b) Where a swinging-type hoistway door and a car door are used, 5 1/2 inches.

(c) Where a sliding-type hoistway door and a car gate or door are used, 5 1/2 inches.

(2) The distances specified must be measured as follows:

(a) Where a multisection car door and a multisection hoistway door are used or where one of these doors is multisection and the other is single section, between the sections of the car door and the hoistway doors nearest to each other.

(b) Where a multisection car door and a swinging-type hoistway door are used, between the hoistway door and the section of the car door farthest from it. Where space conditions require the use of three-speed car doors, the distance must be measured from the intermediate speed panel.

(c) Where a car gate is used, between the car gate and the section of the hoistway door nearest to the car gate.

(3) Where existing distances are greater than specified by paragraphs (1) and (2) of this section, a space guard of sheet metal must be provided, attached to the hoistway door and/or car door.

(a) The guard is to be mounted to the door by a tamper-proof means.

(b) The bottom of the guard must be no less than 1/8 inch nor more than 1/2 inch from the edge of the sill and must be no more than 1/2 inch above the sill.

(c) The face of the guard must run vertically no less than 40 inches nor more than the height of the lower edge of the vision panel.

(d) The guard must extend the full width of the door.

(e) The top of the guard must be inclined toward the face of the door at an angle of no less than 60 degrees nor more than 75 degrees from the horizontal.

(f) Exposed edges must be beveled or rolled to eliminate sharp edges.

(g) The guard must be sufficiently rigid or reinforced to prevent collapsing or denting.

(h) Mounting of the guard must have proper clearances at the bottom and sides to permit easy closing of the door and must not interfere with the self-closing.

(i) On multisection horizontally sliding doors only, the leading or fast panel must be fitted with the space guard. For swinging doors, the sides of the guard must be closed if the depth exceeds 5 inches.

(4) On horizontally-sliding doors where existing clearances are greater than specified by subsections (1) and (2) of this section, a vertical sight guard must be mounted to the leading edge of the hoistway door. The sight guard must:

(a) Be mounted with a vertical clearance of no more than 1/2 inch to this sill to a height of no less than 6 feet; and

(b) Project from the door, a distance of no more than 1/2 inch nor less than 1/8 inch from the hoistway edge of the sill.

(5) Only the following devices may be used to render inoperative hoistway door interlocks, the electric contacts of hoistway door combination mechanical locks and electric contacts, or car door or gate electric contacts:

(a) Leveling devices.

(b) Truck-zoning devices.

(c) Hoistway access switch.

(d) Existing devices which do not conform to the above must be removed.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-23221, filed 12/22/00, effective 1/22/01.]

WAC 296-96-23222 What control requirements apply to operating circuits? The failure of any single magnetically operated switch, contractor, or relay to release in the intended manner, or the occurrence of a single accidental ground, must not permit the car to start or run if any hoistway door interlock is unlocked or if any hoistway door or car door or gate electric contact is not in the closed position.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-23222, filed 12/22/00, effective 1/22/01.]

WAC 296-96-23225 What requirements apply to car emergency exits? (1) Top emergency exits:

(a) Top emergency exit covers must be hinged or otherwise attached to the car top so that the cover can be opened from the top of the car only and opens outward.

(b) The exit cover of the lower compartment of a multideck elevator car must be openable from either compartment.

(2) Side emergency exits:

(a) Side emergency exit doors or panels, where provided, must have a lock arranged so that the door may be opened from the inside of the car only by a special shaped removable key and outside the car by means of a nonremovable handle.

(b) Side emergency car exit door panels must open only into the car.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-23225, filed 12/22/00, effective 1/22/01.]

WAC 296-96-23226 What requirements apply to car lighting? (1) Car interiors must be equipped with at least 2 electric lights.

(2) Minimum illumination at the car threshold, with the door closed, must be at least:

(a) 5 foot candle (54 lx) for passenger elevators; and

(b) 2 1/2 foot candle (27 lx) for freight elevators.

(3) The department does not require light control switches, however, if installed they must be located in or adjacent to the car's onboard operating device.

(4) In automatic elevators, the light control switch must be either a key-operated type or located in a fixture with a locked cover.

(5) Light fixtures mounted on car tops must be equipped with a nonkey operated switch located in or adjacent to the fixture.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-23226, filed 12/22/00, effective 1/22/01.]

Section 5 Safeties

WAC 296-96-23227 What requirements apply to car safeties? Every elevator car suspended by wire ropes must be

equipped with safeties. The safety device must be capable of stopping and sustaining the entire car with its rated load in the event of cable severance or overspeed. There must be a switch on the car activated by the setting of the safeties that will stop electric power from the driving machine motor and brake. Car safeties are identified and classified on the basis of performance characteristics after the safety begins to apply pressure on the guide rails.

(1) Type A safeties:

(a) Develop a rapidly increasing pressure on the guide rails during the stopping interval, the stopping distance being very short due to the inherent design of the safety.

(b) Operating force is derived entirely from the mass and the motion of the car or the counterweight being stopped.

(c) Apply pressure on the guide rails through eccentrics, rollers, or similar devices without any flexible medium purposely introduced to limit the retarding force and increase the stopping distance.

(2) Type B safeties:

(a) Apply limited pressure on the guide rails during the stopping interval and provide stopping distances that are related to the mass being stopped and the speed at which application of the safety is initiated.

(b) Retarding forces are reasonably uniform after the safety is fully applied.

(c) Continuous tension in the governor rope may or may not be required to operate the safety during the entire stopping interval.

(d) Minimum and maximum distances are specified on the basis of governor tripping speed.

(3) Type C safeties (Type A with oil buffers):

(a) Develop retarding forces during the compression stroke of one or more oil buffers interposed between the lower members of the car frame and a governor-operated Type A auxiliary safety plank applied on the guide rails.

(b) The stopping distance is equal to the effective stroke of the buffers.

(4) Type G safeties:

(a) Are similar to Type B except for having a gradually increasing retarding force.

(b) May be either of the wedge clamp type or the flexible guide clamp type applied by a cable which unwinds a drum below the car floor.

(5) Slack rope safeties:

(a) Are actuated by the slackening or breaking of the hoisting ropes.

(b) Are not actuated by an overspeed governor.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-23227, filed 12/22/00, effective 1/22/01.]

WAC 296-96-23228 What is the maximum amount of governor rope movement allowed when operating a safety mechanism? For all Type B safeties, the movement of the governor rope relative to the car or the counterweight, respectively, required to operate the safety mechanism from its fully retracted position to a position where the safety jaws begin to exert pressure against the guide rails must not exceed the following values based on rated speed:

(1) For car safeties:

(a) 200 feet per minute or less: 42 inches.

(b) 201 to 375 feet per minute: 36 inches.

(c) Over 375 feet per minute: 30 inches.

(2) For counterweight safeties: 42 inches for all speeds.

(3) Drum operated car and counterweight safeties requiring continual unwinding of the safety drum rope to fully apply the safety, must be designed so that no less than three turns of the safety rope will remain on the drum after the overspeed test of the safety has been made with rated load in the car.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-23228, filed 12/22/00, effective 1/22/01.]

WAC 296-96-23229 What requirements apply to rail lubricants and lubrication plates? Rail lubricants or coating which will reduce the holding power of the safety or prevent its functioning as required must not be used.

(1) A metal plate must be securely attached to the car crosshead in an easily visible location and, where lubricants are to be used, must carry the notation, "Consult manufacturer of the safety for the characteristics of the rail lubricant to be used." If lubricants are not to be used, it should be stated so on the plate.

(2) If lubricants other than those recommended by the manufacturer are used, a safety test should be done to demonstrate that the safety will function as required.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-23229, filed 12/22/00, effective 1/22/01.]

Section 6 Speed Governors

WAC 296-96-23235 What requirements apply to speed governors? A speed governor or inertia trip safety or a slack cable must be installed on all elevators and must be designed so that it will activate the car safeties before the car attains a speed of 140 percent of the rated speed. Governor ropes must be at least 3/8 inch in diameter, if iron or steel rope, and at least 3/4 inch, if manila rope. Tiller rope must not be used.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-23235, filed 12/22/00, effective 1/22/01.]

WAC 296-96-23236 What requirements apply to speed governor overspeed and car safety mechanism switches? (1) A switch must be provided on the speed governor and operated by the overspeed action of the governor when used with Type B and C car safeties of elevators having a rated speed exceeding 150 feet per minute.

(2) A switch must be provided on the speed governor when used with a counterweight safety for any car speed.

(3) For static control, an overspeed switch must be provided regardless of rated speed and it must operate in both directions of travel.

(4) These switches must, when operated, remove power from the driving-machine motor and brake before or at the time of application of the safety.

(5) Switches used to perform the function specified must be positively opened and remain open until manually reset.

(6) Switches operated by the car safety mechanism must be of a type which will not reset unless the car safety mechanism has been returned to the "off" position.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-23236, filed 12/22/00, effective 1/22/01.]

Section 7 Capacity and Loading

WAC 296-96-23240 What is the minimum rated load for passenger elevators? The rated load in pounds for passenger elevators must be based on the inside net platform areas and must be not less than shown in the table below. The inside net platform areas must be determined as shown in the table below which shows the maximum inside net platform areas for the various common rated loads. If other rated loads are used, they must be at least the following:

(1) For an elevator with an inside net platform area of no more than 50 feet squared, $W = 0.667A$ squared + 66.7A.

(2) For an elevator with an inside net platform area of more than 50 feet squared, $W = 0.0467A$ squared + 125A - 1367.

NOTE: A = inside net platform area, ft. squared
W = minimum rated load, lb.

MAXIMUM* INSIDE NET PLATFORM AREAS FOR THE VARIOUS RATED LOADS			
Rated Load, lb.	Inside Net Platform Area, ft ²	Rated Load, lb.	Inside Net Platform Area, ft ²
500	7.0	5,000	50.0
600	8.3	6,000	57.7
700	9.6	7,000	65.3
1,000	13.25	8,000	72.9
1,200	15.6	9,000	80.5
1,500	18.9	10,000	88.0
1,800	22.1	12,000	103.0
2,000	24.2	15,000	125.1
2,500	29.1	18,000	146.9
3,000	33.7	20,000	161.2
3,500	38.0	25,000	196.5
4,000	42.2	30,000	231.0
4,500	46.2		

*To allow for variations in cab designs, an increase in the maximum inside net platform area not exceeding 5% will be permitted for the various rated loads.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185, 70.87.190, 2002 c 98, 2003 c 143 and 2004 c 66. 04-12-047, § 296-96-23240, filed 5/28/04, effective 6/30/04. Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-23240, filed 12/22/00, effective 1/22/01.]

WAC 296-96-23241 What requirements apply to the use of partitions that reduce inside net platform area? When partitions are used in elevator cars to restrict net platform area for passenger use, they must be permanently fastened in place.

(1) Gates, doors, or handrails must not be used as partitions.

(2) Partitions must be installed to permit approximately symmetrical loading.

(3) When conditions do not permit symmetrical loading, guide rails, car frames, and platforms must be capable of sustaining the resulting stresses and deflections.

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[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-23241, filed 12/22/00, effective 1/22/01.]

WAC 296-96-23243 What is the minimum rated load for freight elevators? The minimum rated load for freight elevators in pounds must be based on the weight and class of the load to be handled but must in no case be less than the minimum specified in this section for each class of loading based on the inside net platform area. Freight elevators must be designed for one of the following classes of loading:

(1) Class A—General freight loading: Where the load is distributed, the weight of any single piece of freight or of any single hand truck and its load is not more than one-quarter the rated load of the elevator, and the load is handled on and off the car platform manually or by means of hand trucks. For this class of loading, the rated load must be based on not less than 50 lb./ft. squared of inside net platform area.

(2) Class B—Motor vehicle loading: Where the elevator is used solely to carry automobile trucks or passenger automobiles up to the rated load of the elevator. For this class of loading, the rated load must be based on not less than 30 lb./ft. squared of inside net platform area.

(3) Class C—Industrial truck loading: Where the load is carried in transit or is handled on and off the car platform by means of power industrial trucks or by hand trucks having a loaded weight more than one-quarter the rated load of the elevator. For this class of loading the following requirements apply:

(a) The rated load must be based on not less than 50 lb./ft. squared of inside net platform area;

(b) The weight of the loaded industrial truck must not exceed the rated load of the elevator;

(c) The weight of the loaded industrial truck plus any other material carried on the elevator must not exceed the rated load when the industrial truck is also carried;

(d) During loading and unloading, the load on the elevator must in no case exceed 150 percent of the rated load, and where this load exceeds the rated load, the capacity of the brake and the traction relation must be adequate to safely sustain and level at least 150 percent of the rated load.

NOTE: When the entire rated load is placed on the elevator by the industrial truck in increments, the load imposed on the car platform while the last increment is being loaded or the first increment unloaded will exceed the rated load by the weight of the empty industrial truck.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-23243, filed 12/22/00, effective 1/22/01.]

WAC 296-96-23244 What requirements apply to capacity plates? (1) Every elevator must be equipped with a capacity plate or a painted sign that is permanently and securely fastened in place and located in a conspicuous position inside the car. It must indicate the rated load of the elevator in pounds, and for freight elevators, this plate or sign must indicate:

(a) The capacity for lifting one-piece loads;

(b) For freight elevators used for industrial truck loading where the truck is not usually carried by the elevator but used

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only for loading and unloading, the maximum load the elevator is designed to support while being loaded or unloaded.

(2) Capacity plates must be durable and readily legible. The height of the letters and figures must be at least 1/4 inch for passenger elevators and 1 inch for freight elevators.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-23244, filed 12/22/00, effective 1/22/01.]

WAC 296-96-23245 What requirements apply to signs on freight elevators? In addition to the capacity plate or painted sign required by WAC 296-96-23244, two other signs must be installed or painted inside the car in a conspicuous place and permanently and securely fastened to the car enclosure. They must be durable and easily read with 1/2 inch letters, as follows:

(1) In elevators not permitted to carry passengers, the sign must read "This is not a passenger elevator; no persons other than the operator and freight handlers are permitted to ride on this elevator."

(2) In elevators permitted to carry employees, the sign must read "No passengers except employees permitted."

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-23245, filed 12/22/00, effective 1/22/01.]

Section 8 Driving Machines and Sheaves

WAC 296-96-23250 What general requirements apply to driving machines and sheaves? (1) Sheaves and drums must be made of cast iron or steel and must have finished grooves for ropes.

(2) Set screws fastenings must not be used in lieu of keys or pins on connections subject to torque or tension.

(3) Friction gearing or a clutch mechanism must not be used to connect a driving-machine drum or sheave to the main driving mechanism, other than in connection with a car leveling device.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-23250, filed 12/22/00, effective 1/22/01.]

WAC 296-96-23255 What requirements apply to winding drum machines? (1) Winding drum machines must be equipped with a slack-rope device with an enclosed switch of the manually reset type which must cause the electric power to be removed from the elevator driving machine motor and brake if the hoisting ropes become slack or broken.

(2) Winding drum machines must be equipped with adjustable machine automatic terminal stop mechanisms set to directly open the main line circuit to the driving machine motor and brake coincident with the opening of the final terminal stopping switch. Chain, belt, or rope-driven mechanisms must not be used.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-23255, filed 12/22/00, effective 1/22/01.]

WAC 296-96-23256 What requirements apply to indirect-drive machines? (1) Indirect-drive machines, uti-

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lizing V belts, tooth drive belts, or chain drives, must have at least three belts or chains operating together in parallel as a set. Belt and chain drive sets must be pre-loaded and matched for length.

(2) Belt set selection must be based upon the manufacturer's rated breaking strength and a safety factor of 10. Chain and sprocket set selection must be based upon the recommendations in the supplementary information section of ASME/ANSI B 29.1, using a service factor of 2.0. Offset links in a chain are permitted. Chain drives and belt drives must be guarded to protect against accidental contact and to prevent foreign objects from interfering with drives.

Sprockets in a chain drive set and also in a driven set must be assembled into a common hub, with teeth cut in line after assembly to assure equal load distribution on all chains. Tooth sheaves for a belt drive must be constructed in a manner to assure equal load distribution on each belt in the set.

Load determination for both the belt and chain sets must be based on the maximum static loading on the elevator car (full load on the car and the car at rest at a position in the hoistway which creates the greatest load, including either the car or counterweight resting on its buffer).

(3) Each belt or chain in a set must be continuously monitored by a broken belt or chain device of the manually reset type which must function to automatically interrupt power to the machine and apply the brake in the event any belt or chain in the set breaks or becomes excessively slack. The driving machine brake must be located on the traction sheave or winding drum assembly side of the driving machine so as to be fully effective in the event the entire belt set or chain set should break.

(4) If one belt or chain of a set is worn, stretched, or damaged so as to require replacement, the entire set must be replaced. Sprockets and toothed sheaves must also be inspected on such occasion and be replaced if noticeably worn.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-23256, filed 12/22/00, effective 1/22/01.]

WAC 296-96-23260 What requirements apply to driving machine brakes? The elevator driving machine must be equipped with a friction brake applied by a spring or springs, and released electrically.

The brake must be designed to have a capacity sufficient to hold the car at rest with its rated load. For passenger elevators and freight elevators permitted to carry employees, the brake must be designed to hold the car at rest with an additional load up to 25 percent in excess of the rated load.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-23260, filed 12/22/00, effective 1/22/01.]

WAC 296-96-23261 What requirements apply to the application and release of driving machine brakes? Driving machine brakes must not be electrically released until power has been applied to the driving machine motor. All power feed lines to the brake must be opened and the brake must apply automatically when:

(1) The operating device of a car switch or continuous pressure operation elevator is in the stop position;

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- (2) A floor stop device functions;
- (3) Any of the electrical protective devices in WAC 296-96-23272 functions;

Under conditions described in subsection (1) and (2) of this section, the application of the brake may occur on or before the completion of the slowdown and leveling operations.

The brake must not be permanently connected across the armature or field of a direct current elevator driving machine motor.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-23261, filed 12/22/00, effective 1/22/01.]

Section 9 Terminal Stopping Devices

WAC 296-96-23262 What requirements apply to normal terminal stopping devices? Enclosed upper and lower normal terminal stopping devices must be provided and arranged to slow down and stop the car automatically, at or near the top and bottom terminal landings. These devices must function independently of the operation of the normal stopping means and of the final terminal stopping device.

(1) Normal stopping devices must be located on the car, in the hoistway, or in the machine room and must be operated by the movement of the car.

(2) Broken rope, tape, or chain switches must be provided in connection with normal terminal stopping devices located in the machine room of traction elevators. These switches must be opened by a failure of the rope, tape, or chain and must cause the electrical power to be removed from the driving machine motor and brake.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-23262, filed 12/22/00, effective 1/22/01.]

WAC 296-96-23264 What requirements apply to final terminal-stopping devices? Enclosed upper and lower final terminal electro-mechanical stopping devices must be provided and arranged to prevent movement of the car by the normal operating devices in either direction of travel after the car has passed a terminal landing. Final terminal stopping devices must be located as follows:

(1) Elevators with winding drum machines must have stopping switches on the machines and also in the hoistway operated by the movement of the car.

(2) Elevators with traction driving machines must have stopping switches in the hoistway operated by the movement of the car.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-23264, filed 12/22/00, effective 1/22/01.]

Section 10 Operating Devices and Control Equipment

WAC 296-96-23266 What types of operating devices must not be used? The following types of operating devices must not be used:

- (1) Rope (i.e., shipper rope);

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- (2) Rod operating devices activated directly by hand; or
- (3) Rope operating devices activated by wheels, levers, or cranks.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-23266, filed 12/22/00, effective 1/22/01.]

WAC 296-96-23268 What requirements apply to car-switch operation elevators? The handles of lever-type operating devices of car-switch operation elevators must be arranged so that they will return to the stop position and latch there automatically when the hand of the operator is removed.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-23268, filed 12/22/00, effective 1/22/01.]

WAC 296-96-23269 What requirements apply to passenger elevator emergency stop buttons? Passenger elevator emergency stop buttons or switches must be installed and connected so as to activate the elevator alarm when in the stop position. An optional door hold open switch may be provided, if desired, but such door hold open function must automatically cancel upon activation of a Phase I recall.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-23269, filed 12/22/00, effective 1/22/01.]

WAC 296-96-23270 What requirements apply to car top operating devices? (1) Elevators with automatic or continuous-pressure operation must have a continuous-pressure button operating switch mounted on the car top for the purpose of operating the car solely from the top of the car. The device must operate the car at a speed not exceeding 150 feet per minute.

(2) The means for transferring the control of the elevator to the top-of-car operating device must be on the car top and located between the car crosshead and the side of the car nearest the hoistway entrance normally used for access to the car top.

(3) A top of car operating station must be installed on all existing elevators which have more than fifteen feet of travel.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185, 70.87.190, 2002 c 98, 2003 c 143 and 2004 c 66. 04-12-047, § 296-96-23270, filed 5/28/04, effective 6/30/04. Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-23270, filed 12/22/00, effective 1/22/01.]

WAC 296-96-23272 What electrical protective devices are required? Electrical protective devices must be installed according to the following:

(1) Slack-rope switch: Winding drum machines must be accompanied by a slack-rope device equipped with a slack-rope switch of the enclosed manually reset type which will cause the electric power to be removed from the elevator driving machine motor and brake if the suspension ropes become slack.

(2) Motor-generator running switch: Where generator-field control is used, means must be provided to prevent the application of power to the elevator driving machine motor and brake unless the motor generator set connections are properly switched for the running condition of the elevator. It

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is not required that the electrical connections between the elevator driving machine motor and the generator be opened in order to remove power from the elevator motor.

(3) Compensating rope sheave switch: Compensating rope sheaves must be provided with a compensating rope sheave switch or switches mechanically opened by the compensating rope sheave before it reaches its upper or lower limit of travel to cause the electric power to be removed from the elevator driving machine motor and brake.

(4) Broken rope, tape, or chain switches used in connection with machine room normal terminal stopping switches: Broken rope, tape, or chain switches which meet the requirements of WAC 296-96-23236 must be provided in connection with normal terminal stopping devices located in machine rooms of traction elevators. These switches must open when a rope, tape, or chain fails.

(5) Stop switch on top of car: A stop switch must be provided on the top of every elevator car, which must cause the electric power to be removed from the elevator driving machine motor and brake, and must:

- (a) Be of the manually operated and closed type;
- (b) Have red operating handles or buttons;
- (c) Be conspicuously and permanently marked "STOP" and indicated the stop and run positions;
- (d) Be positively opened mechanically (opening must not be solely dependent on springs).
- (e) Have red operating handles or buttons;
- (f) Be conspicuously and permanently marked "stop";
- (g) Indicate the "stop" and "run" positions; and
- (h) Be positively opened mechanically and not solely dependent on springs.

(6) Car-safety mechanism switch: A switch is required where a car safety is provided.

(7) Speed governor overspeed switch: A speed governor overspeed switch must be provided when required by WAC 296-96-23236.

(8) Final terminal stopping devices: Final terminal stopping devices must be provided on every elevator.

(9) Emergency terminal speed limiting device: Where reduced stoke oil buffers are provided, emergency terminal speed limiting devices are required.

(10) Motor generator overspeed protection: Means must be provided to cause the electric power to be removed automatically from the elevator driving machine motor and brake should a motor generator set, driven by a direct current motor, overspeed excessively.

(11) Motor field sensing means: Where direct current is supplied to an armature and shunt field of an elevator driving machine motor, a motor field current sensing means must be provided, which must cause the electric power to be removed from the motor armature and brake unless current is lowing in the shunt field of the motor.

A motor field current sensing means is not required for static control elevators provided with a device to detect an overspeed condition prior to, and independent of, the operation of the governor overspeed switch. This device must cause power to be removed from the elevator driving machine motor armature and machine brake.

(12) Buffer switches for oil buffers used with Type C car safeties: Oil level and compression switches must be provided for all oil buffers used with Type C safeties.

(13) Hoistway door interlocks or hoistway door electric contacts: Hoistway door interlocks or hoistway door electric contacts must be provided for all elevators.

(14) Car door/gate electric contacts: Car door or gate electric contacts must be provided on all elevators.

(15) Normal terminal stopping devices: Normal terminal stopping devices must be provided on every elevator.

(16) Car side emergency exit electric contact: An electric contact must be provided on every car side emergency exit door.

(17) Electric contacts for hinged car platform sills: Hinged car platform sills, where provided, must be equipped with electric contacts.

(18) Stop switch in the elevator pit: A stop switch must be installed in all elevator pits. It must be located between 36 inches to 48 inches above the bottom landing floor and accessible from outside the hoistway.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-23272, filed 12/22/00, effective 1/22/01.]

WAC 296-96-23274 What requirements apply to the power supply line disconnect? (1) A disconnect switch or a circuit breaker must be installed and connected into the power supply line to each elevator motor or motor generator set and controller. The power supply line must be equipped with overcurrent protection inside the machine room.

(2) The disconnect switch or circuit breaker must be of the manually closed multipole type and be visible from the elevator driving machine or motor generator set. When the disconnecting means is not within sight of the driving machine, the control panel, or the motor generator set, and additional manually operated switch must be installed adjacent to the remote equipment and connected in the control circuit to prevent starting.

(3) No provision may be made to close the disconnect switch from any other part of the building.

(4) Where there is more than one driving machine in a machine room, disconnect switches or circuit breakers must be numbered to correspond to the number of the driving machine which they control.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-23274, filed 12/22/00, effective 1/22/01.]

WAC 296-96-23276 What requirements apply to phase reversal and failure protection methods? Elevators having polyphase alternating current power supply must be equipped with a means to prevent the starting of the elevator motor if the phase rotation is in the wrong direction or if there is a failure of any phase.

This protection may be considered to be provided in the case of generator field control having alternating current motor-generator driving motors, provided a reversal of phase will not cause the elevator driving machine motor to operate in the wrong direction. Controllers on which switches are operated by polyphase torque motors provide inherent protection against phase reversal or failure.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-23276, filed 12/22/00, effective 1/22/01.]

WAC 296-96-23277 What requirements apply to grounding and overcurrent protections? (1) Control and operating circuit requirements must comply with Article 620-61 of the National Electrical Code.

(2) Grounding methods must comply with Articles 620-81 through 620-85 of the National Electrical Code.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-23277, filed 12/22/00, effective 1/22/01.]

WAC 296-96-23278 What requirements apply to the absorption of regenerated power? When a power source is used which, in itself, is incapable of absorbing the energy generated by an overhauling load, means for absorbing sufficient energy to prevent the elevator from attaining governor tripping speed or a speed in excess of 125 percent of rated speed, whichever is lesser, must be provided on the load side of each elevator power supply line disconnecting means.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-23278, filed 12/22/00, effective 1/22/01.]

WAC 296-96-23279 What requirements apply to door by-pass systems? Door bypass systems, where used, must conform to the requirements of ASME A17.1, Rule 210.1e.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-23279, filed 12/22/00, effective 1/22/01.]

Section 11

Emergency Operation and Signaling Devices

WAC 296-96-23280 What requirements apply to all car emergency signaling devices in all buildings? All elevators must be equipped with an audible signaling device that can be activated by a switch or button marked "alarm." This switch or button must be located in or adjacent to each car's operating panel.

The signaling device must be located inside the building and audible inside the car and outside the hoistway. One signaling device may be used for a group of elevators.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-23280, filed 12/22/00, effective 1/22/01.]

Section 12

Suspension Systems and Their Connections

WAC 296-96-23282 What requirements apply to suspension systems? Cars must be suspended by steel wire ropes attached to the car frame or passing around sheaves attached to the car frame. Only iron (low carbon steel) or steel wire ropes, having the commercial classification "elevator wire rope," or wire rope specifically constructed for elevator use may be used for the suspension of elevator cars and for the suspension of counterweights. The wire material for ropes must be manufactured by the open-hearth or electric furnace process or its equivalent.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-23282, filed 12/22/00, effective 1/22/01.]

(2007 Ed.)

WAC 296-96-23283 What requirements apply to rope data tags? At each rope renewal, a new metal data tag must be securely attached to one of the wire rope fastenings. Rope data tags must be durable and readily legible. The height of letters and figures must be no less than 1/16 inch. This data tag must bear the following information:

- (1) The diameter in inches;
- (2) The manufacturer's rated breaking strength;
- (3) The grade of material used;
- (4) The month and year the ropes were installed;
- (5) Whether nonpreformed or preformed;
- (6) Construction classification
- (7) Name of the person or firm who installed the ropes;
- (8) Name of the manufacturer of the rope;
- (9) The number of ropes; and
- (10) The date on which the rope was resocketed or other types of fastening changed.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-23283, filed 12/22/00, effective 1/22/01.]

WAC 296-96-23284 What is the factor of safety for wire suspension ropes? The factor of safety for wire suspension ropes must at least be equivalent to the values shown in the following table. The factor of safety must be based on the actual rope speed corresponding to the car's rated speed. The factor of safety must be calculated by the following formula:

$$f = S \text{ times } N \text{ over } W$$

where

N = number of runs of rope under load. (For 2:1 roping, twice the number of ropes used. For 3:1 roping, three times, etc.)

S = manufacturer's rated breaking strength of one rope.

W = maximum static load imposed on all car ropes with the car and its rated load at any position in the hoistway.

Table 3.7.1					
MAXIMUM FACTORS OF SAFETY FOR SUSPENSION WIRE ROPES					
Rope Speed, fpm	Minimum Factor of Safety		Rope Speed, fpm	Minimum Factor of Safety	
	Passenger	Freight		Passenger	Freight
50	7.60	6.65	605	10.85	9.65
75	7.75	6.85	700	11.00	9.80
100	7.95	7.00	750	11.15	9.90
125	8.10	7.15	800	11.25	10.00
150	2.25	7.30	850	11.35	10.10
175	8.40	7.45	900	11.45	10.15
200	8.60	7.65	950	11.50	10.20
225	8.75	7.75	1000	11.55	10.30
250	8.90	7.90	1050	11.65	10.35
300	9.20	8.20	1100	11.70	10.40
350	9.50	8.45	1150	11.75	10.45
400	9.75	8.70	1200	11.80	10.50
450	10.00	8.90	1250	11.80	10.50
500	10.25	9.15	1300	11.85	10.55
550	10.45	9.30	1350	11.85	10.55
600	10.70	9.50	1400-2000	11.90	10.55

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-23284, filed 12/22/00, effective 1/22/01.]

WAC 296-96-23285 What is the minimum number of suspension ropes allowed? All elevators, except freight elevators that do not carry passengers or freight handlers and have no means of operation in the car, must conform to the following requirements:

(1) The minimum number of hoisting ropes used is three for traction elevators and two for drum-type elevators. Where a car counterweight is used, the number of counterweight ropes used must not be less than two.

(2) The minimum diameter of hoisting and counterweight ropes is 3/8 inch. Outer wires of the ropes must be no less than 0.024 inch in diameter. The term "diameter" where used in this section refers to the nominal diameter as given by the rope manufacturer.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-23285, filed 12/22/00, effective 1/22/01.]

WAC 296-96-23287 What requirements apply to suspension rope equalizers? Suspension rope equalizers, where provided, must be of the individual-compression spring type.

Equalizers of other types may be used with traction elevators provided the equalizers and fastenings are approved by the authority having jurisdiction on the basis of adequate tensile and fatigue tests made by a qualified laboratory. Such tests must show the ultimate strength of the equalizer and its fastenings in its several parts and assembly, which must be no less than 10 percent in excess of the strength of suspension ropes, provided that equalizers of the single-bar type, or springs in tension, must not be used to attach suspension ropes to cars or counterweights or to dead-end hitch plates.

EXCEPTION: The requirements of this section do not apply to rope equalizers that meet Rule 2.20.5 in ASME A17.1-2000.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185, 70.87.190, 2002 c 98, 2003 c 143 and 2004 c 66. 04-12-047, § 296-96-23287, filed 5/28/04, effective 6/30/04. Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-23287, filed 12/22/00, effective 1/22/01.]

WAC 296-96-23288 What requirements apply to securing suspension wire ropes to winding drums? Suspension wire ropes on winding drum machines must have the drum ends of the ropes secured on the inside of the drum by clamps, tapered babbitted sockets, or other means approved by the department.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-23288, filed 12/22/00, effective 1/22/01.]

WAC 296-96-23289 What requirements apply to spare rope turns on winding drum machines? Suspension wire ropes of winding drum machines must have the drum ends of the ropes secured on the inside of the drum by clamps or by tapered babbitted sockets, or by other means approved by the department.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-23289, filed 12/22/00, effective 1/22/01.]

WAC 296-96-23290 What requirements apply to suspension rope fastenings? Spliced eyes by return loop may continue in service. Suspension rope fastenings must con-

form to the requirements of ASME A17.1 Rule 212.9 when the ropes are replaced.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-23290, filed 12/22/00, effective 1/22/01.]

WAC 296-96-23291 What requirements apply to auxiliary rope fastening devices? Auxiliary rope fastening devices, designed to support cars or counterweights if any regular rope fastenings fail, may be provided subject to approval by the authority having jurisdiction.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-23291, filed 12/22/00, effective 1/22/01.]

Subpart III Hydraulic Elevators

WAC 296-96-23300 What is the scope of Subpart III, Hydraulic Elevators? Subpart III, Hydraulic Elevator, is the minimum standard for existing direct plunger and roped hydraulic elevators.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-23300, filed 12/22/00, effective 1/22/01.]

Section 1 Hoistways, Hoistway Enclosures, and Related Construction

WAC 296-96-23302 What requirements apply to hoistways, hoistway enclosures and related construction? All hoistways, hoistway enclosures and related construction must conform to the requirements of Subpart I, Hoistways and Related Construction for Electric and Hydraulic Elevators.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-23302, filed 12/22/00, effective 1/22/01.]

WAC 296-96-23303 What requirements apply to hydraulic elevators without safety bulkheads? (1) Oil levels must be monitored and tracked in a log.

(2) The log must contain the date the oil was added, the reason for the loss of oil, and the amount of oil added.

(3) If the reason for the loss of oil cannot be determined, the unit must be immediately taken out of service and the cylinder must be replaced.

Note: This section becomes effective August 20, 2004.

[Statutory Authority: Chapter 70.87 RCW. 04-15-104, § 296-96-23303, filed 7/20/04, effective 8/20/04.]

Section 2 Mechanical Equipment

WAC 296-96-23304 What requirements apply to buffers and bumpers? Car buffers or bumpers must be provided. Solid bumpers may be used in lieu of buffers where the rated speed is 50 feet per minute or less.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-23304, filed 12/22/00, effective 1/22/01.]

WAC 296-96-23307 What requirements apply to car frames and platforms? All car frames and platforms must conform to the requirements of WAC 296-96-23206.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-23307, filed 12/22/00, effective 1/22/01.]

WAC 296-96-23309 What requirements apply to car enclosures? Car enclosures must conform to the requirements of WAC 296-96-23215.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-23309, filed 12/22/00, effective 1/22/01.]

WAC 296-96-23311 What requirements apply to capacity and loading? Capacity and loading must conform to the requirements of WAC 296-96-23240.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-23311, filed 12/22/00, effective 1/22/01.]

Section 3 Driving Machines

WAC 296-96-23313 What requirements apply to driving machine connections? The driving member of a direct plunger driving machine must be attached to the car frame or car platform with fastenings of sufficient strength to support that member.

The connection to the driving machine must be capable of withstanding, without damage, any forces resulting from a plunger stop.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-23313, filed 12/22/00, effective 1/22/01.]

WAC 296-96-23316 What requirements apply to plunger stops? Plungers must be provided with solid metal stops and/or other means to prevent the plunger from traveling beyond the limits of the cylinder. Stops must be designed and constructed so as to stop the plunger from maximum speed in the up direction under full pressure without damage to the connection to the driving machine, plunger, plunger connection, or any other parts of the hydraulic system. For rated speeds exceeding 100 feet per minute where a solid metal stop is provided, means other than the normal terminal stopping device (i.e., emergency terminal speed limiting device) must be provided to retard the car to 100 feet per minute with a retardation no greater than gravity, before striking the stop.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-23316, filed 12/22/00, effective 1/22/01.]

Section 4 Valves, Supply Piping, and Fittings

WAC 296-96-23318 What requirements apply to pump relief valves? (1) Each pump or group of pumps must be equipped with a relief valve conforming to the following specifications, except as covered by subsection (2) of this section:

(2007 Ed.)

(a) The relief valve must be located between the pump and the check valve and must be of such a type and installed in the by-pass connection so that the valve cannot be shut off from the hydraulic system.

(b) The relief valve must be preset to open at a pressure no greater than 125 percent of working pressure.

(c) The size of the relief valve and bypass must be sufficient to pass the maximum rated capacity of the pump without raising the pressure more than 20 percent above that at which the valve opens. Two or more relief valves may be used to obtain the required capacity.

(d) Relief valves having exposed pressure adjustments, if used, must have their means of adjustment sealed after being set to the correct pressure.

(2) No relief valve is required for centrifugal pumps driven by induction motors, provided the shutoff, or maximum pressure which the pump can develop, is not greater than 135 percent of the working pressure at the pump.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-23318, filed 12/22/00, effective 1/22/01.]

WAC 296-96-23321 What requirements apply to check valves? A check valve must be provided and must be installed so that it will hold the elevator car with rated load at any point when the pump stops or the maintained pressure drops below the minimum operating pressure.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-23321, filed 12/22/00, effective 1/22/01.]

WAC 296-96-23322 What requirements apply to supply piping and fittings? Supply piping and fittings must be in sound condition and secured in place.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-23322, filed 12/22/00, effective 1/22/01.]

WAC 296-96-23323 What requirements apply to flexible hydraulic connections? When flexible hydraulic connections are replaced, the requirements of ANSI A17.1, Rule 303.1d must be met in all respects. Where flexible connections pass through walls, the replacement must be made with steel piping.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-23323, filed 12/22/00, effective 1/22/01.]

Section 5 Tanks

WAC 296-96-23324 What general requirements apply to tanks? (1) All tanks must have sufficient capacity to provide for an adequate liquid reserve to prevent the entrance of air or other gas into the system.

(2) The permissible minimum liquid level must be clearly indicated.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-23324, filed 12/22/00, effective 1/22/01.]

WAC 296-96-23325 What requirements apply to pressure tanks? (1) Tanks which may be subjected to vacuum sufficient to cause collapse must be provided with one or more vacuum relief valves with openings of sufficient size to prevent collapse of the tank.

(2) Tanks must be provided with one or more gauge glasses attached directly to the tank and equipped to shut off the liquid automatically in case of failure of the glass. The gauge glass or glasses must be located so as to indicate any level of the liquid between permissible minimum and maximum levels and be equipped with a manual cock at the bottom of the lowest glass.

(3) Tanks must be provided with a pressure gauge which will indicate the pressure correctly to no less than 1 1/2 times the pressure setting of the relief valve. The gauge must be connected to the tank or water column by pipe and fittings with a stop cock in such a manner that it cannot be shut off from the tank except by a stop cock. The stop cock must have a "T" or level handle set in line with the direction of flow through the valve when open.

(4) Tanks must have a 1/4 inch pipe size valve connection for attaching an inspector's pressure gauge when the tank is in service.

(5) Tanks must be equipped with means to render the elevator inoperative if for any reason the liquid level in the tank falls below the permissible minimum.

(6) Tanks must be equipped with means for internal inspection.

(7) Piping and fittings for gauge glasses, relief valves, and pressure gauges must be of a material that will not be corroded by the liquid used in the tank.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-23325, filed 12/22/00, effective 1/22/01.]

Section 6 Terminal Stopping Devices

WAC 296-96-23326 What requirements apply to terminal stopping devices? Terminal stopping devices must conform to the requirements of WAC 296-96-23262.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-23326, filed 12/22/00, effective 1/22/01.]

Section 7 Operating Devices and Control Equipment

WAC 296-96-23328 What requirements apply to operating devices? Operating devices must conform to the requirements of WAC 296-96-23266 and 296-96-23268.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-23328, filed 12/22/00, effective 1/22/01.]

WAC 296-96-23330 What requirements apply to car top operating devices? Top-of-car operating devices must be provided and must conform to the requirements of WAC 296-96-23270, except for counterweighted elevators having a rise of no more than 15 feet.

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The bottom normal terminal stopping device may be made ineffective while the elevator is under the control of the top-of-car operating device.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-23330, filed 12/22/00, effective 1/22/01.]

WAC 296-96-23332 What requirements apply to anti-creep leveling devices? Each elevator must be provided with an anticreep leveling device conforming to the following specifications:

(1) It must maintain the car within 3 inches of the landing regardless of the position of the hoistway door.

(2) For electrohydraulic elevators, it must operate the car only in the up direction.

(3) For maintained pressure hydraulic elevators, it must operate the car in both directions.

(4) Its operation may depend on the availability of the electric power supply provided that:

(a) The power supply line disconnecting means required by WAC 296-96-23274 is kept in the closed position at all times except during maintenance, repairs, and inspections;

(b) The electrical protective devices required by WAC 296-96-23334 must not cause the power to be removed from the device.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-23332, filed 12/22/00, effective 1/22/01.]

WAC 296-96-23334 What requirements apply to electrical protective devices? Electrical protective devices, if provided, must conform with the requirements of WAC 296-96-23272 and operate as follows:

(1) The following devices must prevent operation of the elevator by the normal operating device and also the movement of the car in response to the anticreep leveling device:

(a) Stop switches in the pit;

(b) Stop switches on top of the car; and

(c) Car side emergency exit door electric contacts, where such doors are provided.

(2) The following devices must prevent the operation of the elevator by the normal operating device but the anticreep leveling device required by WAC 296-96-23332 must remain operative:

(a) Emergency stop switches in the car;

(b) Broken rope, tape, or chain switches on normal terminal stopping devices when such devices are located in the machine room or overhead space;

(c) Hoistway door interlocks or hoistway door electric contacts;

(d) Car door or gate electric contacts; and

(e) Hinged car platform sill electric contacts.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-23334, filed 12/22/00, effective 1/22/01.]

WAC 296-96-23336 What requirements apply to power supply line disconnects? Power supply line disconnects must conform to the requirements of WAC 296-96-23274.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-23336, filed 12/22/00, effective 1/22/01.]

WAC 296-96-23338 What requirements apply to devices that make hoistway door interlocks or electric contacts and car door (gate) electric contacts inoperative? The installation of these contacts must conform to the requirements of WAC 296-96-23221.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-23338, filed 12/22/00, effective 1/22/01.]

WAC 296-96-23340 What requirements apply to control and operating circuits? Control and operating circuits must conform to the requirements of WAC 296-96-23222.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-23340, filed 12/22/00, effective 1/22/01.]

WAC 296-96-23342 What requirements apply to emergency operation and signaling devices? Emergency operation and signaling devices must conform to the requirements of WAC 296-96-23280.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-23342, filed 12/22/00, effective 1/22/01.]

Section 8

Additional Requirements for Counterweighted Hydraulic Elevators

WAC 296-96-23344 What additional requirements apply to counterweighted hydraulic elevators? Counterweighted hydraulic elevators must be roped so that the counterweight must not strike the overhead when the car is resting on its fully compressed buffer. Counterweighted hydraulic elevators must conform to the requirements of WAC 296-96-23205, where applicable.

Where counterweights are provided, counterweight buffers must be provided.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-23344, filed 12/22/00, effective 1/22/01.]

Subpart IV Escalators

WAC 296-96-23400 What is the scope of Subpart IV, Escalators? Subpart IV, Escalators, is the minimum standard for existing escalators that are used to transport passengers.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-23400, filed 12/22/00, effective 1/22/01.]

Section 1 Construction

WAC 296-96-23405 What requirements apply to balustrades? The balustrade must be totally closed except where the handrail enters the newel base. Gaps between inte-

rior panels are permitted provided that they are no wider than 3/16 inch and the edges are rounded or beveled.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-23405, filed 12/22/00, effective 1/22/01.]

WAC 296-96-23408 How much clearance is required between skirt panels and step treads? The clearance on each side of the steps between the step tread and the adjacent skirt panel must be no more than 3/16 inch.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-23408, filed 12/22/00, effective 1/22/01.]

WAC 296-96-23410 What requirements apply to guards at ceiling or soffit intersections? (1) A solid guard must be provided in the intersection of the angle of the outside balustrade (deck board) and the ceiling or soffit, except as indicated in subsection (2) of this section. The vertical edge of the guard must be a minimum of 8 inches. The escalator side of the vertical face of the guard must be flush with the face of the wellway. The exposed edge of the guard must be rounded and have a minimum width of 1/4 inch.

(2) Guards are not required under the following conditions:

(a) On high decks where the clearance of the outside edge of the deck and the ceiling or soffit is more than 12 inches or where the projected intersection of the outside deck and the ceiling or soffit is more than 24 inches from the centerline of the handrail;

(b) On low decks where the centerline of the handrail is more than 14 inches from the ceiling or soffit.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-23410, filed 12/22/00, effective 1/22/01.]

WAC 296-96-23412 What requirements apply to anti-slide devices? On high deck balustrades, antislid devices must be provided on decks or combination of decks when the outer edge of the deck is greater than 12 inches from the centerline of the handrail or on adjacent escalators when the distance between the centerline of the handrails is greater than 16 inches.

These devices must consist of raised objects fastened to the decks, not closer than 4 inches to the handrail and spaced not greater than 6 feet apart. The height must be no less than 3/4 inch. There must be no sharp corners or edges.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-23412, filed 12/22/00, effective 1/22/01.]

WAC 296-96-23414 What requirements apply to handrails? Each escalator must be equipped with a handrail that moves in the same direction and at substantially the same speed as the steps.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-23414, filed 12/22/00, effective 1/22/01.]

WAC 296-96-23416 What requirements apply to handrail guards? Hand or finger guards must be provided at the point where the handrail enters the balustrade.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-23416, filed 12/22/00, effective 1/22/01.]

WAC 296-96-23418 What requirements apply to step riser slotting? Escalators with smooth curved surface risers must have either:

(1) Steps having cleated risers provided with vertical cleats which mesh with slots on the adjacent step tread as the steps make the transition from the incline to the horizontal; or

(2) Means to cause the opening of the power circuits to the escalator driving machine motor and brake should a step be displaced against the upthrust track at the upper and lower curves in the passenger carrying line of the track system.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-23418, filed 12/22/00, effective 1/22/01.]

WAC 296-96-23420 What requirements apply to step tread slotting? The tread surface of each step must be slotted in a direction parallel to the travel of the steps.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-23420, filed 12/22/00, effective 1/22/01.]

WAC 296-96-23422 What requirements apply to combplates? There must be a combplate at the entrance and at the exit of every escalator. The combplate teeth must be meshed with and set into the slots in the tread surface so that the points of the teeth are always below the upper surface of the treads.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-23422, filed 12/22/00, effective 1/22/01.]

Section 2 Brakes

WAC 296-96-23424 What general requirements apply to escalator brakes? Escalators must be equipped with a brake capable of stopping the up or down traveling escalator with any load up to the brake rated load. The brake must be mechanically or magnetically applied. If the brake is magnetically applied, a ceramic permanent magnet must be used.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-23424, filed 12/22/00, effective 1/22/01.]

WAC 296-96-23427 What requirements apply to main drive shaft brakes? If the escalator brake is separated from the main drive shaft by a chain used to connect the driving machine to the main drive shaft, a mechanically or magnetically applied brake capable of stopping a down running escalator with brake rated load must be provided on the main drive shaft. If the brake is magnetically applied, a ceramic permanent magnet must be used.

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[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-23427, filed 12/22/00, effective 1/22/01.]

Section 3 Operating and Safety Devices

WAC 296-96-23429 What requirements apply to starting switches? Starting switches must be of the key-operated type and must be located so that the escalator steps are within sight.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-23429, filed 12/22/00, effective 1/22/01.]

WAC 296-96-23431 What requirements apply to emergency stop buttons? There must be a red stop button in an accessible location at the top and bottom landings of each escalator. The operation of either one of these buttons must cause the interruption of power to the escalator. It must be impossible to start an escalator by means of these buttons. These buttons must be marked "escalator stop button."

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-23431, filed 12/22/00, effective 1/22/01.]

WAC 296-96-23432 What requirements apply to speed governors? (1) A speed governor must be provided, except as specified in subsection (2) of this section. Its operation must cause the interruption of power to the driving machine if the speed of the steps exceeds a predetermined value, which must be no more than 40 percent above the rated speed.

(2) The speed governor is not required where an alternating current squirrel cage induction motor is used and the motor is directly connected to the driving machine. (NOTE: The governor may be omitted in such case even though a chain is used to connect the sprocket on the driving machine to the sprocket on the main drive shaft.)

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-23432, filed 12/22/00, effective 1/22/01.]

WAC 296-96-23434 What requirements apply to broken step-chain devices? A broken step-chain device must be provided to cause the interruption of power to the driving machine if a step chain breaks, and, where no automatic chain tension is provided, if excessive sag occurs in either step chain.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-23434, filed 12/22/00, effective 1/22/01.]

WAC 296-96-23436 What requirements apply to brake applications? The brake must automatically stop the escalator when any of the safety devices function.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-23436, filed 12/22/00, effective 1/22/01.]

WAC 296-96-23438 What requirements apply to broken drive-chain devices? When the driving machine is

connected to the main drive shaft by a chain, a device must be provided which will cause the application of the brake on the main drive shaft and also stop the drive machine if the drive chain parts.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-23438, filed 12/22/00, effective 1/22/01.]

WAC 296-96-23440 What requirements apply to skirt obstruction devices? Means must be provided to stop the escalator if an object becomes accidentally caught between the step and the skirt as the step approaches the upper or lower combplate. The device shall be located so that the escalator will stop before that object reaches the combplate.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-23440, filed 12/22/00, effective 1/22/01.]

WAC 296-96-23442 What requirements apply to rolling shutter devices? Rolling shutters, if used, must be equipped with a device which will be activated as the shutters begin to close to cause the opening of the power circuit to the escalator driving machine motor and brake.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-23442, filed 12/22/00, effective 1/22/01.]

WAC 296-96-23444 What requirements apply to reversal stop device? Means must be provided to cause the opening of the power circuit to the driving machine motor and brake in case of accidental reversal of travel while the escalator is operating in the ascending direction.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-23444, filed 12/22/00, effective 1/22/01.]

WAC 296-96-23446 What requirements apply to tandem operations? Tandem operation escalators must be electrically interlocked where traffic flow is such that bunching will occur if the escalator is carrying passengers away from the intermediate landing stops.

The electrical interlocks must stop the escalator carrying passengers into the common intermediate landing if the escalator carrying passengers away from the landing stops. These escalators must also be electrically interlocked to assure that they run in the same direction.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-23446, filed 12/22/00, effective 1/22/01.]

WAC 296-96-23448 What requirements apply to caution signs? A caution sign must be located at the top and bottom landings of each escalator, readily visible to the boarding passengers. The sign must be of the standard design recognized by the elevator industry and include the following:

- (1) Caution;
- (2) Passenger only;
- (3) Hold handrail;
- (4) Attend children; and

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(5) Avoid sides.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-23448, filed 12/22/00, effective 1/22/01.]

Section 4 Lighting of Step Treads

WAC 296-96-23450 What requirements apply to step tread lighting? Step treads must be illuminated throughout their run. The light intensity on the treads must be in accordance with local codes and ordinances for stairways.

It is recommended that the illumination be of uniform intensity and that it not contrast significantly with that of the surrounding area.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-23450, filed 12/22/00, effective 1/22/01.]

Subpart V Dumbwaiters and Hand-Powered Elevators

WAC 296-96-23500 What is the scope of Subpart V, Dumbwaiters and hand-powered elevators? Subpart V, Dumbwaiters and Hand-Powered Elevators, is a minimum standard for existing electric and hand-powered dumbwaiters and hand-powered elevators.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-23500, filed 12/22/00, effective 1/22/01.]

WAC 296-96-23510 What requirements apply to electric and electro-hydraulic dumbwaiters? (1) Dumbwaiter cars may be constructed of metal or wood and must be in compliance with local ordinances as to fire resistance providing it is constructed to carry its rated load without distortion. The dumbwaiter car must be fully enclosed except for the landing sides. The car floor must not exceed 9 square feet in area and the total inside height must not exceed 4 feet and the maximum capacity must not exceed 500 pounds.

(2) Electrically-operated machines must be equipped with brakes that are electrically released and applied automatically by springs in conformity with the requirements set forth in WAC 296-96-23260.

(3) Dumbwaiters equipped with winding drum machines having a travel of more than 30 feet and a rated load of more than 100 pounds, must be equipped with a slack rope switch which will automatically remove the power from the motor and brake when the hoisting ropes become slack.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-23510, filed 12/22/00, effective 1/22/01.]

WAC 296-96-23540 What requirements apply to hand-power elevators and dumbwaiters? (1) Cars of hand-power elevators and dumbwaiters must be enclosed on all sides not used for entrance. Elevator cars upon which an operator is permitted to ride must have no more than one compartment.

(2) Hand elevators having a travel of more than 15 feet must have a car safety, capable of stopping and sustaining the

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car and rated load. The car safety device need not be operated by a speed governor and may be of the instantaneous type operated as a result of the breaking and slackening of the suspension members.

(3) Hoistway doors for hand-powered elevators must be designed so that they will ensure protection at each landing.

(4) Doors for hand-powered dumbwaiters must be designed so that they will ensure protection at all landings.

(5) Every hoistway door, gate, or entrance of hand elevators and hand dumbwaiters must have conspicuously displayed on the landing side in letters no less than 2 inches high, the words "Danger—Elevator—Keep closed," or "Danger—Dumbwaiter—Keep closed."

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-23540, filed 12/22/00, effective 1/22/01.]

Subpart VI Alterations, Repairs and Maintenance

WAC 296-96-23600 What is the scope of Part VI, Alterations, Repairs and Maintenance? Subpart VI, Alterations, Repairs and Maintenance, applies to periodic inspections, tests, alterations, and maintenance.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-23600, filed 12/22/00, effective 1/22/01.]

WAC 296-96-23610 What requirements apply to routine periodic inspections and tests? The owner or the owner's agent must ensure that her/his conveyances are inspected and tested periodically by a person qualified to perform such services. All conveyances must be tested to the applicable code(s) by an elevator mechanic licensed in the appropriate category for the conveyance being tested.

(1) For annual testing of electric, hydraulic, and roped hydraulic elevators, a log indicating the date of testing with all pertinent data included must be posted in the machine room. The log must be completed by the qualified person performing the test.

Note: The fire service and smoke detector testing may be performed and logged by the building owner.

(2)(a) For five-year testing of electric, hydraulic and roped hydraulic elevators a full load safety test must be performed with weights.

(b) For roped hydraulic elevators a static load test with the full load on the car must also be performed.

(c) For tests administered under this subsection:

(i) A log indicating the date of testing with all pertinent data included must be posted in the machine room. The log must be completed by the licensed elevator mechanic performing the test.

(ii) A safety tag with the date and company conducting the test must be permanently attached to the governor, safeties, and the rupture valves with a wire and seal.

(iii) Documentation must be submitted to the department.

Note: Separate safety tags must be used to distinguish the no-load annual safety test and the five-year full load test.

(d) Qualified people will conduct the test. A qualified person is either:

(i) An elevator mechanic licensed in the appropriate category for the conveyance being tested;

(ii) The representative of a firm that manufactured the particular material lift, and who holds a current temporary mechanic's license in this state; or

(iii) The representative of a firm that manufactured the particular material lift who is working under the direct supervision of an elevator mechanic licensed in the appropriate category for the conveyance being tested.

Escalators shall be tested and cleaned annually. Upon completion of this work, the appropriate form indicating that the work was done must be submitted to the department.

(3) All other conveyances requiring annual testing must have tags indicating the date and the name of the company who performed the test. When the required location for mounting the tag is not readily accessible, the tag may be mounted on the main line disconnect.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185, 70.87.190, 2002 c 98, 2003 c 143 and 2004 c 66. 04-12-047, § 296-96-23610, filed 5/28/04, effective 6/30/04. Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-23610, filed 12/22/00, effective 1/22/01.]

WAC 296-96-23620 What requirements apply to alterations, repairs and maintenance? The owner or the owner's agent is responsible for the safe operation, proper maintenance, and alteration of his or her conveyance(s) and must comply with ASME A17.1, Part XII.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-23620, filed 12/22/00, effective 1/22/01.]

WAC 296-96-23630 What requirements apply to elevator equipment displaced by seismic activity? Any elevator equipment, hydraulic or cable type, that is displaced as a result of seismic activity must be anchored to conform with current standards, when repaired or reanchored to the building.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-23630, filed 12/22/00, effective 1/22/01.]

Subpart VII Lifts for Physically Handicapped

WAC 296-96-23700 What is the scope of Subpart VII, Lifts for Physically Handicapped? The department's rules regulating lifting devices for physically handicapped people are described in this subpart.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-23700, filed 12/22/00, effective 1/22/01.]

WAC 296-96-23710 What requirements apply to lifts for the physically handicapped? Inclined and vertical chairlifts and inclined and vertical wheelchair lifts installed only for use by persons with disabilities in locations other than in or at a private residence must be equipped with a standard electric switch Chicago lock with key #2252. This requirement is in addition to ASME A17.1, Part XX, and the Washington state rules and regulations on barrier-free design.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-23710, filed 12/22/00, effective 1/22/01.]

Subpart VIII Sidewalk Elevators

WAC 296-96-23800 What is the scope of Subpart VIII, Sidewalk Elevators? Subpart VIII, Sidewalk Elevators, is a minimum standard for existing power sidewalk elevators.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-23800, filed 12/22/00, effective 1/22/01.]

WAC 296-96-23810 What requirements apply to electrically-operated sidewalk elevators? Where the top opening is located in the sidewalk or other area exterior to the building, all electrical equipment on the car or in the hoistway must be weatherproof. The operation of power sidewalk elevators through openings in the sidewalk, or through openings in other exterior areas which are protected by hinged doors or vertically lifting covers, must conform to these following requirements:

(1) The elevator must be operable in both the up and down directions through the opening, only from the sidewalk or other exterior area. The operations must be by means of:

(a) Key-operated continuous pressure type, up and down switches; or

(b) Continuous pressure type up and down operating buttons on the free end of a detachable, flexible cord five feet or less in length.

(c) Continuous pressure type up and down operating buttons may be installed on the elevator car providing the control is so designed that the buttons will not function unless the sidewalk doors are locked in the open position and that a safety screen that will open and close with the car is installed.

(2) Key-operated switches must be of continuous pressure spring-return type, with the key removable only when the switch is in the off position.

[Statutory Authority: RCW 70.87.020, 70.87.030, 70.87.034, 70.87.120, 70.87.185 and chapter 70.87 RCW. 01-02-026, § 296-96-23810, filed 12/22/00, effective 1/22/01.]

Chapter 296-99 WAC

SAFETY STANDARDS FOR GRAIN HANDLING FACILITIES

WAC

296-99-010	What safety hazards does this chapter require the employer to control?
296-99-015	What grain-handling operations does this chapter cover?
296-99-020	What definitions apply to this chapter?
296-99-025	What are the requirements for an emergency action plan?
296-99-030	What training must an employer provide for employees?
296-99-035	When must an employer issue a hot work permit?
296-99-040	What practices must an employer follow for entry into grain storage structures?
296-99-045	What information must an employer provide to contractors?
296-99-050	What elements must an employer include in the house-keeping program?
296-99-055	What is the maximum allowable grate opening size?
296-99-060	How must filter collectors be installed?

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296-99-065	What preventive maintenance program must an employer implement?
296-99-070	How must grain stream processing equipment be equipped?
296-99-075	How many means of emergency escape must an employer provide?
296-99-080	How must continuous-flow bulk raw grain dryers be equipped and installed?
296-99-085	What special requirements apply to inside bucket elevators?
296-99-090	Reserved.
296-99-093	Reserved.
296-99-095	Reserved.

WAC 296-99-010 What safety hazards does this chapter require the employer to control? This chapter directs the employer to control dust fires, explosions and other safety hazards in grain handling facilities including the waterfront dock areas at marine terminals (chapter 296-56 WAC will not apply).

All provisions from chapters 296-24, 296-62, and 296-800 WAC also apply. If rules in either of these chapters conflict with rules in chapter 296-99 WAC, chapter 296-99 WAC will prevail.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 01-11-038, § 296-99-010, filed 5/9/01, effective 9/1/01. Statutory Authority: Chapter 49.17 RCW. 97-22-065, § 296-99-010, filed 11/3/97, effective 1/1/98; 88-23-054 (Order 88-25), § 296-99-010, filed 11/14/88.]

WAC 296-99-015 What grain-handling operations does this chapter cover? (1) WAC 296-99-010 through 296-99-070 apply to:

- Dry grinding operations of soycake;
- Dry corn mills;
- Dust pelletizing plants;
- Feed mills;
- Flour mills;
- Flat storage structures;
- Grain elevators;
- Rice mills; and
- Soybean flaking operations.

(2) WAC 296-99-075, 296-99-080, and 296-99-085 apply only to grain elevators.

(3) Chapter 296-99 WAC does not apply to alfalfa storage or processing operations if they do not use grain products.

[Statutory Authority: Chapter 49.17 RCW. 97-22-065, § 296-99-015, filed 11/3/97, effective 1/1/98; 90-03-029 (Order 89-20), § 296-99-015, filed 1/11/90, effective 2/26/90; 88-23-054 (Order 88-25), § 296-99-015, filed 11/14/88.]

WAC 296-99-020 What definitions apply to this chapter? "Choked leg" means excess material buildup that stops the movement of grain and of the bucket elevator. A bucket elevator is not considered choked if it moves and the boot and discharge are clear.

"Flat storage structure" means a grain storage structure that:

- Can not empty by gravity alone;
- Can be entered through an opening at ground level; and
- Must be entered to remove leftover grain.

"Fugitive grain dust" means combustible grain dust particles, accumulated inside storage structures, that are

small enough to pass through a U.S. Standard 40 mesh sieve (425 microns or less).

"Grain" means raw and processed grain of cereal grass seeds and grain products handled in facilities within the scope of WAC 296-99-015(1).

"Grain elevator" means a facility in which bulk raw grains are stored by means of elevating machinery for later shipment.

"Hot work" means work that involves electric or gas welding, cutting, brazing or similar heat-producing tasks that could be a source of ignition.

"Inside bucket elevator" means a bucket elevator with the boot and more than twenty percent of the total leg height (above grade or ground level) inside a grain elevator structure. Bucket elevators used inside of rail or truck dump sheds are not considered inside bucket elevators.

"Lagging" means a covering on drive pulleys used to increase the driving friction between the pulley and the belt.

[Statutory Authority: Chapter 49.17 RCW. 97-22-065, § 296-99-020, filed 11/3/97, effective 1/1/98; 88-23-054 (Order 88-25), § 296-99-020, filed 11/14/88.]

WAC 296-99-025 What are the requirements for an emergency action plan? The employer must develop and implement an emergency action plan that meets the requirements of WAC 296-24-567.

[Statutory Authority: Chapter 49.17 RCW. 97-22-065, § 296-99-025, filed 11/3/97, effective 1/1/98; 88-23-054 (Order 88-25), § 296-99-025, filed 11/14/88.]

WAC 296-99-030 What training must an employer provide for employees? (1) The employer must train employees:

- (a) Annually; and
- (b) Whenever a new job assignment exposes an employee to a new hazard.

(2) The employer must ensure that employees are trained in the following:

(a) General safety precautions against fires and explosions, including how to recognize and prevent the hazards of excess dust accumulation and ignition sources.

(b) Specific procedures and safety practices for job tasks including, but not limited to:

- Cleaning grinding equipment;
- Clearing choked legs;
- Housekeeping;
- Hot work; and
- Preventive maintenance.

(3) The employer must provide additional training for employees who are assigned special tasks, including but not limited to:

(a) Procedures for grain storage entry according to WAC 296-62-145, confined space entry, and how to:

- Control hazardous energy (lockout/tagout) according to WAC 296-24-110;
- Avoid getting buried by moving grain (engulfment);
- Avoid falling from heights; and
- Prevent mechanical hazards.

(b) How to handle flammable or toxic substances.

[Statutory Authority: Chapter 49.17 RCW. 97-22-065, § 296-99-030, filed 11/3/97, effective 1/1/98; 88-23-054 (Order 88-25), § 296-99-030, filed 11/14/88.]

WAC 296-99-035 When must an employer issue a hot work permit? (1) Before allowing an employee to start any hot work, the employer must:

(a) Issue to the employee a permit that states that all safety precautions required by WAC 296-24-695 are in place; and

(b) Keep the permit on file until the hot work is complete.

(2) The employer may allow an employee to perform hot work without a permit if:

(a) The employer's representative personally monitors the hot work to prevent employee exposure to injury from either fire or explosion during the entire operation; or

(b) The hot work is done in welding shops authorized by the employer; or

(c) The hot work is done in hot work areas authorized by the employer which are located outside of the grain handling structure.

[Statutory Authority: Chapter 49.17 RCW. 97-22-065, § 296-99-035, filed 11/3/97, effective 1/1/98; 88-23-054 (Order 88-25), § 296-99-035, filed 11/14/88.]

WAC 296-99-040 What practices must an employer follow for entry into grain storage structures? This section applies to employee entry into all grain storage structures.

(1) The employer must ensure that the practice of walking down grain is prohibited. "Walking down grain" means an employee walks on grain to make it flow within or out from a grain storage structure, or an employee is on moving grain.

(2) The employer must ensure that during the entry and occupation of a storage structure the employee uses:

- A body harness with a lifeline; or
- A boatswain's chair that meets the requirements of Part J-2 of chapter 296-24 WAC whenever:

(a) The employee is exposed to a fall hazard such as when entering from the top or above the level of the stored grain; or

(b) The employee is exposed to an engulfment hazard such as when entering at the level of the stored grain, or while walking or standing on the grain. The lifeline must be rigged so that its position and length will prevent the employee from sinking below waist level.

(3) The employer must ensure that during the occupation of storage structures, including walking or standing on grain, employees are protected from hazards related to:

- Mechanical;
- Electrical;
- Hydraulic; and
- Pneumatic equipment.

By using safeguards, lockout-tagout, or other equally effective means. All provisions for the control of hazardous energy (lockout/tagout) from WAC 296-24-110 apply to this chapter.

(4) The employer must ensure that employees are prohibited from entering any storage structure where a build-up

of grain overhead (bridging) or on the sides could fall and bury them.

(5) The employer must ensure, as minimum precautions, that employee entry and occupation of all grain storage structures including flat storage structures is done according to all applicable requirements of WAC 296-62-145, confined space, when the storage structure:

- Has limited or restricted means of entry and exit; and
- Is not designed for continuous employee occupancy.

(6) The employer may allow an employee to perform confined space entry work in grain storage structures without a permit if the employer's representative personally monitors the work to prevent employee exposure to illness or injury from atmospheric hazards during the entire operation.

[Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. 01-11-038, § 296-99-040, filed 5/9/01, effective 9/1/01. Statutory Authority: Chapter 49.17 RCW. 97-22-065, § 296-99-040, filed 11/3/97, effective 1/1/98; 88-23-054 (Order 88-25), § 296-99-040, filed 11/14/88.]

WAC 296-99-045 What information must an employer provide to contractors? (1) The employer must inform contractors working at the grain handling facility of:

- (a) General safety rules; and
- (b) Specific fire and explosion hazards related to the contractor's work and work area.

(2) The employer must explain the emergency action plan to each contractor.

[Statutory Authority: Chapter 49.17 RCW. 97-22-065, § 296-99-045, filed 11/3/97, effective 1/1/98; 88-23-054 (Order 88-25), § 296-99-045, filed 11/14/88.]

WAC 296-99-050 What elements must an employer include in the housekeeping program? (1) The employer must develop and enforce a written housekeeping program that:

- (a) Establishes frequency and methods for reducing and cleaning up hazardous accumulations of fugitive grain dust;
- (b) Identifies priority areas for clean up of hazardous accumulations of fugitive grain dust, including floor areas:

- Within thirty-five feet (10.7 m) of inside bucket elevators;
- Of enclosed grinding equipment; and
- Of enclosed grain dryers located inside the facility; and

(c) Requires that fugitive grain dust is cleaned up immediately whenever accumulations exceed one-eighth inch (.32 cm) at priority housekeeping areas, or provide protection against fire and explosion that is equal to the required clean up.

(2) The employer must prohibit the use of compressed air to blow dust from ledges, walls, and other areas unless all machinery that provides an ignition source in the area is shut down, and all other known potential ignition sources in the area are removed or controlled.

(3) The employer must also ensure that the housekeeping program addresses procedures for removing grain and product spills from work areas. Spills are not considered fugitive grain dust accumulations.

[Statutory Authority: Chapter 49.17 RCW. 97-22-065, § 296-99-050, filed 11/3/97, effective 1/1/98; 91-11-070 (Order 91-01), § 296-99-050, filed

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5/20/91, effective 6/20/91; 90-03-029 (Order 89-20), § 296-99-050, filed 1/11/90, effective 2/26/90; 88-23-054 (Order 88-25), § 296-99-050, filed 11/14/88.]

WAC 296-99-055 What is the maximum allowable grate opening size? The employer must ensure that receiving-pit feed openings, such as truck or railcar receiving-pits, are covered by grates with maximum openings of two and one-half inches (6.35 cm).

[Statutory Authority: Chapter 49.17 RCW. 97-22-065, § 296-99-055, filed 11/3/97, effective 1/1/98; 88-23-054 (Order 88-25), § 296-99-055, filed 11/14/88.]

WAC 296-99-060 How must filter collectors be installed? (1) The employer must ensure that, on a pneumatic dust collection system, each fabric dust filter collector has a monitoring device that will show a pressure drop across the surface of its filter.

(2) The employer must ensure that each filter collector installed after March 30, 1988, is:

- (a) Located outside the facility; or
- (b) When located inside the facility, protected by an explosion suppression system; or
- (c) Isolated by a structure with at least a one hour fire-resistance rating:

- Next to an exterior wall;
- Vented to the outside; and
- The vent and ductwork must resist rupture from intense heat.

[Statutory Authority: Chapter 49.17 RCW. 97-22-065, § 296-99-060, filed 11/3/97, effective 1/1/98; 88-23-054 (Order 88-25), § 296-99-060, filed 11/14/88.]

WAC 296-99-065 What preventive maintenance program must an employer implement? (1) The employer must implement a written program that covers the requirements of WAC 296-24-110, The control of hazardous energy (lockout/tagout).

(2) The employer must implement preventive maintenance procedures that include the following:

(a) Conducting regularly scheduled inspections for specified machinery.

(b) Preparing written inspection reports kept on file that include:

- The date of each inspection;
- The name of the inspector; and
- The serial number, or other identification of the machinery as described next in (c) of this subsection.

(c) Conducting regularly scheduled inspections and completing immediate repairs of the mechanical equipment and safety controls of the following machinery:

- Grain dryers;
- Grain stream processing equipment;
- Dust collection systems including their filter collectors that malfunction or operate below designed efficiency;
- Overheated bearings; and
- Slipping or misaligned belt drives for inside bucket elevators.

When immediate repairs are not feasible, then the affected machine must be taken out of service.

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(d) Performing lubrication and other maintenance according to manufacturers' recommendations or more often when needed, such as when operating records indicate that a more stringent schedule is necessary.

[Statutory Authority: Chapter 49.17 RCW. 97-22-065, § 296-99-065, filed 11/3/97, effective 1/1/98; 88-23-054 (Order 88-25), § 296-99-065, filed 11/14/88.]

WAC 296-99-070 How must grain stream processing equipment be equipped? The employer must ensure that the following grain stream processing equipment has an effective means of removing ferrous material from the incoming grain:

- Hammer mills;
- Grinders; and
- Pulverizers.

[Statutory Authority: Chapter 49.17 RCW. 97-22-065, § 296-99-070, filed 11/3/97, effective 1/1/98; 88-23-054 (Order 88-25), § 296-99-070, filed 11/14/88.]

WAC 296-99-075 How many means of emergency escape must an employer provide? The employer must provide the following number of emergency escape means:

Structure	Number of escape means
Galleries (bin decks)	Two
Tunnels of grain elevators constructed after November 14, 1988	Two
Tunnels of grain elevators constructed on or before November 14, 1988	One

[Statutory Authority: Chapter 49.17 RCW. 97-22-065, § 296-99-075, filed 11/3/97, effective 1/1/98; 88-23-054 (Order 88-25), § 296-99-075, filed 11/14/88.]

WAC 296-99-080 How must continuous-flow bulk raw grain dryers be equipped and installed? (1) The employer must ensure that all direct-heat grain dryers have automatic controls that:

(a) Shut off the fuel supply in case of power, flame, or ventilation airflow shutoff; and

(b) Stop the grain flow into the dryer if the dryer exhaust gets too hot.

(2) The employer must ensure that each direct-heat grain dryer installed after March 30, 1988, is:

(a) Located outside the grain elevator; or

(b) When located inside the grain elevator, protected by a fire or explosion suppression system; or

(c) Isolated by a structure with at least a one hour fire-resistance rating.

[Statutory Authority: Chapter 49.17 RCW. 97-22-065, § 296-99-080, filed 11/3/97, effective 1/1/98; 88-23-054 (Order 88-25), § 296-99-080, filed 11/14/88.]

WAC 296-99-085 What special requirements apply to inside bucket elevators? (1) The employer must prohibit jogging of a bucket elevator to free a choked leg.

"Jogging" means to start and stop drive motors repeatedly over short intervals.

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(2) The employer must ensure that all belts and lagging purchased after March 30, 1988, are conductive and have a maximum surface electrical resistance of 300 megohms.

(3) The employer must ensure that all bucket elevators have safe access to the head pulley section for inspection of the head pulley, lagging, belt, and discharge throat. The boot section must also have safe access for its clean-out and inspection of the pulley and belt.

(4) The employer must:

(a) Mount bearings externally to the leg casing; or

(b) Have vibration and temperature monitoring; or

(c) Have other means to monitor the condition of bearings mounted inside or partially inside the leg casing.

(5) The employer must ensure that bucket elevators have a motion detection device that will stop the elevator if belt speed is reduced to less than eighty percent of normal operating speed.

(6) The employer must:

(a) Ensure that bucket elevators have a belt alignment monitoring device that will initiate an alarm to employees when the belt is not tracking properly; or

(b) Use a system to keep the belt tracking properly.

(7) Subsections (5) and (6) of this section do not apply to grain elevators with a permanent storage capacity of less than one million bushels, if daily visual inspection is made of bucket movement and belt tracking.

(8) Subsections (4), (5), and (6) of this section do not apply to the following:

(a) Bucket elevators with an operational fire and explosion suppression system capable of protecting at least the head and boot section of the bucket elevator; or

(b) Bucket elevators with pneumatic or other dust control systems or methods that keep the dust concentration inside the bucket elevator at least twenty-five percent below the lower explosive limit at all times during operations.

[Statutory Authority: Chapter 49.17 RCW. 97-22-065, § 296-99-085, filed 11/3/97, effective 1/1/98; 88-23-054 (Order 88-25), § 296-99-085, filed 11/14/88.]

WAC 296-99-090 Reserved.

[Statutory Authority: Chapter 49.17 RCW. 97-22-065, § 296-99-090, filed 11/3/97, effective 1/1/98; 88-23-054 (Order 88-25), § 296-99-090, filed 11/14/88.]

WAC 296-99-093 Reserved.

[Statutory Authority: Chapter 49.17 RCW. 97-22-065, § 296-99-093, filed 11/3/97, effective 1/1/98; 88-23-054 (Order 88-25), § 296-99-093, filed 11/14/88.]

WAC 296-99-095 Reserved.

[Statutory Authority: Chapter 49.17 RCW. 97-22-065, § 296-99-095, filed 11/3/97, effective 1/1/98; 88-23-054 (Order 88-25), § 296-99-095, filed 11/14/88.]

Chapter 296-104 WAC

BOARD OF BOILER RULES—SUBSTANTIVE

WAC

296-104-001

Administration—To what do these rules apply?

296-104-010

Administration—What are the definitions of terms used in this chapter?

296-104-015	Administration—When and where are the board meetings held?	296-104-271	Installation—How does an owner, user, or installer obtain a variance from clearances?
296-104-017	Administration—How are rules affected if other rules are invalidated?	296-104-273	Installation—What inspections are required for reinstalled standard boilers or unfired pressure vessels?
296-104-018	Administration—How are rules interpreted and revised?	296-104-295	Installation—What are the requirements for an explosion door?
296-104-020	Administration—What are the filing requirements for boilers and unfired pressure vessels before their installation/reinstallation?	296-104-300	Installation—What control and limit devices are required on automatically fired boilers prior to June 1989?
296-104-021	Administration—What is the registration requirement for new standard boilers and unfired pressure vessels?	296-104-301	Installation—What control and limit devices are required on automatically fired boilers after June 1989?
296-104-025	Administration—What are the notification requirements following an accident involving a boiler or pressure vessel?	296-104-302	Installation—What control and limit devices are required on automatically fired boilers after December 1998?
296-104-030	Administration—What is the penalty for operation of unsafe boilers or unfired pressure vessels?	296-104-303	Installation—What control and limit devices are required on automatically fired boilers after December 2004?
296-104-035	Administration—What are conflicts of interest for inspectors?	296-104-307	Installation—When are platforms around boilers required?
296-104-040	Administration—When should inspectors submit inspection reports and on what forms?	296-104-310	Installation—How many exits are required in boiler rooms?
296-104-045	Administration—What are the insurance companies' responsibilities?	296-104-316	Installation—What safety pressure relief devices are required on boilers and unfired pressure vessels?
296-104-050	Administration—What are the requirements for a boiler inspector?	296-104-320	Installation—Where should the discharge from safety pressure relief devices, blow offs and drains be directed?
296-104-060	Administration—When shall an inspectors' Washington state commission be issued, suspended, or revoked?	296-104-325	Installation—What are the requirements for boiler and unfired pressure vessel supports?
296-104-065	Administration—How should an inspector obtain a Washington state commission?	296-104-330	Installation—What are the relief or safety valve requirements when pressure reducing valves are used?
296-104-100	Inspection—How often must boilers and unfired pressure vessels be inspected?	296-104-405	Existing installation—How can the maximum allowable working pressure be established for nonstandard boilers or unfired pressure vessels?
296-104-102	Inspection—What are the standards for in-service inspection?	296-104-502	Repairs—What are the requirements for nonnuclear boilers and unfired pressure vessel repairs and alterations?
296-104-105	Inspection—How much time is required for notification of inspection?	296-104-510	Repairs—When a lap seam crack is discovered along a riveted longitudinal joint on a boiler or unfired pressure vessel, what action is required and what repairs are allowed?
296-104-110	Inspection—What will be done when boilers or unfired pressure vessels are deemed unsafe or defective?	296-104-515	Repairs—Do riveted repairs to boilers and unfired pressure vessels require prior approval?
296-104-115	Inspection—What will be done when defective conditions are concealed by covering?	296-104-520	Repairs—What are the requirements for repair of non-nuclear safety devices?
296-104-125	Inspection—What are the requirements for obtaining a certificate of inspection?	296-104-535	Repairs—What are the requirements for nuclear repairs/replacement?
296-104-130	Inspection—When are inspection certificates valid?	296-104-540	Repairs—What are the requirements for nuclear repairs of safety devices?
296-104-135	Inspection—What are the requirements for restamping of boilers and unfired pressure vessels?	296-104-700	What are the inspection fees—Examination fees—Certificate fees—Expenses?
296-104-140	Inspection—How should a state stamp be applied?	296-104-701	What are the civil penalties?
296-104-145	Inspection—How are groups of vessels operating as a single unit classified?		
296-104-150	Inspection—How are unfired steam boilers classified?		
296-104-151	Inspection—What are the requirements for rental boilers?		
296-104-155	Inspection—What preparations are necessary prior to internal inspections?		
296-104-160	Inspection—What happens if a boiler or unfired pressure vessel is improperly prepared for inspection?		
296-104-165	Inspection—When should coverings be removed for inspection?		
296-104-170	Inspection—When are shop inspections required?		
296-104-180	Inspection—How are radioactive systems inspected?		
296-104-200	Construction—What are the standards for new construction?	296-104-002	Approval by director. [Approval, filed 3/23/60.] Repealed by 99-22-026, filed 10/26/99, effective 11/26/99. Statutory Authority: RCW 70.79.030 and 70.79.040.
296-104-205	Construction—What are the requirements for nonstandard new construction?	296-104-055	Administration—What are the examination fees? [Statutory Authority: RCW 70.79.030, 70.79.040, 70.79.150, 70.79.290, 70.79.330, 70.79.350, and chapter 70.79 RCW. 03-12-051, § 296-104-055, filed 5/30/03, effective 6/30/03; 02-12-021, § 296-104-055, filed 5/28/02, effective 6/28/02; 01-12-034, § 296-104-055, filed 5/29/01, effective 6/29/01. Statutory Authority: RCW 70.79.030 and 70.79.040. 99-22-026, § 296-104-055, filed 10/26/99, effective 11/26/99. Statutory Authority: RCW 70.79.040. 93-12-014, § 296-104-055, filed 5/21/93, effective 6/21/93. Statutory Authority: RCW 70.79.030 and 70.79.330. 82-24-025 (Order 82-36), § 296-104-055, filed 11/23/82, effective 1/1/83; Order 74-37, § 296-104-055, filed 11/8/74; Part II, § 8, filed 3/23/60.] Repealed by 04-01-194, filed 12/24/03, effective 1/24/04. Statutory Authority: RCW 70.79.030, 70.79.040, 70.79.150, 70.79.290, 70.79.330, 70.79.350, and chapter 70.79 RCW.
296-104-210	Construction—What are the requirements for construction of boilers and unfired pressure vessels of special design?		
296-104-215	Construction—What are the requirements to use nonstandard boilers and unfired pressure vessels constructed prior to January 1, 1952?		
296-104-220	Construction—What are the requirements to use nonstandard second hand boilers and unfired pressure vessels?		
296-104-230	Construction—What are the testing requirements for new boilers or unfired pressure vessels exempted from code requirements for volume, pressure or temperature?		
296-104-235	Construction—What are the requirements for code exempted boiler and unfired pressure vessel safety relief valves?	296-104-107	Inspection—Which unfired pressure vessels in places of public assembly are subject to these rules? [Statutory Authority: RCW 70.79.030 and 70.79.040. 97-20-109, § 296-104-107, filed 9/30/97, effective 10/31/97.] Repealed by 99-22-026, filed 10/26/99, effective
296-104-245	Construction—Combustible fluid heaters.		
296-104-255	Installation—What are the required clearances for boilers?		
296-104-260	Installation—What are the required clearances for unfired pressure vessels?		
296-104-265	Installation—What are the requirements for unfired pressure vessels installed underground?		

DISPOSITION OF SECTIONS FORMERLY CODIFIED IN THIS CHAPTER

	11/26/99. Statutory Authority: RCW 70.79.030 and 70.79.040.		104-265, filed 9/30/97, effective 10/31/97. Statutory Authority: RCW 70.79.240, 88-01-064 (Order 87-25), § 296-104-265, filed 12/17/87; Part IV, § 14, filed 3/23/60.] Decodedified by 02-23-036, filed 11/13/02, effective 12/14/02. Statutory Authority: RCW 70.79.030, 70.79.040, 70.79.150, 70.79.290, 70.79.330, 70.79.350, and chapter 70.79 RCW. Recodified as RCW 296-104-300.
296-104-120	Inspection—Condemned boilers or unfired pressure vessel. [Statutory Authority: RCW 70.79.040, 91-11-107, § 296-104-120, filed 5/22/91, effective 6/22/91; Part III, § 5, filed 3/23/60.] Repealed by 95-19-058, filed 9/15/95, effective 10/16/95. Statutory Authority: RCW 70.79.030 and 70.79.040.		
296-104-195	Pressure vessel clearances. [Statutory Authority: RCW 70.79.040, 90-04-009, § 296-104-195, filed 1/26/90, effective 2/26/90.] Repealed by 96-21-081, filed 10/16/96, effective 11/16/96. Statutory Authority: RCW 70.79.030 and 70.79.040.	296-104-270	Installation—What are the requirements for an explosion door? [Statutory Authority: RCW 70.79.030 and 70.79.040, 97-20-109, § 296-104-270, filed 9/30/97, effective 10/31/97; Part IV, § 15, filed 3/23/60.] Decodified by 02-23-036, filed 11/13/02, effective 12/14/02. Statutory Authority: RCW 70.79.030, 70.79.040, 70.79.150, 70.79.290, 70.79.330, 70.79.350, and chapter 70.79 RCW. Recodified as RCW 296-104-295.
296-104-201	Inspection of systems—Standard for water chillers. [Statutory Authority: RCW 70.79.030, 80-14-015 (Order 80-12), § 296-104-201, filed 9/23/80.] Repealed by 86-01-088 (Order 85-26), filed 12/19/85. Statutory Authority: RCW 70.79.040 and 70.79.050.	296-104-273	Installation—Pressure vessel clearances. [Statutory Authority: RCW 70.79.030 and 70.79.040, 96-21-081, § 296-104-273, filed 10/16/96, effective 11/16/96.] Decodified and amended by 02-23-036, filed 11/13/02, effective 12/14/02. Statutory Authority: RCW 70.79.030, 70.79.040, 70.79.150, 70.79.290, 70.79.330, 70.79.350, and chapter 70.79 RCW. Recodified as RCW 296-104-260.
296-104-225	Inspection of systems—Reinstalled boiler or unfired pressure vessel. [Part IV, § 6, filed 3/23/60.] Repealed by 96-21-081, filed 10/16/96, effective 11/16/96. Statutory Authority: RCW 70.79.030 and 70.79.040.	296-104-275	Inspection of systems—Hydro-pneumatic tanks. [Part IV, § 16, filed 3/23/60.] Repealed by 78-03-057 (Order 78-3), filed 2/22/78. Statutory Authority: RCW 70.79.030.
296-104-240	Construction—When are piping components considered unfired pressure vessels? [Statutory Authority: RCW 70.79.030, 70.79.040 and chapter 70.79 RCW, 00-21-024, § 296-104-240, filed 10/10/00, effective 11/13/00. Statutory Authority: RCW 70.79.030 and 70.79.040, 96-21-081, § 296-104-240, filed 10/16/96, effective 11/16/96; Part IV, § 9, filed 3/23/60.] Repealed by 02-23-036, filed 11/13/02, effective 12/14/02. Statutory Authority: RCW 70.79.030, 70.79.040, 70.79.150, 70.79.290, 70.79.330, 70.79.350, and chapter 70.79 RCW.	296-104-280	Inspection of systems—Electric steam generators. [Part IV, § 17, filed 3/23/60.] Repealed by 78-03-057 (Order 78-3), filed 2/22/78. Statutory Authority: RCW 70.79.030.
296-104-250	Inspection of systems—Hot water heating systems. [Part IV, § 11, filed 3/23/60.] Repealed by 78-03-057 (Order 78-3), filed 2/22/78. Statutory Authority: RCW 70.79.030.	296-104-285	Unfired pressure vessels in places of public assembly. [Statutory Authority: RCW 70.79.030, 78-03-057 (Order 78-3), § 296-104-285, filed 2/22/78.] Repealed by 99-08-049, filed 4/1/99, effective 5/2/99. Statutory Authority: RCW 70.79.030 and 70.79.040.
296-104-256	Installation—What inspections are required for reinstalled standard boilers or unfired pressure vessels? [Statutory Authority: RCW 70.79.030, 70.79.040, 70.79.150, 70.79.290, 70.79.330, 70.79.350, and chapter 70.79 RCW, 01-24-061, § 296-104-256, filed 11/30/01, effective 12/31/01. Statutory Authority: RCW 70.79.030 and 70.79.040, 96-21-081, § 296-104-256, filed 10/16/96, effective 11/16/96.] Decodified by 02-23-036, filed 11/13/02, effective 12/14/02. Statutory Authority: RCW 70.79.030, 70.79.040, 70.79.150, 70.79.290, 70.79.330, 70.79.350, and chapter 70.79 RCW. Recodified as RCW 296-104-273.	296-104-300	Installation—When do I need to provide platforms around boilers? [Statutory Authority: RCW 70.79.030 and 70.79.040, 97-20-109, § 296-104-300, filed 9/30/97, effective 10/31/97; Part V, § 1, filed 3/23/60.] Decodified by 02-23-036, filed 11/13/02, effective 12/14/02. Statutory Authority: RCW 70.79.030, 70.79.040, 70.79.150, 70.79.290, 70.79.330, 70.79.350, and chapter 70.79 RCW. Recodified as 296-104-307.
296-104-256	Installation—What are the required clearances for boilers? [Statutory Authority: RCW 70.79.030, 70.79.040, 70.79.150, 70.79.290, 70.79.330, 70.79.350, and chapter 70.79 RCW, 04-01-194, § 296-104-256, filed 12/24/03, effective 1/24/04; 02-23-036, amended and recodified as § 296-104-256, filed 11/13/02, effective 12/14/02. Statutory Authority: RCW 70.79.030 and 70.79.040, 96-21-081, § 296-104-260, filed 10/16/96, effective 11/16/96. Statutory Authority: Chapter 70.79 RCW, 89-15-025 (Order 89-05), § 296-104-260, filed 7/13/89, effective 8/13/89; Part IV, § 13, filed 3/23/60.] Repealed by 06-24-042, filed 11/30/06, effective 1/1/07. Statutory Authority: RCW 70.79.030, 70.79.040, 70.79.150, 70.79.290, 70.79.330, and 70.79.350.	296-104-305	Installation—How many exits are required in boiler rooms? [Statutory Authority: RCW 70.79.030 and 70.79.040, 97-20-109, § 296-104-305, filed 9/30/97, effective 10/31/97; Part V, § 2, filed 3/23/60.] Decodified by 02-23-036, filed 11/13/02, effective 12/14/02. Statutory Authority: RCW 70.79.030, 70.79.040, 70.79.150, 70.79.290, 70.79.330, 70.79.350, and chapter 70.79 RCW. Recodified as 296-104-310.
296-104-260	Installation—Clearance front, back and sides. [Statutory Authority: RCW 70.79.030 and 70.79.040, 96-21-081, § 296-104-260, filed 10/16/96, effective 11/16/96. Statutory Authority: Chapter 70.79 RCW, 89-15-025 (Order 89-05), § 296-104-260, filed 7/13/89, effective 8/13/89; Part IV, § 13, filed 3/23/60.] Decodified and amended by 02-23-036, filed 11/13/02, effective 12/14/02. Statutory Authority: RCW 70.79.030, 70.79.040, 70.79.150, 70.79.290, 70.79.330, 70.79.350, and chapter 70.79 RCW. Recodified as RCW 296-104-256.	296-104-307	Installation—What safety pressure relief devices are required on boilers and pressure vessels? [Statutory Authority: RCW 70.79.030, 70.79.040 and chapter 70.79 RCW, 00-21-024, § 296-104-307, filed 10/10/00, effective 11/13/00. Statutory Authority: RCW 70.79.030 and 70.79.040, 98-22-024, § 296-104-307, filed 10/28/98, effective 11/28/98.] Decodified by 02-23-036, filed 11/13/02, effective 12/14/02. Statutory Authority: RCW 70.79.030, 70.79.040, 70.79.150, 70.79.290, 70.79.330, 70.79.350, and chapter 70.79 RCW. Recodified as 296-104-316.
296-104-265	Installation—What control and limit devices are required on boilers? [Statutory Authority: RCW 70.79.030, 70.79.040, 70.79.150, 70.79.290, 70.79.330, 70.79.350, and chapter 70.79 RCW, 01-24-061, § 296-104-265, filed 11/30/01, effective 12/31/01. Statutory Authority: RCW 70.79.030, 70.79.040 and chapter 70.79 RCW, 00-21-024, § 296-104-265, filed 10/10/00, effective 11/13/00. Statutory Authority: RCW 70.79.030 and 70.79.040, 98-22-024, § 296-104-265, filed 10/28/98, effective 11/28/98; 97-20-109, § 296-	296-104-310	Installation—Where should the discharge from safety valves, blow offs and drains be directed? [Statutory Authority: RCW 70.79.030 and 70.79.040, 98-22-024, § 296-104-310, filed 10/28/98, effective 11/28/98; 97-20-109, § 296-104-310, filed 9/30/97, effective 10/31/97; Part V, § 3, filed 3/23/60.] Decodified by 02-23-036, filed 11/13/02, effective 12/14/02. Statutory Authority: RCW 70.79.030, 70.79.040, 70.79.150, 70.79.290, 70.79.330, 70.79.350, and chapter 70.79 RCW. Recodified as RCW 296-104-320.
		296-104-315	New installations—Blow off tanks. [Statutory Authority: RCW 70.79.030, 78-03-057 (Order 78-3), § 296-104-315, filed 2/22/78; Part V, § 4, filed 3/23/60.] Repealed by 89-15-025 (Order 89-05), filed 7/13/89, effective 8/13/89. Statutory Authority: Chapter 70.79 RCW.
		296-104-320	Installation—What are the requirements for underground installations? [Statutory Authority: RCW 70.79.030 and 70.79.040, 97-20-109, § 296-104-320, filed 9/30/97, effective 10/31/97; Part V, § 5, filed

3/23/60.] Decodified by 02-23-036, filed 11/13/02, effective 12/14/02. Statutory Authority: RCW 70.79.030, 70.79.040, 70.79.150, 70.79.290, 70.79.330, 70.79.350, and chapter 70.79 RCW. Recodified as RCW 296-104-265.

- 296-104-400 Existing installations—Stamping of existing boilers and unfired pressure vessels. [Statutory Authority: RCW 70.79.040, 90-20-029, § 296-104-400, filed 9/24/90, effective 10/25/90; Part VI, § 1, filed 3/23/60.] Repealed by 97-20-109, filed 9/30/97, effective 10/31/97. Statutory Authority: RCW 70.79.030 and 70.79.040.
- 296-104-410 Existing installations—Noncode steel heating boilers. [Part VI, § 3, filed 3/23/60.] Repealed by 97-20-109, filed 9/30/97, effective 10/31/97. Statutory Authority: RCW 70.79.030 and 70.79.040.
- 296-104-415 Existing installations—Noncode cast iron boilers. [Part VI, § 4, filed 3/23/60.] Repealed by 97-20-109, filed 9/30/97, effective 10/31/97. Statutory Authority: RCW 70.79.030 and 70.79.040.
- 296-104-500 Nonnuclear repairs. [Statutory Authority: RCW 70.79.040, 93-12-014, § 296-104-500, filed 5/21/93, effective 6/21/93; 92-11-070, § 296-104-500, filed 5/20/92, effective 6/20/92. Statutory Authority: RCW 70.79.030, 86-04-059 (Order 86-01), § 296-104-500, filed 2/4/86. Statutory Authority: RCW 70.79.030 and 70.79.330, 84-21-012 (Order 84-20), § 296-104-500, filed 10/5/84; Part VII, § 1, filed 3/23/60.] Repealed by 94-21-002, filed 10/5/94, effective 11/5/94. Statutory Authority: RCW 70.79.040.
- 296-104-501 Nonnuclear alterations. [Statutory Authority: RCW 70.79.040, 93-12-014, § 296-104-501, filed 5/21/93, effective 6/21/93; 92-11-070, § 296-104-501, filed 5/20/92, effective 6/20/92. Statutory Authority: RCW 70.79.030, 86-04-059 (Order 86-01), § 296-104-501, filed 2/4/86.] Repealed by 94-21-002, filed 10/5/94, effective 11/5/94. Statutory Authority: RCW 70.79.040.
- 296-104-505 Repairs—Repairs by fusion welding. [Part VII, § 2, filed 3/23/60.] Repealed by 94-21-002, filed 10/5/94, effective 11/5/94. Statutory Authority: RCW 70.79.040.
- 296-104-525 Repairs—Hydrostatic pressure tests. [Part VII, § 6, filed 3/23/60.] Repealed by 98-22-024, filed 10/28/98, effective 11/28/98. Statutory Authority: RCW 70.79.030 and 70.79.040.
- 296-104-530 Repairs—Can air or vapor testing be performed? [Statutory Authority: RCW 70.79.030 and 70.79.040, 98-22-024, § 296-104-530, filed 10/28/98, effective 11/28/98. Statutory Authority: RCW 70.79.040, 92-11-070, § 296-104-530, filed 5/20/92, effective 6/20/92; Part VII, § 7, filed 3/23/60.] Repealed by 04-01-194, filed 12/24/03, effective 1/24/04. Statutory Authority: RCW 70.79.030, 70.79.040, 70.79.150, 70.79.290, 70.79.330, 70.79.350, and chapter 70.79 RCW.
- 296-104-600 General requirements—Conditions not covered by these rules. [Part VIII, § 1, filed 3/23/60.] Repealed by 98-22-024, filed 10/28/98, effective 11/28/98. Statutory Authority: RCW 70.79.030 and 70.79.040.
- 296-104-800 Inspection of systems subject to radioactivity. [Statutory Authority: RCW 70.79.240, 88-01-064 (Order 87-25), § 296-104-800, filed 12/17/87.] Repealed by 98-22-024, filed 10/28/98, effective 11/28/98. Statutory Authority: RCW 70.79.030 and 70.79.040.
- 296-104-801 Nuclear repairs/replacement. [Statutory Authority: RCW 70.79.040, 91-11-106, § 296-104-801, filed 5/22/91, effective 6/22/91.] Repealed by 98-22-024, filed 10/28/98, effective 11/28/98. Statutory Authority: RCW 70.79.030 and 70.79.040.
- 296-104-805 Nuclear repairs—Safety devices. [Statutory Authority: RCW 70.79.040, 91-11-106, § 296-104-805, filed 5/22/91, effective 6/22/91.] Repealed by 98-22-024, filed 10/28/98, effective 11/28/98. Statutory Authority: RCW 70.79.030 and 70.79.040.

WAC 296-104-001 Administration—To what do these rules apply? The following rules and regulations apply to all boilers and unfired pressure vessels except those exempt under RCW 70.79.080. Boilers and unfired pressure vessels listed under RCW 70.79.090 are exempt from inspection and fees, but shall comply with all rules for construction, installation, repairs and general requirements.

(2007 Ed.)

[Statutory Authority: RCW 70.79.030 and 70.79.040, 99-22-026, § 296-104-001, filed 10/26/99, effective 11/26/99; Promulgation, filed 3/23/60.]

WAC 296-104-010 Administration—What are the definitions of terms used in this chapter? "Agriculture purposes" shall mean any act performed on a farm in production of crops or livestock, and shall include the storage of such crops and livestock in their natural state, but shall not be construed to include the processing or sale of crops or livestock.

"Attendant" shall mean the person in charge of the operation of a boiler or unfired pressure vessel.

"Automatic operation of a boiler" shall mean automatic unattended control of feed water and fuel in order to maintain the pressure and temperature within the limits set. Controls must be such that the operation follows the demand without interruption. Manual restart may be required when the burner is off because of low water, flame failure, power failure, high temperatures or pressures.

"Board of boiler rules" or "board" shall mean the board created by law and empowered under RCW 70.79.010.

"Boiler and unfired pressure vessel installation/reinstallation permit," shall mean a permit approved by the chief inspector before starting installation or reinstallation of any boiler and unfired pressure vessel within the jurisdiction of Washington.

Owner/user inspection agency's, and Washington specials are exempt from "boiler and unfired pressure vessel installation/reinstallation permit."

"Boilers and/or unfired pressure vessels" - below are definitions for types of boilers and unfired pressure vessels used in these regulations:

- "Condemned boiler or unfired pressure vessel" shall mean a boiler or unfired pressure vessel that has been inspected and declared unsafe or disqualified for further use by legal requirements and appropriately marked by an inspector.
- "Hot water heater" shall mean a closed vessel designed to supply hot water for external use to the system. All vessels must be listed by a nationally recognized testing agency and shall be protected with an approved temperature and pressure safety relief valve and shall not exceed any of the following limits:
 - * Pressure of 160 psi (1100 kpa);
 - * Temperature of 210 degrees F (99°C);
 - * Capacity of 120 U.S. gallons (454 liters);
 - * Input of 200,000 BTU/hr (58.58 kw). Note that if input exceeds 200,000 BTU/hr (58.58 kw), other terms defined in this section may apply.
- Hot water heaters exceeding 200,000 BTU/hr (58.58 kw) must be ASME code stamped.
- "Low pressure heating boiler" shall mean a steam or vapor boiler operating at a pressure not exceeding 15 psig or a boiler in which water or other fluid is heated and intended for operation at pressures not exceeding 160 psig or temperatures not exceeding 250 degrees F by the direct application of energy from the combustion of fuels or from electricity, solar or nuclear energy, excluding lined hot water heaters supplying potable hot water for external use to the system.
- "Nonstandard boiler or unfired pressure vessel" shall mean a boiler or unfired pressure vessel that

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does not bear marking of the codes adopted in WAC 296-104-200.

- **"Power boiler"** shall mean a boiler in which steam or other vapor is generated at a pressure of more than 15 psig for use external to itself or a boiler in which water or other fluid is heated and intended for operation at pressures in excess of 160 psig and/or temperatures in excess of 250 degrees F by the direct application of energy from the combustion of fuels or from electricity, solar or nuclear energy.
- **"Reinstalled boiler or unfired pressure vessel"** shall mean a boiler or unfired pressure vessel removed from its original setting and reset at the same location or at a new location without change of ownership.
- **"Rental boiler"** shall mean any power or low pressure heating boiler that is under a rental contract between owner and user.
- **"Second hand boiler or unfired pressure vessel"** shall mean a boiler or unfired pressure vessel of which both the location and ownership have changed after primary use.
- **"Standard boiler or unfired pressure vessel"** shall mean a boiler or unfired pressure vessel which bears the marking of the codes adopted in WAC 296-104-200.
- **"Unfired pressure vessel"** shall mean a closed vessel under pressure excluding:
 - * Fired process tubular heaters;
 - * Pressure containers which are integral parts of components of rotating or reciprocating mechanical devices where the primary design considerations and/or stresses are derived from the functional requirements of the device;
 - * Piping whose primary function is to transport fluids from one location to another;
 - * Those vessels defined as low pressure heating boilers or power boilers.
- **"Unfired steam boiler"** shall mean a pressure vessel in which steam is generated by an indirect application of heat. It shall not include pressure vessels known as evaporators, heat exchangers, or vessels in which steam is generated by the use of heat resulting from the operation of a processing system containing a number of pressure vessels, such as used in the manufacture of chemical and petroleum products, which will be classed as unfired pressure vessels.

"Certificate of competency" shall mean a certificate issued by the Washington state board of boiler rules to a person who has passed the tests as set forth in WAC 296-104-050.

"Certificate of inspection" shall mean a certificate issued by the chief boiler inspector to the owner/user of a boiler or unfired pressure vessel upon inspection by an inspector. The boiler or unfired pressure vessel must comply with rules, regulations, and appropriate fee payment shall be made directly to the chief boiler inspector.

"Code, API-510" shall mean the Pressure Vessel Inspection Code of the American Petroleum Institute with addenda and revisions, thereto made and approved by the institute which have been adopted by the board of boiler rules in accordance with the provisions of RCW 70.79.030.

"Code, ASME" shall mean the boiler and pressure vessel code of the American Society of Mechanical Engineers with addenda thereto made and approved by the council of

the society which have been adopted by the board of boiler rules in accordance with the provisions of RCW 70.79.030.

"Code, NBIC" shall mean the National Board Inspection Code of the National Board of Boiler and Pressure Vessel Inspectors with addenda and revisions, thereto made and approved by the National Board of Boiler and Pressure Vessel Inspectors and adopted by the board of boiler rules in accordance with the provisions of RCW 70.79.030.

"Commission" shall mean an annual commission card issued to a person in the employ of Washington state, an insurance company or a company owner/user inspection agency holding a Washington state certificate of competency which authorizes them to perform inspections of boilers and/or unfired pressure vessels.

"Department" as used herein shall mean the department of labor and industries of the state of Washington.

"Director" shall mean the director of the department of labor and industries.

"Domestic and/or residential purposes" shall mean serving a private residence or an apartment house of less than six families.

"Existing installations" shall mean any boiler or unfired pressure vessel constructed, installed, placed in operation, or contracted for before January 1, 1952.

"Inspection certificate" see "certificate of inspection."

"Inspection, external" shall mean an inspection made while a boiler or unfired pressure vessel is in operation and includes the inspection and demonstration of controls and safety devices required by these rules.

"Inspection, internal" shall mean an inspection made when a boiler or unfired pressure vessel is shut down and handholes, manholes, or other inspection openings are open or removed for examination of the interior. An external ultrasonic examination of unfired pressure vessels less than 36" inside diameter shall constitute an internal inspection.

"Inspector" shall mean the chief boiler inspector, a deputy inspector, or a special inspector.

- **"Chief inspector"** shall mean the inspector appointed under RCW 70.79.100 who serves as the secretary to the board without a vote.
- **"Deputy inspector"** shall mean an inspector appointed under RCW 70.79.120.
- **"Special inspector"** shall mean an inspector holding a Washington commission identified under RCW 70.79.130.

"Nationwide engineering standard" shall mean a nationally accepted design method, formulae and practice acceptable to the board.

"Operating permit" see "certificate of inspection."

"Owner" or "user" shall mean a person, firm, or corporation owning or operating any boiler or unfired pressure vessel within the state.

"Owner/user inspection agency" shall mean an owner or user of boilers and/or pressure vessels that maintains an established inspection department, whose organization and inspection procedures meet the requirements of a nationally recognized standard acceptable to the department.

"Place of public assembly" or "assembly hall" shall mean a building or portion of a building used for the gathering together of 50 or more persons for such purposes as deliberation, education, instruction, worship, entertainment,

amusement, drinking, or dining or waiting transportation. This shall also include child care centers (those agencies which operate for the care of thirteen or more children), public and private hospitals, nursing and boarding homes.

"Special design" shall mean a design using nationwide engineering standards other than the codes adopted in WAC 296-104-200 or other than allowed in WAC 296-104-230.

[Statutory Authority: RCW 70.79.030, 70.79.040, 70.79.150, 70.79.290, 70.79.330, and 70.79.350. 06-24-042, § 296-104-010, filed 11/30/06, effective 1/1/07. Statutory Authority: Chapter 70.79 RCW. 04-21-069, § 296-104-010, filed 10/19/04, effective 1/1/05. Statutory Authority: RCW 70.79.030, 70.79.040, 70.79.150, 70.79.290, 70.79.330, 70.79.350, and chapter 70.79 RCW. 04-01-194, § 296-104-010, filed 12/24/03, effective 1/24/04; 02-23-036, § 296-104-010, filed 11/13/02, effective 12/14/02; 01-24-061, § 296-104-010, filed 11/30/01, effective 12/31/01. Statutory Authority: RCW 70.79.030, 70.79.040 and chapter 70.79 RCW. 00-21-024, § 296-104-010, filed 10/10/00, effective 11/13/00. Statutory Authority: RCW 70.79.030 and 70.79.040. 99-22-026, § 296-104-010, filed 10/26/99, effective 11/26/99; 98-22-024, § 296-104-010, filed 10/28/98, effective 11/28/98; 96-21-081, § 296-104-010, filed 10/16/96, effective 11/16/96. Statutory Authority: RCW 70.79.040. 94-21-002, § 296-104-010, filed 10/5/94, effective 11/5/94; 93-12-014, § 296-104-010, filed 5/21/93, effective 6/21/93; 92-11-070, § 296-104-010, filed 5/20/92, effective 6/20/92. Statutory Authority: RCW 70.79.240. 88-01-064 (Order 87-25), § 296-104-010, filed 12/17/87. Statutory Authority: RCW 70.79.040 and 70.79.050. 86-01-088 (Order 85-26), § 296-104-010, filed 12/19/85; Order 72-11, § 296-104-010, filed 7/7/72; Part I, filed 3/23/60.]

WAC 296-104-015 Administration—When and where are the board meetings held? The board of boiler rules shall hold its regular meetings in January, March, May, September and November of each year. The time, place, and date of each regular meeting shall be set by the chairman of the board and published annually. Special meetings may be called by the chair.

[Statutory Authority: RCW 70.79.030 and 70.79.040. 99-22-026, § 296-104-015, filed 10/26/99, effective 11/26/99; 95-19-058, § 296-104-015, filed 9/15/95, effective 10/16/95. Statutory Authority: RCW 70.79.040. 91-11-107, § 296-104-015, filed 5/22/91, effective 6/22/91. Statutory Authority: RCW 70.79.050. 90-07-082, § 296-104-015, filed 3/21/90, effective 4/21/90. Statutory Authority: RCW 70.79.040 and 70.79.050. 86-01-088 (Order 85-26), § 296-104-015, filed 12/19/85; Order 72-11, § 296-104-015, filed 7/7/72.]

WAC 296-104-017 Administration—How are rules affected if other rules are invalidated? Should any section, subsection, sentence, clause, phrase, provision or exemption of these rules be declared unconstitutional or invalid for any reason, such invalidity shall not affect the remaining portion or provisions.

[Statutory Authority: RCW 70.79.030 and 70.79.040. 98-22-024, § 296-104-017, filed 10/28/98, effective 11/28/98.]

WAC 296-104-018 Administration—How are rules interpreted and revised? Stakeholders may request clarifications and interpretations of these rules by contacting the chief inspector. Interpretations will be brought to the board if the inquirer is aggrieved by the interpretation of the chief inspector (RCW 70.79.360). The board will consider written requests for interpretations and revisions to these definitions, rules, and regulations. Inquiries shall be limited to requests for interpretation of the rules or to proposed revisions to the existing rules and shall be submitted to the department of labor and industries forty-five days prior to the board of boiler rules meeting date in the following format:

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(1) Scope. Identify a single rule or closely related rules that are in dispute.

(2) Background. State the purpose of the inquiry, which should be either to obtain an interpretation or to propose a revision to existing rules. Provide concise information needed for the board's understanding of the inquiry, including references to the WAC section as well as other code and/or standards paragraphs.

(3) Inquiry structure. Provide statements in a condensed and precise question format and, where appropriate, compose in such a way that "yes" or "no" (perhaps with provisos) would be an acceptable reply.

(4) Proposed reply. State what it is believed the rule requires. If in the inquirer's opinion a revision to the definitions, rules, and regulations is needed, recommended wording should be provided.

Inquiries shall be submitted by mail to:

Board of Boiler Rules
% Chief Inspector
Department of Labor & Industries
Boiler Section
P.O. Box 44410
Olympia, WA 98504-4410

or

Inquiries shall be submitted by delivery to:

Board of Boiler Rules
% Chief Inspector
Department of Labor & Industries
Boiler Section
7273 Linderson Way SW
Tumwater, WA 98501

[Statutory Authority: RCW 70.79.030, 70.79.040, 70.79.150, 70.79.290, 70.79.330, and 70.79.350. 05-22-092, § 296-104-018, filed 11/1/05, effective 1/1/06. Statutory Authority: RCW 70.79.030 and 70.79.040. 99-22-026, § 296-104-018, filed 10/26/99, effective 11/26/99. Statutory Authority: RCW 70.79.040. 92-11-070, § 296-104-018, filed 5/20/92, effective 6/20/92.]

WAC 296-104-020 Administration—What are the filing requirements for boilers and unfired pressure vessels before their installation/reinstallation? A "boiler and pressure vessel installation/reinstallation permit," as defined in WAC 296-104-010 shall be submitted by the owner or agent and approved by the chief inspector.

[Statutory Authority: RCW 70.79.030, 70.79.040, 70.79.150, 70.79.290, 70.79.330, 70.79.350, and chapter 70.79 RCW. 02-23-036, § 296-104-020, filed 11/13/02, effective 12/14/02; 01-24-061, § 296-104-020, filed 11/30/01, effective 12/31/01. Statutory Authority: RCW 70.79.030 and 70.79.040. 99-22-026, § 296-104-020, filed 10/26/99, effective 11/26/99; 95-19-058, § 296-104-020, filed 9/15/95, effective 10/16/95; Order 74-37, § 296-104-020, filed 11/8/74; Part II, § 1, filed 3/23/60.]

WAC 296-104-021 Administration—What is the registration requirement for new standard boilers and unfired pressure vessels? Manufacturers' data report for new "standard boilers and unfired pressure vessels" shall be registered with the National Board of Boiler and Pressure Vessel Inspectors.

[Statutory Authority: RCW 70.79.030, 70.79.040, 70.79.150, 70.79.290, 70.79.330, 70.79.350, and chapter 70.79 RCW. 02-23-036, § 296-104-021, filed 11/13/02, effective 12/14/02.]

WAC 296-104-025 Administration—What are the notification requirements following an accident involving a boiler or pressure vessel? When an accident occurs which renders a boiler or unfired pressure vessel inoperative, the owner or user shall notify the chief inspector, and submit a detailed report of the accident. In cases of accidents, such as explosions or those resulting in personal injury, notice to the chief inspector shall be given immediately by telephone or electronic means designed to assure its earliest possible receipt. Neither the boiler or unfired pressure vessel nor any parts thereof shall be removed or disturbed before an inspection has been made by the chief inspector, or his designee except for the purpose of saving life or limiting consequential damage. The inspector making the investigation and inspection shall report to the chief inspector as soon as possible. The boiler or pressure vessel owner shall be responsible for all costs of the department's investigation.

[Statutory Authority: RCW 70.79.030 and 70.79.040. 99-22-026, § 296-104-025, filed 10/26/99, effective 11/26/99; 96-21-081, § 296-104-025, filed 10/16/96, effective 11/16/96; 95-19-058, § 296-104-025, filed 9/15/95, effective 10/16/95; Part II, § 2, filed 3/23/60.]

WAC 296-104-030 Administration—What is the penalty for operation of unsafe boilers or unfired pressure vessels? In the event that a boiler or unfired pressure vessel is unsafe to operate, the inspection certificate shall be suspended. Any person, firm, partnership, or corporation causing such objects to be operated under pressure without a valid certificate of inspection shall be in violation of RCW 70.79.320 and subject to the penalties specified in WAC 296-104-701.

[Statutory Authority: RCW 70.79.030 and 70.79.040. 99-22-026, § 296-104-030, filed 10/26/99, effective 11/26/99; 95-19-058, § 296-104-030, filed 9/15/95, effective 10/16/95; Part II, § 3, filed 3/23/60.]

WAC 296-104-035 Administration—What are conflicts of interest for inspectors? Inspectors commissioned by the state of Washington shall not engage in the sale of any service, article, or device or promote any other activity for personal gain relating to boilers or unfired pressure vessels or their appurtenances.

[Statutory Authority: RCW 70.79.030 and 70.79.040. 99-22-026, § 296-104-035, filed 10/26/99, effective 11/26/99; 95-19-058, § 296-104-035, filed 9/15/95, effective 10/16/95; Part II, § 4, filed 3/23/60.]

WAC 296-104-040 Administration—When should inspectors submit inspection reports and on what forms? Inspectors shall submit reports of inspections of boilers and unfired pressure vessels on appropriate forms or media approved by the chief inspector. Routine reports of inspections shall be submitted within thirty days of inspection. Reports of reinspection after suspension of an inspection certificate shall be submitted by an inspector as soon as notice of corrective action has been received.

[Statutory Authority: RCW 70.79.030, 70.79.040, 70.79.150, 70.79.290, 70.79.330, 70.79.350, and chapter 70.79 RCW. 01-24-061, § 296-104-040, filed 11/30/01, effective 12/31/01. Statutory Authority: RCW 70.79.030 and 70.79.040. 99-22-026, § 296-104-040, filed 10/26/99, effective 11/26/99; 95-19-058, § 296-104-040, filed 9/15/95, effective 10/16/95; Order 74-37, § 296-104-040, filed 11/8/74; Part II, § 5, filed 3/23/60.]

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WAC 296-104-045 Administration—What are the insurance companies' responsibilities? All insurance companies shall notify the chief inspector within thirty days of all boiler and/or unfired pressure vessel risks written, canceled, not renewed or suspended because of unsafe conditions. Special inspectors shall perform all in-service inspections of boilers and unfired pressure vessels insured by their employer. After a repair or alteration the in-service inspector is responsible to assure that proper documentation is completed and submitted to the department in accordance with the rules of the National Board Inspection Code (NBIC) as adopted in WAC 296-104-102.

[Statutory Authority: RCW 70.79.030, 70.79.040, 70.79.150, 70.79.290, 70.79.330, 70.79.350, and chapter 70.79 RCW. 01-24-061, § 296-104-045, filed 11/30/01, effective 12/31/01. Statutory Authority: RCW 70.79.030 and 70.79.040. 99-22-026, § 296-104-045, filed 10/26/99, effective 11/26/99; 95-19-058, § 296-104-045, filed 9/15/95, effective 10/16/95; Part II, § 6, filed 3/23/60.]

WAC 296-104-050 Administration—What are the requirements for a boiler inspector? In order to qualify as a prospective National Board Commissioned Inspector an applicant shall meet the minimum requirements as set forth in the national board's "Rules for Commissioned Inspectors," NB263, Revision 8 (4/02).

Application for examination for certificate of competency shall be in writing upon a form to be furnished by the chief inspector stating the school and education of the applicant, a list of employers, period of employment and position held with each employer. Applications containing willful falsification or untruthful statements shall be rejected.

If the applicant's history and experience meet with the approval of the board of boiler rules, the candidate shall be given the national board examination and the Washington state examination. If the applicant is accepted on the merits of these examinations or as provided for in WAC 296-104-065, a certificate of competency will be issued by the chief inspector.

Examinations shall be held at locations and times when considered necessary by the board of boiler rules. The examinations may be offered four times each year, namely, the first Wednesday and following Thursday of the months of March, June, September and December. Special examinations may be held when considered necessary by the board of boiler rules.

[Statutory Authority: Chapter 70.79 RCW. 04-21-069, § 296-104-050, filed 10/19/04, effective 1/1/05. Statutory Authority: RCW 70.79.030, 70.79.040, 70.79.150, 70.79.290, 70.79.330, 70.79.350, and chapter 70.79 RCW. 04-01-194, § 296-104-050, filed 12/24/03, effective 1/24/04; 02-23-036, § 296-104-050, filed 11/13/02, effective 12/14/02. Statutory Authority: RCW 70.79.030 and 70.79.040. 99-22-026, § 296-104-050, filed 10/26/99, effective 11/26/99. Statutory Authority: RCW 70.79.040. 94-21-002, § 296-104-050, filed 10/5/94, effective 11/5/94. Statutory Authority: Chapter 70.79 RCW. 89-15-025 (Order 89-05), § 296-104-050, filed 7/13/89, effective 8/13/89. Statutory Authority: RCW 70.79.030. 78-03-057 (Order 78-3), § 296-104-050, filed 2/22/78; Part II, § 7, filed 3/23/60.]

WAC 296-104-060 Administration—When shall an inspectors' Washington state commission be issued, suspended, or revoked? The chief inspector shall issue a commission as a deputy or special inspector in accordance with RCW 70.79.120 and 70.79.130.

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The deputy inspector commission shall be held by the chief inspector. The deputy inspector commission shall be valid for one year and may be renewed annually at the request of the chief inspector. The special inspector commission shall be held at the home office of the employing company and shall be valid for one year and may be renewed annually at the request of the employing company. Inspectors shall carry identifying commission cards while they are inspecting. The state or employing company shall return the commission and the identifying commission card at once to the chief inspector when the inspector to whom the commission was issued is no longer in its employ, or at the request of the chief inspector.

An inspector's commission may be suspended or revoked in accordance with RCW 70.79.180.

[Statutory Authority: RCW 70.79.030, 70.79.040, 70.79.150, 70.79.290, 70.79.330, 70.79.350, and chapter 70.79 RCW. 04-01-194, § 296-104-060, filed 12/24/03, effective 1/24/04; 02-23-036, § 296-104-060, filed 11/13/02, effective 12/14/02; 02-12-021, § 296-104-060, filed 5/28/02, effective 6/28/02; 01-24-061, § 296-104-060, filed 11/30/01, effective 12/31/01. Statutory Authority: RCW 70.79.030 and 70.79.040. 99-22-026, § 296-104-060, filed 10/26/99, effective 11/26/99. Statutory Authority: RCW 70.79.040. 94-21-002, § 296-104-060, filed 10/5/94, effective 11/5/94. Statutory Authority: RCW 70.79.030 and 70.79.330. 82-24-025 (Order 82-36), § 296-104-060, filed 11/23/82, effective 1/1/83; Order 74-37, § 296-104-060, filed 11/8/74; Part II, § 9, filed 3/23/60.]

WAC 296-104-065 Administration—How should an inspector obtain a Washington state commission? A commission as a deputy inspector of boilers and/or unfired pressure vessels may be issued by the chief inspector to an inspector complying with WAC 296-104-065 (1) or (4). Upon the request of a boiler insurance company authorized to insure and insuring against loss from explosion of boilers and/or unfired pressure vessels in this state, or a company with an owner/user inspection agency, a commission as a special inspector of boilers and/or unfired pressure vessels shall be issued by the chief inspector to an inspector in the employ and supervision of such company provided the inspector has had the experience prescribed in chapter 70-79 RCW and complies with one of the following:

(1) Passed an examination covering the Washington state boilers and unfired pressure vessels law, chapters 70.79 RCW and 296-104 WAC; and holds a national board commission.

(2) Is certified by the American Petroleum Institute in accordance with API-510 for pressure vessel inspection, having passed an examination covering the Washington state boilers and unfired pressure vessels law, chapters 70.79 RCW and 296-104 WAC.

(3) Is certified by the American Petroleum Institute in accordance with API-510 for pressure vessel inspection, and specifically and temporarily in the direct employ of an owner/user inspection agency as set forth in RCW 70.79.130. This inspector shall be exempted from the state examination requirement in WAC 296-104-065(2).

(4) Is an inspector holding the national board "A" endorsement and performs shop inspections only. This inspector shall be exempt from the exam requirement set forth in WAC 296-104-065(1).

[Statutory Authority: RCW 70.79.030, 70.79.040, 70.79.150, 70.79.290, 70.79.330, 70.79.350, and chapter 70.79 RCW. 04-01-194, § 296-104-065, filed 12/24/03, effective 1/24/04; 01-24-061, § 296-104-065, filed 11/30/01, effective 12/31/01. Statutory Authority: RCW 70.79.030 and 70.79.040. 99-

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22-026, § 296-104-065, filed 10/26/99, effective 11/26/99; 96-21-081, § 296-104-065, filed 10/16/96, effective 11/16/96. Statutory Authority: RCW 70.79.040. 94-21-002, § 296-104-065, filed 10/5/94, effective 11/5/94. Statutory Authority: RCW 70.79.030. 78-03-057 (Order 78-3), § 296-104-065, filed 2/22/78; Order 74-37, § 296-104-065, filed 11/8/74; Part II, § 10, filed 3/23/60.]

WAC 296-104-100 Inspection—How often must boilers and unfired pressure vessels be inspected? In accordance with RCW 70.79.080, 70.79.090, and 70.79.240 the following inspection requirements shall apply:

(1) **Power boilers** shall be inspected:

(a) Internally and externally while not under pressure - Annually.

(b) Externally while under pressure - Annually.

(2) **Organic vapor boilers** shall be inspected:

(a) Internally and externally while not under pressure - Biennially.

(b) Externally while under pressure - Annually.

(3) **Low pressure heating boilers** shall be inspected:

(a) Externally while in operation and under pressure - Biennially.

(b) Where construction permits, internally while not under pressure. Also, as a minimum, an internal of their low water fuel cutoff(s) must be completed, where construction permits - Biennially.

(4) **Hot water heaters** shall be inspected:

(a) Externally - Biennially.

(b) Internally - None required.

(5) **Unfired pressure vessels** shall be inspected:

(a) Externally - Biennially.

(b) Internally:

(i) When subject to corrosion and construction permits - Biennially. Vessels in an owner/user inspection program may follow intervals established by the NBIC or API-510 eighth edition with addenda, provided nondestructive examination (NDE) is performed at the biennial external inspection.

(ii) Pulp or paper dryer rolls may be inspected on a five-year basis in accordance with TAPPI TIP 0402-16 2001 edition, provided the owner has established a written inspection program accepted by the inspector that meets the minimum requirements of TAPPI TIP 0402-16 2001 edition.

(iii) Vessels not subject to corrosion do not require an internal.

[Statutory Authority: Chapter 70.79 RCW. 04-21-069, § 296-104-100, filed 10/19/04, effective 1/1/05. Statutory Authority: RCW 70.79.030, 70.79.040, 70.79.150, 70.79.290, 70.79.330, 70.79.350, and chapter 70.79 RCW. 04-01-194, § 296-104-100, filed 12/24/03, effective 1/24/04; 01-24-061, § 296-104-100, filed 11/30/01, effective 12/31/01. Statutory Authority: RCW 70.79.030 and 70.79.040. 99-22-026, § 296-104-100, filed 10/26/99, effective 11/26/99; 98-22-024, § 296-104-100, filed 10/28/98, effective 11/28/98; 95-19-058, § 296-104-100, filed 9/15/95, effective 10/16/95. Statutory Authority: RCW 70.79.040. 94-21-002, § 296-104-100, filed 10/5/94, effective 11/5/94; Part III, § 1, filed 3/23/60.]

WAC 296-104-102 Inspection—What are the standards for in-service inspection? Where a conflict exists between the requirements of the standards listed below and this chapter, this chapter shall prevail.

(1) The standard for inspection of nonnuclear boilers, unfired pressure vessels, and safety devices is the National Board Inspection Code (NBIC), 2004 edition, with addenda. This code may be used on or after the date of issue and

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becomes mandatory twelve months after adoption by the board as specified in RCW 70.79.050(2).

(2) The standard for inspection of historical steam boilers of riveted construction preserved, restored, or maintained for hobby or demonstration use, shall be Appendix "C" of the National Board Inspection Code as referenced in subsection (1) of this section.

(3) The standard for inspection of nuclear items is ASME section XI. The applicable ASME Code edition and addenda shall be as specified in the owner in-service inspection program plan.

(4) Where a petroleum or chemical process industry owner/user inspection agency so chooses, the standard for inspection of unfired pressure vessels used by the owner shall be the API-510 Pressure Vessel Inspection Code, eighth edition, with addenda. This code may be used on or after the date of issue.

(5) TAPPI TIP 0402-16, dated 2001 may be used for both pulp dryers and paper machine dryers when requested by the owner. When requested by the owner, this document becomes a requirement and not a guideline.

[Statutory Authority: RCW 70.79.030, 70.79.040, 70.79.150, 70.79.290, 70.79.330, and 70.79.350. 05-22-092, § 296-104-102, filed 11/1/05, effective 1/1/06. Statutory Authority: Chapter 70.79 RCW. 04-21-069, § 296-104-102, filed 10/19/04, effective 1/1/05. Statutory Authority: RCW 70.79.030, 70.79.040, 70.79.150, 70.79.290, 70.79.330, 70.79.350, and chapter 70.79 RCW. 01-24-061, § 296-104-102, filed 11/30/01, effective 12/31/01. Statutory Authority: RCW 70.79.030 and 70.79.040. 99-22-026, § 296-104-102, filed 10/26/99, effective 11/26/99; 98-22-024, § 296-104-102, filed 10/28/98, effective 11/28/98; 96-21-081, § 296-104-102, filed 10/16/96, effective 11/16/96. Statutory Authority: RCW 70.79.040. 94-21-002, § 296-104-102, filed 10/5/94, effective 11/5/94.]

WAC 296-104-105 Inspection—How much time is required for notification of inspection? Seven days will be considered sufficient notification. The owner or user shall prepare each boiler and unfired pressure vessel for internal inspection and shall prepare for and apply a hydrostatic pressure test whenever necessary on the date specified by the inspector.

[Statutory Authority: RCW 70.79.030 and 70.79.040. 99-22-026, § 296-104-105, filed 10/26/99, effective 11/26/99; 95-19-058, § 296-104-105, filed 9/15/95, effective 10/16/95; Part III, § 2, filed 3/23/60.]

WAC 296-104-110 Inspection—What will be done when boilers or unfired pressure vessels are deemed unsafe or defective? Upon inspection of a boiler or unfired pressure vessel or appurtenances, if an inspector finds hazardous conditions such that it is unsafe to operate under pressure, remedial action shall be initiated at once. A red tag indicating "unsafe - do not use" shall be attached to the principle operating control and the owner or user advised that further operation is prohibited until specified repairs or other action are taken. The chief inspector shall be notified immediately, followed by a report on the condition. Any certificate in force is considered suspended. When reinspection establishes that necessary repairs have been made or corrective action taken so that the boiler or unfired pressure vessel is safe to operate, a report of reinspection shall be submitted to the chief inspector. The certificate of inspection will then be reinstated or a new certificate issued as appropriate.

If other defects, but not unsafe conditions, are found, a routine inspection report containing a noncompliance report

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shall be submitted to the chief inspector. The owner or user shall be allowed to operate the object for a period as specified by the inspector so long as corrective action is completed in the allotted time.

[Statutory Authority: RCW 70.79.030 and 70.79.040. 99-22-026, § 296-104-110, filed 10/26/99, effective 11/26/99; 95-19-058, § 296-104-110, filed 9/15/95, effective 10/16/95; Part III, § 3, filed 3/23/60.]

WAC 296-104-115 Inspection—What will be done when defective conditions are concealed by covering? If upon an external inspection there is evidence of a leak or crack, enough of the covering of the boiler or unfired pressure vessel shall be removed to satisfy the inspector in order to determine the safety of the boiler or unfired pressure vessel. If the covering cannot be removed at the time, the inspector may order the operation of the boiler or unfired pressure vessel stopped until such time as the covering can be removed and proper examination made.

[Statutory Authority: RCW 70.79.030 and 70.79.040. 99-22-026, § 296-104-115, filed 10/26/99, effective 11/26/99; 95-19-058, § 296-104-115, filed 9/15/95, effective 10/16/95; Part III, § 4, filed 3/23/60.]

WAC 296-104-125 Inspection—What are the requirements for obtaining a certificate of inspection? Before a certificate of inspection as defined in RCW 70.79.-290 is issued, a boiler or unfired pressure vessel must be inspected by an inspector and have all necessary permits. In addition, the owner or user shall pay the fees scheduled in WAC 296-104-700 directly to the chief inspector. The inspection process is not complete until the certificate of inspection is posted.

If the owner or user of each boiler or unfired pressure vessel required to be inspected refuses to allow an inspection to be made, or refuses to pay the above fee, the certificate of inspection shall be suspended by the chief inspector until the owner or user complies with the requirements.

[Statutory Authority: RCW 70.79.030, 70.79.040, 70.79.150, 70.79.290, 70.79.330, 70.79.350, and chapter 70.79 RCW. 02-23-036, § 296-104-125, filed 11/13/02, effective 12/14/02. Statutory Authority: RCW 70.79.030 and 70.79.040. 99-22-026, § 296-104-125, filed 10/26/99, effective 11/26/99; Part III, § 6, filed 3/23/60.]

WAC 296-104-130 Inspection—When are inspection certificates valid? An inspection certificate, issued in accordance with RCW 70.79.290, shall be valid until expiration unless some defect or condition affecting the safety of the boiler or unfired pressure vessel is disclosed or the conditions of RCW 70.79.300 apply.

When an agreement exists between the state and the city jurisdictions of Spokane or Seattle, the certificates for portable boilers and unfired pressure vessels will be considered valid.

[Statutory Authority: RCW 70.79.030, 70.79.040, 70.79.150, 70.79.290, 70.79.330, 70.79.350, and chapter 70.79 RCW. 01-24-061, § 296-104-130, filed 11/30/01, effective 12/31/01. Statutory Authority: RCW 70.79.030 and 70.79.040. 99-22-026, § 296-104-130, filed 10/26/99, effective 11/26/99; 95-19-058, § 296-104-130, filed 9/15/95, effective 10/16/95; Part III, § 7, filed 3/23/60.]

WAC 296-104-135 Inspection—What are the requirements for restamping of boilers and unfired pressure vessels? When the stamping on a boiler or unfired pres-

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sure vessel becomes indistinct the inspector shall instruct the owner or user to have it restamped. Request for permission to restamp the boiler or unfired pressure vessel shall be made to the chief inspector and proof of the original stamping shall accompany the request. Restamping authorized by the chief inspector shall be done only in the presence of an inspector, and shall be identical with the original stamping except that it will not be required to restamp the code symbol. Notice of completion of such restamping shall be filed with the chief boiler inspector by the inspector who witnessed the restamping of the boiler or unfired pressure vessel together with a facsimile of the stamping applied.

[Statutory Authority: RCW 70.79.030 and 70.79.040. 99-22-026, § 296-104-135, filed 10/26/99, effective 11/26/99; 95-19-058, § 296-104-135, filed 9/15/95, effective 10/16/95; Part III, § 8, filed 3/23/60.]

WAC 296-104-140 Inspection—How should a state stamp be applied? Upon completion of the installation, all boilers and unfired pressure vessels shall be inspected by an inspector as defined in WAC 296-104-010. At the time of this inspection, each boiler or unfired pressure vessel shall be marked with a serial number of the state of Washington followed by the letter "W." The marking should be conspicuously located and as close as possible to the boiler or unfired pressure vessel nameplate.

Washington special numbers when assigned by the chief inspector shall be a serial number of the state of Washington followed by the letters "WS."

All rental boilers used in the state of Washington shall be marked with the serial number of the state of Washington followed by the letters "WR." This will indicate that the boiler is a rental unit.

The state of Washington markings, numbers and letters, referenced above, shall not be less than 5/16 inches in height and shall not be concealed by lagging or paint and shall be exposed at all times.

[Statutory Authority: Chapter 70.79 RCW. 04-21-069, § 296-104-140, filed 10/19/04, effective 1/1/05. Statutory Authority: RCW 70.79.030, 70.79.040, 70.79.150, 70.79.290, 70.79.330, 70.79.350, and chapter 70.79 RCW. 02-23-036, § 296-104-140, filed 11/13/02, effective 12/14/02. Statutory Authority: RCW 70.79.030 and 70.79.040. 99-22-026, § 296-104-140, filed 10/26/99, effective 11/26/99; 96-21-081, § 296-104-140, filed 10/16/96, effective 11/16/96; 95-19-058, § 296-104-140, filed 9/15/95, effective 10/16/95; Order 73-1, § 296-104-140, filed 3/22/73; Part III, § 9, filed 3/23/60.]

WAC 296-104-145 Inspection—How are groups of vessels operating as a single unit classified? A group of unfired pressure vessels operating as a single unit such as the vessels in a refrigeration system, evaporators, ironers and paper machines shall have an individual state serial number marked on each boiler or unfired pressure vessel. The marking should be conspicuously located and as close as possible to the boiler or unfired pressure vessel nameplate. The certificate of inspection fee shall be as outlined in WAC 296-104-700, for each vessel of the system.

[Statutory Authority: RCW 70.79.030, 70.79.040, 70.79.150, 70.79.290, 70.79.330, 70.79.350, and chapter 70.79 RCW. 02-23-036, § 296-104-145, filed 11/13/02, effective 12/14/02. Statutory Authority: RCW 70.79.030 and 70.79.040. 99-22-026, § 296-104-145, filed 10/26/99, effective 11/26/99; 95-19-058, § 296-104-145, filed 9/15/95, effective 10/16/95; Part III, § 10, filed 3/23/60.]

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WAC 296-104-150 Inspection—How are unfired steam boilers classified? Unfired steam boilers as defined in WAC 296-104-010 operating at pressures of 50 psi or more shall be inspected as power boilers. Unfired steam boilers operating at less than 50 psi shall be inspected as unfired pressure vessels.

[Statutory Authority: RCW 70.79.030, 70.79.040, 70.79.150, 70.79.290, 70.79.330, 70.79.350, and chapter 70.79 RCW. 02-23-036, § 296-104-150, filed 11/13/02, effective 12/14/02. Statutory Authority: RCW 70.79.030 and 70.79.040. 99-22-026, § 296-104-150, filed 10/26/99, effective 11/26/99; 95-19-058, § 296-104-150, filed 9/15/95, effective 10/16/95; Part III, § 11, filed 3/23/60.]

WAC 296-104-151 Inspection—What are the requirements for rental boilers? Every rental boiler used in the state of Washington will have an internal inspection as defined in WAC 296-104-010 witnessed by an inspector once a year. An external inspection as defined in WAC 296-104-010 shall be witnessed by an inspector at each and every rental location before being placed into service. Rental boilers shall also meet the requirements of WAC 296-104-300.

A rental boiler, which has never been in rental service in the state of Washington, shall meet the requirements of WAC 296-104-273. Each inspection will be reported to the state of Washington in accordance with WAC 296-104-040, and a copy of this report will be posted on the rental boiler.

It is the responsibility of the rental boiler owner to arrange for all required inspections.

[Statutory Authority: RCW 70.79.030, 70.79.040, 70.79.150, 70.79.290, 70.79.330, 70.79.350, and chapter 70.79 RCW. 02-23-036, § 296-104-151, filed 11/13/02, effective 12/14/02; 01-24-061, § 296-104-151, filed 11/30/01, effective 12/31/01. Statutory Authority: RCW 70.79.030 and 70.79.040. 99-22-026, § 296-104-151, filed 10/26/99, effective 11/26/99; 96-21-081, § 296-104-151, filed 10/16/96, effective 11/16/96.]

WAC 296-104-155 Inspection—What preparations are necessary prior to internal inspections? The owner or user shall prepare a boiler for internal inspection in the following manner or as required by the inspector:

(1) Water shall be drawn off and the boiler thoroughly washed.

(2) All manhole and handhole plates and wash-out plugs and water column connections shall be removed, the furnace and combustion chambers thoroughly cooled and cleaned.

(3) All grates of internally fired boilers shall be removed.

(4) At each annual inspection brickwork shall be removed as required by the inspector in order to determine the condition of the boiler headers, drums, furnace, supports, or other parts.

(5) The steam gauge shall be removed for testing or evidence of testing shown.

(6) Any leakage of steam or water into the boiler shall be prevented by either disconnecting the pipe or block valve at the most convenient point or installing isolation blinds.

(7) The low water cutout shall be disassembled to such a degree as the inspector shall require.

Unfired pressure vessels shall be prepared for internal inspection to the extent deemed necessary by the inspector.

[Statutory Authority: RCW 70.79.030, 70.79.040, 70.79.150, 70.79.290, 70.79.330, 70.79.350, and chapter 70.79 RCW. 02-23-036, § 296-104-155, filed 11/13/02, effective 12/14/02. Statutory Authority: RCW 70.79.030 and 70.79.040. 99-22-026, § 296-104-155, filed 10/26/99, effective 11/26/99;

95-19-058, § 296-104-155, filed 9/15/95, effective 10/16/95; Part III, § 12, filed 3/23/60.]

WAC 296-104-160 Inspection—What happens if a boiler or unfired pressure vessel is improperly prepared for inspection? If a boiler or unfired pressure vessel has not been properly prepared for an internal inspection, or the owner or user fails to comply with the requirements for hydrostatic test as set forth in these rules, the inspector may decline to make the inspection or test and the certificate of inspection shall be withheld until the owner or user complies with the requirements.

[Statutory Authority: RCW 70.79.030 and 70.79.040. 99-22-026, § 296-104-160, filed 10/26/99, effective 11/26/99; 95-19-058, § 296-104-160, filed 9/15/95, effective 10/16/95; Part III, § 13, filed 3/23/60.]

WAC 296-104-165 Inspection—When should coverings be removed for inspection? If the boiler or unfired pressure vessel is jacketed such that the longitudinal seams of shells, drums, or domes cannot be seen, or if pertinent information cannot be determined by other means, the following may be ordered by the inspector: Enough of the jacketing, setting wall, or other form of casing or housing shall be removed so that information necessary to determine the safety of the boiler or unfired pressure vessel can be obtained to the satisfaction of the inspector.

[Statutory Authority: RCW 70.79.030 and 70.79.040. 99-22-026, § 296-104-165, filed 10/26/99, effective 11/26/99; 95-19-058, § 296-104-165, filed 9/15/95, effective 10/16/95; Part III, § 14, filed 3/23/60.]

WAC 296-104-170 Inspection—When are shop inspections required? Shop inspections shall be as required in the standards of construction as adopted in WAC 296-104-200. Only inspectors and supervisors of inspectors holding a national board commission with the appropriate endorsements shall make shop inspections in this state.

Upon request from a boiler or pressure vessel manufacturer holding an ASME Certificate of Authorization within the jurisdiction, the department shall provide inspection services as required by the ASME Code. The manufacturer receiving such inspection services shall reimburse the department for the time and expenses in accordance with the fee schedule established in WAC 296-104-700.

[Statutory Authority: RCW 70.79.030, 70.79.040, 70.79.150, 70.79.290, 70.79.330, and 70.79.350. 06-24-042, § 296-104-170, filed 11/30/06, effective 1/1/07. Statutory Authority: RCW 70.79.030, 70.79.040, 70.79.150, 70.79.290, 70.79.330, 70.79.350, and chapter 70.79 RCW. 02-23-036, § 296-104-170, filed 11/13/02, effective 12/14/02. Statutory Authority: RCW 70.79.030 and 70.79.040. 99-22-026, § 296-104-170, filed 10/26/99, effective 11/26/99; 96-21-081, § 296-104-170, filed 10/16/96, effective 11/16/96. Statutory Authority: RCW 70.79.040. 90-20-029, § 296-104-170, filed 9/24/90, effective 10/25/90. Statutory Authority: RCW 70.79.030. 78-03-057 (Order 78-3), § 296-104-170, filed 2/22/78; Part III, § 15, filed 3/23/60.]

WAC 296-104-180 Inspection—How are radioactive systems inspected? An alternative means of inspection is allowed when a pressure vessel has radioactive contamination that would not allow entering for visual inspection. The inspector and owner shall work out a program of nondestructive examination that shall ascertain the condition of the vessel to assure its integrity.

[Statutory Authority: RCW 70.79.030 and 70.79.040. 98-22-024, § 296-104-180, filed 10/28/98, effective 11/28/98.]

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WAC 296-104-200 Construction—What are the standards for new construction? The standards for new construction are:

(1) ASME Boiler and Pressure Vessel Code, 2004 edition, with addenda Sections I, III, IV, VIII, Division 1, 2, 3, X, XII;

(2) ASME PVHO-1 2002-2003 Safety Standard for Pressure Vessels for Human Occupancy; and

(3) ASME CSD-1 2004 edition with addenda (as referenced in WAC 296-104-302); and

(4) NFPA 85 Boiler and Combustion Systems Hazards Code 2004 edition (for use with boilers with fuel input ratings of 12, 500,000 BTU/hr) or greater; and

(5) Standards of construction approved by the chief inspector and meeting the National Board Criteria for Registration of Boilers, Pressure Vessels and Other Pressure Retaining Items.

These codes and standards may be used on or after the date of issue and become mandatory twelve months after adoption by the board as specified in RCW 70.79.050(2). ASME Code Cases may be approved for use when accepted by the chief inspector. The board recognizes that the ASME Code states that new editions of the code become mandatory on issue and that subsequent addenda become mandatory six months after the date of issue. For nuclear systems, components and parts the time period for addenda becoming mandatory is defined in the Code of Federal Regulations.

[Statutory Authority: RCW 70.79.030, 70.79.040, 70.79.150, 70.79.290, 70.79.330, and 70.79.350. 06-24-042, § 296-104-200, filed 11/30/06, effective 1/1/07; 05-22-092, § 296-104-200, filed 11/1/05, effective 1/1/06. Statutory Authority: Chapter 70.79 RCW. 04-21-069, § 296-104-200, filed 10/19/04, effective 1/1/05. Statutory Authority: RCW 70.79.030, 70.79.040, 70.79.150, 70.79.290, 70.79.330, 70.79.350, and chapter 70.79 RCW. 02-23-036, § 296-104-200, filed 11/13/02, effective 12/14/02; 01-24-061, § 296-104-200, filed 11/30/01, effective 12/31/01. Statutory Authority: RCW 70.79.030, 70.79.040 and chapter 70.79 RCW. 00-21-024, § 296-104-200, filed 10/10/00, effective 11/13/00. Statutory Authority: RCW 70.79.030 and 70.79.040. 98-22-024, § 296-104-200, filed 10/28/98, effective 11/28/98; 97-20-109, § 296-104-200, filed 9/30/97, effective 10/31/97; 96-21-081, § 296-104-200, filed 10/16/96, effective 11/16/96. Statutory Authority: RCW 70.79.040. 93-12-014, § 296-104-200, filed 5/21/93, effective 6/21/93; 92-11-070, § 296-104-200, filed 5/20/92, effective 6/20/92; 91-11-107, § 296-104-200, filed 5/22/91, effective 6/22/91; 90-04-009, § 296-104-200, filed 1/26/90, effective 2/26/90. Statutory Authority: RCW 70.79.040 and 70.79.050. 86-01-088 (Order 85-26), § 296-104-200, filed 12/19/85. Statutory Authority: RCW 70.79.030 and 70.79.330. 84-11-016 (Order 84-09), § 296-104-200, filed 5/10/84; 82-24-025 (Order 82-36), § 296-104-200, filed 11/23/82, effective 1/1/83. Statutory Authority: RCW 70.79.030. 82-05-003 (Order 82-2), § 296-104-200, filed 2/4/82; 81-12-012 (Order 81-10), § 296-104-200, filed 5/28/81; 81-01-114 (Order 80-28), § 296-104-200, filed 12/24/80; 80-05-065 (Order 80-7), § 296-104-200, filed 4/23/80; 79-05-054 (Order 79-7), § 296-104-200, filed 4/30/79; 78-10-096 (Order 78-19), § 296-104-200, filed 10/3/78; Order 77-23, § 296-104-200, filed 11/8/77; Order 77-9, § 296-104-200, filed 5/26/77; Order 75-35, § 296-104-200, filed 10/29/75; Order 74-37, § 296-104-200, filed 11/8/74; Order 73-1, § 296-104-200, filed 3/22/73; Order 72-17, § 296-104-200, filed 9/28/72; Order 72-11, § 296-104-200, filed 7/7/72; Part IV, § 1, filed 3/23/60.]

WAC 296-104-205 Construction—What are the requirements for nonstandard new construction? Those boilers and unfired pressure vessels that are exempted by the codes adopted in WAC 296-104-200 due to volume, temperature or pressure requirements, and are not to be constructed to those codes, must be certified to a nationally recognized testing agency or constructed to WAC 296-104-230. See WAC 296-104-307 for safety pressure relief devices.

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Other boilers and unfired pressure vessels that are not to be constructed to the codes adopted in WAC 296-104-200 may be treated as special designs at the discretion of the board. Nonstandard construction shall not be permitted to avoid standard construction.

[Statutory Authority: RCW 70.79.030, 70.79.040, 70.79.150, 70.79.290, 70.79.330, 70.79.350, and chapter 70.79 RCW. 01-24-061, § 296-104-205, filed 11/30/01, effective 12/31/01. Statutory Authority: RCW 70.79.030, 70.79.040 and chapter 70.79 RCW. 00-21-024, § 296-104-205, filed 10/10/00, effective 11/13/00. Statutory Authority: RCW 70.79.030 and 70.79.040. 96-21-081, § 296-104-205, filed 10/16/96, effective 11/16/96; Part IV, § 2, filed 3/23/60.]

WAC 296-104-210 Construction—What are the requirements for construction of boilers and unfired pressure vessels of special design? Boilers and unfired pressure vessels of special design require a special certificate granted by the board of boiler rules. At a minimum the following information shall be supplied to obtain board approval for special designs: Construction drawings, design calculations, material specifications, and a Washington state professional engineer's evaluation of the design. Upon board approval a Washington special number will be assigned by the chief inspector. The installation will be subject to the regular inspections required by WAC 296-104-100 and any additional conditions as required by the board.

[Statutory Authority: RCW 70.79.030, 70.79.040, 70.79.150, 70.79.290, 70.79.330, and 70.79.350. 05-22-092, § 296-104-210, filed 11/1/05, effective 1/1/06. Statutory Authority: RCW 70.79.030, 70.79.040 and chapter 70.79 RCW. 00-21-024, § 296-104-210, filed 10/10/00, effective 11/13/00. Statutory Authority: RCW 70.79.030 and 70.79.040. 96-21-081, § 296-104-210, filed 10/16/96, effective 11/16/96. Statutory Authority: RCW 70.79.040 and 70.79.050. 86-07-064 (Order 86-02), § 296-104-210, filed 3/19/86; Order 73-1, § 296-104-210, filed 3/22/73; Part IV, § 3, filed 3/23/60.]

WAC 296-104-215 Construction—What are the requirements to use nonstandard boilers and unfired pressure vessels constructed prior to January 1, 1952? Nonstandard boilers and unfired pressure vessels constructed prior to January 1, 1952, may be used provided they have not been moved from their original setting since January 1, 1952.

[Statutory Authority: RCW 70.79.030, 70.79.040 and chapter 70.79 RCW. 00-21-024, § 296-104-215, filed 10/10/00, effective 11/13/00. Statutory Authority: RCW 70.79.030 and 70.79.040. 97-20-109, § 296-104-215, filed 9/30/97, effective 10/31/97; 96-21-081, § 296-104-215, filed 10/16/96, effective 11/16/96; Part IV, § 4, filed 3/23/60.]

WAC 296-104-220 Construction—What are the requirements to use nonstandard second hand boilers and unfired pressure vessels? Nonstandard second hand boilers and unfired pressure vessels constructed after January 1, 1952, cannot be used in this state without prior approval of the board of boiler rules. At a minimum the following information shall be supplied to obtain board approvals: Construction drawings, photographs, operating and inspection history, design calculations, and a Washington state professional engineer's evaluation of the design and present condition. Upon board approval a Washington special number will be assigned by the chief inspector. The installation will be subject to the regular inspections required by WAC 296-104-100 and any additional conditions as required by the board.

[Statutory Authority: RCW 70.79.030, 70.79.040, 70.79.150, 70.79.290, 70.79.330, and 70.79.350. 05-22-092, § 296-104-220, filed 11/1/05, effective 1/1/06.]

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tive 1/1/06. Statutory Authority: RCW 70.79.030, 70.79.040 and chapter 70.79 RCW. 00-21-024, § 296-104-220, filed 10/10/00, effective 11/13/00. Statutory Authority: RCW 70.79.030 and 70.79.040. 96-21-081, § 296-104-220, filed 10/16/96, effective 11/16/96. Statutory Authority: RCW 70.79.240. 88-01-064 (Order 87-25), § 296-104-220, filed 12/17/87; Part IV, § 5, filed 3/23/60.]

WAC 296-104-230 Construction—What are the testing requirements for new boilers or unfired pressure vessels exempted from code requirements for volume, pressure or temperature? Boilers or unfired pressure vessels that are not required by the codes adopted in WAC 296-104-200 to be built to those codes (except those exempted in the RCWs), shall be tested as follows:

One boiler or unfired pressure vessel of each design and size taken from the manufacturer's stock at random, shall be subjected to a hydrostatic test of twice the rated maximum allowable working pressure in the presence of an inspector holding a national board commission. The boiler or unfired pressure vessel shall withstand the hydrostatic pressure test without leaks and without exceeding 80% of the boiler or unfired pressure vessel material's yield strength. Samples shall be taken from the longitudinal seam and tests made as outlined in Section IX ASME Code for root and face bends and reduced tensile coupons. Upon successfully passing the above tests, the maximum allowable working pressure will be allowed for all boilers or unfired pressure vessels constructed to identical specifications. The company name, serial number, maximum allowable working pressure, and energy input (if applicable) shall be stamped or marked in a permanent manner on each boiler or unfired pressure vessel. A retest shall be made at the inspector's discretion or by the request of the chief inspector. Any unfired pressure vessels containing water and an air cushion designed for less than 300 psi and 210 degree F, in use prior to January 1, 1997, may be accepted by hydrostatically testing them to twice their maximum allowable working pressure.

[Statutory Authority: RCW 70.79.030, 70.79.040, 70.79.150, 70.79.290, 70.79.330, 70.79.350, and chapter 70.79 RCW. 02-23-036, § 296-104-230, filed 11/13/02, effective 12/14/02. Statutory Authority: RCW 70.79.030, 70.79.040 and chapter 70.79 RCW. 00-21-024, § 296-104-230, filed 10/10/00, effective 11/13/00. Statutory Authority: RCW 70.79.030 and 70.79.040. 96-21-081, § 296-104-230, filed 10/16/96, effective 11/16/96; Order 74-37, § 296-104-230, filed 11/8/74; Part IV, § 7, filed 3/23/60.]

WAC 296-104-235 Construction—What are the requirements for code exempted boiler and unfired pressure vessel safety relief valves? The boilers and unfired pressure vessels covered by WAC 296-104-230 shall be protected by the installation of ASME Code relief valves with trial levers, set pressure not to exceed the boiler's or the unfired pressure vessel's design pressure. Relief valves shall be installed on top of the boiler or the unfired pressure vessel or on outlet piping as close as possible to the boiler or unfired pressure vessel, with a minimum of fittings and no valves intervening. The outlet of the relief valve shall be run full size to a safe place and shall not induce stress on the valve.

[Statutory Authority: RCW 70.79.030, 70.79.040 and chapter 70.79 RCW. 00-21-024, § 296-104-235, filed 10/10/00, effective 11/13/00. Statutory Authority: RCW 70.79.030 and 70.79.040. 96-21-081, § 296-104-235, filed 10/16/96, effective 11/16/96. Statutory Authority: RCW 70.79.030. 78-03-057 (Order 78-3), § 296-104-235, filed 2/22/78; Part IV, § 8, filed 3/23/60.]

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WAC 296-104-245 Construction—Combustible fluid heaters. Steam or hot water combustible fluid heaters shall be so designed and constructed that in the event of failure of any part, the combustible fluid cannot enter the boiler water.

[Statutory Authority: RCW 70.79.030 and 70.79.040. 96-21-081, § 296-104-245, filed 10/16/96, effective 11/16/96. Statutory Authority: RCW 70.79.030. 78-03-057 (Order 78-3), § 296-104-245, filed 2/22/78; Part IV, § 10, filed 3/23/60.]

WAC 296-104-255 Installation—What are the required clearances for boilers? When boilers are replaced or new boilers installed in either existing or new buildings, a minimum top clearance as specified below shall be provided between the top of boiler proper and ceiling. Sufficient access must be provided for inspection, maintenance, operations, and repair. Required clearances shall be:

(1) Minimum clearance on top of power boilers having a steam generating capacity in excess of 5,000 pounds per hour or having a heating surface in excess of 1,000 sq. ft. or input in excess of 5,000,000 btu per hour shall be 7 feet.

(2) Minimum clearance on top of low pressure heating boilers which exceed any one of the following limits: 5,000,000 btu input; 5,000 lbs. steam per hour capacity or 1,000 sq. ft. heating surface; and power boilers which do not exceed any of the following limits: 5,000,000 btu input; 5,000 lbs. steam per hour capacity or 1,000 sq. ft. heating surface; shall be 3 feet.

(3) Minimum clearance on top of boilers which do not exceed the above limits and miniature boilers; shall be 2 feet.

(4) Minimum clearance from manhole openings and any wall, ceiling, or piping that will prevent a person from entering the boiler shall be 5 feet.

(5) Minimum clearances at sides, front and back wall shall be the manufacturers' recommendations, but in no case less than eighteen inches.

[Statutory Authority: RCW 70.79.030, 70.79.040, 70.79.150, 70.79.290, 70.79.330, and 70.79.350. 06-24-042, § 296-104-255, filed 11/30/06, effective 1/1/07. Statutory Authority: RCW 70.79.030 and 70.79.040. 96-21-081, § 296-104-255, filed 10/16/96, effective 11/16/96; Part IV, § 12, filed 3/23/60.]

WAC 296-104-260 Installation—What are the required clearances for unfired pressure vessels? When unfired pressure vessels are replaced or new vessels are installed in either existing or new buildings, manufacturers' recommendations shall be used, but in no case less than eighteen inches shall be provided between the top of the unfired pressure vessel and the ceiling and adjacent walls or other structures. All unfired pressure vessels having manholes shall have five feet clearance from manhole openings and any wall, ceiling, or piping that will prevent a person from entering the unfired pressure vessel.

[Statutory Authority: RCW 70.79.030, 70.79.040, 70.79.150, 70.79.290, 70.79.330, 70.79.350, and chapter 70.79 RCW. 02-23-036, amended and recodified § 296-104-260, filed 11/13/02, effective 12/14/02. Statutory Authority: RCW 70.79.030 and 70.79.040. 96-21-081, § 296-104-273, filed 10/16/96, effective 11/16/96.]

WAC 296-104-265 Installation—What are the requirements for unfired pressure vessels installed underground? Unfired pressure vessels installed underground shall comply with the following requirements:

(1) A pit with concrete or masonry sides and floor shall enclose the underground portion of the unfired pressure vessel.

(2) Pit covers shall be removable.

(3) Clearances shall be as required by WAC 296-104-260.

[Statutory Authority: RCW 70.79.030, 70.79.040, 70.79.150, 70.79.290, 70.79.330, 70.79.350, and chapter 70.79 RCW. 04-01-194, § 296-104-265, filed 12/24/03, effective 1/24/04; 02-23-036, recodified as § 296-104-265, filed 11/13/02, effective 12/14/02. Statutory Authority: RCW 70.79.030 and 70.79.040. 97-20-109, § 296-104-320, filed 9/30/97, effective 10/31/97; Part V, § 5, filed 3/23/60.]

WAC 296-104-271 Installation—How does an owner, user, or installer obtain a variance from clearances? Variances from WAC 296-104-255, 296-104-256, 296-104-260, and 296-104-265 may be requested. The variance request shall be in writing on an appropriate form approved by the chief inspector, and shall specify how equivalent safety is to be maintained. The chief inspector may grant the variance provided that safety and accessibility for inspections are acceptable.

[Statutory Authority: RCW 70.79.030, 70.79.040, 70.79.150, 70.79.290, 70.79.330, 70.79.350, and chapter 70.79 RCW. 02-23-036, § 296-104-271, filed 11/13/02, effective 12/14/02.]

WAC 296-104-273 Installation—What inspections are required for reinstalled standard boilers or unfired pressure vessels? When a stationary standard boiler or unfired pressure vessel is moved and reinstalled it must be inspected by an inspector. The following will be required:

(1) The fittings and appliances must comply with the latest codes adopted in WAC 296-104-200.

(2) An installation permit must be submitted in accordance with WAC 296-104-020.

(3) For any boiler or unfired pressure vessel the following are required to be documented and submitted:

(a) A hydrostatic test up to 150% of the maximum allowable working pressure, MAWP.

(b) An internal inspection.

(c) An operational test.

(d) Any repairs deemed necessary.

(e) A complete history of inspection, operation and repairs.

(4) The following are required unless waived by the inspector:

(a) Additional examination or nondestructive testing.

(b) A written evaluation by a professional engineer knowledgeable with boilers and pressure vessels, an ASME certificateholder, or a National Board R certificateholder.

[Statutory Authority: RCW 70.79.030, 70.79.040, 70.79.150, 70.79.290, 70.79.330, 70.79.350, and chapter 70.79 RCW. 02-23-036, recodified as § 296-104-273, filed 11/13/02, effective 12/14/02; 01-24-061, § 296-104-256, filed 11/30/01, effective 12/31/01. Statutory Authority: RCW 70.79.030 and 70.79.040. 96-21-081, § 296-104-256, filed 10/16/96, effective 11/16/96.]

WAC 296-104-295 Installation—What are the requirements for an explosion door? Provide substantial deflectors to divert the blast when explosion doors are located within seven feet of the firing floor or an operating platform.

[Statutory Authority: RCW 70.79.030, 70.79.040, 70.79.150, 70.79.290, 70.79.330, 70.79.350, and chapter 70.79 RCW. 02-23-036, recodified as § 296-104-295, filed 11/13/02, effective 12/14/02. Statutory Authority: RCW 70.79.030 and 70.79.040. 97-20-109, § 296-104-270, filed 9/30/97, effective 10/31/97; Part IV, § 15, filed 3/23/60.]

WAC 296-104-300 Installation—What control and limit devices are required on automatically fired boilers prior to June 1989? All automatically fired steam, vapor, or hot water boilers except boilers having a constant attendant who has no other duties while the boiler is in operation, shall be equipped with:

- (1) An automatic low-water fuel cutoff; and
- (2) An automatic water feeding device.
- (3) All devices shall be designed so that they may be readily tested at frequent intervals.

[Statutory Authority: Chapter 70.79 RCW. 04-21-069, § 296-104-300, filed 10/19/04, effective 1/1/05. Statutory Authority: RCW 70.79.030, 70.79.040, 70.79.150, 70.79.290, 70.79.330, 70.79.350, and chapter 70.79 RCW. 04-01-194, § 296-104-300, filed 12/24/03, effective 1/24/04; 02-23-036, recodified as § 296-104-300, filed 11/13/02, effective 12/14/02; 01-24-061, § 296-104-265, filed 11/30/01, effective 12/31/01. Statutory Authority: RCW 70.79.030, 70.79.040 and chapter 70.79 RCW. 00-21-024, § 296-104-265, filed 10/10/00, effective 11/13/00. Statutory Authority: RCW 70.79.030 and 70.79.040. 98-22-024, § 296-104-265, filed 10/28/98, effective 11/28/98; 97-20-109, § 296-104-265, filed 9/30/97, effective 10/31/97. Statutory Authority: RCW 70.79.240. 88-01-064 (Order 87-25), § 296-104-265, filed 12/17/87; Part IV, § 14, filed 3/23/60.]

WAC 296-104-301 Installation—What control and limit devices are required on automatically fired boilers after June 1989? In addition to those requirements listed in WAC 296-104-300, the following are also required:

(1) All boilers that are automatically fired low pressure steam heating boilers, small power boilers, and power steam boilers without a constant attendant who has no other duties shall be equipped with:

- (a) Two high steam pressure limit controls, the highest of which shall be provided with a manual reset.
- (b) Two low-water fuel cutoffs, one of which shall be provided with a manual reset device and independent of the feed water controller.
- (c) Coil type flash steam boilers may use two high-temperature limit controls, one of which shall have a manual reset. This is instead of the low-water fuel cutoff.
- (d) All control and limit devices shall be independently connected and electrically wired in series.

(2) All automatically fired hot water supply, low-pressure hot water heating boilers, and power hot water boilers shall be equipped with:

- (a) Two high-temperature limit controls, the highest of which shall be provided with a manual reset.
- (b) One low-water fuel cutoff with a manual reset and independent of the feed water controller.
- (c) For coil type hot water boilers a low-water flow limit control installed in the circulating water line may be used instead of a low-water fuel cutoff.
- (d) All control and limit devices shall be independently connected and electrically wired in series.

[Statutory Authority: Chapter 70.79 RCW. 04-21-069, § 296-104-301, filed 10/19/04, effective 1/1/05.]

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WAC 296-104-302 Installation—What control and limit devices are required on automatically fired boilers after December 1998? In addition to those requirements listed in WAC 296-104-301, the following are also required with regard to installations or refits of gas, oil, or combinations of gas or oil:

(1) All boilers installed or refitted after December 1998, with fuel input ratings of less than 12,500,000 BTU/hr which are fired by gas, oil, or a combination of gas or oil shall comply with the fuel train requirements defined in ASME CSD-1 (CF), as adopted in WAC 296-104-200 where applicable.

(2) Verification of fuel train compliance will be per CSD-1. A CSD-1 report will be completed and signed by an authorized representative of the manufacturer and/or the installing contractor.

(3) The CSD-1 report must be made available to the authorized inspection agency or the inspector after which a certificate of operation may be issued. The report shall remain in the possession of the boiler owner.

[Statutory Authority: RCW 70.79.030, 70.79.040, 70.79.150, 70.79.290, 70.79.330, and 70.79.350. 05-22-092, § 296-104-302, filed 11/1/05, effective 1/1/06. Statutory Authority: Chapter 70.79 RCW. 04-21-069, § 296-104-302, filed 10/19/04, effective 1/1/05.]

WAC 296-104-303 Installation—What control and limit devices are required on automatically fired boilers after December 2004? In addition to those requirements listed in WAC 296-104-302, the following are also required with regard to installations or refits of gas, oil, or combinations of gas or oil:

(1) A manually operated remote shutdown switch or circuit breaker should be located just outside the boiler room door and marked for easy identification. Consideration should be given to the type and location of the switch to safeguard against tampering. If the boiler room door is on the building exterior, the switch should be located just inside the door. If there is more than one door to the boiler room, there should be a switch located at each door.

(2) A means shall be provided for testing the operation of hot water heating boiler low-water fuel cutoff(s) without resorting to draining the entire system. Such means shall not render the device(s) inoperable. If the means temporarily isolates the device from the boiler during testing, it shall automatically return to its normal position.

[Statutory Authority: Chapter 70.79 RCW. 04-21-069, § 296-104-303, filed 10/19/04, effective 1/1/05.]

WAC 296-104-307 Installation—When are platforms around boilers required? Provide platforms allowing safe access to each boiler, when the controls, valves, manholes, or casing openings are over ten feet above the floor.

[Statutory Authority: RCW 70.79.030, 70.79.040, 70.79.150, 70.79.290, 70.79.330, 70.79.350, and chapter 70.79 RCW. 04-01-194, § 296-104-307, filed 12/24/03, effective 1/24/04; 02-23-036, recodified as § 296-104-307, filed 11/13/02, effective 12/14/02. Statutory Authority: RCW 70.79.030 and 70.79.040. 97-20-109, § 296-104-300, filed 9/30/97, effective 10/31/97; Part V, § 1, filed 3/23/60.]

WAC 296-104-310 Installation—How many exits are required in boiler rooms? (1) For boiler rooms containing a boiler or a combination of boilers of over 2,000 square feet of

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heating surface, provide at least two exits on opposite sides of the boiler(s).

(2) Each floor elevation change of 10 feet or more must have two exits from that elevation.

(3) All exits shall meet Washington state building codes or local building codes as applicable.

[Statutory Authority: RCW 70.79.030, 70.79.040, 70.79.150, 70.79.290, 70.79.330, 70.79.350, and chapter 70.79 RCW. 02-23-036, recodified as § 296-104-310, filed 11/13/02, effective 12/14/02. Statutory Authority: RCW 70.79.030 and 70.79.040, 97-20-109, § 296-104-305, filed 9/30/97, effective 10/31/97; Part V, § 2, filed 3/23/60.]

WAC 296-104-316 Installation—What safety pressure relief devices are required on boilers and unfired pressure vessels? All boiler and unfired pressure vessels shall be safeguarded by safety valves, safety relief valves, or rupture discs as specified in the ASME Code. As an alternative they may be safeguarded by a fail safe pressure relief control system that is evaluated by a professional engineer knowledgeable with boilers and pressure vessels, licensed by the state of Washington, and accepted by the chief inspector.

[Statutory Authority: RCW 70.79.030, 70.79.040, 70.79.150, 70.79.290, 70.79.330, 70.79.350, and chapter 70.79 RCW. 04-01-194, § 296-104-316, filed 12/24/03, effective 1/24/04; 02-23-036, recodified as § 296-104-316, filed 11/13/02, effective 12/14/02. Statutory Authority: RCW 70.79.030, 70.79.040 and chapter 70.79 RCW. 00-21-024, § 296-104-307, filed 10/10/00, effective 11/13/00. Statutory Authority: RCW 70.79.030 and 70.79.040, 98-22-024, § 296-104-307, filed 10/28/98, effective 11/28/98.]

WAC 296-104-320 Installation—Where should the discharge from safety pressure relief devices, blow offs and drains be directed? Discharge from safety pressure relief devices, blow offs and drains shall be directed to a safe point of discharge to prevent injury to personnel and property. Discharge lines from boilers, accumulators, or headers, with a capacity of 1,000 pounds of steam per hour or more, shall be directed outside of the building.

[Statutory Authority: RCW 70.79.030, 70.79.040, 70.79.150, 70.79.290, 70.79.330, 70.79.350, and chapter 70.79 RCW. 04-01-194, § 296-104-320, filed 12/24/03, effective 1/24/04; 02-23-036, recodified as § 296-104-320, filed 11/13/02, effective 12/14/02. Statutory Authority: RCW 70.79.030 and 70.79.040, 98-22-024, § 296-104-310, filed 10/28/98, effective 11/28/98; 97-20-109, § 296-104-310, filed 9/30/97, effective 10/31/97; Part V, § 3, filed 3/23/60.]

WAC 296-104-325 Installation—What are the requirements for boiler and unfired pressure vessel supports? Each boiler or unfired pressure vessel shall be supported by masonry or structural supports of sufficient strength and rigidity to safely support the vessel and its contents. There shall be no excessive vibration in either the vessel or its connecting piping.

[Statutory Authority: RCW 70.79.030, 70.79.040, 70.79.150, 70.79.290, 70.79.330, 70.79.350, and chapter 70.79 RCW. 04-01-194, § 296-104-325, filed 12/24/03, effective 1/24/04. Statutory Authority: RCW 70.79.030 and 70.79.040, 97-20-109, § 296-104-325, filed 9/30/97, effective 10/31/97; Part V, § 6, filed 3/23/60.]

WAC 296-104-330 Installation—What are the relief or safety valve requirements when pressure reducing valves are used? (1) Where pressure reducing valves are used, one or more relief or safety valve(s) and pressure gauge(s) shall be provided on the low pressure side of the reducing valve. The relief or safety valve(s) shall be located

as close as possible to the reducing valve. The combined discharge capacity of the relief valves shall be such that the pressure rating of the lower pressure piping or equipment shall not be exceeded in case the reducing valve sticks open. Discharge lines shall comply with WAC 296-104-310.

(2) The use of hand-controlled bypasses around reducing valves is permissible. The bypass shall not be greater in capacity than the reducing valve unless the piping or equipment is adequately protected by a relief valve(s) or meets the requirements of the high pressure system.

[Statutory Authority: RCW 70.79.030 and 70.79.040, 97-20-109, § 296-104-330, filed 9/30/97, effective 10/31/97; Part V, § 7, filed 3/23/60.]

WAC 296-104-405 Existing installation—How can the maximum allowable working pressure be established for nonstandard boilers or unfired pressure vessels? The maximum allowable working pressure MAWP of cylindrical components under internal pressure shall be established as follows:

(1) For nonstandard steel low pressure steam heating boilers the MAWP shall be computed from the formula in subsection (5) of this section not exceeding 15 psi steam.

(2) For nonstandard steel low pressure water heating boilers the MAWP shall be computed from the formula in subsection (5) of this section not exceeding 30 psi.

(3) For nonstandard cast iron low pressure steam heating boilers the MAWP shall not exceed 15 psi steam.

(4) For nonstandard cast iron low pressure water heating boilers the MAWP shall not exceed 30 psi.

(5) For boilers and unfired pressure vessels not listed above, where the original code of construction is unknown, the following formula will be used.

$$\frac{TS \times t \times E}{R \times FS} = MAWP$$

TS = Tensile Strength in psi as given in ASME Code, when material cannot be identified use 55,000 for steel and 45,000 for wrought iron.

t = thickness in inches of the thinnest part determined by actual measurement.

E = efficiency of longitudinal joint or ligament, whichever is the least, determined by the rules and formula in the ASME Code. When construction methods are not known welded joint efficiency will be 70%.

R = radius of largest course in inches.

FS = Factor of Safety, for boilers shall be a minimum of 5. For boilers with a longitudinal lap seam it shall be a minimum 8. Boilers with a longitudinal lap seam, unless granted a special permit, may only be used at a maximum of 15 psi provided they have passed inspection. The minimum for unfired pressure vessels shall be 4 when less than 20 years old, 4 1/2 when over 20 years old.

[Statutory Authority: Chapter 70.79 RCW. 04-21-069, § 296-104-405, filed 10/19/04, effective 1/1/05. Statutory Authority: RCW 70.79.030, 70.79.040, 70.79.150, 70.79.290, 70.79.330, 70.79.350, and chapter 70.79 RCW. 04-01-194, § 296-104-405, filed 12/24/03, effective 1/24/04. Statutory Authority: RCW 70.79.030 and 70.79.040, 98-22-024, § 296-104-405, filed 10/28/98, effective 11/28/98; 97-20-109, § 296-104-405, filed 9/30/97, effective 10/31/97; Part VI, § 2, filed 3/23/60.]

WAC 296-104-502 Repairs—What are the requirements for nonnuclear boilers and unfired pressure vessel repairs and alterations? Repairs and alterations to nonnuclear boilers and pressure vessels shall be made in accordance with the rules of the National Board Inspection Code (NBIC) as adopted in WAC 296-104-102. Additionally, repairs and alterations to nonstandard boilers and pressure vessels, as addressed in WAC 296-104-215, must be authorized by the chief inspector.

Repairs and alterations may be made by an organization in possession of a valid Certificate of Authorization for use of the "R" symbol stamp, issued by the national board provided such repairs/alterations are within the scope of the authorization.

Owner/user special inspectors may only accept repairs and alterations to boilers and unfired pressure vessels operated by their respective companies per RCW 70.79.130.

Documentation of repairs and alterations, in accordance with the requirements of the National Board Inspection Code (NBIC) as adopted in WAC 296-104-102, shall be submitted to the department.

[Statutory Authority: RCW 70.79.030, 70.79.040, 70.79.150, 70.79.290, 70.79.330, and 70.79.350. 06-24-042, § 296-104-502, filed 11/30/06, effective 1/1/07. Statutory Authority: Chapter 70.79 RCW. 04-21-069, § 296-104-502, filed 10/19/04, effective 1/1/05. Statutory Authority: RCW 70.79.030, 70.79.040, 70.79.150, 70.79.290, 70.79.330, 70.79.350, and chapter 70.79 RCW. 02-23-036, § 296-104-502, filed 11/13/02, effective 12/14/02; 01-24-061, § 296-104-502, filed 11/30/01, effective 12/31/01. Statutory Authority: RCW 70.79.030, 70.79.040 and chapter 70.79 RCW. 00-21-024, § 296-104-502, filed 10/10/00, effective 11/13/00. Statutory Authority: RCW 70.79.030 and 70.79.040. 99-22-026, § 296-104-502, filed 10/26/99, effective 11/26/99; 98-22-024, § 296-104-502, filed 10/28/98, effective 11/28/98. Statutory Authority: RCW 70.79.040. 94-21-002, § 296-104-502, filed 10/5/94, effective 11/5/94.]

WAC 296-104-510 Repairs—When a lap seam crack is discovered along a riveted longitudinal joint on a boiler or unfired pressure vessel, what action is required and what repairs are allowed? A "lap seam crack" is a crack found in a riveted lap seam, extending parallel to the longitudinal joint and located either between or adjacent to rivet holes. Repairs to a "lap seam crack" on a shell or drum of any boiler or unfired pressure vessel is not allowed. The shell or drum of any boiler or unfired pressure vessel in which a lap seam crack is discovered shall be immediately discontinued from use.

[Statutory Authority: RCW 70.79.030, 70.79.040, 70.79.150, 70.79.290, 70.79.330, 70.79.350, and chapter 70.79 RCW. 04-01-194, § 296-104-510, filed 12/24/03, effective 1/24/04. Statutory Authority: RCW 70.79.030 and 70.79.040. 98-22-024, § 296-104-510, filed 10/28/98, effective 11/28/98; Part VII, § 3, filed 3/23/60.]

WAC 296-104-515 Repairs—Do riveted repairs to boilers and unfired pressure vessels require prior approval? Yes, riveted repairs to boilers and unfired pressure vessels requires prior approval by the chief inspector.

[Statutory Authority: RCW 70.79.030, 70.79.040, 70.79.150, 70.79.290, 70.79.330, 70.79.350, and chapter 70.79 RCW. 04-01-194, § 296-104-515, filed 12/24/03, effective 1/24/04. Statutory Authority: RCW 70.79.030 and 70.79.040. 98-22-024, § 296-104-515, filed 10/28/98, effective 11/28/98. Statutory Authority: RCW 70.79.030. 86-04-059 (Order 86-01), § 296-104-515, filed 2/4/86. Statutory Authority: RCW 70.79.030 and 70.79.330. 84-21-012 (Order 84-20), § 296-104-515, filed 10/5/84; Part VII, § 4, filed 3/23/60.]

(2007 Ed.)

WAC 296-104-520 Repairs—What are the requirements for repair of nonnuclear safety devices? (1) The resetting, repairing, and restamping of safety valves and relief valves shall be done by a qualified valve repair organization holding a valid "VR" Certificate of Authorization issued by the National Board of Boiler and Pressure Vessel Inspectors. ASME valve manufacturers holding a valid "V," "HV," and "UV" Certificate(s) of Authorization may also do this work provided they also have a valid "VR" Certificate of Authorization issued by the national board.

(2) With jurisdictional approval, boiler and pressure vessel owners/users, may authorize external adjustments to bring their installed safety valves and relief valves, back to the stamped set pressure when performed by the owner/user's trained, qualified, regular, and full-time employees. Refer to Appendix "J" of the National Board Inspection Code as referenced in WAC 296-104-102 for guidelines regarding training, documentation, and the implementation of a quality system for the owner/user employees. All such external adjustments shall be resealed with a metal tag showing the identification of the organization making the adjustments and the date. If any valve repairs are required, they shall be done by a qualified "VR" certificate holder.

(3) Repairing of noncode relief or safety valves shall not be allowed, except as specified below. Noncode liquid relief valves installed prior to 1-1-85 shall be repaired by an organization holding a valid "VR" Certificate of Authorization, but need not be stamped.

[Statutory Authority: RCW 70.79.030, 70.79.040, 70.79.150, 70.79.290, 70.79.330, and 70.79.350. 06-24-042, § 296-104-520, filed 11/30/06, effective 1/1/07. Statutory Authority: Chapter 70.79 RCW. 04-21-069, § 296-104-520, filed 10/19/04, effective 1/1/05. Statutory Authority: RCW 70.79.030, 70.79.040, 70.79.150, 70.79.290, 70.79.330, 70.79.350, and chapter 70.79 RCW. 04-01-194, § 296-104-520, filed 12/24/03, effective 1/24/04. Statutory Authority: RCW 70.79.030 and 70.79.040. 98-22-024, § 296-104-520, filed 10/28/98, effective 11/28/98; Part VII, § 5, filed 3/23/60.]

WAC 296-104-535 Repairs—What are the requirements for nuclear repairs/replacement? (1) Repairs/replacement to all nuclear components, appurtenances, and their supports shall conform to the rules contained in the ASME Section XI Code. The ASME Section XI Code edition and addenda shall be as specified in the owner in-service inspection program plan.

(2) Where a repair/replacement is performed, a report as required by ASME Section XI Code, signed by the owner and the Authorized Nuclear In-service Inspector (ANII) shall be submitted to the jurisdiction.

[Statutory Authority: RCW 70.79.030 and 70.79.040. 98-22-024, § 296-104-535, filed 10/28/98, effective 11/28/98.]

WAC 296-104-540 Repairs—What are the requirements for nuclear repairs of safety devices? All nuclear pressure retaining items shall be safe-guarded by safety devices, as specified in the ASME Section III, Division 1, Class 1, 2, and 3.

(1) The resetting, repair, and restamping of these safety devices shall be performed only by organizations holding a valid National Board "NR" and "VR" Certificate of Authorization to repair ASME Section III Code safety devices. The repair work shall be documented on the applicable NR-1/NVR-1 form. All repair/replacement activities performed

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under the "NR" Certificate of Authorization must be in accordance with the provisions of the NBIC, ASME Section XI, and the rules of the jurisdiction.

(2) Nuclear plant owners with an approved ASME Section XI program, may authorize external adjustments to bring their installed safety valves and relief valves back to the stamped set pressure when performed by the owner's/user's trained, qualified, regular, and full-time employees. Refer to Appendix "J" of the National Board Inspection Code as referenced in WAC 296-104-102 for guidelines regarding training, documentation, and implementation of a quality system for the owner/user employees.

(3) All such external adjustments shall be resealed with a metal tag showing the identification of the organization making the adjustments and the date.

(4) If any valve repairs are required, they shall be done by a qualified "VR" and "NR" certificate holder.

[Statutory Authority: RCW 70.79.030, 70.79.040, 70.79.150, 70.79.290, 70.79.330, and 70.79.350. 06-24-042, § 296-104-540, filed 11/30/06, effective 1/1/07. Statutory Authority: RCW 70.79.030 and 70.79.040. 98-22-024, § 296-104-540, filed 10/28/98, effective 11/28/98.]

WAC 296-104-700 What are the inspection fees—Examination fees—Certificate fees—Expenses? The following fees shall be paid by, or on behalf of, the owner or user upon the completion of the inspection. The inspection fees apply to inspections made by inspectors employed by the state.

Heating boilers:	Internal	External
Cast iron—All sizes	\$32.00	\$25.60
All other boilers less than 500 sq. ft.	\$38.60	\$25.60
500 sq. ft. to 2500 sq. ft.	\$63.70	\$32.00
Each additional 2500 sq. ft. of total heating surface, or any portion thereof	\$25.60	\$12.60
Power boilers:	Internal	External
Less than 100 sq. ft.	\$32.00	\$25.60
100 sq. ft. to less than 500 sq. ft.	\$38.60	\$25.60
500 sq. ft. to 2500 sq. ft.	\$63.70	\$32.00
Each additional 2500 sq. ft. of total heating surface, or any portion thereof	\$25.60	\$12.60
Pressure vessels:		
Automatic utility hot water supply heaters per RCW 70.79.090		\$6.00
All other pressure vessels:		
Square feet shall be determined by multiplying the length of the shell by its diameter.		
	Internal	External
Less than 15 sq. ft.	\$25.60	\$19.10
15 sq. ft. to less than 50 sq. ft.	\$38.00	\$19.10
50 sq. ft. to 100 sq. ft.	\$44.20	\$25.60
For each additional 100 sq. ft. or any portion thereof	\$44.20	\$12.60

Certificate of inspection fees: For objects inspected, the certificate of inspection fee is \$19.10 per object.

Boiler and pressure vessel installation/reinstallation permit (excludes inspection and certificate of inspection fee) \$50.00

Nonnuclear shop inspections, field construction inspections, and special inspection services:

For each hour or part of an hour up to 8 hours \$38.60

For each hour or part of an hour in excess of 8 hours \$57.70

Nuclear shop inspections, nuclear field construction inspections, and nuclear triennial shop survey and audit:

For each hour or part of an hour up to 8 hours \$57.70

For each hour or part of an hour in excess of 8 hours \$90.10

Nonnuclear triennial shop survey and audit:

When state is authorized inspection agency:

For each hour or part of an hour up to 8 hours \$38.60

For each hour or part of an hour in excess of 8 hours \$57.70

When insurance company is authorized inspection agency:

For each hour or part of an hour up to 8 hours \$57.70

For each hour or part of an hour in excess of 8 hours \$90.10

Examination fee: A fee of \$71.30 will be charged for each applicant sitting for an inspection examination(s).

Special inspector commission: An initial fee of \$25 and an annual renewal fee of \$10 along with an annual work card fee of \$15.

Expenses shall include:

Travel time and mileage: The department shall charge for its inspectors' travel time from their offices to the inspection sites and return. The travel time shall be charged for at the same rate as that for the inspection, audit, or survey. The department shall also charge the current Washington office of financial management accepted mileage cost fees or the actual cost of purchased transportation. Hotel and meals: Actual cost not to exceed the office of financial management approved rate.

Washington state specials: For each vessel to be considered by the board for a Washington state special certificate, a fee of \$358.00 must be paid to the department before the board meets to consider the vessel. The board may, at its discretion, prorate the fee when a number of vessels that are essentially the same are to be considered.

[Statutory Authority: RCW 70.79.030, 70.79.040, 70.79.150, 70.79.290, 70.79.330, and 70.79.350. 06-12-032, § 296-104-700, filed 5/31/06, effective 7/1/06; 05-12-028, § 296-104-700, filed 5/24/05, effective 6/30/05. Statutory Authority: Chapter 70.79 RCW. 04-21-069, § 296-104-700, filed 10/19/04, effective 1/1/05; 04-13-044, § 296-104-700, filed 6/10/04, effective 6/30/04. Statutory Authority: RCW 70.79.030, 70.79.040, 70.79.150, 70.79.290, 70.79.330, 70.79.350, and chapter 70.79 RCW. 04-01-194, §

296-104-700, filed 12/24/03, effective 1/24/04; 03-12-051, § 296-104-700, filed 5/30/03, effective 6/30/03; 02-23-036, § 296-104-700, filed 11/13/02, effective 12/14/02; 02-12-021, § 296-104-700, filed 5/28/02, effective 6/28/02; 01-24-061, § 296-104-700, filed 11/30/01, effective 12/31/01; 01-12-034, § 296-104-700, filed 5/29/01, effective 6/29/01. Statutory Authority: RCW 70.79.030, 70.79.040 and chapter 70.79 RCW. 00-21-024, § 296-104-700, filed 10/10/00, effective 11/13/00. Statutory Authority: RCW 70.79.030 and 70.79.040. 99-08-049, § 296-104-700, filed 4/1/99, effective 5/2/99; 98-09-064, § 296-104-700, filed 4/20/98, effective 5/21/98. Statutory Authority: RCW 70.79.040. 93-12-014, § 296-104-700, filed 5/21/93, effective 6/21/93. Statutory Authority: RCW 70.79.030 and 70.79.330. 84-21-012 (Order 84-20), § 296-104-700, filed 10/5/84; 84-11-016 (Order 84-09), § 296-104-700, filed 5/10/84; 82-24-025 (Order 82-36), § 296-104-700, filed 11/23/82, effective 1/1/83; Order 77-23, § 296-104-700, filed 11/8/77; Emergency Order 77-22, § 296-104-700, filed 11/8/77.]

WAC 296-104-701 What are the civil penalties? (1)

An owner, user, or operator of a boiler or pressure vessel that violates a provision of chapter 70.79 RCW, or of the rules adopted under that chapter, is liable for a civil penalty based on the following schedule.

Operating under pressure a boiler or pressure vessel which the department has condemned, has issued a red tag or has suspended the inspection certificate:

First offense	\$150.00
Second offense	\$300.00
Each additional offense	\$500.00

Each day of such unlawful operation shall be deemed a separate offense.

Operating under pressure a boiler or pressure vessel without a valid inspection certificate:

First offense	\$50.00
Second offense	\$100.00
Each additional offense	\$200.00

Each day of such unlawful operation shall be deemed a separate offense.

Installation of a boiler or pressure vessel without meeting prior filing requirements of WAC 296-104-020:

First offense	\$100.00
Second offense	\$200.00
Each additional offense	\$500.00

Performing a repair to a boiler or pressure vessel, involving welding to a pressure retaining part, without meeting requirements of WAC 296-104-502:

First offense	\$150.00
Second offense	\$300.00
Each additional offense	\$500.00

Performing an alteration to a boiler or pressure vessel without meeting requirements of WAC 296-104-502:

First offense	\$150.00
Second offense	\$300.00
Each additional offense	\$500.00

Performing resetting, repair or restamping of safety valves, safety relief valves, or rupture discs, without meeting requirements of WAC 296-104-520:

First offense	\$150.00
Second offense	\$300.00
Each additional offense	\$500.00

Failure of owner to notify chief inspector in case of accident which serves to render a boiler or unfired pressure vessel inoperative, as required by WAC 296-104-025:

Each offense	\$100.00
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Failure to comply with a noncompliance report requirement:

Within 90 days	\$100.00
Within 91-180 days	\$250.00
Within 181-270 days	\$400.00
Within 271-360 days	\$500.00

(2) The inspection agency responsible for the inservice inspector of a boiler or unfired pressure vessel that violates a provision of chapter 296-104 WAC, or the rules adopted under that chapter, is liable for a civil penalty based on the following schedule.

Failure to file a report of inspection per WAC 296-104-040:

Each offense	\$50.00
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Failure to apply a state serial number per WAC 296-104-140:

Each offense	\$50.00
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Failure to attach a "Red TAG" per WAC 296-104-110:

Each offense	\$50.00
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Each object (boiler or unfired pressure vessel) is considered a separate offense.

(3) The department shall by certified mail notify a person of its determination that the person has violated this section.

(4) Any person aggrieved by an order or act under the boiler and unfired pressure vessels law or under the rules and regulations may appeal to the board of boiler rules. This appeal shall be filed within twenty days after service of the notice of the penalty to the assessed party by filing a written notice of appeal with the chief boiler inspector per RCW 70.79.361.

(5) Each day that a violation occurs will be a separate offense. A violation will be a second or additional offense only if it occurs within one year from the first violation.

[Statutory Authority: RCW 70.79.030, 70.79.040, 70.79.150, 70.79.290, 70.79.330, and 70.79.350. 05-22-092, § 296-104-701, filed 11/1/05, effective 1/1/06. Statutory Authority: Chapter 70.79 RCW. 04-21-069, § 296-104-701, filed 10/19/04, effective 1/1/05. Statutory Authority: RCW 70.79.030, 70.79.040 and chapter 70.79 RCW. 00-21-024, § 296-104-701, filed 10/10/00, effective 11/13/00. Statutory Authority: Chapter 70.79 RCW. 87-12-003 (Order 87-10), § 296-104-701, filed 5/21/87.]

Chapter 296-115 WAC

SAFETY REQUIREMENTS FOR CHARTER BOATS

WAC

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296-115-030	Master's examination and licensing.
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296-115-040	Construction and arrangement.
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296-115-120	Annual fee schedule.

WAC 296-115-001 Foreword. This chapter is adopted to implement chapter 88.04 RCW as revised in 1999. The purpose of these rules is to set reasonable guidelines and requirements to provide for the safety and health of passengers and crew on board passenger vessels. It is intended that these rules will be consistent with the rules adopted by the United States Coast Guard under 46 CFR Parts 166 to 199.

[Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050 and 1999 c 111. 00-23-100, § 296-115-001, filed 11/21/00, effective 1/1/01. Statutory Authority: RCW 49.17.040, 49.17.050, 49.17.240, chapters 42.30 and 43.22 RCW. 80-17-014 (Order 80-20), § 296-115-001, filed 11/13/80.]

WAC 296-115-005 Scope and application. (1) This chapter applies to vessels for hire that carry seven or more passengers when operated in waters within the jurisdiction of the state of Washington. These rules do not apply to vessels in the navigable waters of the United States subject to the jurisdiction of the United States Coast Guard.

(2) Pursuant to chapter 88.04 RCW, the director of the department of labor and industries will administer this chapter.

(3) All rules adopted by the United States Coast Guard pertaining to inland water passenger vessel service and navigation on inland waters will be applied to this chapter unless they conflict with specific provisions of this chapter or chapter 88.04 RCW.

(4) Special consideration. In applying the provisions of this section, the director may allow departures from the specific requirements when special circumstances or arrangements warrant such departures.

(5) The provisions of this chapter do not apply to:

(a) A vessel that is a charter boat but is being used by the documented or registered owner of the charter boat exclusively for the owner's own noncommercial or personal pleasure purposes;

(b) A vessel owned by a person or corporate entity which is donated and used by a person or nonprofit organization to transport passengers for charitable or noncommercial purposes, regardless of whether consideration is directly or indirectly paid to the owner;

(c) A vessel that is rented, leased, or hired by an operator to transport passengers for noncommercial or personal pleasure purposes;

(d) A vessel used exclusively for, or incidental to, an educational purpose; or

(e) A bare boat charter boat.

[Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050 and 1999 c 111. 00-23-100, § 296-115-005, filed 11/21/00, effective 1/1/01. Statutory Authority: Chapter 49.17 RCW. 91-24-017 (Order 91-07), § 296-115-005, filed 11/22/91, effective 12/24/91; 91-03-044 (Order 90-18), § 296-115-005, filed 1/10/91, effective 2/12/91. Statutory Authority: RCW 49.17.040, 49.17.050, 49.17.240, chapters 42.30 and 43.22 RCW. 80-17-014 (Order 80-20), § 296-115-005, filed 11/13/80.]

WAC 296-115-010 Appeal of decisions. (1) Any person aggrieved by a decision of the maritime specialist in policy & technical services (P&TS) may appeal the decision to the director within fifteen working days after receipt of the decision.

(2) The director will give the maritime specialist in P&TS notice of the appeal. The maritime specialist in P&TS will have ten working days to comment in writing. At the discretion of the director, an informal conference may be held with all affected parties invited to participate.

(3) The director must issue a determining order within twenty working days of the receipt of the appeal or within ten working days following conclusion of an informal conference.

[Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050 and 1999 c 111. 00-23-100, § 296-115-010, filed 11/21/00, effective 1/1/01. Statutory Authority: Chapter 49.17 RCW. 91-03-044 (Order 90-18), § 296-115-010, filed 1/10/91, effective 2/12/91. Statutory Authority: RCW 49.17.040, 49.17.050, 49.17.240, chapters 42.30 and 43.22 RCW. 80-17-014 (Order 80-20), § 296-115-010, filed 11/13/80.]

WAC 296-115-015 Definitions applicable to all sections of this chapter.

Note: Meaning of words. Unless the context indicates otherwise, words used in this chapter will have the meaning given in this section.

Approved means approved by the director; however, if a provision of this chapter requires approval by an agency or organization other than the department such as nationally recognized testing laboratories or the United States Coast Guard is required, then approval by the specified authority will be accepted.

Authorized person means a person approved or assigned by the employer to perform a specific type of duty or duties or be at a specific location or locations at the workplace.

Bare boat charter means the unconditional lease, rental, or charter of a boat by the owner, or his or her agent, to a person who by written agreement, or contract, assumes all responsibility and liability for the operation, navigation, and provisioning of the boat during the term of the agreement or contract, except when a captain or crew is required or provided by the owner or owner's agents to be hired by the charterer to operate the vessel.

Carrying passengers or cargo means the transporting of any person or persons or cargo on a vessel for a fee or other consideration.

CFR means Code of Federal Regulations.

Charter boat means a vessel or barge operating on waters of the state of Washington which is not inspected or licensed by the United States Coast Guard and over which the United States Coast Guard does not exercise jurisdiction and which is rented, leased, or chartered to carry more than six persons or cargo.

Commercial means any activity from which the operator, or the person chartering, renting, or leasing a vessel derives a profit, and/or which qualifies as a legitimate business expense under the Internal Revenue Statutes.

Competent person means someone who is capable of identifying existing and predictable hazards in the surroundings or working conditions that are unsanitary, hazardous, or

dangerous to employees, and who has authorization to take prompt action to eliminate them.

Confined space means a space that:

(1) Is large enough and so configured that an employee can bodily enter and perform assigned work; and

(2) Has limited or restricted means for entry or exit (for example, tanks, vessels, silos, storage bins, hoppers, vaults, and pits are spaces that may have limited means of entry); and

(3) Is not designed for continuous employee occupancy.

Defect means any characteristic or condition that tends to weaken or reduce the strength of the tool, object, or structure of which it is a part.

Department means the department of labor and industries.

Director means the director of the department of labor and industries, or his/her designated representative.

Employer means any person, firm, corporation, partnership, business trust, legal representative, or other business entity that operates a passenger vessel for hire in this state and employs one or more employees or contracts with one or more persons, the essence of which is the personal labor of such persons. Any person, partnership, or business entity that has no employees, and is covered by the Industrial Insurance Act shall be considered both an employer and an employee.

Enclosed space means any space, other than a confined space, which is enclosed by bulkheads and overhead. It includes cargo holds, tanks, quarters, and machinery and boiler spaces.

Equipment means a system, part, or component of a vessel as originally manufactured, or a system, part, or component manufactured or sold for replacement, repair, or improvement of a system, part, or component of a vessel; an accessory or equipment for, or appurtenance to a vessel; or a marine safety article, accessory, or equipment, including radio equipment, intended for use by a person on board a vessel.

Hazard means a condition, potential or inherent, that is likely to cause injury, death, or occupational disease.

Hazardous substance means a substance that, because it is explosive, flammable, poisonous, corrosive, oxidizing, irritating, or otherwise harmful, is likely to cause death or injury, including all substances listed on the USCG hazardous materials list.

Inspection means the examination of vessels by the director or an authorized representative of the director.

Maritime specialist in P&TS means a technical and operations specialist in maritime issues located in the department of labor and industries' policy and technical services section.

Passenger means any person or persons, carried on board a vessel in consideration of the payment of a fee or other consideration.

Port means left hand side of a vessel as one faces the bow.

Starboard means right hand side of a vessel as one faces the bow.

Power driven vessel means any vessel propelled by machinery.

Qualified means one who, by possession of a recognized degree, certificate, or professional standing, or who by extensive knowledge, training, and experience, has successfully

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demonstrated the ability to solve problems relating to the subject matter, the work, or the project.

Safety and health standard means a standard that requires the adoption or use of one or more practices, means, methods, operations, or processes reasonably necessary or appropriate to provide safe or healthful employment and places of employment.

Should means recommended.

Substantial means constructed of such strength, of such material, and of such workmanship, that the object referred to will withstand all normal wear, shock, and usage.

Standard safeguard means a device intended to remove a hazard incidental to the machine, appliance, tool, or equipment to which the device is attached.

Standard safeguards shall be constructed of either metal, wood, other suitable material, or a combination of these. The final determination of the sufficiency of any safeguard rests with the director.

Suitable means that which fits, or has the qualities or qualifications to meet a given purpose, occasion, condition, function, or circumstance.

Under way means a vessel is not at anchor, or made fast to the shore, or aground.

USCG means the United States Coast Guard.

United States Coast Guard Navigation means rules International/Inland, Commandants Instruction M16672.29 as now adopted, or hereafter legally amended by the United States Coast Guard.

Vessel means every description of motorized watercraft, other than a bare boat charter boat, seaplane, or sailboat, used or capable of being used to transport more than six passengers or cargo on water for rent, lease, or hire.

Working day means a calendar day, except Saturdays, Sundays, and legal holidays as set forth in RCW 1.16.050, as now or hereafter amended. The time within which an act is to be done under the provisions of this chapter shall be computed by excluding the first working day and including the last working day.

Worker, personnel, man, person, employee, and other terms of like meaning, unless the context indicates otherwise means an employee of an employer who is employed in the business of his/her employer whether by way of manual labor or otherwise and every person in this state who is engaged in the employment of or who is working under an independent contract the essence of which is his/her personal labor for an employer whether by manual labor or otherwise.

[Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050 and 1999 c 111. 00-23-100, § 296-115-015, filed 11/21/00, effective 1/1/01. Statutory Authority: Chapter 49.17 RCW. 95-04-007, § 296-115-015, filed 1/18/95, effective 3/1/95; 91-24-017 (Order 91-07), § 296-115-015, filed 11/22/91, effective 12/24/91; 91-03-044 (Order 90-18), § 296-115-015, filed 1/10/91, effective 2/12/91. Statutory Authority: RCW 49.17.040, 49.17.050, 49.17.240, chapters 42.30 and 43.22 RCW. 80-17-014 (Order 80-20), § 296-115-015, filed 11/13/80.]

WAC 296-115-025 Vessel inspection and licensing.

(1) The department must inspect all vessels to ensure they are safe and seaworthy at least once each year. The department may also inspect a vessel if requested to do so by the owner, operator, or master of the vessel, and after an explosion, fire, or any other accident involving the vessel.

(2) The department may inspect a vessel upon receipt of a complaint from any person or, at the discretion of the department, at any other time.

(3) The department will charge the owner of a vessel a fee for each certification or recertification inspection. This fee will be determined by the director. (See WAC 296-115-120 for fee schedule.)

(4) After the department has inspected a vessel and it is satisfied the vessel is safe and seaworthy, the department will issue a certificate of inspection for that vessel. The certificate will be valid for one year after the date of inspection.

(5) The certificate must set forth the date of the inspection, the names of the vessel and the owner, the number of lifeboats and life preservers required, the number of passengers allowed, and any other information the department may by rule require.

(6)(a) If at any time a vessel is found to be not safe or seaworthy, or not in compliance with the provisions of this chapter, the department may refuse to issue a certificate of inspection until the deficiencies have been corrected and may cancel any certificate of inspection currently issued.

(b) The department must give the owner of the vessel a written statement of the reason(s) the vessel was found to be unsafe, unseaworthy, or not in compliance with the provisions of this chapter, including a specific reference to the statute or rule with which the vessel did not comply.

(7) An inspector of the department may, upon the presentation of his or her credentials to the owner, master, operator, or agent in charge of a vessel, board the vessel without delay to make an inspection. The inspector must inform the owner, master, operator, or agent in charge that his or her intent is to inspect the vessel.

(8) During the inspection, the inspector must have access to all areas of the vessel. The inspector may question privately the owner, master, operator, or agent in charge of the vessel, or any crew member of or passenger on the vessel.

(9) If any person refuses to allow an inspector to board a vessel for an inspection, or refuses to allow access to any areas of the vessel, the department may request a warrant from the superior court for the county in which the vessel is located. The court will grant the warrant:

(a) If there is evidence that the vessel has sustained a fire, explosion, unintentional grounding, or has been involved in any other accident;

(b) If there is evidence that the vessel is not safe or seaworthy; or

(c) Upon a showing that the inspection furthers a general administrative plan for enforcing the safety requirements of the act.

(10) The owner or master of a vessel must post the certificate of inspection behind glass in a conspicuous area of the vessel.

(11) No person will operate a passenger vessel if the vessel does not have a valid certificate of inspection.

[Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050 and 1999 c 111. 00-23-100, § 296-115-025, filed 11/21/00, effective 1/1/01. Statutory Authority: Chapter 49.17 RCW. 91-03-044 (Order 90-18), § 296-115-025, filed 1/10/91, effective 2/12/91. Statutory Authority: RCW 49.17.040, 49.17.050, 49.17.240, chapters 42.30 and 43.22 RCW. 80-17-014 (Order 80-20), § 296-115-025, filed 11/13/80.]

WAC 296-115-030 Master's examination and licensing. (1) The registered owner of passenger vessels or barges for hire is responsible to obtain an operator's license from the United States Coast Guard or the department for the master or operator of each vessel. A physical examination will be required.

(2) The department will penalize any person who acts as a master or operator on a vessel without having first received a United States Coast Guard or department license, or without having a valid license in his or her possession, or upon a vessel or class of vessels not specified in the license.

(3) The department may recommend suspension or revocation of a license to the United States Coast Guard for intemperance, incompetence, or a negligent, reckless, or willful disregard for duty.

[Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050 and 1999 c 111. 00-23-100, § 296-115-030, filed 11/21/00, effective 1/1/01. Statutory Authority: Chapter 49.17 RCW. 89-21-018 (Order 89-10), § 296-115-030, filed 10/10/89, effective 11/24/89. Statutory Authority: RCW 49.17.040, 49.17.050, 49.17.240, chapters 42.30 and 43.22 RCW. 80-17-014 (Order 80-20), § 296-115-030, filed 11/13/80.]

WAC 296-115-035 Specific inspection requirements.

(1) Drydocking or hauling out.

Each vessel subject to the provisions in this section must be drydocked or hauled out at intervals not to exceed sixty months and the underwater hull and appendages, propellers, shafting, stern bearings, rudders, through-hull fittings, sea valves and strainers must be examined to determine that these items are in satisfactory condition.

(2) At the annual inspection the inspector must view the vessel afloat and conduct the following tests and inspections of the hull:

(a) Hull exterior and interior, bulkheads, and weather deck.

(b) Examine and test by operation all watertight closures in the hull, decks, and bulkheads.

(c) Inspect all railings and bulwarks and their attachment to the hull.

(d) Inspect weathertight closures above the weather deck and drainage or water from exposed decks and superstructure.

(3) At the annual inspection the inspector will examine and test the following items:

(a) Main propulsion machinery.

(b) Engine starting system.

(c) Engine control mechanisms.

(d) Auxiliary machinery.

(e) Fuel systems.

(f) Sea valves and bulkhead closure valves.

(g) Bilge and drainage systems.

(h) Electrical system, including circuit protection.

(4) Lifesaving and fire extinguishing equipment. At each annual inspection the inspector must inspect the life saving and fire extinguishing equipment for serviceability.

(5) Miscellaneous systems and equipment. At each annual inspection the marine dock inspector must inspect and test the vessel's steering apparatus, ground tackle, navigation lights, sanitary facilities, pressure vessels, and any other equipment aboard the vessel for serviceability and safety.

[Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050 and 1999 c 111. 00-23-100, § 296-115-035, filed 11/21/00, effective 1/1/01. Statutory

Authority: Chapter 49.17 RCW. 91-03-044 (Order 90-18), § 296-115-035, filed 1/10/91, effective 2/12/91. Statutory Authority: RCW 49.17.040, 49.17.050, 49.17.240, chapters 42.30 and 43.22 RCW. 80-17-014 (Order 80-20), § 296-115-035, filed 11/13/80.]

WAC 296-115-040 Construction and arrangement.

(1) Application.

(a) The requirements of this section apply to all vessels contracted for construction on or after June 7, 1979.

(b) Vessels constructed before the effective date of this chapter must be brought into substantial compliance with the requirements of this section. Where deviation exists and strict compliance is impractical, the director may grant a temporary variance to allow a modification or a permanent variance if the intent of subsection (1)(c) of this section is met.

(c) The intent of the regulations in this part is to provide for a sound, seaworthy vessel, reasonably fit for the service it is intended to provide, and to ensure that the materials, scantlings, fastenings, and workmanship meet this intent. Primary consideration must be given to the provision of a seaworthy hull, protection against fire, means of escape in case of casualty, guards and rails in hazardous places, ventilation of closed spaces, and necessary facilities for passengers and crew.

(2) Hull structure.

(a) In general, compliance with the standards of the United States Coast Guard rules for small passenger vessels or with the standards of a recognized classification society will be considered satisfactory evidence of the structural adequacy of a vessel.

(b) Special consideration will be given by the director to materials or structural requirements not contemplated by the standards of a recognized classification society.

(3) Watertight integrity and subdivision.

(a) All vessels carrying more than forty-nine passengers must have a collision bulkhead and watertight bulkheads (or sufficient air tankage or other internal flotation) so the vessel will remain afloat (with positive stability) with any one main compartment flooded.

(b) All watertight bulkheads required by this part must be of substantial construction so as to be able to remain watertight with water to the top of the bulkhead.

(c) Watertight bulkheads must extend intact to the bulkhead deck. Penetrations must be kept to a minimum and must be watertight.

(d) The weather deck on a flush deck vessel must be watertight and must not obstruct overboard drainage.

(e) Cockpits must be watertight except that companionways may be fitted if they are provided with watertight coamings and weathertight doors. Also, ventilation openings may be provided if they are situated as high in the cockpit as possible and the opening height does not exceed two inches.

(f) Cockpits must be self-bailing. The scuppers installed for this purpose must be located so as to be effective considering probable list and trim.

(g) Well decks must be watertight. Freeing ports may be installed if the provisions of applicable United States Coast Guard standards are followed.

(h) On vessels operating on protected waters, hatches may be weathertight. All hatches must be provided with covers capable of being secured.

(i) The number of openings in the vessel's sides below the weather deck must be kept to a minimum.

(j) Any openings in a vessel's sides, such as portlights, must comply with applicable United States Coast Guard standards.

(4) Stability.

(a) All vessels subject to the provisions of this section must have a stability test, except that the director may dispense with the requirements for a test if he deems that a test is not required, on the basis of sufficient evidence provided by the owner that the vessel's stability is satisfactory for the service for which it is intended.

(b) A letter stating that the vessel has met the stability requirements of this part must be posted in the pilothouse of each vessel.

[Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050 and 1999 c 111. 00-23-100, § 296-115-040, filed 11/21/00, effective 1/1/01. Statutory Authority: RCW 49.17.040, 49.17.050, 49.17.240, chapters 42.30 and 43.22 RCW. 80-17-014 (Order 80-20), § 296-115-040, filed 11/13/80.]

WAC 296-115-050 General requirements. (1) Application.

(a) The following rules are applicable to all vessels operated within the scope of this chapter.

(b) Where an existing vessel does not comply with a particular requirement of this section, the director may grant a temporary variance to allow time for modifications to be made.

(c) Where an existing vessel does not comply with a specific requirement contained herein but the degree of protection afforded is judged to be adequate for the service in which the vessel is used, the director may grant a permanent variance.

(2) Lifesaving equipment. Where equipment required by this section is required to be of an approved type, the equipment is required to be approved by the USCG.

(3) Lifesaving equipment required.

(a) All vessels carrying passengers must carry life floats or buoyant apparatus for all persons on board.

(b) All life floats or buoyant apparatus must be international orange in color.

(c) In the case of vessels operating not more than one mile from land, the director may permit operation with reduced amounts of life floats or buoyant apparatus, when, in his opinion, it is safe to do so.

(d) Lifeboats, life rafts, dinghies, dories, skiffs, or similar type craft may be substituted for the required life floats or buoyant apparatus if the substitution is approved by the director.

(e) Life floats, buoyant apparatus, or any authorized substitute must have the following equipment:

(i) A life line around the sides at least equivalent to 3/8-inch manila, festooned in bights of at least three feet, with a seine float in the center of each bight.

(ii) Two paddles or oars not less than four feet in length.

(iii) A painter of at least thirty feet in length and of at least two-inch manila or the equivalent.

(f) All vessels must have an approved adult type life preserver for each person carried, with at least ten percent additional of a type suitable for children.

(g) Life preservers must be stowed in readily accessible places in the upper part of the vessel, and each life preserver shall be marked with the vessel's name.

(h) All vessels must carry at least one life ring buoy of an approved type with sixty feet of line attached.

(i) The life ring buoy must be carried in a readily accessible location and must be capable of being cast loose at any time.

(4) Fire protection.

(a) The general construction of a vessel must minimize fire hazards.

(b) Internal combustion engine exhausts, boiler and galley uptakes, and similar sources of ignition must be kept clear of and suitably insulated from woodwork or other combustible material.

(c) Lamp, paint, and oil lockers and similar storage areas for flammable or combustible liquids must be constructed of metal or lined with metal.

(5) Fire protection equipment. Equipment required by this section, when required to be of an approved type, must be of a type approved by the USCG or other agency acceptable to the director.

(6) Fire pumps.

(a) All vessels carrying more than forty-nine passengers must carry an approved power fire pump, and all other vessels must carry an approved hand fire pump. These pumps must be provided with a suitable suction and discharge hose. These pumps may also serve as bilge pumps.

(b) Vessels required to have a power fire pump must also have a fire main system, including fire main, hydrants, hose, and nozzles. The fire hose may be a good commercial grade garden hose of not less than 5/8 inch size.

(7) Fixed fire extinguishing system.

(a) All vessels powered by internal combustion engines using gasoline or other fuel having a flashpoint of 110°F or lower, must have a fixed fire extinguishing system to protect the machinery and fuel tank spaces.

(b) This system must be an approved type using carbon dioxide and have a capacity sufficient to protect the space.

(c) Controls for the fixed system must be installed in an accessible location outside the space protected.

(8) Fire axe. All vessels must have one fire axe located in or near the pilothouse.

(9) Portable fire extinguishers.

(a) All vessels must have a minimum number of portable fire extinguishers of an approved type. The number required will be determined by the director.

(b) Portable fire extinguishers must be inspected at least once a month. Extinguishers found defective must be serviced or replaced.

(c) Portable fire extinguishers must be serviced at least once a year. The required service must consist of discharging and recharging foam and dry chemical extinguishers and weighing and inspecting carbon dioxide extinguishers.

(d) Portable fire extinguishers must be hydrostatically tested at intervals not to exceed those specified in WAC 296-24-59211(2) and Table I (after August 31, 2001, see WAC 296-800-300).

(e) Portable fire extinguishers of the vaporizing liquid type such as carbon tetrachloride and other toxic vaporizing liquids are prohibited and must not be carried on any vessel.

(f) Portable fire extinguishers must be mounted in brackets or hangers near the space protected. The location must be marked in a manner satisfactory to the director.

(10) Means of escape.

(a) Except as otherwise provided in this section, all vessels must be provided with not less than two avenues of escape from all general areas accessible to the passengers or where the crew may be quartered or normally employed. The avenues must be located so that if one is not available the other may be. At least one of the avenues should be independent of watertight doors.

(b) Where the length of the compartment is less than twelve feet, one vertical means of escape will be acceptable under the following conditions:

(i) There is no source of fire in the space, such as a galley stove or heater and the vertical escape is remote from the engine and fuel tank space; or

(ii) The arrangement is such that the installation of two means of escape does not materially improve the safety of the vessel or those aboard.

(11) Ventilation.

(a) All enclosed spaces within the vessel must be properly vented or ventilated. Where such openings would endanger the vessel under adverse weather conditions, means must be provided to close them.

(b) All crew and passenger space must be adequately ventilated in a manner suitable to the purpose of the space.

(12) Crew and passenger accommodations.

(a) Vessels with crew members living aboard must have suitable accommodations.

(b) Vessels carrying passengers must have fixed seating for the maximum number of passengers permitted to be carried.

(c) Fixed seating must be installed with spacing to provide for ready escape in case of fire or other casualty.

(d) Fixed seating must be installed as follows, except that special consideration may be given by the director if escape over the side can be readily accomplished through windows or other openings in the way of the seats:

(i) Aisles not over fifteen feet long must be not less than twenty-four inches wide.

(ii) Aisles over fifteen feet long must be not less than thirty inches wide.

(iii) Where seats are in rows the distance from seat front to seat front must be not less than thirty inches.

(e) Portable or temporary seating may be installed but must be arranged in general as provided for fixed seating.

(13) Toilet facilities and drinking water.

(a) Vessels must be provided with toilets and wash basins as specified in WAC 296-800-230, except that in the case of vessels used exclusively on short runs of approximately thirty minutes or less, the director may approve other arrangements.

(b) All toilets and wash basins must be fitted with adequate plumbing. Facilities for men and women must be in separate compartments, except in the case of vessels carrying forty-nine passengers and less, the director may approve other arrangements.

(c) Potable drinking water must be provided for all passengers and crew. The provisions of WAC 296-800-230 apply.

(d) Covered trash containers must be provided in passenger areas.

(14) Rails and guards.

(a) Except as otherwise provided in this section, rails or equivalent protection must be installed near the periphery of all weather decks accessible to passengers and crews. Where space limitations make deck rails impractical, such as at narrow catwalks in the way of deckhouse sides, hand grabs may be substituted.

(b) Rails must consist of evenly spaced courses. The spacing must not be greater than twelve inches except as provided in WAC 296-115-050 (14)(f). The lower rail courses may not be required where all or part of the space below the upper rail course is fitted with a bulwark, chain link fencing, wire mesh or the equivalent.

(c) On passenger decks of vessels engaged in ferry or excursion type operation, rails must be at least forty-two inches high. The top rail must be pipe, wire, chain, or wood and must withstand at least two hundred pounds of side loading. The space below the top rail must be fitted with bulwarks, chain link fencing, wire mesh, or the equivalent.

(d) On vessels in other than passenger service, the rails must be not less than thirty-six inches high, except that where vessels are used in special service, the director may approve other arrangements, but in no case less than thirty inches.

(e) Suitable storm rails or hand grabs must be installed where necessary in all passageways, at deckhouse sides, and at ladders and hatches where passengers or crew might have normal access.

(f) Suitable covers, guards, or rails must be installed in the way of all exposed and hazardous places such as gears or machinery. (See chapter 296-806 WAC, Machine safety for detailed requirements.)

(15) Machinery installation.

(a) Propulsion machinery.

(i) Propulsion machinery must be suitable in type and design for the propulsion requirements of the hull in which it is installed. Installations meeting the requirements of the USCG or other classification society will be considered acceptable to the director.

(ii) Installations using gasoline as a fuel must meet the requirements of applicable USCG standards.

(iii) Installations using diesel fuel must meet the requirements of applicable USCG standards.

(b) Auxiliary machinery and bilge systems.

(i) All vessels must be provided with a suitable bilge pump, piping and valves for removing water from the vessel.

(ii) Vessels carrying more than forty-nine passengers must have a power operated bilge pump. The source of power must be independent of the propulsion machinery. Other vessels must have a hand operated bilge pump, but may have a power operated pump if it is operated by an independent power source.

(c) Steering apparatus and miscellaneous systems.

(i) All vessels must be provided with a suitable steering apparatus.

(ii) All vessels must be provided with navigation lights and shapes, whistles, fog horns, and fog bells as required by the USCG rules of navigation.

(iii) All vessels must be equipped with a suitable number of portable battery lights for emergency purposes.

(d) Electrical installations. The electrical installations of all vessels must be at least equal to applicable USCG standards, or as approved by the director.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060. 04-14-028, § 296-115-050, filed 6/29/04, effective 1/1/05; 03-18-090, § 296-115-050, filed 9/2/03, effective 11/1/03. Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050 and 1999 c 111. 00-23-100, § 296-115-050, filed 11/21/00, effective 1/1/01. Statutory Authority: RCW 49.17.040, 49.17.050, 49.17.240, chapters 42.30 and 43.22 RCW. 80-17-014 (Order 80-20), § 296-115-050, filed 11/13/80.]

WAC 296-115-060 Operations. (1) This section applies to all passenger vessel operations within the scope of this chapter.

(2) No person will rent, lease, or hire out a charter boat, nor carry, advertise for the carrying of, nor arrange for the carrying of, more than six passengers on a vessel for a fee or other consideration on the waters of the state unless the vessel is in compliance with the provisions of this chapter.

(3) Notice of casualty.

(a) The owner or person in charge of any vessel involved in a marine accident or casualty involving any of the following must report the incident immediately to the department.

(i) Damage to property in excess of one thousand five hundred dollars.

(ii) Major damage affecting the seaworthiness or safety of the vessel.

(iii) Loss of life or an injury to a person that incapacitates the person for more than seventy-two hours.

(b) The report must be in writing to the director and upon receipt of the report the director may request an investigation by a marine dock inspector.

(4) Miscellaneous operating requirements.

(a) In the case of collision, accident, or other casualty involving a vessel the operator, must, so far as he can do so without serious danger to his own vessel or persons aboard, render any necessary assistance to other persons affected by the collision, accident, or casualty to save them from danger. He must also give his name and address and the name of his vessel to any person injured and to the owner of any property damaged.

(b) The person in charge of the vessel must see that the provisions of the certificate of inspection are strictly adhered to. This will not be construed as limiting the person in charge from taking any action in an emergency that he deems necessary to help vessels in distress or to prevent loss of life.

(c) Persons operating vessels must comply with the provisions of the USCG rules of the road for inland waters.

(d) The operator of a vessel must test the vessel's steering gear, signaling whistle, controls, and communication system before getting under way for the day's operation.

(e) Vessels using fuel having a flashpoint of 110°F or lower must not take on fuel when passengers are on board.

(f) All vessels must enforce "no smoking" provisions when fueling. Locations on the vessel where flammable or combustible liquids are stored must be posted "no smoking."

(g) All vessels must prepare and post emergency check-off lists in a conspicuous place accessible to crew and passengers, covering the following:

(i) Man overboard.

(ii) Fire.

(h) The persons in charge must conduct emergency drills to ensure that the crew is familiar with their duties in an emergency.

(i) The carriage of hazardous substances is prohibited on vessels. However, the director may authorize a vessel to carry specific types and quantities of hazardous substances if he deems it necessary.

(j) All areas accessible to passengers or crew must be kept in a clean and sanitary condition. All walking surfaces must be free of slipping or tripping hazards and in good repair.

(5) First-aid training. There must be present or available on all passenger vessels at all times, a person holding a valid certificate of first-aid training.

(6) Valid certification must be achieved by passing a course of first-aid instruction and participation in practical application of the following subject matter.

Bleeding control and bandaging.

Practical methods of artificial respiration, including mouth to mouth and mouth to nose resuscitation.

Closed chest heart massage.

Poisons.

Shock, unconsciousness, stroke.

Burns, scalds.

Sunstroke, heat exhaustion.

Frostbite, freezing, hypothermia.

Strains, sprains, hernias.

Fractures, dislocations.

Proper transportation of the injured.

Bites, stings.

Subjects covering specific health hazards likely to be encountered by coworkers of first-aid students enrolled in the course.

(7) First-aid equipment. A first-aid kit or first-aid room must be provided on all passenger vessels. The size and quantity of first-aid supplies or equipment required must be determined by the number of persons normally dependent upon each kit or equipment. The first-aid kit or supplies must be in a weatherproof container with individually sealed packages for each type of item. The first-aid station or kit location must be posted on the container.

[Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050 and 1999 c 111. 00-23-100, § 296-115-060, filed 11/21/00, effective 1/1/01. Statutory Authority: Chapter 49.17 RCW. 91-03-044 (Order 90-18), § 296-115-060, filed 1/10/91, effective 2/12/91. Statutory Authority: RCW 49.17.040, 49.17.050, 49.17.240, chapters 42.30 and 43.22 RCW. 80-17-014 (Order 80-20), § 296-115-060, filed 11/13/80.]

WAC 296-115-070 Rules of navigation. The operation and navigation of all vessels subject to this chapter must be in strict accordance with the United States Coast Guard Navigation Rules International/Inland, Commandants Instruction M16672.29 as now adopted, or hereafter legally amended by the United States Coast Guard.

(1) A copy of the United States Coast Guard Navigation Rules International/Inland, Commandants Instruction M16672.29, must be on board all vessels subject to this chapter at all times when the vessel is under way.

(2) At least annually, where applicable, the operator of each vessel must "swing the vessel" to determine the actual

compass readings in relation to true compass headings, and must maintain a record on board the vessel.

[Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050 and 1999 c 111. 00-23-100, § 296-115-070, filed 11/21/00, effective 1/1/01. Statutory Authority: Chapter 49.17 RCW. 91-03-044 (Order 90-18), § 296-115-070, filed 1/10/91, effective 2/12/91. Statutory Authority: RCW 49.17.040, 49.17.050, 49.17.240, chapters 42.30 and 43.22 RCW. 80-17-014 (Order 80-20), § 296-115-070, filed 11/13/80.]

WAC 296-115-100 Violations and setting of penalties. (1) Violations of the mandatory provisions of this chapter will be subject to penalty. The amount of the penalty will be assessed in accordance with the guidelines and fixed schedules contained herein.

(2) Fixed schedule penalties.

(a) Failure to display certificate of inspection as required: Fifty dollars to owner of the vessel.

(b) Operation of vessel in passenger service without a valid certificate of inspection: To owner of vessel, two hundred dollars per violation; to person who operates vessel, one hundred dollars per violation.

(c) Operation of vessel in passenger service while not in possession of valid USCG/state of Washington operator's license: One hundred dollars per violation to owner of vessel.

[Statutory Authority: RCW 49.17.010, [49.17].040, [49.17].050 and 1999 c 111. 00-23-100, § 296-115-100, filed 11/21/00, effective 1/1/01. Statutory Authority: Chapter 49.17 RCW. 91-03-044 (Order 90-18), § 296-115-100, filed 1/10/91, effective 2/12/91. Statutory Authority: RCW 49.17.040, 49.17.050, 49.17.240, chapters 42.30 and 43.22 RCW. 80-17-014 (Order 80-20), § 296-115-100, filed 11/13/80.]

WAC 296-115-120 Annual fee schedule. (1) The annual license fee for passenger vessels or barges is \$250.00 plus \$2.00 per ton for each vessel.

(2) The fee for an operator's license for passenger vessels or barges is \$50.00 for the first year; this covers application and test costs. The renewal fee is \$25.00 annually.

(3) Additional inspection service when required is at the rate of \$25.00 per hour, plus travel and per diem.

[Statutory Authority: Chapter 49.17 RCW. 89-21-018 (Order 89-10), § 296-115-120, filed 10/10/89, effective 11/24/89. Statutory Authority: RCW 49.17.040, 49.17.050, 49.17.240, chapters 42.30 and 43.22 RCW. 80-17-014 (Order 80-20), § 296-115-120, filed 11/13/80.]

Chapter 296-125 WAC

NONAGRICULTURAL EMPLOYMENT OF MINORS

WAC

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MASTER BUSINESS LICENSE/MINOR WORK PERMIT ENDORSEMENT

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296-125-0261	Where can I obtain a parent/school authorization form?	DISPOSITION OF SECTIONS FORMERLY CODIFIED IN THIS CHAPTER	
296-125-0262	Do parent/school authorization forms expire?		
296-125-0263	What information must a minor provide on the parent/school authorization form?	296-125-019	Prerequisites to employing minors. [Statutory Authority: Chapters 43.22 and 49.12 RCW, RCW 26.28.060 and 43.17.060. 93-01-068, § 296-125-019, filed 12/11/92, effective 3/1/93.] Repealed by 99-15-071, filed 7/19/99, effective 8/19/99. Statutory Authority: Chapter 49.12 RCW.
296-125-0264	What information must an employer provide on the parent/school authorization form?	296-125-020	Minor work permits. [Statutory Authority: Chapters 43.22 and 49.12 RCW, RCW 26.28.060 and 43.17.060. 93-01-068, § 296-125-020, filed 12/11/92, effective 3/1/93; Order 76-15, § 296-125-020, filed 5/17/76; Order 71-5, § 296-125-020, filed 5/26/71, effective 7/1/71; Section C, filed 9/18/63; Rules (part), filed 3/23/60.] Repealed by 99-02-041, filed 12/31/98, effective 1/31/99. Statutory Authority: RCW 49.12.121.
296-125-0265	What information must a parent or legal guardian provide on the parent/school authorization form?		Posting. [Order 76-15, § 296-125-023, filed 5/17/76.] Repealed by 93-01-068, filed 12/11/92, effective 3/1/93. Statutory Authority: Chapters 43.22 and 49.12 RCW, RCW 26.28.060 and 43.17.060.
296-125-0266	What information must a school provide on the parent/school authorization form?		Conditions governing issuance of permits. [Order 74-9, § 296-125-025, filed 3/13/74, effective 4/15/74; Order 71-5, § 296-125-025, filed 5/26/71, effective 7/1/71; Section D, filed 9/18/63; Rules (part), filed 3/12/60.] Repealed by Order 76-15, filed 5/17/76.
296-125-0267	What if a minor is no longer attending school?		Parent/school authorization forms. [Statutory Authority: Chapters 43.22 and 49.12 RCW, RCW 26.28.060 and 43.17.060. 93-01-068, § 296-125-026, filed 12/11/92, effective 3/1/93.] Repealed by 99-02-041, filed 12/31/98, effective 1/31/99. Statutory Authority: RCW 49.12.121.
296-125-0268	Can a parent, legal guardian or school revoke the work authorization previously given on the parent/school authorization form?		Meal and rest breaks for minors. [Statutory Authority: Chapters 43.22 and 49.12 RCW, RCW 26.28.060 and 43.17.060. 93-01-068, § 296-125-028, filed 12/11/92, effective 3/1/93.] Repealed by 99-02-041, filed 12/31/98, effective 1/31/99. Statutory Authority: RCW 49.12.121.
296-125-027	Hours of work for minors.		Working conditions. [Section F, filed 9/18/63; Rules (part), filed 3/23/60.] Repealed by Order 71-5, filed 5/26/71, effective 7/1/71.
RECORDKEEPING			Issuance of permit. [Order 71-5, § 296-125-040, filed 5/26/71, effective 7/1/71; Section G, filed 9/18/63; Rules (part), filed 3/23/60.] Repealed by Order 76-15, filed 5/17/76.
296-125-0275	When I employ minors, what recordkeeping requirements must I satisfy?	296-125-023	Denial of permit. [Order 71-5, § 296-125-045, filed 5/26/71, effective 7/1/71; Section H, filed 9/18/63.] Repealed by Order 76-15, filed 5/17/76.
296-125-0280	What is the department's enforcement authority?	296-125-025	Posting, recordkeeping, and authority to enter, inspect, and investigate. [Statutory Authority: Chapters 43.22 and 49.12 RCW, RCW 26.28.060 and 43.17.060. 93-01-068, § 296-125-050, filed 12/11/92, effective 3/1/93; Order 76-15, § 296-125-050, filed 5/17/76; Order 71-5, § 296-125-050, filed 5/26/71, effective 7/1/71; Section I, filed 9/18/63; Rules (part), filed 3/23/60.] Repealed by 99-02-041, filed 12/31/98, effective 1/31/99. Statutory Authority: RCW 49.12.121.
MEAL AND REST BREAKS FOR MINORS		296-125-026	Revocation of permits. [Order 76-15, § 296-125-055, filed 5/17/76; Order 71-5, § 296-125-055, filed 5/26/71, effective 7/1/71; Section J, filed 9/18/63; Rules (part), filed 3/23/60.] Repealed by 93-01-068, filed 12/11/92, effective 3/1/93. Statutory Authority: Chapters 43.22 and 49.12 RCW, RCW 26.28.060 and 43.17.060.
296-125-0285	What regulations apply to meal and rest breaks for my fourteen-year-old and fifteen-year-old minors?		Variances. [Statutory Authority: Chapters 43.22 and 49.12 RCW, RCW 26.28.060 and 43.17.060. 93-01-068, § 296-125-060, filed 12/11/92, effective 3/1/93; Order 76-15, § 296-125-060, filed 5/17/76.] Repealed by 99-02-041, filed 12/31/98, effective 1/31/99. Statutory Authority: RCW 49.12.121.
296-125-0287	What regulations apply to meal and rest breaks for my sixteen-year-old and seventeen-year-old employees?		Special variances. [Statutory Authority: Chapters 43.22 and 49.12 RCW, RCW 26.28.060 and 43.17.060. 93-01-
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- 068 and 93-04-112, § 296-125-070, filed 12/11/92 and 2/3/93, effective 3/1/93 and 7/1/93.] Repealed by 99-02-041, filed 12/31/98, effective 1/31/99. Statutory Authority: RCW 49.12.121.
- 296-125-110 Applicability. [Statutory Authority: RCW 43.22.270 and 1989 c 216. 89-23-003, § 296-125-110, filed 11/3/89, effective 11/20/89.] Repealed by 93-01-068, filed 12/11/92, effective 3/1/93. Statutory Authority: Chapters 43.22 and 49.12 RCW, RCW 26.28.060 and 43.17.060.
- 296-125-115 Definitions. [Statutory Authority: RCW 43.22.270 and 1989 c 216. 89-23-003, § 296-125-115, filed 11/3/89, effective 11/20/89.] Repealed by 93-01-068, filed 12/11/92, effective 3/1/93. Statutory Authority: Chapters 43.22 and 49.12 RCW, RCW 26.28.060 and 43.17.060.
- 296-125-120 Filing of registration certificate. [Statutory Authority: RCW 43.22.270 and 1989 c 216. 89-23-003, § 296-125-120, filed 11/3/89, effective 11/20/89.] Repealed by 93-01-068, filed 12/11/92, effective 3/1/93. Statutory Authority: Chapters 43.22 and 49.12 RCW, RCW 26.28.060 and 43.17.060.
- 296-125-125 Application for initial and renewed registration. [Statutory Authority: RCW 43.22.270 and 1989 c 216. 89-23-003, § 296-125-125, filed 11/3/89, effective 11/20/89.] Repealed by 93-01-068, filed 12/11/92, effective 3/1/93. Statutory Authority: Chapters 43.22 and 49.12 RCW, RCW 26.28.060 and 43.17.060.
- 296-125-130 Posting. [Statutory Authority: RCW 43.22.270 and 1989 c 216. 89-23-003, § 296-125-130, filed 11/3/89, effective 11/20/89.] Repealed by 93-01-068, filed 12/11/92, effective 3/1/93. Statutory Authority: Chapters 43.22 and 49.12 RCW, RCW 26.28.060 and 43.17.060.
- 296-125-135 Identification cards. [Statutory Authority: RCW 43.22.270 and 1989 c 216. 89-23-003, § 296-125-135, filed 11/3/89, effective 11/20/89.] Repealed by 93-01-068, filed 12/11/92, effective 3/1/93. Statutory Authority: Chapters 43.22 and 49.12 RCW, RCW 26.28.060 and 43.17.060.
- 296-125-140 House to house employment standards. [Statutory Authority: RCW 43.22.270 and 1989 c 216. 89-23-003, § 296-125-140, filed 11/3/89, effective 11/20/89.] Repealed by 93-01-068, filed 12/11/92, effective 3/1/93. Statutory Authority: Chapters 43.22 and 49.12 RCW, RCW 26.28.060 and 43.17.060.
- 296-125-145 Transporting minors out-of-state. [Statutory Authority: RCW 43.22.270 and 1989 c 216. 89-23-003, § 296-125-145, filed 11/3/89, effective 11/20/89.] Repealed by 93-01-068, filed 12/11/92, effective 3/1/93. Statutory Authority: Chapters 43.22 and 49.12 RCW, RCW 26.28.060 and 43.17.060.
- 296-125-155 Recordkeeping. [Statutory Authority: RCW 43.22.270 and 1989 c 216. 89-23-003, § 296-125-155, filed 11/3/89, effective 11/20/89.] Repealed by 93-01-068, filed 12/11/92, effective 3/1/93. Statutory Authority: Chapters 43.22 and 49.12 RCW, RCW 26.28.060 and 43.17.060.
- 296-125-160 Revocation of registration certificate. [Statutory Authority: RCW 43.22.270 and 1989 c 216. 89-23-003, § 296-125-160, filed 11/3/89, effective 11/20/89.] Repealed by 93-01-068, filed 12/11/92, effective 3/1/93. Statutory Authority: Chapters 43.22 and 49.12 RCW, RCW 26.28.060 and 43.17.060.
- 296-125-165 Denial of registration certificate. [Statutory Authority: RCW 43.22.270 and 1989 c 216. 89-23-003, § 296-125-165, filed 11/3/89, effective 11/20/89.] Repealed by 93-01-068, filed 12/11/92, effective 3/1/93. Statutory Authority: Chapters 43.22 and 49.12 RCW, RCW 26.28.060 and 43.17.060.
- 296-125-170 Employment of minors under the age of sixteen. [Statutory Authority: RCW 43.22.270 and 1989 c 216. 89-23-003, § 296-125-170, filed 11/3/89, effective 11/20/89.] Repealed by 93-01-068, filed 12/11/92, effective 3/1/93. Statutory Authority: Chapters 43.22 and 49.12 RCW, RCW 26.28.060 and 43.17.060.
- 296-125-175 Length of registration period. [Statutory Authority: RCW 43.22.270 and 1989 c 216. 89-23-003, § 296-125-175, filed 11/3/89, effective 11/20/89.] Repealed by 93-01-068, filed 12/11/92, effective 3/1/93. Statutory Authority: Chapters 43.22 and 49.12 RCW, RCW 26.28.060 and 43.17.060.

WAC 296-125-010 Applicability. This chapter applies to every person that employs one or more minors, or who permits, allows, or suffers one or more minors to work at a site or workplace, on premises, or under work conditions controlled by that employer, except for those employers statutorily exempted, as follows: This chapter does not apply to newspaper vendors or carriers; to domestic or casual labor in or about private residences; to parents or stepparents who employ their own children for house-to-house sales; to agricultural labor as defined by RCW 50.04.150; or, to employers expressly exempted by federal statute from the coverage of state law.

[Statutory Authority: Chapters 43.22 and 49.12 RCW, RCW 26.28.060 and 43.17.060. 93-01-068, § 296-125-010, filed 12/11/92, effective 3/1/93; Order 76-15, § 296-125-010, filed 5/17/76; Order 74-9, § 296-125-010, filed 3/13/74, effective 4/15/74; Order 71-5, § 296-125-010, filed 5/26/71, effective 7/1/71; Section A, filed 9/18/63; Rules (part), filed 3/23/60.]

WAC 296-125-015 Definitions. For the purposes of this chapter:

(1) "Department" means the Washington state department of labor and industries.

(2) "Employ" means to engage, suffer or permit to work, and includes entering into any arrangement, including a contract, whether implied, express, oral, or written, with a minor whereby the minor works in house-to-house sales except when a minor is working in house-to-house sales for her or his parent or stepparent. The term "employ" does not include newspaper vendors or carriers, the use of domestic or casual labor in or about private residences, agricultural labor as defined by RCW 50.04.150, or the use of voluntary or donated services performed for an educational, charitable, religious, or nonprofit organization and without expectation or contemplation of compensation for the services performed.

(3) "Employee" means any minor employed by an employer, including minors who work pursuant to any arrangement, including contract, whether implied, express, oral, or written in house-to-house sales, but does not include newspaper vendors or carriers, domestic or casual labor in or about private residences, minors employed in agricultural labor as defined by RCW 50.04.150, or minors employed for house-to-house sales by their parents or stepparents.

(4) "Employer" means any person, association, partnership, private or public corporation that employs or exercises control over the wages, hours, working conditions, or workplace of a minor, and for purposes of house-to-house sales includes any distributor or other person, association, partnership, private or public corporation that enters into any arrangement, including contract, whether implied, express, oral, or written, with a minor whereby the minor works in house-to-house sales; but does not include employers of agricultural labor as defined by RCW 50.04.150, employers of newspaper vendors or carriers, employers of casual labor in or about the employers' private residences, parents or stepparents employing their own minor children for house-to-house sales, the state, a state institution, a state agency, a political subdivision of the state, a municipal corporation, or a quasi-municipal corporation.

(5) "House-to-house sales" means a sale or other transaction in consumer goods, the demonstration of products or

equipment, the obtaining of orders for consumer goods, or the obtaining of contracts for services, in which an employee personally solicits the sale or transaction at a place other than the place of business of the employer or the residence of the employee.

(6) "Minor" means a person under the age of eighteen years.

(7) "School holiday" means a day of a school week on which the school at which a minor employee is enrolled is scheduled to be closed. If a minor employee is not enrolled in school, school holidays shall be determined by the schedule of the public school district in which the minor resides.

(8) "School vacation" means the spring break, winter break, and summer break of the school at which a minor employee is enrolled, or if not enrolled the public school district in which a minor resides.

(9) "Transport" means the conveyance, provision of a means of conveyance, or reimbursement or payment for the cost of conveyance at the direction or under the control of an employer or an employer's agent.

(10) "Workplace" means any worksite, premises, or location where minors work.

[Statutory Authority: Chapters 43.22 and 49.12 RCW, RCW 26.28.060 and 43.17.060, 93-01-068, § 296-125-015, filed 12/11/92, effective 3/1/93. Statutory Authority: RCW 43.22.270 and 1989 c 216, 89-23-003, § 296-125-015, filed 11/3/89, effective 11/20/89; Order 76-15, § 296-125-015, filed 5/17/76; Order 74-9, § 296-125-015, filed 3/13/74, effective 4/15/74; Order 71-5, § 296-125-015, filed 5/26/71, effective 7/1/71; Section B, filed 9/18/63; Rules (part), filed 3/23/60.]

WAC 296-125-018 Minimum age for employment.

(1) Pursuant to RCW 26.28.060, a written order issued by a judge of a superior court of the county in which a minor lives is a prerequisite to the hiring, not otherwise prohibited by federal law, of any minor under the age of fourteen for any labor in or in connection with any store, shop, factory, mine, or inside employment other than inside employment connected with farm or housework.

(2) No employer shall employ a minor under the age of sixteen in house-to-house sales, unless the department has granted a variance to an employer for that specific purpose.

[Statutory Authority: Chapters 43.22 and 49.12 RCW, RCW 26.28.060 and 43.17.060, 93-01-068, § 296-125-018, filed 12/11/92, effective 3/1/93.]

MASTER BUSINESS LICENSE/MINOR WORK PERMIT ENDORSEMENT

WAC 296-125-0200 If I plan to employ minors in my business, what general requirements do I have to satisfy?

(1) You must obtain, keep current and post valid minor work permit endorsements issued by the department.

(2) If employing minors for house-to-house sales, you must satisfy the special requirements in WAC 296-125-024 for that activity.

(3) You must obtain and keep on file a completed parent/school authorization form for each minor you employ.

(4) You must keep on file any variances issued to you according to variance and/or special variance sections of this chapter.

(5) If you sponsor bona fide *unpaid* work-based learning programs approved by the office of the superintendent of public instruction or a local school district, you are not

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required to obtain minor work permit endorsements for those programs.

[Statutory Authority: RCW 49.12.121, 99-02-041, § 296-125-0200, filed 12/31/98, effective 1/31/99.]

WAC 296-125-0210 Do I need minor work permit endorsements for my business? If you plan to employ one or more minors, you must obtain, keep current and post valid minor work permit endorsements before you:

- (1) Employ minors; or
- (2) Allow minors to work at your workplace; or
- (3) Allow minors to work under work conditions controlled by you.

[Statutory Authority: RCW 49.12.121, 99-02-041, § 296-125-0210, filed 12/31/98, effective 1/31/99.]

WAC 296-125-0211 What if I employ minors at several different workplaces? (1) You must obtain, keep current and post separate minor work permit endorsements for each workplace at which you employ minors.

(2) In those situations where you place minors in a workplace controlled by another employer, you and the other employer must obtain, keep current and post minor work permit endorsements at that workplace.

(3) When you employ minors in multiple workplaces, you must obtain, keep current and post minor work permit endorsements at each workplace.

(4) Unless modified or revoked, a single endorsement will allow you to employ any number of minors at the workplace specified on the endorsement.

[Statutory Authority: RCW 49.12.121, 99-02-041, § 296-125-0211, filed 12/31/98, effective 1/31/99.]

WAC 296-125-0220 Are there working condition restrictions which may be placed on my minor work permit endorsements? Minor work permit endorsements may include restrictions, consistent with this chapter, on minors' working conditions.

[Statutory Authority: RCW 49.12.121, 99-02-041, § 296-125-0220, filed 12/31/98, effective 1/31/99.]

WAC 296-125-0221 Do my minor work permit endorsements expire? Your minor work permit endorsements will expire one year from the date of issue.

[Statutory Authority: RCW 49.12.121, 99-02-041, § 296-125-0221, filed 12/31/98, effective 1/31/99.]

WAC 296-125-0222 Can I renew my minor work permit endorsements? You may renew your minor work permit endorsements. However, filing an application for renewal does not automatically result in an extension of your endorsement. The department may refuse to renew your endorsement if you have:

- (1) Failed to satisfy a condition related to the initial issuance of the endorsement; or
- (2) Violated the requirements of this chapter; or
- (3) Any other condition that the department finds is or could be detrimental to the health, safety, or welfare of minors.

[Statutory Authority: RCW 49.12.121. 99-02-041, § 296-125-0222, filed 12/31/98, effective 1/31/99.]

WAC 296-125-0223 How long must my minor work permit endorsements stay in force? Unless revoked, suspended or modified by the department, your minor work permit endorsements must remain in full force and effect as long as:

- (1) You employ minors; or
- (2) Have minors working at your workplace; or
- (3) Have minors working under work conditions controlled by you.

[Statutory Authority: RCW 49.12.121. 99-02-041, § 296-125-0223, filed 12/31/98, effective 1/31/99.]

WAC 296-125-0224 Do I need to post my minor work permit endorsements? At least one copy of your minor work permit endorsements and a current copy of the poster required by WAC 296-126-080 must be posted in plain view of all employees at each workplace specified in each endorsement.

[Statutory Authority: RCW 49.12.121. 99-02-041, § 296-125-0224, filed 12/31/98, effective 1/31/99.]

WAC 296-125-0230 Can the department of labor and industries refuse to issue or renew, revoke, suspend or modify my minor work permit endorsements? The department may refuse to issue or renew, revoke, suspend, or modify your minor work permit endorsements if it finds:

- (1) A condition related to their issuance has not been satisfied; or
- (2) You have violated any requirements of this chapter; or
- (3) An existing condition that is or could be detrimental to the health, safety, or welfare of a minor. In this case, the department may issue an order of immediate restraint revoking, suspending or modifying your endorsements. If you appeal the department's action, the order of immediate restraint will remain in force until your appeal is resolved.

[Statutory Authority: RCW 49.12.121. 99-02-041, § 296-125-0230, filed 12/31/98, effective 1/31/99.]

WAC 296-125-0231 Can I appeal the department's refusal to issue or renew, or to revoke, suspend or modify my minor work permit endorsements? You have the right to appeal such actions by the department. However, your appeal must be filed with the department in writing within thirty days of the department's action according to the procedures established by RCW 49.12.161 and 49.12.400. Your appeal **will not** set aside an order of immediate restraint issued by the department according to RCW 49.12.390.

[Statutory Authority: RCW 49.12.121. 99-02-041, § 296-125-0231, filed 12/31/98, effective 1/31/99.]

WAC 296-125-024 House-to-house sales. (1) Minimum age. No minor under the age of sixteen years may be employed in house-to-house sales, unless the department grants a variance to an employer for that specific purpose. A variance must be obtained prior to an employer's employment of any minor under the age of sixteen.

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(2) Registration certificates. Each employer of minors in house-to-house sales, or person seeking to advertise to employ a person in house-to-house sales with an advertisement specifically stating a minimum age requirement that is under the age of twenty-one, shall receive from the department, and shall maintain, a valid house-to-house sales registration certificate prior to employing a sixteen- or seventeen-year-old minor for house-to-house sales and prior to advertising for employment.

Employers also must obtain and maintain a valid minor work permit, pursuant to WAC 296-125-020 [296-125-0200], and parent/school authorization forms, pursuant to WAC 296-125-126 [296-125-0260], prior to employing minors for house-to-house sales. If an employer seeks to transport a minor out of the state of Washington for house-to-house sales, the employer must obtain and keep on file express written authorization from each minor's parent or legal guardian to transport each minor worker out of the state for house-to-house sales.

A valid registration certificate and a valid minor work permit must remain in full force and effect at all times that minors are employed by the employer. When duly issued by the department, and unless modified, suspended, or revoked, such a certificate will authorize the employer to employ any number of sixteen- or seventeen-year-old minors for house-to-house sales in accordance with the provisions of this chapter and in accordance with any limitations listed on the certificate.

(3) Adult supervision requirements.

(a) The employer shall ensure that there is one adult supervisor for every five minor employees employed in house-to-house sales during all work hours. A supervisor may not supervise more than one group of five minor employees.

(b) The employer shall ensure that each supervisor of minor employees is a responsible adult who is at least twenty-one years of age.

(c) The employer shall ensure that each supervisor has contact, personally or verbally, with each minor employee at least once every fifteen minutes. The contact with minor employees may be made by remote means such as telephone or walkie-talkie, but in any case shall be of such a nature as to provide assurance of the minor's health, safety, and welfare. The employer shall ensure that each supervisor is within one-half mile of each supervised minor employee during all working hours.

(d) The employer shall ensure that each minor employee is returned by the employer or its agent to the minor's home or initial point of contact promptly at the end of the minor's work hours. If the minor is returned to the initial point of contact, the employer shall ensure that the location selected is one in which the minor's safety is the first and foremost consideration. Minors shall be protected from risks of injury including, but not limited to, moving vehicles.

(4) Hours restrictions and rest periods. Minors may not be employed in house-to-house sales prior to 7:00 a.m. or after 9:00 p.m., nor during school hours. In addition, employers of minors in house-to-house sales must comply with the further requirements of WAC 296-125-027, concerning maximum number of hours per day and per week, and WAC 296-125-028, concerning mandatory rest and meal breaks.

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(5) Employee identification cards.

(a) An employer shall issue to each minor employed in house-to-house sales an identification card with the employee's picture. The identification cards issued shall be exclusively from forms obtained in blank from the department.

(b) An identification card shall be in the possession of each minor employed in house-to-house sales during all working hours, and shall be shown to each customer or potential customer.

(6) Posting. At least one copy of a valid house-to-house sales registration certificate shall be posted in plain view of all employees at the employer's primary place of business within the state of Washington.

(7) Renewal. House-to-house sales registration certificates shall be valid for a one-year period. The filing of an application for renewal of registration does not result in an automatic extension of the one-year registration period. The department may refuse to renew a registration certificate if the department finds that a condition of the previous registration period has not been satisfied, that the employer has violated the requirements of this chapter, or that any other condition exists that is or could be detrimental to the health, safety, or welfare of a minor.

(8) Revocation, suspension, and modification. The department may revoke, suspend, or modify an employer's registration for house-to-house sales if the department finds that a condition of registration is not being satisfied, that the employer has violated the requirements of this chapter, or that any other condition exists which is or could be detrimental to the health, safety, or welfare of a minor. In the event the department finds that a condition exists which is or could be detrimental to the health, safety, or welfare of a minor, the department may take emergency action to revoke or suspend a house-to-house sales registration; in such instances, an appeal of the department's action shall not stay the revocation, suspension, or modification during the pendency of the appeal.

(9) Appeals. An appeal of an action by the department to refuse to issue or renew, or to revoke, suspend, or modify an employer's house-to-house sales registration must be filed in writing with the director of the department within thirty days of the department's action. Such appeal shall be conducted in accordance with the rules of practice and procedure established in chapter 296-10 WAC. Such appeal shall not stay the effectiveness of an emergency action taken by the department pursuant to this section.

[Statutory Authority: Chapters 43.22 and 49.12 RCW, RCW 26.28.060 and 43.17.060, 93-01-068, § 296-125-024, filed 12/11/92, effective 3/1/93.]

PARENT/SCHOOL AUTHORIZATION FORMS

WAC 296-125-0260 If I employ minors, do I need authorization from the parent or school? Before allowing a minor to begin work, you must obtain and keep on file, at the minor's workplace, a fully completed parent/school authorization form. As the employer, it is your responsibility to ensure that the parent/school authorization form is complete.

[Statutory Authority: RCW 49.12.121. 99-02-041, § 296-125-0260, filed 12/31/98, effective 1/31/99.]

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WAC 296-125-0261 Where can I obtain a parent/school authorization form? Parent/school authorization forms are issued only to employers with a valid minor work permit endorsement and can be obtained by contacting the local labor and industries office or:

Department of Labor and Industries

Employment Standards Section

PO Box 44510

Olympia WA 98504-4510

[Statutory Authority: RCW 49.12.121. 99-02-041, § 296-125-0261, filed 12/31/98, effective 1/31/99.]

WAC 296-125-0262 Do parent/school authorization forms expire? All parent/school authorization forms expire each year on the thirtieth day of September. *Therefore, each year, prior to September 30, you must:*

- (1) Obtain a new form for each of your minors; and
- (2) Make sure it is properly completed; and
- (3) File it where the minor works.

[Statutory Authority: RCW 49.12.121. 99-02-041, § 296-125-0262, filed 12/31/98, effective 1/31/99.]

WAC 296-125-0263 What information must a minor provide on the parent/school authorization form? A minor must provide the following personal information:

- (1) Name.
- (2) Address.
- (3) Date of birth*.
- (4) Whether he or she is employed at any other job(s) and the total number of hours worked at that job(s).
- (5) His or her signature.

*Note: The date of birth must be supported by proof. Acceptable forms of proof are:

- ☐ A birth certificate and a social security card; or
- ☐ A driver's license; or
- ☐ A baptismal record and a Social Security card; or
- ☐ A notarized statement of a parent or guardian.

[Statutory Authority: RCW 49.12.121. 99-02-041, § 296-125-0263, filed 12/31/98, effective 1/31/99.]

WAC 296-125-0264 What information must an employer provide on the parent/school authorization form? As the employer, you must provide the following information:

- (1) The location of the minor's workplace(s).
- (2) A description of the minor's duties.
- (3) The earliest and latest hours the minor would be working.
- (4) The total number of hours the minor would work per week.
- (5) Your minor work permit endorsement number and expiration date.
- (6) Your unified business identifier (UBI) number.
- (7) Your signature or the signature of your authorized agent.

[Statutory Authority: RCW 49.12.121. 99-02-041, § 296-125-0264, filed 12/31/98, effective 1/31/99.]

WAC 296-125-0265 What information must a parent or legal guardian provide on the parent/school authorization form? A parent or legal guardian of a minor must:

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(1) Indicate that he or she authorizes (or does not authorize) the minor to work according to the terms listed by the employer.

(2) Sign the form.

[Statutory Authority: RCW 49.12.121. 99-02-041, § 296-125-0265, filed 12/31/98, effective 1/31/99.]

WAC 296-125-0266 What information must a school provide on the parent/school authorization form? (1) If a minor will be working during the school year, an authorized school official from the minor's school must:

(a) Indicate that the school authorizes (or does not authorize) the minor working according to the terms listed by the employer; and

(b) Sign the form as the school's authorized agent.

(2) Furthermore, if a minor begins work during a school vacation and wishes to continue working after school resumes, the employer must obtain school approval before the minor can continue. School approval must be based upon:

(a) Maintaining an acceptable level of scholastic achievement; and

(b) Maintaining good school attendance; and

(c) Making satisfactory progress toward graduation.

[Statutory Authority: RCW 49.12.121. 99-02-041, § 296-125-0266, filed 12/31/98, effective 1/31/99.]

WAC 296-125-0267 What if a minor is no longer attending school? (1) A parent or guardian must certify a minor's nonenrolled status if the minor is:

(a) Unmarried and living with a parent or legal guardian; and

(b) No longer enrolled in school; and

(c) Has not obtained a certificate of educational competence according to RCW 28A.305.190 or is not enrolled in a bona fide college program.

(2) If a minor is named on a valid marriage certificate or is living independently of a parent or legal guardian, the minor must:

(a) Certify that he or she is either married or living independently of a parent or guardian; and

(b) Certify his or her nonenrolled status; and

(c) Provide the name and location of the last school attended; and

(d) Provide the name and address or telephone number of an adult emergency contact other than the minor's employer. This contact person must certify that the minor is living independently of a parent or legal guardian.

[Statutory Authority: RCW 49.12.121. 99-02-041, § 296-125-0267, filed 12/31/98, effective 1/31/99.]

WAC 296-125-0268 Can a parent, legal guardian or school revoke the work authorization previously given on the parent/school authorization form? A parent, legal guardian, or school may revoke authorization at any time by simply notifying the department and the other parties to the authorization.

[Statutory Authority: RCW 49.12.121. 99-02-041, § 296-125-0268, filed 12/31/98, effective 1/31/99.]

[Title 296 WAC—p. 1826]

WAC 296-125-027 Hours of work for minors.

Employers shall restrict the hours of minors' employment as follows:

(1) During the school year:

(a) Minors may work the following total of hours:

(i) Minors under the age of sixteen:

(A) Maximum of three hours per day on any school day preceding another school day or otherwise a maximum of eight hours per day;

(B) Maximum of six days per week; and

(C) Maximum of sixteen hours per week;

(D) Except that no minors of this age shall work in house-to-house sales without a variance issued by the department pursuant to WAC 296-125-060(7) [296-125-0600].

(ii) Sixteen- and seventeen-year-old minors:

(A) Maximum of four hours per day on any school day preceding another school day or otherwise a maximum of eight hours per day;

(B) Maximum of six days per week; and

(C) Maximum of twenty hours per week.

(b) Minors shall work during the following hours only:

(i) Minors under the age of sixteen:

(A) No earlier than 7:00 a.m.;

(B) No later than 7:00 p.m. on any day preceding a school day;

(C) No later than 9:00 p.m. on Fridays, Saturdays, and the day preceding a school holiday or vacation, provided that minors employed past 8:00 p.m. in service occupations shall be supervised by a responsible adult employee who is on the premises at all times; and

(D) Not during school hours;

(E) Except that minors of this age shall not be employed in house-to-house sales without a variance issued by the department pursuant to WAC 296-125-060(7) [296-125-0600].

(ii) Sixteen- and seventeen-year-old minors:

(A) No earlier than 7:00 a.m.;

(B) No later than 10:00 p.m. on any day preceding a school day;

(C) No later than 12:00 a.m. on Fridays, Saturdays, and the day preceding a school holiday or vacation, provided that minors employed past 8:00 p.m. in service occupations shall be supervised by a responsible adult employee who is on the premises at all times; and

(D) Not during school hours, unless the minor has been excused from school attendance by the minor's school district superintendent or her or his authorized agent.

(2) During school vacations:

(a) Minors may work the following total of hours:

(i) Minors under the age of sixteen:

(A) Maximum of eight hours per day;

(B) Maximum of six days per week; and

(C) Maximum of forty hours per week;

(D) Except that no minors of this age shall work in house-to-house sales without a variance issued by the department pursuant to WAC 296-125-060(7) [296-125-0600].

(ii) Sixteen- and seventeen-year-old minors:

(A) Maximum of eight hours per day;

(B) Maximum of six days per week; and

(C) Maximum of forty-eight hours per week.

(b) Minors shall work during the following hours only:

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(i) Minors under the age of sixteen:

(A) No earlier than 7:00 a.m.; and

(B) No later than 9:00 p.m. provided that minors employed past 8:00 p.m. in service occupations shall be supervised by a responsible adult employee who is on the premises at all times.

(ii) Sixteen- and seventeen-year-old minors:

(A) No earlier than 5:00 a.m.; and

(B) No later than 12:00 a.m. provided that minors employed past 8:00 p.m. in service occupations shall be supervised by a responsible adult employee who is on the premises at all times, and except no later than 9:00 p.m. for minors employed in house-to-house sales.

(3) Sixteen- and seventeen-year-old minors who have been issued a certificate of educational competence pursuant to RCW 28A.305.190, are enrolled in a bona fide college program, are named on a valid certificate of marriage, or are shown as the parent on a valid certificate of birth may work as would be permitted during school vacations.

[Statutory Authority: Chapters 43.22 and 49.12 RCW, RCW 26.28.060 and 43.17.060 and chapters 49.12 and 43.22 RCW and RCW 43.17.060. 93-01-068 and 93-01-116, § 296-125-027, filed 12/11/92 and 12/21/92, effective 7/1/93; Order 76-15, § 296-125-027, filed 5/17/76.]

RECORDKEEPING

WAC 296-125-0275 When I employ minors, what recordkeeping requirements must I satisfy? (1) You must create and maintain a file for each minor.

(2) The file must be maintained for three years from the last date of the minor's employment.

(3) The file must contain the following:

(a) A copy of the completed parent/school authorization form with any attachments; and

(b) Copies of any variances you obtained according to the requirements of this chapter.

(4) These records must be kept safe and accessible at the place of employment or at a central recordkeeping office where such records are customarily maintained.

[Statutory Authority: RCW 49.12.121. 99-02-041, § 296-125-0275, filed 12/31/98, effective 1/31/99.]

WAC 296-125-0280 What is the department's enforcement authority? To enforce the requirements of this chapter, the director or the director's authorized representatives can, without delay:

(1) Enter any workplace where work is or has been performed by a minor, or where employment records are, or are required to be maintained; and

(2) Inspect, transcribe, and copy all pertinent records; and

(3) Inspect and investigate any workplace and all pertinent conditions, structures, machines, apparatus, devices, equipment, supplies, and materials located there; and

(4) Question privately any employer, owner, operator, agent, or employee.

[Statutory Authority: RCW 49.12.121. 99-02-041, § 296-125-0280, filed 12/31/98, effective 1/31/99.]

(2007 Ed.)

MEAL AND REST BREAKS FOR MINORS

WAC 296-125-0285 What regulations apply to meal and rest breaks for my fourteen-year-old and fifteen-year-old minors? (1) Since the purpose of meal periods and rest breaks is to provide rest from work, they must not be scheduled near the beginning of the work shift.

(2) The following specific regulations apply to your minors who are *fourteen-years-old and fifteen-years-old*:

(a) They must not work more than four hours without being given a meal period. This meal period must be at least thirty minutes in length and be separate and distinct from, and in addition to, the rest breaks mandated by this subsection.

(b) They must be given, on your business's time, a rest break of at least ten minutes for every two hours worked.

(c) When they work four-hour periods, they cannot be required to work more than two hours without being given either a ten-minute rest break or a thirty-minute meal period.

[Statutory Authority: RCW 49.12.121. 99-02-041, § 296-125-0285, filed 12/31/98, effective 1/31/99.]

WAC 296-125-0287 What regulations apply to meal and rest breaks for my sixteen-year-old and seventeen-year-old employees? (1) The following regulations apply to *meal periods* for your minors who are *sixteen-years-old and seventeen-years-old*:

(a) They must be allowed meal periods of at least thirty minutes in length.

(b) Their meal periods must start no less than two hours but no more than five hours from the beginning of their work shift.

(c) They must not be required to work more than five consecutive hours without a meal period.

(2) The following regulations apply to *rest periods* for your minors who are *sixteen-years-old and seventeen-years-old*:

(a) They must be allowed a rest period of not less than ten minutes, on your time, for each four hours worked.

(b) Their rest periods must be scheduled as near as possible to the midpoint of the work period.

(c) They must receive a rest period at least every three hours.

[Statutory Authority: RCW 49.12.121. 99-02-041, § 296-125-0287, filed 12/31/98, effective 1/31/99.]

WAC 296-125-030 Prohibited and hazardous employment—All minors. The following employments and occupations as outlined in subsections (1) through (30) of this section, are prohibited for all minors, provided that exemption will be allowed from subsections (5), (8), (9), (11), (13), (15), (16), and (23) of this section when the minor is participating in a bona fide cooperative vocational education program, diversified career experience program, or work experience program certified and monitored by the office of the superintendent of public instruction or the minor employee's school district; further, exemption from the same numbered prohibitions will be allowed for any minor involved in an apprenticeship program registered with the Washington state apprenticeship and training council. The state will not grant

variances for employments or occupations prohibited by the United States Department of Labor.

(1) Occupations in or about plants or establishments manufacturing or storing explosives or articles containing explosive components.

(2) Occupations involving regular driving of motor vehicles. Occupations of outside helper or flagger on any public road or highway, work which involves directing moving motor vehicles in or around warehouses or loading/unloading areas including but not limited to loading docks, transfer stations, or landfills, or work which involves towing vehicles. Occasional driving is permissible if: The minor has a valid state driver's license for the type of driving involved; driving is restricted to daylight hours; such driving is only occasional, and is incidental to the minor's employment; vehicle gross weight is under 6,000 pounds; the minor has completed a state-approved driver education course; and seat belts are provided in the vehicle and the minor has been instructed to use them. Occupations involving occasional operation of a bus are prohibited.

(3) All mining occupations.

(4) Logging occupations and occupations in the operation of any sawmill, lath mill, shingle mill, or cooperage-stock mill.

(5) Occupations involving operation or repair, oiling, cleaning, adjusting, or setting up of any power-driven wood-working machines.

(6) Occupations involving potential exposure to radioactive substances and to ionizing radiation.

(7) Occupations involving operation or repair, oiling, cleaning, adjusting, or setting up of elevators. This includes riding on a manlift.

(8) Occupations involving operation or repair, oiling, cleaning, adjusting, or setting up of power-driven metal-forming, punching, and shearing machines.

(9) Occupations involving slaughtering, meat packing, processing, or rendering.

(10) Occupations involving operation or repair, oiling, cleaning, adjusting, or setting up of power-driven bakery machines.

(11) Occupations involving operation or repair, oiling, cleaning, adjusting, or setting up of power-driven paper-products machines.

(12) Occupations involving manufacturing of brick, tile, and kindred products.

(13) Occupations involving operation or repair, oiling, cleaning, adjusting, or setting up of power-driven circular saws, band saws, and guillotine shears.

(14) Occupations involving wrecking, demolition, and shipbreaking operations.

(15) All roofing operations.

(16) Occupations involving excavations.

(17) Occupations involving operation or repair, oiling, cleaning, adjusting, or setting up of or working in proximity to earth-moving machines, hoisting apparatus, cranes, garbage-compactors, trash-compactors or other compactors, paper-balers or other balers, or other heavy equipment including, but not limited to, graders, bulldozers, earth compactors, backhoes, and tractors. Working in proximity shall mean working within the radius of movement of any portion of the machinery where one could be struck or otherwise

injured. It shall not include work in proximity to ski-lift apparatus. This prohibition shall not invalidate activities allowed under subsection (2) of this section.

(18) Work in establishments or workplaces being picketed during the course of a labor dispute.

(19) Work as a nurse's aide/assistant; unless the minor is a student in a bona fide state-certified nursing training program or has successfully completed such a program.

(20) Work as a maid or bellhop in motels or hotels, unless the minor is accompanied by a responsible adult whenever the work requires the minor to enter an assigned guest room, whether or not it is occupied at the time the minor is in the room. Minors may work in unassigned, unoccupied guest rooms unaccompanied by an adult.

(21) Work in sauna or massage parlors, body painting or tattoo studios, or adult entertainment establishments.

(22) Occupations requiring the wearing of personal protective equipment or wearing apparel as defined and required by statutes or rules and regulations administered by the department's division of industrial safety and health as related to hazardous substances exposure and/or hazardous noise exposure per chapters 296-24 and 296-62 WAC; except those occupations where the only requirement is the wearing of gloves, boots, or eye protection if the occupation is not otherwise prohibited by this section or by WAC 296-125-033. This subsection's prohibitions shall not apply if a minor is a student in a bona fide health care career training or vocational education program.

(23) Occupations involving fire fighting and fire suppression duties.

(24) Occupations where there is a risk of exposure to bodily fluids or transmission of infectious agents, including but not limited to hepatitis and HIV, in accordance with standards established by WAC 296-62-08001 (Occupational exposure to blood-borne pathogens), including lab work which entails the cleaning of medical equipment used to draw or store blood or other contaminated tissue; duties which involve venipuncture; and duties involving work with laundry from health care facilities; unless the minor is a student in a bona fide health care career training or vocational education program. State-certified life guards with first-aid training are exempt.

(25) Occupations involving potential exposure to hazardous substances which are considered to be carcinogenic, corrosive, highly toxic, toxic sensitizers, or which have been determined to cause reproductive health effects or irreversible end organ damage. This does not include handling of such substances in sealed containers in retail situations. This subsection's prohibitions shall not apply to any consumer product or hazardous substance, as those terms are defined by the Consumer Product Safety Act (15 U.S.C. 2051 et seq.) and the Federal Hazardous Substances Act (15 U.S.C. 1261 et seq.) and those statutes' regulations, where the employer of a minor can demonstrate that a product or substance is used in the workplace in the same manner as normal consumer use, and which use results in a duration and frequency of exposure that is not greater than exposures experienced by consumers using the product or substance in conformity with the manufacturer's instructions, provided that such exposures are not otherwise prohibited by subsection (22) of this section.

(26) In selling to passing motorists on the public right of way candy, flowers, or other merchandise or commodities. Selling to motorists from a window counter is not prohibited.

(27) Work performed in or about boiler or engine rooms.

(28) All work performed more than ten feet above ground or floor level.

(29) Work in freezers, meat coolers, and all work in preparing meats for sale (wrapping, sealing, labeling, weighing, pricing, and stocking are permitted if work is performed away from meat-cutting and preparation areas). Occasional entry into freezers or coolers for obtaining stock or placing stock shall not be prohibited.

(30) Service occupations if a minor works past 8:00 p.m., unless the minor is supervised by a responsible adult employee who is on the premises at all times.

[Statutory Authority: Chapters 43.22 and 49.12 RCW, RCW 26.28.060 and 43.17.060, 93-01-068, § 296-125-030, filed 12/11/92, effective 3/1/93. Statutory Authority: RCW 43.22.270 and 1989 c 216, 89-23-003, § 296-125-030, filed 11/3/89, effective 11/20/89; Order 77-32, § 296-125-030, filed 12/30/77; Order 76-15, § 296-125-030, filed 5/17/76; Order 74-9, § 296-125-030, filed 3/13/74, effective 4/15/74; Order 71-5, § 296-125-030, filed 5/26/71, effective 7/1/71; Section E, filed 9/18/63; Rules (part), filed 3/23/60.]

WAC 296-125-033 Prohibited and hazardous employment—Special restrictions for minors under the age of 16. Employment of minors under age 16 is subject to the following additional restrictions. They are prohibited from working:

(1) In any manufacturing operations.

(2) In any processing operations (including but not limited to filleting of fish, dressing poultry, cracking nuts, commercial processing, canning, freezing or drying of foods, laundering as performed by commercial laundries and dry cleaning).

(3) In any public messenger service, including but not limited to work that is performed by foot, bicycle, or public transportation.

(4) In occupations connected with transportation, warehouse and storage, communications and public utilities, or construction. (Office work related to these occupations is permitted if none of the minor's work is performed on the transportation media or construction site.)

(5) In the following specific areas of retail, food service or gasoline service station operations:

(a) Maintenance or repair work.

(b) Window washing or other work requiring worker to be positioned at higher than ground or floor level.

(c) Cooking and baking.

(d) Operating, setting up, adjusting, cleaning, oiling or repairing power-driven food slicers and grinders, food choppers and cutters and bakery-type mixers.

(6) In occupations involving work in the operation of amusement parks, street carnivals, and traveling shows.

(7) Loading and unloading goods to or from trucks, railroad cars, or conveyors.

(8) In occupations involving operation or repair, oiling, cleaning, adjusting, or setting up of or working in proximity to any power-driven machinery.

[Statutory Authority: Chapters 43.22 and 49.12 RCW, RCW 26.28.060 and 43.17.060, 93-01-068, § 296-125-033, filed 12/11/92, effective 3/1/93; Order 76-15, § 296-125-033, filed 5/17/76.]

(2007 Ed.)

WAC 296-125-043 Minimum wages—Minors.

Except where a higher minimum wage is required by Washington state or federal law:

(1) Every employer shall pay to each of his or her employees who have reached their sixteenth or seventeenth year of age a rate of pay per hour which is equal to the hourly rate required by RCW 49.46.020 for employees eighteen years of age or older, whether computed on an hourly, commission, piecework, or other basis, except as may be otherwise provided under this chapter.

(2) Every employer shall pay to each of his or her employees who have not reached their sixteenth year of age a rate of pay per hour that is not less than eighty-five percent of the hourly rate required by RCW 49.46.020 for employees eighteen years of age or older whether computed on an hourly, commission, piecework, or other basis, except as may be otherwise provided under this chapter.

(3) These provisions shall not apply to handicapped minors for whom special handicapped minor work permits have been issued as provided in RCW 49.12.110. The handicapped rate therein shall be set at a rate designed to adequately reflect the individual's earning capacity.

(4) These minimum wage provisions shall not apply when a minor student is in a work place to carry out an occupational training experience assignment directly supervised on the premises by a school official or an employer under contract with a school and when no appreciable benefit is rendered to the employer by the presence of the minor student.

[Statutory Authority: RCW 43.22.270 and 1988 c 236, 89-10-014 (Order 88-32), § 296-125-043, filed 4/24/89, effective 6/1/89; Order 76-15, § 296-125-043, filed 5/17/76.]

VARIANCES

WAC 296-125-0600 What is a variance? A variance is an exception to the rules of this chapter granted for good cause by the director of labor and industries or the director's designee.

[Statutory Authority: RCW 49.12.121, 99-02-041, § 296-125-0600, filed 12/31/98, effective 1/31/99.]

WAC 296-125-0610 How do I obtain a variance? You must submit a written application to the director requesting the variance(s). In your application you must specify the reasons why your request should be granted. If necessary, the director may request or receive additional information from you or other interested parties.

[Statutory Authority: RCW 49.12.121, 99-02-041, § 296-125-0610, filed 12/31/98, effective 1/31/99.]

WAC 296-125-0611 What does "good cause" mean? At a minimum, "good cause" refers to those situations and circumstances that support your request for a variance. You must be able to demonstrate that the variance will not be harmful to the health, safety, and welfare (including school attendance and performance) of the minor(s) affected. "Good cause" may also include the financial need of the minor's family or an exceptional or special talent manifested by the minor.

[Statutory Authority: RCW 49.12.121, 99-02-041, § 296-125-0611, filed 12/31/98, effective 1/31/99.]

WAC 296-125-0620 Are there special requirements that I must satisfy if I request a variance to employ minors under the age of sixteen in house-to-house sales? If you are requesting a variance to employ minors under the age of sixteen in house-to-house sales, you must demonstrate good cause for the variance and file a signed sworn statement ensuring that the following minimum requirements will be in force at all times:

- (1) All house-to-house sales will be conducted only during daylight hours; and
- (2) A responsible adult who is at least twenty-one years of age will accompany the minor at all times; and
- (3) No house-to-house sales visits will be conducted in inclement weather; and
- (4) The minor will only be employed for a specific time period that cannot exceed six weeks.

[Statutory Authority: RCW 49.12.121. 99-02-041, § 296-125-0620, filed 12/31/98, effective 1/31/99.]

WAC 296-125-0640 What criteria will be used to evaluate my variance request? (1) The director or the director's designee may grant your variance request if you:

- (a) Possess a valid minor work permit endorsement; and
- (b) Demonstrate good cause.
- (2) Variances will be granted, as applicable, based on good cause shown, for residential schools, apprenticeship programs registered with the Washington state apprenticeship and training council, and vocational education, diversified career education, work experience, and cooperative education programs accepted and certified by the office of superintendent of public instruction or the local school district for circumstances other than those already exempted in WAC 296-125-030.

(3) Variances from federal regulations will not be issued except where you can show exemption from federal statutes and regulations governing minor work.

[Statutory Authority: RCW 49.12.121. 99-02-041, § 296-125-0640, filed 12/31/98, effective 1/31/99.]

WAC 296-125-0650 Do my variances expire? Each of your variances will expire upon the expiration of the minor work permit endorsement that was in effect at the time the variance was issued unless the variance was issued with an earlier expiration date.

[Statutory Authority: RCW 49.12.121. 99-02-041, § 296-125-0650, filed 12/31/98, effective 1/31/99.]

WAC 296-125-0651 Can my variances be renewed? When you renew your minor work permit endorsements, you must also apply for new variances that are related to those endorsements.

[Statutory Authority: RCW 49.12.121. 99-02-041, § 296-125-0651, filed 12/31/98, effective 1/31/99.]

WAC 296-125-0660 Can the department of labor and industries revoke, suspend, or modify my variances? The department may revoke, suspend, or modify your variances if it finds:

- (1) A condition related to its issuance has not been satisfied; or
- (2) You have violated any requirement of this chapter; or

[Title 296 WAC—p. 1830]

(3) An existing condition that is or could be detrimental to the health, safety, or welfare of a minor including an adverse impact upon their school attendance or performance.

[Statutory Authority: RCW 49.12.121. 99-02-041, § 296-125-0660, filed 12/31/98, effective 1/31/99.]

WAC 296-125-0670 Can I appeal the department's action to revoke, suspend or modify my variances? You have the right to appeal a department action to revoke, suspend or modify your variances. However, your appeal must be filed with the department in writing within thirty days of the department's action according to the procedures established by RCW 49.12.161 and 49.12.400. Your appeal **will not** set aside an order of immediate restraint issued by the department according to RCW 49.12.390.

[Statutory Authority: RCW 49.12.121. 99-02-041, § 296-125-0670, filed 12/31/98, effective 1/31/99.]

SPECIAL VARIANCES

WAC 296-125-0700 What is a special variance? (1) A special variance is an exception to specific rules of this chapter. Special variances are granted by a designated school official of a school district or individual private school which has department approval to participate in the special variance process described in WAC 296-125-0720.

(2) A special variance is used to facilitate flexibility in a sixteen-year-old or seventeen-year-old minor's school and work requirements and may be granted **only** for exceptions to the rules governing:

(a) The maximum hours of work per week during a week when school is in session, up to a maximum of twenty-eight hours per week; and

(b) The maximum hours of work per day during a week when school is in session, up to a maximum of six hours per day.

(3) Special variances will not be granted for sixteen-year-old and seventeen-year-old minors working in house-to-house sales.

(4) When school is in session, minors must not work in excess of the maximum hours per week or per day illustrated in the following chart unless the employer has a current, fully completed and executed special variance on file at the minor's workplace.

Hours of work--Nonagriculture

	14-year-olds and 15-year-olds		16-year-olds and 17-year-olds	
	School	Nonschool	School	Nonschool
Hours a day	3* (weekdays) 8 (Fri.-Sun.)	8	4** (weekdays) 8 (Fri.-Sun.)	8
Hours a week	16	40	20/28***	48
Days a week	6 days	6 days	6 days	6 days
Start	7 a.m.	7 a.m.	7 a.m.	5 a.m.
Quit	7 p.m. (weekdays)	9 p.m.	10 p.m. (Sun.-Thurs.) Midnight (Fri. & Sat.)	Midnight

* 14-year-olds and 15-year-olds can work up to 3 hours on a school day preceding a school day. All other days, 8 hours per day.

** 16-year-olds and 17-year-olds can work up to 4 hours on a school day preceding a school day. All other days, 8 hours per day.

*** Up to 28 hours available through special variances.

[Statutory Authority: RCW 49.12.121. 99-02-041, § 296-125-0700, filed 12/31/98, effective 1/31/99.]

WAC 296-125-0710 What criteria will be followed in evaluating my special variance request? The designated school official may grant your special variance request if you:

- (1) Possess a valid minor work permit endorsement; and
- (2) Demonstrate good cause; and
- (3) Request the variance for a minor whose school district or individual private school has department approval to participate in the special variance process discussed in WAC 296-125-0720.

[Statutory Authority: RCW 49.12.121. 99-02-041, § 296-125-0710, filed 12/31/98, effective 1/31/99.]

WAC 296-125-0720 How can a school district or individual private school qualify for participation in the special variance process? Each school district or individual private school seeking to participate in the special variance process must:

- (1) Complete an enrollment form provided by the department; and
- (2) Be approved by the department; and
- (3) Agree to maintain a mandatory recordkeeping system specified by the department; and
- (4) Use the uniform criteria described in WAC 296-125-0750 to evaluate variance requests.

[Statutory Authority: RCW 49.12.121. 99-02-041, § 296-125-0720, filed 12/31/98, effective 1/31/99.]

WAC 296-125-0721 Where can a school district or individual private school obtain a copy of the special variance process enrollment form? The form can be obtained from:

Department of Labor and Industries
Employment Standards Section
PO Box 44510
Olympia WA 98504-4510

[Statutory Authority: RCW 49.12.121. 99-02-041, § 296-125-0721, filed 12/31/98, effective 1/31/99.]

WAC 296-125-0722 In addition to completing the enrollment form, what other requirements must be satis-

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fied before a school district or private school can participate in the special variance program? At a minimum, a school district or private school must agree to all of the following:

- (1) Maintain the recordkeeping system required by the department.
- (2) Designate a school official at each school who is authorized to evaluate and approve/disapprove variance requests.
- (3) Use the uniform criteria discussed in WAC 296-125-0750 to evaluate variance requests.
- (4) Within thirty days of the school's action, forward a copy of each variance approved or denied to the department.
- (5) Give department agents immediate access to all variance files during normal school office hours.
- (6) Be responsible for ensuring that the employer completes all appropriate sections of the special variance request form.

[Statutory Authority: RCW 49.12.121. 99-02-041, § 296-125-0722, filed 12/31/98, effective 1/31/99.]

WAC 296-125-0723 What is the employer's responsibility in providing information to the minor, the minor's parent or legal guardian, and school officials? (1) The employer must obtain a special variance form from the participating school and provide the following information:

- (a) The minor's work-related duties;
- (b) The maximum hours to be worked each week;
- (c) The length of the minor's work shifts;
- (d) The latest afternoon or evening hour that the minor will work;
- (e) The number of days each week that the minor will be required to work the latest afternoon or evening hour;
- (f) The employer's unified business identifier (UBI) number;
- (g) The expiration dates of the employer's minor work permit endorsements.

(2) The employer must agree to maintain all special variance records according to the terms of WAC 296-125-0275.

(3) Upon completion, the employer must give the form to the minor to complete according to WAC 296-125-0730.

[Title 296 WAC—p. 1831]

[Statutory Authority: RCW 49.12.121. 99-02-041, § 296-125-0723, filed 12/31/98, effective 1/31/99.]

WAC 296-125-0730 What other information about special variance requests is important? (1) To be valid, a special variance request form must be completed and signed by the employer, the minor, the minor's authorized school official and the minor's parent or legal guardian.

(2) The special variance, unless revoked, suspended or modified, shall remain in force for the duration of the school year for which it was granted. While the special variance is in force, it is the school district's responsibility to monitor it to insure that the conditions under which it was granted are being met.

(3) All minors must complete their section of the variance form *after* the employer section has been completed but *before* the form is submitted to the school, parent, or legal guardian.

(4) All minors must explain why they are requesting a special variance.

(5) The minor's parent or guardian must sign the request form. By signing, the parent or guardian approves or denies the request and attests to the reasons supporting it.

[Statutory Authority: RCW 49.12.121. 99-02-041, § 296-125-0730, filed 12/31/98, effective 1/31/99.]

WAC 296-125-0740 What are the consequences of submitting an incomplete special variance request form?

(1) An incomplete special variance request form submitted to the department is:

(a) Invalid; and

(b) A violation of this chapter; and

(c) Cause for a school district, an individual private school or an employer to be dropped from the special variance program.

(2) When the department receives an incomplete special variance request form, it must give written notification to the school district or private school that its enrollment in the special variance program is being revoked.

[Statutory Authority: RCW 49.12.121. 99-02-041, § 296-125-0740, filed 12/31/98, effective 1/31/99.]

WAC 296-125-0741 Can a school district or private school appeal the department's decision to revoke its participation in the special variance program? A school district or private school may appeal a notice of revocation; however, the appeal must be filed with the department in writing within thirty days of its receipt. The written appeal must be sent to the department according to the procedures established by RCW 49.12.161 and 49.12.400. Filing an appeal does not set aside a notice of revocation.

[Statutory Authority: RCW 49.12.121. 99-02-041, § 296-125-0741, filed 12/31/98, effective 1/31/99.]

WAC 296-125-0750 What are the criteria used by a school to evaluate special variance requests? In evaluating requests for special variances, a school must consider at least the following factors:

(1) Does the employer hold a current valid minor work permit endorsement?

(2) What is the student's attendance pattern?

[Title 296 WAC—p. 1832]

(3) Is the student making satisfactory academic progress?

(4) Will the student still have opportunities to participate in extracurricular activities?

(5) How many school nights will the student work?

(6) How late in the evening will the student work?

(7) How long a shift will the student work?

(8) How sound is the student's rationale for requesting a variance from the work hour restrictions illustrated in the table in WAC 296-125-0700(4)?

[Statutory Authority: RCW 49.12.121. 99-02-041, § 296-125-0750, filed 12/31/98, effective 1/31/99.]

WAC 296-125-0760 Do special variances expire? (1)

Since special variances will be issued only to employers holding valid minor work permit endorsements, each special variance expires on the expiration date of the endorsement that was in effect at the time the special variance was issued.

(2) Upon the renewal of a minor work permit endorsement, an employer must complete a new special variance request form.

[Statutory Authority: RCW 49.12.121. 99-02-041, § 296-125-0760, filed 12/31/98, effective 1/31/99.]

WAC 296-125-0770 Can the department of labor and industries revoke, suspend, or modify a special variance?

(1) The department may revoke, suspend, or modify a special variance if it finds:

(a) A condition related to its issuance has not been satisfied; or

(b) A violation of any requirement of this chapter; or

(c) An existing condition that is or could be detrimental to the health, safety, or welfare of a minor.

(2) If an employer violates the hour standards in WAC 296-125-027 or the hours specified in any special variance, they will forfeit their participation in the special variance process for one year from the finding of the violation by the department.

[Statutory Authority: RCW 49.12.121. 99-02-041, § 296-125-0770, filed 12/31/98, effective 1/31/99.]

WAC 296-125-0771 Can the parties to a special variance revoke it? A parent, legal guardian, or school may revoke a special variance at any time by simply giving written notification to the department and the other parties to the variance.

[Statutory Authority: RCW 49.12.121. 99-02-041, § 296-125-0771, filed 12/31/98, effective 1/31/99.]

WAC 296-125-0772 Can the department's action to refuse to issue or renew, revoke, suspend or modify a special variance be appealed? The department's refusal to issue or renew participation in the special variance process can be appealed, as well as, its decision to revoke or suspend participation. However, the appeal must be filed with the department in writing within thirty days of the department's action according to the procedures established by RCW 49.12.161 and 49.12.400. The appeal *will not* set aside an order of immediate restraint issued by the department according to RCW 49.12.390.

[Statutory Authority: RCW 49.12.121, 99-02-041, § 296-125-0772, filed 12/31/98, effective 1/31/99.]

Chapter 296-126 WAC
STANDARDS OF LABOR FOR THE PROTECTION
OF THE SAFETY, HEALTH AND WELFARE OF
EMPLOYEES FOR ALL OCCUPATIONS SUBJECT
TO CHAPTER 49.12 RCW

WAC

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Reviser's note: For industrial welfare committee appeal procedures, see also chapter 296-129 WAC.

DISPOSITION OF SECTIONS FORMERLY
CODIFIED IN THIS CHAPTER

296-126-098	Wearing apparel. [Statutory Authority: RCW 49.12-091 (as amended by RCW 43.22.282), 97-01-124, § 296-126-098, filed 12/19/96, effective 1/19/97; Order 76-15, § 296-126-098, filed 5/17/76.] Repealed by 98-14-041, filed 6/24/98, effective 7/25/98. Statutory Authority: RCW 49.12.091 and 1998 c 334.
296-126-140	Appeal procedures. [Order 74-9, § 296-126-140, filed 3/13/74, effective 4/15/74.] Repealed by 97-17-064, filed 8/18/97, effective 9/18/97.
296-126-224	Wearing apparel. [Statutory Authority: RCW 49.12-091, 78-03-004 (Order 78-1), § 296-126-224, filed 2/3/78.] Repealed by 97-01-124, filed 12/19/96, effective 1/19/97. Statutory Authority: RCW 49.12.091 (as amended by RCW 43.22.282).

WAC 296-126-001 Applicability. These standards, adopted pursuant to the authority of chapter 49.12 RCW as amended by chapter 16, Laws of 1973 2nd ex. sess., shall apply to any person employed in any industry or occupation within the state of Washington, unless:

(1) Exempted by the provisions of chapter 49.12 RCW (newspaper vendors or carriers, domestic or casual labor in or about private residences, agricultural labor as defined in RCW 50.04.150, as now or hereafter amended, and sheltered workshops, are all exempt from these provisions);

(2007 Ed.)

(2) Otherwise exempted in rules and regulations adopted by the industrial welfare committee of the state of Washington;

(3) Exempted by a variance issued under the provisions in WAC 296-126-130;

(4) Such person is an employee of the state or any political subdivision, or municipal corporation to the extent that these rules conflict with any statute, rule or regulation adopted under the authority of the appropriate legislative body.

[Order 74-9, § 296-126-001, filed 3/13/74, effective 4/15/74.]

WAC 296-126-002 Definitions. (1) "Employer" means any person, firm, corporation, partnership, business trust, legal representative, or other business entity which engages in any business, industry, profession, or activity in this state and employs one or more employees, unless exempted by chapter 49.12 RCW or these rules.

(2) "Employee" means an employee who is employed in the business of his employer whether by way of manual labor or otherwise. This definition is not intended, for purposes of these regulations, to include: Any individual registered as a volunteer with a state or federal volunteer program or any person who performs any assigned or authorized duties for an educational, religious, governmental or nonprofit charitable corporation by choice and receives no payment other than reimbursement for actual expenses necessarily incurred in order to perform such volunteer services; any individual employed in a bona fide executive, administrative or professional capacity or in the capacity of commissioned outside salesperson; nor is it intended to include independent contractors where said individuals control the manner of doing the work and the means by which the result is to be accomplished.

(3) "Employ" means to engage, suffer or permit to work.

(4) "Adult" means any person of either sex, eighteen years of age or older.

(5) "Minor" means any person of either sex under eighteen years of age.

(6) "Student learner" means a person enrolled in a bona fide vocational training program accredited by a national or regional accrediting agency recognized by the United States Office of Education, or authorized and approved by the Washington state commission for vocational education, who may be employed part time in a definitely organized plan of instruction.

(7) "Learner" means a worker whose total experience in an authorized learner occupation is less than the period of time allowed as a learning period for that occupation in a learner certificate issued by the director pursuant to regulations of the department of labor and industries.

(8) "Hours worked" shall be considered to mean all hours during which the employee is authorized or required by the employer to be on duty on the employer's premises or at a prescribed work place.

(9) "Conditions of labor" shall mean and include the conditions of rest and meal periods for employees including provisions for personal privacy, practices, methods and means by or through which labor or services are performed by employees and includes bona fide physical qualifications in

[Title 296 WAC—p. 1833]

employment, but shall not include conditions of labor otherwise governed by statutes and rules and regulations relating to industrial safety and health administered by the department.

(10) "Committee" shall mean the industrial welfare committee as provided by law. The committee's secretary is the supervisor of employment standards in care of the Department of Labor and Industries, General Administration Building, Olympia, Washington 98504.

[Order 76-15, § 296-126-002, filed 5/17/76; Order 74-9, § 296-126-002, filed 3/13/74, effective 4/15/74.]

WAC 296-126-010 Minimum wages—Adults. Except where a higher minimum wage is required by Washington state or federal law,

(1) Every employer shall pay to each of his or her adult employees wages at a rate of not less than one dollar and eighty cents per hour, and effective January 1, 1975, not less than two dollars per hour, whether computed on an hourly commission, piecework or other basis, except as may be otherwise provided by law or regulation.

(2) These provisions shall not apply to outside commissioned salespersons; or to trainees, learners, student learners, apprentices or handicapped persons for whom special certificates or special permits have been issued as set forth in RCW 49.12.110. These special rates shall be computed as follows: Learners — 85% of the applicable minimum wage; student-learner — 75% of the applicable minimum rate; handicapped — at a rate designed to reflect adequately the individual's earning capacity.

[Order 74-9, § 296-126-010, filed 3/13/74, effective 4/15/74.]

WAC 296-126-020 Minimum wages—Minors. Except where a higher minimum wage is required by Washington state or federal law:

(1) Every employer shall pay to each of his or her employees who have reached their sixteenth or seventeenth year of age a rate of pay per hour which is equal to the hourly rate required by RCW 49.46.020 for employees eighteen years of age or older, whether computed on an hourly, commission, piecework, or other basis, except as may be otherwise provided under this chapter.

(2) Every employer shall pay to each of his or her employees who have not reached their sixteenth year of age a rate of pay per hour that is not less than eighty-five percent of the hourly rate required by RCW 49.46.020 for employees eighteen years of age or older whether computed on an hourly, commission, piecework, or other basis, except as may be otherwise provided under this chapter.

(3) These provisions shall not apply to handicapped minors for whom special handicapped minor work permits have been issued as provided in RCW 49.12.110. The handicapped rate therein shall be set at a rate designed to adequately reflect the individual's earning capacity.

[Statutory Authority: RCW 43.22.270 and 1988 c 236, 89-10-014 (Order 88-32), § 296-126-020, filed 4/24/89, effective 6/1/89; Order 74-9, § 296-126-020, filed 3/13/74, effective 4/15/74.]

[Title 296 WAC—p. 1834]

WAC 296-126-021 Minimum wages—Commissions and piecework. Where employees are paid on a commission or piecework basis, wholly or partially,

(1) The amount earned on such basis in each work-week period may be credited as a part of the total wage for that period; and

(2) The total wages paid for such period shall be computed on the hours worked in that period resulting in no less than the applicable minimum wage rate.

[Order 74-9, § 296-126-021, filed 3/13/74, effective 4/15/74.]

WAC 296-126-022 Gratuities. For the purposes of these regulations, gratuities received by employees shall not be considered a part of the minimum wage.

[Order 74-9, § 296-126-022, filed 3/13/74, effective 4/15/74.]

WAC 296-126-023 Payment interval. All wages due shall be paid at no longer than monthly intervals to each employee on established regular pay days. To facilitate book-keeping, an employer may implement a regular payroll system in which wages from up to seven days before pay day may be withheld from the pay period covered and included in the next pay period.

[Statutory Authority: RCW 43.22.270, 49.12.020, 49.12.091, 49.12.050, 49.46.020 and 49.46.070, 89-22-016 (Order 89-16), § 296-126-023, filed 10/24/89, effective 11/24/89; Order 74-9, § 296-126-023, filed 3/13/74, effective 4/15/74.]

WAC 296-126-025 Deductions from final wages. (1) An employer may deduct any portion of an employee's final wages and may reduce the employee's final gross wages below the state minimum wage that is in effect at the time the work is performed, if the deduction is for any of the following:

- (a) Required by state or federal law; or
- (b) For medical, surgical, or hospital care or service. No deductions may be made for these services if covered under RCW 51.48.050; or

Example. During the final pay period, the business paid a worker's medical costs for an injury not related to the employee's job duties and deducted the amount from final wages to repay those costs to the employer.

- (c) To satisfy a court order, judgment, wage attachment, trustee process, bankruptcy proceeding, or payroll deduction notice for child support payments.

(2) The following deductions must be specifically agreed upon orally or in writing by the employee or employer and may reduce the employee's final gross wages below the state minimum wage that is in effect at the time the work is performed, if the deduction is for any of the following:

- (a) For pension, medical, dental, or other benefit plans when such agreements have been specifically agreed upon orally or in writing in advance by the employee and employer.

Example 1. Insurance premium: An employee and employer may have entered into an oral or written agreement in advance for deductions for monthly medical premiums.

Example 2. Retirement plan: The employee chose a 401K pension plan and agreed orally or in writing to a payroll deduction for the specified amount to participate in that plan.

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(b) For a payment to a creditor or third party if the employee authorizes it orally or in writing in advance to pay a sum for the benefit of the employee. The creditor or third party can be the employer of the employee.

Example 1. Assignment to third party: An employee may request orally or in writing for the employer to withhold four hundred dollars from the final paycheck for an automobile loan to be paid directly to the employee's financial institution by the employer.

Example 2. Employee loan: The employer loaned the employee three hundred dollars and charged reasonable interest. A written agreement with the terms of repaying the loan at fifty dollars per pay period through payroll deductions was made in writing and in advance between the employer and employee. The agreement also contained a provision that if the employee left the employer's employment for any reason, any balance due on the loan could be withheld from the final paycheck. Note: Employers are advised to check with the United States Department of Labor, Wage and Hour Division and the Internal Revenue Service regarding application of federal laws on charging interest.

(3) An employer can deduct wages from an employee's final paycheck for the reasons in (a), (b), (c), and (d) of this subsection, but only when these incidents have occurred in the final pay period. An employer may not deduct wages from the final paycheck for incidents that occurred in previous pay periods under (a) through (d) of this subsection. None of the deductions contained in this subsection may reduce the employee's final gross wages below the state minimum wage that is in effect at the time the work is performed.

(a) For acceptance of a bad check or credit card, if it can be shown that the employee accepted the check or credit card in violation of procedures previously made known to the employee by the employer; or

(b) For any cash shortage from a cash register, drawer or portable depository provided for that purpose, if it can be shown that the employee has sole access to the cash and has participated in the cash accounting at the beginning of the employee's shift and again at the end of said shift; or

(c) For any cash shortage, walkout (failure of customer to pay), breakage, or loss of equipment, if it can be shown that the shortage, walkout, breakage or loss was caused by a dishonest or willful act of the employee; or

(d) Deductions taken due to alleged employee theft are permissible only if it can be shown that the employee's intent was to deprive and that the employer filed a police report.

(4) It is the employer's responsibility to prove the existence of any agreement. Therefore, the department recommends that all agreements, policies, and procedures be in writing and signed by the affected employees.

(5) The employer must identify and record all wage deductions openly and clearly in employee payroll records.

Helpful information:

The following are examples of situations when deductions are allowed from the employee's final paycheck:

Example 1. Employee purchase of employer's goods or services: An employee worked for a tire store. The employee purchased tires from the store and entered into a written agreement with the employer to deduct an agreed amount each pay period until the debt was paid in full, and the agreement further specified that any remaining balance due at the

time of termination could be withheld from the final paycheck. This type of deduction may reduce the employee's wage below the state minimum wage.

Example 2. Advance or draw on wages. An employee may obtain an advance or draw on wages. The employer may deduct the advance or draw from the employee's final paycheck. The employer must record the advance or draw in the employee's payroll records. This type of deduction may reduce the employee's wage below the state minimum wage.

Example 3. Cost of uniforms: An employee and employer may agree orally or in writing that the employer may deduct the cost of uniforms provided by the employer if the uniforms are not returned by the employee at the time of termination. This type of deduction cannot reduce the employee's wage below the state minimum wage.

Example 4. Cash shortages: In a grocery store, the employees and employer agreed orally or in writing that the employer could deduct wages for cash shortages that occurred in the final pay period if the employees had sole access to their cash registers during their shifts and participated in the employer's cash accounting procedures before and after their shifts.

[Statutory Authority: Chapters 49.12, 49.46, 49.48, 49.52 RCW, and RCW 43.22.270. 05-24-019, § 296-126-025, filed 11/29/05, effective 1/1/06; Order 74-9, § 296-126-025, filed 3/13/74, effective 4/15/74.]

WAC 296-126-028 Wage deductions during on-going employment. (1) During an on-going employment relationship, an employer may deduct any portion of an employee's wages below the state minimum wage that is in effect at the time the work is performed if the deduction is for any of the following reasons:

(a) Required by state or federal law; or

(b) For medical, surgical, or hospital care or service; or

Example: The business paid a worker's medical costs for an injury not related to the employee's job duties and deducted the amount to repay those costs to the employer.

(c) To satisfy a court order, judgment, wage attachment, trustee process, bankruptcy proceeding, or payroll deduction notice for child support payments.

(2) During an on-going employment relationship, an employer may deduct wages when the employee expressly authorizes the deduction in writing and in advance for a lawful purpose for the benefit of the employee. These deductions may reduce the employee's gross wages below the state minimum wage.

Example 1. Employee purchase of employer's goods or services: An employee works for a tire store and wants to buy tires from the store. The employee can enter into a written agreement in advance with the employer to buy the tires through a payroll deduction. However, the employer must sell the tires to the employee for the same price or less than it would sell the tires to the customer.

Example 2. Employee loan: An employee worked for a hardware store and asked the employer for a loan. The employer loaned the employee money and charged reasonable interest. An agreement with the terms of repaying the loan and interest through payroll deductions was made in writing and in advance between the employer and employee.

Example 3. Employee benefits: Deductions have been specifically agreed upon orally or in writing in advance by

the employee and employer for monthly pension, medical, dental, or other benefit plans.

Example 4. Creditor or third party: An agreement with a creditor or third party to withhold \$400 from the final paycheck for an automobile loan to be paid directly to the employee's financial institution by the employer. The creditor or third party can be the employer of the employee.

(3) Neither the employer nor any person acting in the interest of the employer can derive any financial profit or benefit from any of the deductions under this regulation.

(4) For the purposes of this regulation, reasonable interest charged by the employer for a loan or credit extended to the employee is not considered to be of financial benefit to the employer. Note: Employers are advised to check with the United States Department of Labor, Wage and Hour Division and the Internal Revenue Service regarding application of federal laws on charging interest.

(5) The employer must identify and record all wage deductions openly and clearly in employee payroll records.

Helpful information:

The following are examples of situations when deductions are not allowed from the employee's wages during an on-going employment relationship:

Example 1. Customer's bad check or credit card: The amount of a customer's check that is returned for nonsufficient funds when an employee accepts a check in violation of established policies, or if an employee accepts a customer's bad credit card in violation of established policies.

Example 2. Shortage from cash register: The amount of a till shortage even when an employee participates in cash accounting at the beginning and end of their shift, has sole access to the cash register, and is short at the end of the shift.

Example 3. Customer walks out without paying: An unpaid bill when a customer leaves the restaurant without paying even when an employee is not watching their customers at a restaurant and ignores the fact the customers are finished dining and are ready for their check.

Example 4. Damage or loss: The cost for replacing broken glasses when the employee drops a tray of glasses when unloading the dishwasher.

[Statutory Authority: Chapters 49.12, 49.46, 49.48, 49.52 RCW, and RCW 43.22.270. 05-24-019, § 296-126-028, filed 11/29/05, effective 1/1/06.]

WAC 296-126-030 Adjustments for overpayments.

(1) An overpayment occurs when an employer pays an employee for:

- (a) More than the agreed-upon wage rate; or
- (b) More than the hours actually worked.

(2) Recouping the overpayment may reduce the employee's gross wages below the state minimum wage.

(3) An employer cannot recover an overpayment when the disputed amount concerns the quality of work.

(4) An employer can recover an overpayment from an employee's paycheck provided the overpayment was infrequent and inadvertent. Infrequent means rarely, not occurring regularly, or not showing a pattern. Inadvertent means an error that was accidental, unintentional, or not deliberately done. The burden of proving the inadvertent error rests with the employer who made the error. The employer has ninety days from the initial overpayment to detect and implement a plan with the employee to collect the overpayment. If the

overpayment is not detected within the ninety-day period, the employer cannot adjust an employee's current or future wages to recoup the overpayment. Recouping of overpayments is limited to the ninety-day detection period.

(5) In the case of employees covered by an unexpired collective bargaining agreement that expires on or after January 1, 2006, in which overpayments are included in the terms of the collective bargaining agreement, the effective date of this rule shall be the later of:

(a) The first day following expiration of the collective bargaining agreement; or

(b) The effective date of the revised collective bargaining agreement.

Helpful information:

The following are examples of when overpayments may or may not be allowed:

Example 1. Allowed. Overpayment of agreed wage rate: An employee was paid an agreed rate of ten dollars per hour but received a paycheck at the rate of eleven dollars per hour. The employer provided documentation of the overpayment to the affected employee and adjusted the employee's next paycheck for the amount overpaid in the previous pay period.

Example 2. Allowed. Overpayment for hours worked: An employee worked seventy-two hours in the pay period, but the employee was paid for eighty hours for that period. The employer provided documentation of the overpayment to the affected employee and adjusted the employee's next paycheck for the eight hours overpaid in the previous pay period.

Example 3. Not allowed. Overpayment not detected within ninety days of first occurrence: An employer agreed to pay an employee ten dollars per hour, but when the first check was received, the amount paid was paid at eleven dollars per hour. The employee may or may not have brought it to the attention of the employer. Six months later the employer detected the overpayments and adjusted the employee's wages in the next paycheck for the entire amount of the overpayment. This is not an allowable adjustment because it was not detected within ninety days from the first occurrence.

(6) The employer must provide advance written notice to the employee before any adjustment is made. The notice must include the terms under which the overpayment will be recouped. For example: One adjustment or a series of adjustments.

(7) The employer must provide documentation of the overpayment to the affected employee or employees.

(8) The employer must identify and record all wage deductions openly and clearly in employee payroll records.

(9) Regardless of the provisions of this section, if appropriate, employers retain the right of private legal action to recover an overpayment from an employee.

(10) This regulation does not apply to public employers. See chapter 49.48 RCW, Wages—Payment—Collection.

[Statutory Authority: Chapters 49.12, 49.46, 49.48, 49.52 RCW, and RCW 43.22.270. 05-24-019, § 296-126-030, filed 11/29/05, effective 1/1/06.]

WAC 296-126-040 Statements furnished. Every employer shall furnish to each employee at the time of payment of wages an itemized statement showing the pay basis (i.e., hours or days worked), rate or rates of pay, gross wages and all deductions therefrom for that pay period.

[Order 74-9, § 296-126-040, filed 3/13/74, effective 4/15/74.]

WAC 296-126-050 Employment records. (1) Every employer shall keep for at least three years a record of the name, address, and occupation of each employee, dates of employment, rate or rates of pay, amount paid each pay period to each such employee and the hours worked.

(2) Every employer shall make the record described in subsection (1) available to the employee, upon request, at any reasonable time.

(3) Every employer shall, upon written request by the employee, furnish within ten working days of the request to each employee who is discharged a signed written statement, setting forth the reasons for such discharge and the effective date thereof.

[Statutory Authority: RCW 43.22.270, 49.12.020, 49.12.091, 49.12.050, 49.46.020 and 49.46.070. 89-22-016 (Order 89-16), § 296-126-050, filed 10/24/89, effective 11/24/89; Order 74-9, § 296-126-050, filed 3/13/74, effective 4/15/74.]

WAC 296-126-060 Minor work permits. No minor shall be employed in any occupation or industry unless the employer shall have on file during the period of employment an unexpired work permit issued pursuant to section 15, chapter 16, Laws of 1973 2nd ex. sess., and regulations implementing said section in chapter 296-125 WAC. Such permit will not be issued except upon presentation of such evidence of age as is required by the industrial welfare committee.

[Order 74-9, § 296-126-060, filed 3/13/74, effective 4/15/74.]

WAC 296-126-070 Prohibited action. No employer shall discharge or in any other way discriminate against or penalize any employee who seeks information or a hearing concerning variance requests by an employer or information concerning employment standards, or who has filed a complaint alleging a violation of any employment standard.

[Order 74-9, § 296-126-070, filed 3/13/74, effective 4/15/74.]

WAC 296-126-080 Posting of order. The employer shall keep posted a current copy of these regulations in a form provided by the department. The poster shall be positioned in a readily accessible location and within plain view in each work site where an employee or employees are employed.

[Order 74-9, § 296-126-080, filed 3/13/74, effective 4/15/74.]

WAC 296-126-090 Hours. Any employee who feels the number of hours or other matters relating to overtime employment are detrimental to the health, safety or welfare of the employee may request the department of labor and industries to make an investigation following which the department will issue findings and conclusions. Whenever the circumstances are found to be detrimental to the health, safety or welfare of the employee, the industrial welfare committee may adopt additional or revised employment standards.

[Order 76-15, § 296-126-090, filed 5/17/76.]

WAC 296-126-092 Meal periods—Rest periods. (1) Employees shall be allowed a meal period of at least 30 minutes which commences no less than two hours nor more than

five hours from the beginning of the shift. Meal periods shall be on the employer's time when the employee is required by the employer to remain on duty on the premises or at a prescribed work site in the interest of the employer.

(2) No employee shall be required to work more than five consecutive hours without a meal period.

(3) Employees working three or more hours longer than a normal work day shall be allowed at least one 30-minute meal period prior to or during the overtime period.

(4) Employees shall be allowed a rest period of not less than 10 minutes, on the employer's time, for each 4 hours of working time. Rest periods shall be scheduled as near as possible to the midpoint of the work period. No employee shall be required to work more than three hours without a rest period.

(5) Where the nature of the work allows employees to take intermittent rest periods equivalent to 10 minutes for each 4 hours worked, scheduled rest periods are not required.

[Order 76-15, § 296-126-092, filed 5/17/76.]

WAC 296-126-094 General duty—Working conditions. It shall be the responsibility of every employer to maintain conditions within the work place environment that will not endanger the health, safety or welfare of employees. All facilities, equipment, practices, methods, operations and procedures shall be reasonably adequate to protect employees' health, safety and welfare.

[Order 76-15, § 296-126-094, filed 5/17/76.]

WAC 296-126-096 Lifting. Where weights in excess of 20 pounds are to be lifted, carried, pushed or pulled as a normal part of an employee's responsibility:

(1) The lifting, carrying, pushing or pulling duties shall be made known to the prospective employee at the time of recruitment, initial employment or reassignment to a lifting job.

(2) Instruction shall be given such employees on proper lifting techniques in accordance with instructions provided or approved by the department of labor and industries.

(3) Assurance that adequate instructions in weight lifting techniques have been given as provided in (2) shall be furnished the committee or its authorized agent upon request.

[Order 76-15, § 296-126-096, filed 5/17/76.]

WAC 296-126-130 Variance. (1) Upon written application from an employer, a variance from any standard herein may be granted by the industrial welfare committee for good cause shown as authorized by section 8, chapter 16, Laws of 1973 2nd ex. sess. The employer shall give notice to the employees or their representative so that they may submit their written views to the committee on any variance request.

(2) The committee may afford the applicant and any involved employee, or their representatives, the opportunity for oral presentation whenever circumstances of the particular application warrant such additional procedure.

(3) Temporary variance valid for not more than thirty calendar days may be issued by the committee for good cause where immediate action is necessary and warranted pending further review by the committee.

(4) "Good cause" shall mean, but not be limited to, those situations in which the employer finds that his circumstance warrants an alternative procedure and where he is able to demonstrate to the committee that such alternative would not have a harmful effect on the health, safety and welfare of the employees involved.

[Order 74-9, § 296-126-130, filed 3/13/74, effective 4/15/74.]

WAC 296-126-200 Applicability. WAC 296-126-200 through 296-126-226 shall apply to persons employed in counselor staff occupations in organized seasonal recreational camps as herein defined.

[Statutory Authority: RCW 49.12.091. 78-03-004 (Order 78-1), § 296-126-200, filed 2/3/78.]

WAC 296-126-202 Definitions. (1) "Department" shall mean the department of labor and industries.

(2) "Committee" shall mean the industrial welfare committee of the department of labor and industries.

(3) "Organized camps," as used herein, shall refer to established resident group camps, which are established and maintained for recreation, education, vacation, or religious purposes, for use by organized groups wherein the activities are conducted on a closely supervised basis, and where day-to-day living facilities, including food and lodging, are provided either free-of-charge or by payment of fee.

(4) "Employ" means to engage, suffer, or permit to work.

(5) "Employee" shall mean any person who is employed in a counselor staff occupation in an organized seasonal recreational camp as herein defined.

(6) "Employer" means any person, association, partnership, private or public corporation who employs or exercises control over wages, hours, or working conditions of one or more employees.

(7) "Minor" shall mean any person under eighteen years of age.

(8) "Counselor staff occupations" shall include all work involving duties primarily relating to guidance, instruction, supervision, and care of campers in organized camps, whether such work involves direct charge of, or responsibility for, such activities, or merely assistance to persons in charge; but shall not include preseason training courses. Counselor staff occupations include, but are not limited to: Head counselor, assistant head counselor, specialist counselor or instructor (such as swimming counselor, arts and crafts counselor, etc.), group or division leader, camp parent, teacher, supervising counselor, senior counselor, counselor, general counselor, bunk counselor, assistant counselor, junior counselor, counselor aide, and kitchen helpers working no more than 27 hours in a given work week.

(9) "Resident counselor staff" shall mean staff who receive lodging and meals from the employer.

(10) "Nonresident counselor staff" shall mean staff who do not receive lodging and meals from the employer.

(11) "Counselor I," "Counselor II," and "Counselor III," shall be defined for purposes of this standard as follows: "Counselor I" is one never before employed in any counselor staff occupations; "Counselor II" is one who has had at least one season's employment in a counselor staff occupation; "Counselor III" is one who has had at least three seasons of employment in a counselor staff occupation.

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(12) "Season of employment" is defined as a period of not less than six weeks, nor more than 12 weeks in any one calendar year, except that counselors employed less than six weeks in any one season may accumulate their employment experience from year to year to meet the minimum requirements for counselor grade.

[Statutory Authority: RCW 49.12.091. 78-03-004 (Order 78-1), § 296-126-202, filed 2/3/78.]

WAC 296-126-204 Minimum wage. Except as otherwise provided by chapter 49.46 RCW:

(1) The minimum wage for kitchen helpers working in excess of 27 hours per week, camp cooks, and all employees other than counselor staff, shall be no less than \$2.00 per hour for employees 18 years of age or older, and no less than \$1.75 for employees under age 18.

(2) Minimum wage rates for counselor staff occupations shall be as follows:

	MINIMUM WEEKLY RATE	
	Nonresident Employee (6-day week)	Resident Employee (6-day week)
COUNSELOR III	\$66.00	\$51.00
COUNSELOR II	45.00	30.00
COUNSELOR I	36.00	21.00

(3) The minimum daily wage rate for resident or nonresident counselor staff shall be prorated from the six-day basis.

(4) Minimum wage provisions shall not apply to resident campers under the age of 18 who are engaged in an in-training program, which provides prepared instructions and supervision by qualified counselor staff, and which requires no more than 24 on-duty hours weekly. Such resident campers shall (a) carry no responsibility for other campers and no bunk responsibility, except as a defined part of the training program and (b) shall not enter such a program unless their parents or guardians sign an authorization, which includes an outline of the program and a description of the duties and responsibilities involved.

[Statutory Authority: RCW 49.12.091. 78-03-004 (Order 78-1), § 296-126-204, filed 2/3/78.]

WAC 296-126-206 Limitation on number of employees paid in Counselor I and Counselor II rates. In any week, an employer may pay the Counselor I rate to no more than 30 percent of the total number of employees in counselor staff occupations. Furthermore, the total number of employees paid at the Counselor I and Counselor II rates may not exceed 80 percent of the total staff. In small camps (40 campers or under) where the above percentage limitations may be unworkable, the supervisor of employment standards shall have authority to make reasonable adjustments of these limitations upon a showing that the above limitations will work a hardship.

[Statutory Authority: RCW 49.12.091. 78-03-004 (Order 78-1), § 296-126-206, filed 2/3/78.]

WAC 296-126-208 Premium pay for resident counselor staff occupations. At termination of employment, a resident counselor staff member shall be entitled to premium payment of an additional 25 percent of the staff member's

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weekly rate of pay for each week of employment, unless he or she received 24 hours per week off-duty, 12 hours of which must have been in sequence. The 24 hours off-duty time need not have been accumulated in any one week.

[Statutory Authority: RCW 49.12.091. 78-03-004 (Order 78-1), § 296-126-208, filed 2/3/78.]

WAC 296-126-210 Board, lodging, and other services. The minimum wage rates of resident counselor staff shall be subject to no charge by an employer for lodging or meals furnished by the employer or for any other services furnished in connection with camp business within reason.

[Statutory Authority: RCW 49.12.091. 78-03-004 (Order 78-1), § 296-126-210, filed 2/3/78.]

WAC 296-126-212 Travel expenses. The employer shall pay the fare or make transportation available for any counselor staff member who is required or permitted to supervise, or assist in supervising, campers in transit.

[Statutory Authority: RCW 49.12.091. 78-03-004 (Order 78-1), § 296-126-212, filed 2/3/78.]

WAC 296-126-214 Records. Records showing the names of employees, dates of employment, wages paid, and days worked by them shall be kept by every employer for a period of at least three years and available for inspection by the representatives of the industrial welfare committee of the department of labor and industries at all reasonable times.

[Statutory Authority: RCW 49.12.091. 78-03-004 (Order 78-1), § 296-126-214, filed 2/3/78.]

WAC 296-126-216 Agreements. All employees must enter into a written agreement with the camp administration setting forth the remuneration, room and board, special services provided, and the nature of the work assignment as counselors and leaders. Resident camper parental authorizations and employee agreements are to be kept on file for a three-year period.

[Statutory Authority: RCW 49.12.091. 78-03-004 (Order 78-1), § 296-126-216, filed 2/3/78.]

WAC 296-126-218 Work permits. No minor shall be employed until the employer has applied for and received a permit to employ minors from the department of labor and industries, and has obtained a parental authorization and proof of age document for each minor employee.

[Statutory Authority: RCW 49.12.091. 78-03-004 (Order 78-1), § 296-126-218, filed 2/3/78.]

WAC 296-126-220 Minors' occupations. No minor worker shall be employed in any occupation which the department of labor and industries, through the industrial welfare committee, shall declare to be particularly hazardous for minors under the age specified in the minor work permit regulation, chapter 296-125 WAC.

[Statutory Authority: RCW 49.12.091. 78-03-004 (Order 78-1), § 296-126-220, filed 2/3/78.]

WAC 296-126-222 Sanitation and safety. (1) All places of employment shall be maintained in a sanitary condition in conformity with the requirements for sanitation for camps set by the health services division, department of social and health services and/or the Washington Industrial Safety and Health Act (WISHA).

(2) All places of employment shall be maintained in a safe condition in conformity with the WISHA standards of the department of labor and industries, division of industrial safety and health.

(3) First-aid requirements of the WISHA standards of the department of labor and industries shall be met. In addition, the provision of an infirmary with the full-time services of a physician and/or registered nurse is recommended for camps operated by one organized group for more than two weeks.

(4) Transportation shall be available at all times for use in case of an emergency and shall be of a nature to render reasonable comfort to an injured person.

(5) If preemployment physical examinations, including preventive inoculations, recommended by public health authorities are required of employees, such examinations shall not be at the expense of the employee.

(6) No employee shall be required or permitted to lift or carry excessive weights. Where weights in excess of 20 pounds are to be lifted, carried, pushed, or pulled as a normal part of an employee's responsibility:

(i) The lifting, carrying, pushing or pulling duties shall be made known to the prospective employee at the time of recruitment, initial employment or reassignment to a lifting job.

(ii) Instruction shall be given such employees on proper lifting techniques in accordance with instructions provided or approved by the department of labor and industries.

(iii) Assurance that adequate instruction in weight lifting techniques have been given as provided in (ii) shall be furnished the committee or its authorized agent upon request.

(7) Employee assignments to counseling duties shall be in keeping with the employee's maturity, knowledge, and skills. The health and welfare of the employee shall be considered in the determination of adequate counselor staff-camper ratios. Personnel should be selected on the basis of standards currently prescribed in the American Camping Association Resident Camp standards.

[Statutory Authority: RCW 49.12.091. 78-03-004 (Order 78-1), § 296-126-222, filed 2/3/78.]

WAC 296-126-226 Penalties. The department shall investigate the complaint of any individual alleging that these standards have been violated. Any employer employing any person in violation of these standards shall upon conviction thereof be punished in accordance with RCW 49.12.170, which states as follows: "Any employer employing any person for whom a minimum wage or standards, conditions, and hours of labor have been specified, at less than said minimum wage, or under standards, or conditions of labor or at hours of labor prohibited by the rules and regulations of the committee; or violating any other of the provisions of this 1973 amendatory act, shall be deemed guilty of a misdemeanor, and shall, upon conviction thereof, be punished by a fine of not less than twenty-five dollars nor more than one thousand dollars."

[Statutory Authority: RCW 49.12.091. 78-03-004 (Order 78-1), § 296-126-226, filed 2/3/78.]

Chapter 296-127 WAC

PREVAILING WAGE

WAC

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DISPOSITION OF SECTIONS FORMERLY CODIFIED IN THIS CHAPTER

296-127-016	Coverage and exemptions of workers involved in the production and delivery of materials predominantly used in road construction. [Statutory Authority: Chapters 39.04 and 39.12 RCW and RCW 43.22.270, 88-22-046 (Order 88-22), § 296-127-016, filed 10/31/88.] Repealed by 92-01-104, filed 12/18/91, effective 1/31/92. Statutory Authority: Chapters 39.04 and 39.12 RCW and RCW 43.22.270.
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WAC 296-127-010 Definitions for chapter 296-127 WAC. (1) "Department" means the department of labor and industries.

(2) "Director" means the director of the department or his or her duly authorized deputy or representative.

(3) "Industrial statistician" means the industrial statistician of the department's employment standards, apprenticeship, and crime victims (ESAC) division.

(4) "Assistant director" means the assistant director of the employment standards, apprenticeship, and crime victims (ESAC) division or his or her duly authorized deputy or representative.

(5) "Contractor" means:

(a) The prime contractor, and each and every subcontractor, required to be registered under chapter 18.27 RCW and/or licensed under chapter 19.28 RCW, that performs any work on a public works project site, and/or is required to pay industrial insurance premiums as a construction company.

(b) Employers engaged in shipbuilding and ship repair, building service maintenance, and any fabricator or manufacturer that produces nonstandard items specifically for a public works project.

(c) Employers that contract with contractors or subcontractors for the purpose of the production and/or delivery of materials pursuant to the terms of WAC 296-127-018.

(6) The term municipality shall include every city, county, town, district, political subdivision, or other public agency thereof which is authorized by law to require the execution of public work, except drainage districts, diking districts, diking and drainage improvement districts, drainage improvement districts, diking improvement districts, consolidated diking and drainage improvement districts, consolidated drainage improvement districts, consolidated diking improvement districts, irrigation districts, or any such other districts as shall from time to time be authorized by law for the reclamation or development of waste or undeveloped lands.

(7)(a) The term "public work" shall include:

(i) All work, construction, alteration, enlargement, improvement, repair, and/or demolition that is executed by contract, purchase order, or any other legal agreement and that is executed at the cost of the state of Washington or of any municipality. The source of the funding shall not determine the applicability of the statute, and may include, but is not limited to, such sources as those payments made through contracts with insurance companies on behalf of the insured state or municipality;

(ii) All work, construction, alteration, enlargement, improvement, repair, and/or demolition which, by law, constitutes a lien or charge on any property of the state or of a municipality;

(iii) All work, construction, alteration, repair, or improvement, other than ordinary maintenance that the state or a municipality causes to be performed by a private party through a contract to rent, lease, or purchase at least fifty percent of the project by one or more state agencies or municipalities, pursuant to RCW 39.04.260;

(iv) Maintenance, except ordinary maintenance as defined by (b)(iii) of this subsection, when performed by contract. Maintenance is defined as keeping existing facilities in good usable, operational condition;

(v) Janitorial and building service maintenance as defined by WAC 296-127-023, when performed by contract, on public buildings and/or assets; and

(vi) The fabrication and/or manufacture of nonstandard items produced by contract specifically for a public works project as defined by (a)(i) through (v) of this subsection.

(b) The term "public work" shall not include:

(i) Work, construction, alteration, enlargement, improvement, repair, demolition, and/or maintenance for which no wage or salary compensation is paid, consistent with the requirements of RCW 35.21.278;

(ii) The construction, alteration, repair, or improvement of any municipal street railway system;

(iii) Ordinary maintenance which is defined as work not performed by contract and that is performed on a regularly scheduled basis (e.g., daily, weekly, monthly, seasonally, semiannually, but not less frequently than once per year), to service, check, or replace items that are not broken; or work not performed by contract that is not regularly scheduled but is required to maintain the asset so that repair does not become necessary.

(8) "Contract" means a contract, purchase order, or any other legal agreement in writing for public work to be performed for a fixed or determinable amount, which is duly awarded after advertisement and competitive bid. A contract that is awarded from a small works roster, or under the emergency provisions of state law, need not be advertised.

(9) "Residential construction" means construction, alteration, repair, improvement, or maintenance of single family dwellings, duplexes, apartments, condominiums, and other residential structures not to exceed four stories in height, including basement, when used solely as permanent residences. It does not include the utilities construction (water and sewer lines), or work on streets, or work on other structures (e.g., for recreation and business.)

[Statutory Authority: RCW 39.12.070, 94-01-100, § 296-127-010, filed 12/16/93, effective 1/16/94. Statutory Authority: Chapters 39.04 and 39.12 RCW and RCW 43.22.270, 92-01-104, § 296-127-010, filed 12/18/91, effective 1/31/92; 88-22-046 (Order 88-22), § 296-127-010, filed 10/31/88. Statutory Authority: RCW 39.12.050, 39.12.065, 43.22.270 and 51.04.020, 86-03-063 (Order 85-28), § 296-127-010, filed 1/17/86. Statutory Authority: RCW 39.12.015, 39.12.060 and HB 795, 1982 1st ex.s. c 38, 82-18-041 (Order 82-28), § 296-127-010, filed 8/27/82.]

WAC 296-127-011 Time for determining prevailing wage.

(1) Prevailing wage rates for all public work contracts will be determined by the industrial statistician and published on the first business day of February and the first business day of August of each year. These rates shall become effective thirty days after the date of publication. However, the industrial statistician may revise an established prevailing wage rate in response to an administrative or judicial finding overturning the established rate, or at any time necessary to correct an error, with such revision becoming effective thirty days after the date of publication. However, in the event of an emergency as determined by the director of the department, such revised rate shall take effect upon publication.

(2) The department shall establish deadlines for the submission of:

(a) Completed wage surveys, for inclusion of submitted data in the survey computations;

(b) Newly ratified collective bargaining agreements for inclusion in the semiannual prevailing wage publication;

(c) Notice of collectively bargained wage and benefit adjustments, and/or relevant contractual changes, for inclusion in the semiannual prevailing wage publication; and

(d) Notice of changes in apprenticeship standards and incremental wage rates for inclusion in the semiannual prevailing wage publication.

(3) The applicable prevailing wage rates for a given public works contract will be determined as follows:

(a) For all public works contracts, except janitorial or building service maintenance contracts, the applicable prevailing wage rates shall be the rates that are in effect on the date when bids by prime contractors are due for submission to contract awarding agencies. These rates shall remain in effect for the duration of the contract.

(b) If contracts are not awarded within six months of the date bids are due, the applicable prevailing wage rates shall be those that are in effect on the date the contract is awarded. These rates shall remain in effect for the duration of the contract.

(c) For work orders issued under job order contracts pursuant to chapter 301, Laws of 2003, the appropriate prevailing wage rates shall be the rates that are in effect on the date when the individual work order is issued.

(4) If a contract for public work is not awarded pursuant to bids, the applicable prevailing wage rates shall be those that are in effect on the date when the contract is executed. These rates shall remain in effect for the duration of the contract.

(5) A schedule of the applicable prevailing wage rates must be included by:

(a) Contract awarding agencies, in the bid specifications and contract documents for each contract.

(b) Contractors, in the bid and/or contract documents provided to subcontractors.

[Statutory Authority: Chapter 39.12 RCW, RCW 43.22.270, 43.22.051, and 2003 c 301. 04-10-083, § 296-127-011, filed 5/4/04, effective 6/4/04. Statutory Authority: Chapters 39.04 and 39.12 RCW and RCW 43.22.270. 92-01-104, § 296-127-011, filed 12/18/91, effective 1/31/92; 88-22-046 (Order 88-22), § 296-127-011, filed 10/31/88. Statutory Authority: RCW 39.12.015, 39.12.060 and HB 795, 1982 1st ex.s. c 38. 82-18-041 (Order 82-28), § 296-127-011, filed 8/27/82.]

WAC 296-127-013 Scope of work descriptions. (1) In order to determine applicable prevailing wage rates, the director or his/her designee will issue scope of work descriptions for each trade and occupation recognized as being involved in public work.

(2) The scope of work descriptions shall be created using authoritative sources available to the department, such as:

(a) Washington state apprenticeship and training council approved apprenticeship standards;

(b) Collective bargaining agreements;

(c) Dictionaries of occupational titles;

(d) Experts from organized labor, licensed contractors, and contractors' associations;

(e) Recognized labor and management industry practice.

(3) The applicable prevailing wage rates for workers employed on public works projects shall be determined by the scopes of work performed by those workers, and not by their specific job titles.

(4) The applicable scope of work description for a public works contract is the scope of work description that is in effect on the date that the bids are due to be submitted to the contract awarding agency. If the contract is not awarded within six months of the bid due date, then the applicable scope of work description shall be that which is in effect on the date that the contract is awarded. The same scope of work description shall remain in effect for the duration of the contract.

(5) In the event a dispute arises regarding a scope of work description following the award of a public works contract, the aggrieved party may request an arbitration hearing pursuant to the provisions of RCW 39.12.060, WAC 296-127-060, 296-127-061, and 296-127-062.

[Statutory Authority: Chapter 39.12 RCW, RCW 43.22.270 and 43.22.051. 00-15-077, § 296-127-013, filed 7/19/00, effective 7/19/00. Statutory Authority: Chapters 39.04 and 39.12 RCW and RCW 43.22.270. 92-01-104, § 296-127-013, filed 12/18/91, effective 1/31/92; 88-22-046 (Order 88-22), § 296-127-013, filed 10/31/88.]

[Title 296 WAC—p. 1842]

WAC 296-127-01301 Certified asbestos abatement workers. For the purpose of the Washington state public works law, chapter 39.12 RCW, the department of labor and industries has established the work classification of certified asbestos abatement workers.

Asbestos abatement work may be performed by any worker who is certified as an asbestos remover and encapsulator, except when the work performed is incidental to the normal scope of work of another trade or occupation. Incidental asbestos work includes only that work of short duration which is indistinguishable from the work of another established classification.

This classification does not include work falling within the scope of work for asbestos workers. That work is primarily related to the installation of insulation material around mechanical systems.

Certified asbestos abatement workers perform all of the work, including any cleanup required in connection with the abatement of asbestos, coming within the purpose and scope of chapter 49.26 RCW and chapter 296-65 WAC. WAC 296-65-003 provides definitions which establish the scope of this work.

[Statutory Authority: Chapter 39.12 RCW, RCW 43.22.270 and 43.22.051. 00-15-077, § 296-127-01301, filed 7/19/00, effective 7/19/00.]

WAC 296-127-01303 Heat and frost insulators and asbestos workers. For the purpose of the Washington state public works law, chapter 39.12 RCW, heat and frost insulators and asbestos workers apply insulation materials to mechanical systems to reduce loss or absorption of heat, prevent moisture condensation and to deaden sound and prevent vibration.

The work includes, but is not limited to:

- The preparation and physical distribution on the job site of asbestos, cork, plastic, magnesia or similar insulation materials.

- Insulation of mechanical systems, plumbing, heating systems, any insulation connected with air handling systems, refrigeration piping and related vessels, boilers, tanks, flues breechings, evaporators, turbines, fittings, valves, ducts, flues, vats and all insulation connected with steam, condensate, feedwater and/or chilled water, or insulation of any mechanical system for sound control.

- All cleanup required in connection with heat and frost insulators and asbestos worker's work.

[Statutory Authority: Chapter 39.12 RCW, RCW 43.22.270 and 43.22.051. 00-15-077, § 296-127-01303, filed 7/19/00, effective 7/19/00.]

WAC 296-127-01305 Boilermakers. For the purpose of the Washington state public works law, chapter 39.12 RCW, boilermakers assemble, erect, repair and clean boilers, tanks, vats and pressure vessels according to blueprint specifications, using hand tools and portable power tools and equipment.

The work includes, but is not limited to:

- Locating and marking of reference points for columns or plates on foundations, using master straightedge, squares, transit and measuring tape.

- Using rigging or cranes to lift parts to specified positions.

(2007 Ed.)

- Aligning structures or plate sections, using plumb bobs, levels, wedges, dogs or turnbuckles.
- Drilling, reaming, chipping, caulking and grinding of structures and sections and bolting or welding them together.
- Setting of drums and headers and installation of tubes.
- And all the cleanup required in connection with boiler-makers work.

[Statutory Authority: Chapter 39.12 RCW, RCW 43.22.270 and 43.22.051. 00-15-077, § 296-127-01305, filed 7/19/00, effective 7/19/00.]

WAC 296-127-01306 Brick masons. For the intents and purposes of the Washington state public works law, chapter 39.12 RCW, the job description for brick masons is as follows:

- Prepare and lay building materials such as brick, concrete block, cinder block, terra cotta block, marble and granite block, and related materials to construct, repair and waterproof structures, such as walls, partitions, arches, sewers, chimneys or smokestacks, piers, abutments, walks and curbstones.
- Measure distance from reference points and mark guidelines on working surface to lay out work.
- Spread soft layer of mortar that serves as base and binder for brick (or block), using trowel.
- Apply mortar to end of brick and position brick in mortar bed.
- Tap brick with trowel to level, align, and embed in mortar, allowing specified thickness of joint. Remove excess mortar from face of brick, using trowel.
- Finish mortar between brick with pointing tool or trowel.
- Break bricks to fit spaces too small for whole brick, using edge of trowel or brick hammer.
- Determine vertical and horizontal alignment of courses, using plumb bob, gaugeline and level. Fasten brick or terra cotta veneer to face of structures, with tie wires embedded in mortar between bricks, or in anchor holes in veneer brick.

[Statutory Authority: Chapter 39.12 RCW, RCW 43.22.270 and 43.22.051. 00-15-077, § 296-127-01306, filed 7/19/00, effective 7/19/00.]

WAC 296-127-01308 Building service employees (janitors, waxers, and window washers). For the purpose of the Washington state public works law, chapter 39.12 RCW, the work of building service employees includes, but is not limited to:

(1) Janitors. Empty trash and damp wipe containers. Dust chairs, sides of desks, top of filing cabinets, panelled walls, doors, ledges and picture frames within easy reach. Damp wipe desk tops, telephones and desk fixtures. Damp mop floors. Vacuum upholstered furniture and draperies. Wash vinyl furniture with cleaning solution. Wash doors and other surfaces and spot wash painted walls. Clean door glass and inside partition glass. Vacuum and shampoo carpets.

(2) Utility janitors. Performs the following duties in addition to those performed by janitors: Waxing of floors (when not performed by traveling waxers), high wall and ceiling washing requiring the use of a ladder, and minor repairs and maintenance necessary to the operation of the building.

(3) Waxers. Waxing of floors.

(2007 Ed.)

(4) Window washers. Washing of all windows, other than inside partition glass and door glass, washing of painted walls, (when not done as a prerequisite to repainting) and wall paper cleaning.

(5) And all the cleanup required in connection with building service employees.

[Statutory Authority: Chapter 39.12 RCW, RCW 43.22.270 and 43.22.051. 00-15-077, § 296-127-01308, filed 7/19/00, effective 7/19/00.]

WAC 296-127-01309 Cabinet makers. For the purpose of the Washington state public works law, chapter 39.12 RCW, cabinet makers set up and operate a variety of wood-working machines and use various hand tools to fabricate and repair wooden cabinets, sashes, doors, and furniture in a shop or plant.

The work includes, but is not limited to:

- Study blueprints or drawings of articles to be constructed or repaired and plan sequences of cutting or shaping operations to be performed.
- Mark outline or dimensions of parts on paper or lumber stock, according to blueprint or drawing specifications. Match materials for color, grain or texture.
- Set up and operate woodworking machines, such as: Power saws, jointer, mortiser, tenoner, molder and shaper to cut and shape parts from woodstock.
- Trim component parts of joints to assure snug fit, using hand tools, such as: Planes, chisels, or wood files. Bore holes for insertion of screws or dowels by hand or using boring machine. Glue, fit and clamp parts and subassemblies together to form a complete unit, using clamps or clamping machine. Drive nails or other fasteners into joints at designated places to reinforce joints.
- Sand and scrape surfaces and joints of articles to prepare articles for finishing. Dip, brush or spray assembled articles with protective or decorative materials, such as stain, varnish, or paint.
- Install hardware such as: Hinges, catches and drawer pulls.

[Statutory Authority: Chapter 39.12 RCW, RCW 43.22.270 and 43.22.051. 00-15-077, § 296-127-01309, filed 7/19/00, effective 7/19/00.]

WAC 296-127-01310 Carpenters. For the purpose of the Washington state public works law, chapter 39.12 RCW, carpenters construct, erect, install and repair structures, structural members and fixtures made of wood, plywood, wall-board and materials that take the place of wood, such as plastic, metals, composites, and fiberglass, using carpenter hand tools and power tools.

The work includes, but is not limited to:

- Build rough wooden structures, such as concrete forms, scaffolds, wooden bridges, trestles, coffer dams, tunnel and sewer support; welding and burning.
- Install ladders, handrails, walkways, platforms and gangways.
- Install door and window bucks (rough frames in which finished frames are inserted) in building frame work and brace them with boards nailed to frame work.
- Install subflooring in buildings.
- Nail plaster grounds (wood or metal strips) to studding.
- Fit and nail sheathing on outer walls and roofs on buildings.

- Construct, erect, install and repair commercial, industrial and residential structures.
- Select specified type of lumber or other materials.
- Prepare layout, using rule, framing square and calipers.
- Mark cutting and assembling lines on materials, using pencil, chalk, and marking gauge.
- Shape materials to prescribed measurements, using saws, chisels and planes.
- Assemble, cut and shape materials and fasten them together with nails, dowel pins, or glue.
- Verify trueness of structure with plumb bob and carpenter's level.
- Apply decorative paneling to walls.
- Erect frame work for structures and lay subflooring.
- Cover subfloor with building paper to keep out moisture and lay hardwood, parquet and wood-strip-lock floors by nailing floors to subfloor or cementing them to mastic or asphalt base.
- Build stairs and layout and install partitions and cabinets.
- Install metal roof decking and metal siding, regardless of the fastening method, or what it is fastened to.
- Install all other types of siding, regardless of composition, fastening method, or what it is fastened to.
- Fit and install prefabricated wooden cabinets, window frames, door frames, doors, weather stripping, interior and exterior trim, and finish hardware, such as locks, letter drops and kick plates.
- Apply acoustical tile to ceilings and walls of buildings to reduce reflecting of sound and to decorate rooms.
- Cement tile to masonry surface.
- Nail channels or wood furring strips to surfaces to provide mounting for tile.
- Place building paper between tile and furring strip to keep out moisture.
- Nail, screw, or staple tile to wooden furring strips.
- Nail or screw moulding to walls to support and seal joint between ceiling tile and wall. Hang dry lines to wall mauling.
- Drive hanger inserts into reinforced concrete ceiling, suspend and bend hanger wires at points touching dry lines.
- Thread wires through holes in main runners and cut and attach cross supports to suspended runners and wall mauling.
- Cut tiles for fixtures and borders and insert tiles into supporting frame work.

[Statutory Authority: Chapter 39.12 RCW, RCW 43.22.270 and 43.22.051. 00-15-077, § 296-127-01310, filed 7/19/00, effective 7/19/00.]

WAC 296-127-01312 Carpenter tenders. For the purpose of the Washington state public works law, chapter 39.12 RCW, carpenter tenders are laborers who assist carpenters engaged in construction, erection, installation and repair of wooden structures and fixtures. Carpenter tenders perform a variety of routine tasks which do not require the use of carpenter tools, such as:

- Cleaning materials, equipment, tools and work areas.
- Moving and lifting building materials, tools and supplies.
- Handling materials, tools and supplies to carpenters.
- Dismantling temporary wooden structures.
- Assisting carpenters in stripping forms and shoring.

- Cleaning and moving forms.

[Statutory Authority: Chapter 39.12 RCW, RCW 43.22.270 and 43.22.051. 00-15-077, § 296-127-01312, filed 7/19/00, effective 7/19/00.]

WAC 296-127-01313 Carpet and resilient floor layers. For the purpose of the Washington state public works law, chapter 39.12 RCW, carpet and resilient floor layers do the measuring, cutting, sewing, taping, fitting, laying and installing of oil cloth, matting, linen, carpet, synthetic turf, linoleum, vinyl, plastic, rubber, cork, mastic, asphalt, mastipave, tile and chalkboard, nonslip or abrasive materials, resilient, decorative seamless surface coatings (except terrazzo, magnesite and latex built-up floors) and all other resilient coverings on floors, walls, counters, table tops and ceilings when cemented, tacked or otherwise applied to a base, whether used as shock-absorbing, sound-absorbing, or decorative coverings.

The work includes, but is not limited to:

- Handling of the materials at the site of installation.
- Sweeping, scraping, sanding, or chipping dirt and irregularities from base surfaces and filling cracks with putty, plaster, or cement grout to form smooth, clean foundations.
- All necessary preparation work and finish work, such as drilling holes for sockets and pins, installation of underlayment, sanding and filling, fitting of metal edgings, metal corners and caps and fitting devices for attachment of such materials.
- Spreading of adhesive cement over floor to cement foundation material to the floor. Laying covering on cement. Rolling finished floor to smooth it out and press cement into base and covering.
- All the cleanup required in connection with carpet and resilient floor layers work.

[Statutory Authority: Chapter 39.12 RCW, RCW 43.22.270 and 43.22.051. 00-15-077, § 296-127-01313, filed 7/19/00, effective 7/19/00.]

WAC 296-127-01315 Cement masons. For the purpose of the Washington state public works law, chapter 39.12 RCW, cement masons perform all work where finishing tools are used.

The work includes, but is not limited to:

- The setting of screeds, the rodding (buildings), shaping, smoothing and finishing of the surfaces of freshly poured concrete floors, walls, sidewalks, curbs, steps and stairways, the finishing of extruded barrier rails, or any other concrete surface requiring finishing, using hand tools or power tools, including floats, trowels, screeds and straightedge.
- The removing of rough or defective spots from concrete surfaces, using grinder or chisel and hammer and patching holes with fresh concrete or epoxy compound preparatory to sacking. (The finishing of a large surface of patched holes.)
- The moulding of expansion joints and edges, using edging tools, jointers and straightedge.
- The application of penetrating sealer and primer protective coatings to concrete floors and steps for the first twenty-four hours after pouring, when part of the finishing process.
- The installation of seamless composition floors and the installation and finishing of epoxy based coatings or poly-

ter based linings to all surfaces, when the coatings or linings are applied by spraying or troweling.

- Sandblasting or waterblasting for architectural finish or preparatory to patching.
- The setting of all forms one board high.
- The cutting of joints with concrete saw for the control of cracks in buildings and contiguous to buildings.
- The setting of concrete curb, gutter and sidewalk forms as a composite crew with laborers.
- All cleanup work required in connection with the above work.

[Statutory Authority: Chapter 39.12 RCW, RCW 43.22.270 and 43.22.051. 00-15-077, § 296-127-01315, filed 7/19/00, effective 7/19/00.]

WAC 296-127-01317 Drywall applicators (drywall nailers and sheetrock installers). For the purpose of the Washington state public works law, chapter 39.12 RCW, drywall applicators install plasterboard or other wallboards to ceilings and interior walls of buildings, using hand tools and portable power tools.

The work includes, but is not limited to:

- Installing horizontal and vertical metal studs for attachment of wallboard on interior walls.
- Cutting angle iron and channel iron to specified size and suspending angle iron grid and channel iron from ceiling, using wire.
- Cutting wallboard to size.
- Cutting openings for electrical and other outlets.
- Nailing wallboard to wall and ceiling supports.
- Trimming rough edges from wallboard to maintain even joints.
- Nailing prefabricated metal pieces around windows and doors and between dissimilar materials to protect drywall edges.

[Statutory Authority: Chapter 39.12 RCW, RCW 43.22.270 and 43.22.051. 00-15-077, § 296-127-01317, filed 7/19/00, effective 7/19/00.]

WAC 296-127-01318 Drywall finishers (tapers). For the purpose of the Washington state public works law, chapter 39.12 RCW, drywall finishers perform all the preparatory work and finishing work involved in covering interior walls and ceilings with decorative or protective finish materials.

The work includes, but is not limited to:

- Handling of all materials after the initial unloading at the job site, including the distribution to the points of application.
- Erecting, moving and dismantling of all scaffolding.
- All preparatory work of taping, sealing, finishing and sanding of joints between plasterboard or other wallboard.
- Spotting, caulking, pointing and sealing of cracks and holes in walls and ceilings.
- Applying protective coverings prior to the application of the finish materials.
- Spackling of surfaces and application of texture finishes where adhesive materials are used.
- Applying all primers, sealers, decorative or protective finish materials, regardless of the method of application.
- Installing metal moulding at corners instead of sealant and tape.
- Removing all drywall material scraps and all cleaning work, including scraping of floors.

(2007 Ed.)

[Statutory Authority: Chapter 39.12 RCW, RCW 43.22.270 and 43.22.051. 00-15-077, § 296-127-01318, filed 7/19/00, effective 7/19/00.]

WAC 296-127-01320 Power line construction electricians. For the purpose of the Washington state public works law, chapter 39.12 RCW, power line construction electricians erect, maintain and repair transmission poles (whether built of wood, metal or other material), fabricated metal transmission towers, outdoor substations, switch racks, or similar electrical structures, electric cables and related auxiliary equipment for high-voltage transmission and distribution power lines used to conduct energy between generating stations, substations and consumers.

The work includes, but is not limited to:

- The moving of men, tools, or equipment. The sorting, loading and moving of materials from the first drop. The handling, assembling and erecting of all necessary materials.
- The trenching, digging, and backfilling of vaults, holes for poles and anchors (by hand or mechanical equipment), guying, fastening to the stub-in on concrete footings or pads, assembling of the grillage, grounding of all structures, the stringing and installation of transformers.
- Constructing, repairing and maintaining highway and street lighting systems and highway and street traffic signal systems.
- Trimming trees and brush prior to the construction of new power lines, during repair of damaged lines, or as part of routine maintenance of the lines (tree trimmers).
- All the cleanup required in connection with line construction electrician work.

All the classifications listed below work under the supervision of linemen and assist linemen.

(1) Groundmen. Performs the following tasks:

- Manual digging of pole holes, anchor holes and trenches.
 - Assists in framing of poles, pulling guys.
 - Assembles and erects fixtures.
 - Tamping and compacting.
 - Driving of 1/2 to 3/4 ton pickup truck.
- (2) Head groundman. Performs the following tasks:

- Manual digging of pole holes, anchor holes, and trenches.
- Assists in framing of poles, pulling guys.
- Assembles and erects fixtures.
- Tamping and compacting.
- Driving of 1/3 to 3/4 ton pickup truck for material or man haul.

(3) Line equipment operators. They operate caterpillars, trucks equipped with winch and/or boom, hydraulically operated backhoes with or without front end loaders, mounted booms, and any other equipment that does not come within the scope of heavy equipment operators.

(4) Heavy line equipment operators. They operate any piece of equipment which, in accordance with manufacturer's recommended specifications is capable of operating with one hundred or more aggregate feet of boom, be it crane, backhoe, clam shell, drag line, or shovel.

[Statutory Authority: Chapter 39.12 RCW, RCW 43.22.270 and 43.22.051. 00-15-077, § 296-127-01320, filed 7/19/00, effective 7/19/00.]

WAC 296-127-01322 Electronic technicians. For the purpose of the Washington state public works law, chapter 39.12 RCW, the scope of work for electronic technicians is as follows:

(1) The installation, operation, inspection, maintenance, repair and service of:

- (a) Radio, television and recording systems and devices.
- (b) Systems for paging, intercommunication, public address, wired music, clocks, security and surveillance systems and mobile radio systems.
- (c) Fire alarm and burglar systems.

(2) The installation of nonmetallic conduits and incidental shielded metallic conduits of no longer than ten feet nor larger than one inch, when installed for the specific purpose of carrying low voltage wiring.

(3) Pulling wiring through the type of conduit described under subsection (2) of this section, when the wiring is installed for the specific purpose of carrying low voltage electricity.

(4) All the cleanup required in connection with electronic technician's work.

[Statutory Authority: Chapter 39.12 RCW, RCW 43.22.270 and 43.22.051. 00-15-077, § 296-127-01322, filed 7/19/00, effective 7/19/00.]

WAC 296-127-01323 Inside wireman electrician. For the purpose of the Washington state public works law, chapter 39.12 RCW, inside wireman electricians plan the layout, install and repair conduit, wiring, electrical fixtures, apparatus, and control equipment in buildings and adjacent yards to provide electricity for power and lighting.

(1) They assemble, install and maintain all electrical lighting, electric heating and cooling equipment, standby motor generators, electric heat pumps, under-floor duct and luminous ceilings.

They install, repair and maintain highway and street lighting systems and highway and street traffic signal systems.

The work includes, but is not limited to:

- The handling and moving of any electrical materials, equipment and apparatus on the job site.

- Welding, burning, brazing, bending, drilling and shaping of all copper, silver, aluminum, angle iron and brackets to be used in connection with the installation and erection of electrical wiring and equipment.

- Measuring, cutting, bending, threading, forming, assembling and installing of electrical conduit, using such tools as hacksaw, pipe threader and conduit bender.

- Pulling wiring through conduit.

- The installation of conduit and interduct raceways for fiber optic cable and the pulling of fiber optic cable through these raceways, except telephone conduit and cable.

Cutting holes in floors and walls for electrical conduit:

- With point and hammer.

- Core-drilled.

- Chasing and channeling necessary to complete any electrical work, including the fabrication and installation of duct and manhole forms incidental to electrical installation.

- Splicing wires by stripping insulation from terminal leads with knife or pliers, twisting or soldering wires together and applying tape or terminal caps.

- Installation and maintenance of lighting fixtures.

- Connecting wiring to lighting fixtures and power equipment.

Assembling and installing of conduit switches, relays, junction boxes, circuit breaker panels, and related accessories and controls.

- Testing continuity of circuit to insure electrical compatibility and safety of components.

- All cleanup required in connection with electrical work.

(2) The following power line construction classifications may assist journeymen wireman in the installation, repair and maintenance of highway and signal lighting systems and highway and street traffic signal systems:

(a) Groundmen.

- Performs the following tasks:

- Manual digging of pole holes, anchor holes and trenches.

- Assembles and erects fixtures.

- Assists in framing of poles, pulling guys.

- Tamping and compacting.

- Driving of 1/2 or 3/4 ton pickup truck.

(b) Head groundman.

- Performs the following tasks:

- Manual digging of pole holes, anchor holes and trenches.

- Assists in framing of poles, pulling guys.

- Assembles and erects fixtures.

- Tamping and compacting.

- Driving of 1/3 or 3/4 ton pickup truck for materials or man haul.

(c) Line equipment operators. Operate caterpillars, trucks equipped with winch and/or boom, hydraulically operated backhoes with or without front end loaders, mounted booms, and any other equipment that does not come within the scope of heavy equipment operators.

(d) Heavy line equipment operators. Operate any piece of equipment which, in accordance with manufacturer's recommended specifications is capable of operating with one hundred or more aggregate feet of boom, be it crane, backhoe or clam shell, drag line, or shovel.

[Statutory Authority: Chapter 39.12 RCW, RCW 43.22.270 and 43.22.051. 00-15-077, § 296-127-01323, filed 7/19/00, effective 7/19/00.]

WAC 296-127-01325 Electrical fixture maintenance workers. For the purpose of chapter 39.12 RCW, Washington state prevailing wage law, the prevailing wage for electrical fixture maintenance worker is required for the following work:

Cleaning of all types of lighting fixtures, luminous ceilings, all types of diffused areas and ceiling lighting. The work also includes replacement of lamps, ballasts, sockets and the installation of energy efficiency upgrades. This work must be limited to nonresidential fixture bodies, but may also include replacement or retrofitting of remote located ballasts with approved products.

Work beyond that which is described above must be paid at another electrical classification such as inside wireman electrician or residential electrician. Electrical fixture maintenance worker does not include installation of new fixtures or branch circuits, movement or relocation of existing fixtures, or alteration of existing branch circuits.

[Statutory Authority: Chapter 39.12 RCW, RCW 43.22.270 and 43.22.051. 00-15-077, § 296-127-01325, filed 7/19/00, effective 7/19/00.]

WAC 296-127-01327 Elevator constructors. For the purpose of the Washington state public works law, chapter 39.12 RCW, elevator constructors assemble and install electric and hydraulic freight and passenger elevators, escalators, and dumbwaiters.

The work includes, but is not limited to:

- Studies blueprints and lays out location of framework, counterbalance rails, motor pump, cylinder, and plunger foundations.
- Drills holes in concrete or structural steel members with portable electric drill, secures anchor bolts or welds brackets to support rails and framework, and verifies alignment with plumb bob and level.
- Cuts prefabricated sections of framework, rails, and other elevator components to specified dimensions, using acetylene torch, power saw, and disc grinder.
- Installs cables, counterweights, pumps, motor foundations, escalator drives, guide rails, elevator cars, and control panels.
- Positions electric motor and equipment on top of elevator shaft, using hoists and cable slings.
- Connects electrical wiring to control panels and electric motors.
- Installs safety and control devices.
- All cleanup required in connection with the installation of elevators.

[Statutory Authority: Chapter 39.12 RCW, RCW 43.22.270 and 43.22.051. 00-15-077, § 296-127-01327, filed 7/19/00, effective 7/19/00.]

WAC 296-127-01328 Fence erectors and fence laborers. For the purpose of the Washington state public works law, chapter 39.12 RCW, fence erectors and fence laborers erect and repair metal and wooden fences and fence gates around industrial establishments (schools, playgrounds, etc.), residences, farms and along highways using power tools and hand tools.

The work of the fence erectors includes, but is not limited to:

(1) Fence erector.

- Lays out fence line, using tape measure, and marks for postholes.
- Digs postholes with mechanical posthole digger or power-driven auger.
- Aligns posts, using line or by sighting along edges of posts.
- Verifies vertical alignment of posts with plumb bob or spirit level.
- Attaches fence-rail support to post, using hammer and pliers.
- Cuts metal tubing, using pipe cutter, and inserts tubing through rail support.
- Completes top fence rail of metal fence by connecting tube sections, using metal sleeves.
- Attaches rails or tension wire along bottoms of posts to form fencing frame.
- May weld metal parts together, using portable gas welding equipment.

(2007 Ed.)

- Stretches wire, wire mesh, barbed wire, or chain link fencing between posts and attaches fencing to frame.

- Assembles gate and fastens in position, using hand tools.

- Saws required length of lumber to make rails for wooden fence.

- Nails top and bottom rails to fence posts, or inserts them in slots on posts.

- Nails pointed slats to rails to construct picket fence.

- Erects alternate panel, basket weave, and louvered fences.

(2) Fence laborer. In addition to assisting the fence erector in the performance of the tasks described above, the work of the fence laborer includes, but is not limited to:

- Digs holes for posts with spade or posthole digger.

- Blasts rock formations with dynamite to facilitate digging of holes.

- Sets metal or wooden posts in upright position in holes.

- Mixes concrete by hand or by use of a cement mixer.

- Pours concrete around base of posts or tamps soil into holes to embed posts.

- All the cleanup required in connection with the erection of fences.

[Statutory Authority: Chapter 39.12 RCW, RCW 43.22.270 and 43.22.051. 00-15-077, § 296-127-01328, filed 7/19/00, effective 7/19/00.]

WAC 296-127-01329 Flaggers. For the intents and purposes of the Washington state public works law, chapter 39.12 RCW, the scope of work for flaggers is as follows:

- Controls and directs pedestrian and vehicular traffic through construction projects using sign, hand and flag signals, warning paddles and radio communication.

- Informs drivers of detour routes through construction sites. Distributes signs, markers, flares, barricades, cones and other traffic control devices along construction sites in designated patterns.

- Is responsible for the safety of the workers and the public on construction sites.

- Must have completed a Washington state approved flagging course, or the equivalent.

[Statutory Authority: Chapter 39.12 RCW, RCW 43.22.270 and 43.22.051. 00-15-077, § 296-127-01329, filed 7/19/00, effective 7/19/00.]

WAC 296-127-01331 Glaziers. For the purpose of the Washington state public works law, chapter 39.12 RCW, glaziers select, cut, prepare, handle, install or remove all window glass, plate glass, and all other types of glass, including structural glass, mirror glass, tempered and laminated glass, safety or protection glass, all types of insulating glass units, all plastics or other similar materials when used in place of glass and when set or glazed with putty, moulding rubber, cement, lead and all types of mastic, or other materials used in place of same.

Glaziers install the above materials in windows, louvers, doors, partitions, skylights, and on building fronts, walls, ceilings and tables, whether the materials are set in wood, stone, cement, or metal of all types.

The work includes, but is not limited to:

- Install mirrors of all types.

- Mark outline or pattern on glass and cut glass, using glasscutter. Break off excess glass by hand or with notched tool.

- Fasten glass panes into wood sash with glazier's points and spread smooth putty around edge of panes with knife to seal joints.

- Install metal window and door frames into which glass panels are to be fitted, such as fixed or sliding patio doors and vented, fixed or sliding windows.

- Bolt metal hinges, handles, locks, and other hardware to prefabricated glass doors. Set glass doors in frame and fit hinges.

- Install metal-framed glass enclosures for showers, bath tubs, and skylights where the glass installation and frame assembly is a single operation.

- Install mirror or structural glass on building fronts, walls, ceilings, or tables, using mastic, screws or decorative moulding.

- All the cleanup required in connection with glazing work.

[Statutory Authority: Chapter 39.12 RCW, RCW 43.22.270 and 43.22.051. 00-15-077, § 296-127-01331, filed 7/19/00, effective 7/19/00.]

WAC 296-127-01332 Hod carriers, mason tenders, and mortarmen. For the purpose of the Washington state public works law, chapter 39.12 RCW, hod carriers, mason tenders and mortarmen assist bricklayers and masons.

The work includes, but is not limited to:

- The mixing, packing, wheeling and tempering of mortar and fire clay.

- The mixing, handling and conveying of all other materials used by bricklayers and masons (e.g., brick, tile, stone and cast stone), whether done by hand or any other process (e.g., operation of forklifts, hoisting equipment and pumping equipment).

- Building of scaffolds, trestles, boxes and swinging staging.

- Hanging of cables and placing of putlogs.

- Carrying bricks and mortar in a hod.

- Cleaning and clearing of all debris.

[Statutory Authority: Chapter 39.12 RCW, RCW 43.22.270 and 43.22.051. 00-15-077, § 296-127-01332, filed 7/19/00, effective 7/19/00.]

WAC 296-127-01333 Heating equipment mechanics. For the purpose of the Washington state public works law, chapter 39.12 RCW, heating equipment mechanics replace the gas and oil burners in furnaces or replace complete furnaces, but they do not install the original furnaces.

The work includes, but is not limited to:

- Removal of old burner.

- Installation of new burner.

- Connection of fuel lines.

- Installation of instrumentation lines.

- Installation of new fan.

- Firing off.

- Setting burner on correct ratio.

- All cleanup required in connection with the installation of heating equipment.

[Statutory Authority: Chapter 39.12 RCW, RCW 43.22.270 and 43.22.051. 00-15-077, § 296-127-01333, filed 7/19/00, effective 7/19/00.]

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WAC 296-127-01335 Inland boatmen. For the purpose of the Washington state public works law, chapter 39.12 RCW, inland boatmen man the tugs and launches (but not outboard-powered skiffs) engaged in construction, dredge tending, pile driving, diver tending and geodetic surveying.

[Statutory Authority: Chapter 39.12 RCW, RCW 43.22.270 and 43.22.051. 00-15-077, § 296-127-01335, filed 7/19/00, effective 7/19/00.]

WAC 296-127-01337 Insulation applicators. For the purpose of the Washington state public works law, chapter 39.12 RCW, insulation applicators install all the insulation material in floors, walls, sound rated partitions and ceilings.

They also install insulation materials on roofs, when the material must be measured, cut and nailed to the inside or outside of an existing roofing system.

The insulation materials installed by insulation applicators include, but are not limited to:

- Batt insulation, semi-rigid and rigid insulation, blown spray and foam-type insulation, regardless of method of installation, attachment or connection.

- All the cleanup required in connection with insulation applicators.

[Statutory Authority: Chapter 39.12 RCW, RCW 43.22.270 and 43.22.051. 00-15-077, § 296-127-01337, filed 7/19/00, effective 7/19/00.]

WAC 296-127-01339 Ironworkers. For the purpose of the Washington state public works law, chapter 39.12 RCW, ironworkers perform all work in connection with field fabrication and/or erection, installation, removal, wrecking and dismantling of structural, architectural and reinforcing iron and steel, ornamental lead, bronze, brass, copper and aluminum, and plastics or other materials when used in place thereof.

The work performed by ironworkers includes, but is not limited to:

- Steel and metal houses and packaged buildings.

- Bridges, viaducts, cableways, tramways, monorails.

- Locks, gates, metal forms, railings (including pipe).

- Steel towers, energy producing windmill type towers, nuclear reactors.

- Frames in support of boilers.

- The installation of metal siding and metal roof decking, regardless of the fastening method, or what it is fastened to.

- All reinforcing work in connection with field fabrication, handling, burning, welding and tying of all materials used to reinforce concrete structures.

- The signaling, rigging, hoisting, aligning, bolting, riveting, or welding of structural-steel members.

- The unloading, loading, distributing, stockpiling, hoisting, rigging, and handling of materials used by ironworkers and all cleanup work.

Work process:

(1) Structural:

(a) Erecting:

- Connecting

- Fitting

- Hooking on

- Bolting up

- Torquing

- Signaling

- Preengineered buildings

- Sheeting
- (b) Rigging:
 - Cranes
 - Derricks
 - Land rigs
 - Cable splicing
- (c) Maintenance of equipment:
 - Dismantling
 - Field rigging
 - Moving field equipment
- (2) Welding:
 - (a) Acetylene welding
 - (b) Electric arc welding
 - (c) Cutting and burning
 - (d) Heliarc.

[Statutory Authority: Chapter 39.12 RCW, RCW 43.22.270 and 43.22.051. 00-15-077, § 296-127-01339, filed 7/19/00, effective 7/19/00.]

WAC 296-127-01340 Laborers in utilities construction. For the purpose of the Washington state public works law, chapter 39.12 RCW, the work for laborers includes, but is not limited to:

- (1) Pipe layer.
 - Shoring, building of manholes and catch basins.
 - Sealing, doping and wrapping of the pipe after the joints have been welded and before the pipe is lowered into the trench or ditch.
 - Joining ductile iron pipe by using screws, bolts, fittings, caulking or any other method for making joints in the industry, when the pipe will not be under pressure. Lowering the pipe into the trench or ditch.
- (2) Topman. Assists the pipe layer from the surface, he does not work in the trench or ditch.
- (3) General laborer.
 - Performs all other laborers' work which is not done by pipe layers and topmen.
 - Responsible for all cleanup required in connection with utilities construction work.

[Statutory Authority: Chapter 39.12 RCW, RCW 43.22.270 and 43.22.051. 00-15-077, § 296-127-01340, filed 7/19/00, effective 7/19/00.]

WAC 296-127-01342 Clean-up laborers. For the intents and purposes of the Washington state public works law, chapter 39.12 RCW, the scope of work for clean-up laborers is as follows:

Performs general cleanup in buildings during construction when too much rubbish has accumulated.

Cleans areas where the next phase of construction will take place.

Performs final cleanup after the construction has been completed.

[Statutory Authority: Chapter 39.12 RCW, RCW 43.22.270 and 43.22.051. 00-15-077, § 296-127-01342, filed 7/19/00, effective 7/19/00.]

WAC 296-127-01344 Laborers. For the intents and purposes of the Washington state public works law, chapter 39.12 RCW, laborers perform a variety of tasks such as:

- Erect and repair guard rails, median rails, guide and reference posts, sign posts and right of way markers along highways.

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- Mix, pour and spread asphalt, gravel and other materials, using hand tools, and mix, pour, spread and rod concrete.
- Lift, carry and hold building materials, tools and supplies.
- Measure distances from grade stakes, drive stakes and stretch tight line.
- Bolt, nail, align and block up under forms.
- Signal operators of construction equipment to facilitate alignment, movement and adjustment of machinery to conform to grade specifications.
- Level earth to fine grade specifications, using pick and shovel.
- Mix concrete, using portable mixer.
- Position, join, align, wrap and seal pipe sections.
- The placement and testing of plastic conduit for electrical cable, when the conduit is buried underground.
- Erect scaffolding, shoring and braces.
- Mop, or spread bituminous compounds over surfaces for protection (outside buildings).
- Spray material such as water, sand, steam, vinyl, or stucco through hoses to clean, coat or seal surfaces.
- Apply caulking compounds by hand or with caulking gun to seal crevices.
- The application of penetrating sealer and primer protective coatings to concrete floors and steps when safe to walk on.

• Installation of plastic panels on the inside of existing window frames for insulation (instead of storm windows). The panels are held in place magnetically (with metal brackets) and with self-taping screws.

The cleaning and grinding of concrete floors and walls by high pressure waterblasting or sandblasting preparatory to the application of waterproofing.

- The removing of rough or defective spots from concrete surfaces, using grinder or chisel and hammer and patching holes with fresh concrete or epoxy compound when not preparatory to sacking (finishing a large surface of patched holes).

• The setting of concrete curb, gutter and sidewalk forms as a composite crew with cement masons.

• The laying of concrete, granite and brick pavers in beds of sand.

• General cleanup required after damage caused by water or fire.

All clean-up work required in connection with the above work. Clean tools, equipment, materials and work areas:

(1) When the cleanup is performed for more than one trade (usually employed by general contractor).

(2) When assisting those trades for which laborers have been specifically designated as tenders, e.g., carpenter tender, cement finisher tender, etc.

[Statutory Authority: Chapter 39.12 RCW, RCW 43.22.270 and 43.22.051. 00-15-077, § 296-127-01344, filed 7/19/00, effective 7/19/00.]

WAC 296-127-01346 Landscape construction. For the purposes of the Washington state public works law, chapter 39.12 RCW, landscape construction involves the beautification of a plot of land by changing its natural features through the addition or modification of lawns, trees, bushes, etc.

(1) Landscape construction includes:

- Constructing or maintaining lawns, yards, gardens or other landscaped surfaces.
- Mixing and spreading mulches, ground covers, soil amendments, decorative bark or decorative rock.
- Seeding, sodding or hydroseeding.
- Applying chemicals or fertilizers.
- Planting trees, shrubs or plants.
- Installing, servicing or repairing above ground lawn or landscape sprinkler systems.
- Installing, servicing or repairing underground lawn or landscape sprinkler systems to a maximum depth of three feet below finish grade.
- Assembling or placing premanufactured trellis work, play equipment, benches or picnic tables.
- Constructing rock walls to a maximum height of four feet.
- Land clearing.
- Spreading top soil to a maximum depth of six inches below finish grade.
- Trenching to a maximum depth of three feet below finish grade.
- Installing french drains or other subsurface water collection systems to a maximum depth of three feet below finish grade.
- Hauling top soil, plants or other landscaping materials in trucks with only one rear axle.

(2) Landscape construction does not include:

- Any activity or task (including those mentioned above) when performed preparatory to any nonlandscaping construction work.
- Constructing roads, footpaths, trails or rock walls more than four feet high.
- Custom fabrication of trellis work, play equipment, benches or picnic tables.
- Constructing restrooms, shelters or similar structures.
- Installing sewer systems, storm sewer systems, catch basins, vaults or drainage systems for impervious surfaces (such as parking lots).
- Installing drainage systems or underground sprinkler systems more than three feet below final grade.
- Land clearing, dozing, grading, excavating or hauling except as permitted above.
- Tree falling or bucking.
- Subgrade preparation.
- The use of power equipment with more than ninety horsepower.
- The use of trucks with more than one rear axle except hydroseeders.
- Demolition of structures.
- Asphalt or concrete work except incidental anchorage for play equipment, benches or picnic tables.
- Welding.
- Installing agricultural irrigation systems.
- Encapsulation of landfills.

[Statutory Authority: Chapter 39.12 RCW, RCW 43.22.270 and 43.22.051. 00-15-077, § 296-127-01346, filed 7/19/00, effective 7/19/00.]

WAC 296-127-01347 Lathers. For the purpose of the Washington state public works law, chapter 39.12 RCW, a lather erects horizontal metal framework to which laths are

fastened, using nails, bolts, and studgun. Drills holes in floor and ceiling and drives ends of wooden or metal studs into holes to provide anchor for furring or rockboard laths.

Cuts and shapes lath and other materials, using hand tools and power tools.

Nails, clips or fastens all types of wood, wire and metal laths, plasterboard, wallboard, rockboard, gypsum, sheetrock and acoustical materials which take the place of same to walls, ceilings, and partitions of buildings to provide supporting base for plaster, fireproofing or acoustical material.

Erects all metal plastering accessories which are covered and/or serve as ground, guard, stock or screed for plaster materials, including wire mesh.

The work includes, but is not limited to:

- Installs all carrying bars and purlins (pieces of horizontal timber), light iron and metal furring (thin strips of wood or metal to create air space) of all descriptions, such as rods, channels, flatiron, t-bar, h-bar and other ceiling bars or systems for the receipt of lath and board.
- Wires plasterer's channels to overhead structural framework to provide support for plaster or acoustical ceiling tile.
- Nails, plaster grounds (wood or metal strips) to studing to provide a guide for plasters.
- Handles, moves, hoists and stores on the job site all materials used by lathers and does all the cleanup required in connection with lather work.

[Statutory Authority: Chapter 39.12 RCW, RCW 43.22.270 and 43.22.051. 00-15-077, § 296-127-01347, filed 7/19/00, effective 7/19/00.]

WAC 296-127-01349 Marble setters. For the purpose of the Washington state public works law, chapter 39.12 RCW, marble setters cut, trim and set marble slabs in floors and walls of buildings and repair and polish slabs previously set in buildings.

The work includes, but is not limited to:

- Cutting, trimming and facing marble to specified size, using cutting, power sawing, and facing equipment and hand tools.
- Drilling holes in slabs and attaching brackets.
- Spreading mortar on bottom of slabs and on sides of adjacent slabs.
- Setting blocks in position, tamping them into place, and anchoring bracket attachments with wire.
- Filling joints with grout and removing excess grout from marble with a sponge.
- Cleaning and beveling cracks or chips on slabs, using power tools and hand tools.
- Heating cracked or chipped areas with blowtorch and filling defects with composition mastic that matches grain of marble.
- Polishes marble and other ornamental stone to high luster, using power tools or by hand.

[Statutory Authority: Chapter 39.12 RCW, RCW 43.22.270 and 43.22.051. 00-15-077, § 296-127-01349, filed 7/19/00, effective 7/19/00.]

WAC 296-127-01351 Millwrights. For the purpose of the Washington state public works law, chapter 39.12 RCW, millwrights install machinery and equipment according to layout plans, blueprints, and other drawings in industrial establishments, using hoists, lift trucks, hand tools and power

tools. They read blueprints and schematic drawings to determine work procedures.

The work includes, but is not limited to:

- Dismantle machines, using hammers, wrenches, crow-bars, and other hand held tools.
- Move machinery and equipment, using hoists, dollies, rollers, and trucks.
- Assemble and install equipment, such as shafting, conveyors, and tram rails, using hand tools and power tools.
- Construct foundation for machines, using hand tools and building materials, such as wood, cement, and steel.
- Align machines and equipment, using hoists, jacks, hand tools, squares, rules, micrometers, and plumb bobs.
- Assemble machines and bolt, weld, rivet, or otherwise fasten them to foundation or other structures, using hand tools and power tools.

[Statutory Authority: Chapter 39.12 RCW, RCW 43.22.270 and 43.22.051. 00-15-077, § 296-127-01351, filed 7/19/00, effective 7/19/00.]

WAC 296-127-01352 Metal fabricators. For the purpose of the Washington state public works law, chapter 39.12 RCW, metal fabricators fabricate and assemble structural or ornamental metal products, such as frame work or shells for machinery, tanks, stacks, and metal parts for buildings and bridges.

The work includes, but is not limited to:

- Develop layout and plan sequences of operation.
- Design and construct templates and fixtures.
- Locate and mark bending and cutting lines onto work-piece.
- Operate a variety of machines and equipment to fabricate metal products, such as brakes, saws rolls, shears, flame cutters, drill presses, bending machines, welding machines, and punch and forming presses.
- Set up and operate machine tools associated with fabricating shops, such as radial drill presses, end mills and edge planers, to turn, drill and mill metal to specific dimensions.
- Weld, forge weld, braze, solder, rivet or bolt components together to assemble workpiece.

[Statutory Authority: Chapter 39.12 RCW, RCW 43.22.270 and 43.22.051. 00-15-077, § 296-127-01352, filed 7/19/00, effective 7/19/00.]

WAC 296-127-01354 Operating engineers (equipment operators). For the purpose of the Washington state public works law, chapter 39.12 RCW, operating engineers operate, repair and maintain all types of self-propelled mechanically, electrically, electronically, hydraulic, automatic or remote controlled equipment on construction projects.

The work includes, but is not limited to, the following types of construction and equipment:

- (1) Type of construction.
 - (a) Heavy and highway.
 - Roads, streets, highways, grading and paving, excavation of earth and rock, viaducts, bridges, abutments, retaining walls, alleys, sidewalks, guard rails, fences, parkways, parking areas, athletic fields, railroads, airport grading, surfacing and drainage, pile driving, water supply, water development, reclamation, irrigation, drainage and flood control projects, water mains, pipe lines, sanitation and sewer projects, all common ditches, dams, aqueducts, canals, reservoirs,

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intakes, channels, levees, dikes, revetments, jetties, quarrying of breakwater or riprap stone, foundations pile driving piers, docks, locks, river and harbor projects, breakwaters, dredging, channel-cutoffs, duct lines, subways, shafts, tunnels, drilling, soil testing, clearing and grubbing, land leveling, quarrying, demolition and site clearing, tramways, soil stabilization, landscaping, beautification projects, hoisting or related work done by helicopters.

- Oil or gas refineries, nuclear power plants, industrial complexes and incidental structures.
- It shall also include any work relating to off-shore drilling and pipe lines.

(b) Building.

• Construction, erection, alteration, repair, modification, demolition, addition or improvement, in whole or in part, of any building structure.

• It shall include the installation, operation, maintenance and repair of equipment, and other facilities used in connection with the performance of such building construction.

(c) Material supply. Operations such as quarries, sand and gravel plants, screening plants, asphalt plants, ready-mix concrete or batch plants and prestressed concrete plants (excluding established plants) that are established at the job site.

(2) Type of equipment.

(a) Self-propelled.

• Asphalt machines, backhoes, blades, boring equipment, brooms, chippers, compactors, compressors, concrete saws, cranes, derricks, dozers, drilling equipment, hoists, lifts, loaders, motor graders, pavement breakers, paving machines, pumps, rollers, scrapers, screeds, shovels, tractors, and trenchers.

(b) Stationary.

• Asphalt plants, concrete batch plants, crushing plants, and screening plants.

[Statutory Authority: Chapter 39.12 RCW, RCW 43.22.270 and 43.22.051. 00-15-077, § 296-127-01354, filed 7/19/00, effective 7/19/00.]

WAC 296-127-01356 Painters. For the intents and purposes of the Washington state public works law, chapter 39.12 RCW, the job description for painters is as follows:

(1) Preparation of surfaces.

(a) Washing, cleaning and smoothing of surfaces, using sandpaper, brushes or steel wool.

(b) Removal of old paint or other coatings from surfaces, using paint remover, scraper, wire brush or by sandblasting.

(c) Filling of nail holes, cracks and joints with putty, plaster or other fillers.

(2) Color matching and mixing.

(3) Application of paint, varnish, stain, enamel, lacquer, vinyl, wallpaper and other materials of whatever kind or quality applied to walls or ceilings with paste or adhesive using brushes, spray gun or paint rollers.

(4) Application of polyurethane elastomers, vinyl plastics, neoprene, resin, polyester and epoxy as waterproofing or protective coatings to any kind of surfaces (except roofs) when applied with brushes, spray guns or rollers.

(5) Application of sprayed on fire retardant foam.

(6) Texturing and decorating.

(7) Erecting of scaffolding or setting up of ladders to perform the work above ground level.

[Title 296 WAC—p. 1851]

(8) Responsible for all the cleanup required in connection with painters work.

[Statutory Authority: Chapter 39.12 RCW, RCW 43.22.270 and 43.22.051. 00-15-077, § 296-127-01356, filed 7/19/00, effective 7/19/00.]

WAC 296-127-01358 Pile drivers. For the purpose of the Washington state public works law, chapter 39.12 RCW, the work of a pile driver includes, but is not limited to:

Pile driver (pile buck).

- The preparation, aligning, plumbing, setting, stressing, testing, pulling, welding, cutting off and capping of piling of any type including steel pile and concrete pile and the splicing, barking, heading and shoeing of piling and the rigging and signaling connected with all of the above.

- Operating engineer pile driver.

- Operating any power equipment used for pile driving, such as cranes equipped with drophammers and drums and hoists on A-frame type fixed leads on floating rigs.

[Statutory Authority: Chapter 39.12 RCW, RCW 43.22.270 and 43.22.051. 00-15-077, § 296-127-01358, filed 7/19/00, effective 7/19/00.]

WAC 296-127-01360 Plasterers. For the purpose of the Washington state public works law, chapter 39.12 RCW, plasterers apply gypsum, portland cement, stucco, imitation stone, and kindred materials and products to interior walls, ceilings, and partitions and to exterior walls of buildings, and finish those materials and products.

The work includes, but is not limited to:

- The spreading of plaster over laths, masonry, or any other base, using trowel and smoothing the plaster with darby and float for uniform thickness.

- The application of all the various manufacturer's brand names of "thin coat" or "plaster veneer."

- The application of all bonding agents and mastic.

- Roughing of undercoat with wire or metal scraper to provide bond for succeeding coats of plaster.

- The application of all malleable plastic materials and epoxy materials.

- The setting in place of plasterboard, insulationboard, "styro-foam and bead-board," ground, locks, patent dots, cork plates, brownstone and acoustical tile, fiberglass reinforcement and finished products.

- The plastering of joints, nail holes, and bruises on wall-board.

- The grouting and filling of door bucks, runners and similar installations.

- The application of scratchcoat, browncoat, and finish-coat of plaster to wood, metal, or board laths successively to all ceilings and walls when finished with terrazzo or tile, and the application of any plastic material to same.

- The fireproofing of all building assemblies with plaster materials, sprayed fiberglass or similar materials, whether applied to gypsum, metal lath or directly.

- All waterproofing work, such as the cutting and placing of nylon mesh and the plastering and finish of all exterior wall insulation and plaster finish systems.

- The application of crushed stone, marble or ceramic chips and broken glass where embedded in plaster, cement, plastic, or similar materials.

- The placing of acoustic blocks with any plastic material, regardless of thickness.

[Title 296 WAC—p. 1852]

- The placing, by any method, of plaster or composition caps and ornaments.

- Creating decorative textures in finish coat by marking surface of coat with brush and trowel or by spattering it with small stones ("stucco") where plastering equipment and/or materials are used.

- The operation and control of all types of plastering machines, including power trowels and floats.

- All clean-up work.

[Statutory Authority: Chapter 39.12 RCW, RCW 43.22.270 and 43.22.051. 00-15-077, § 296-127-01360, filed 7/19/00, effective 7/19/00.]

WAC 296-127-01362 Playground and park equipment installers. For the intents and purposes of the Washington state public works law, chapter 39.12 RCW, the job description for playground and park equipment installers is as follows:

- Construction and placement of play equipment, benches and picnic tables in school grounds and parks.

- Responsible for all the cleanup required in connection with installation of playground and park equipment.

[Statutory Authority: Chapter 39.12 RCW, RCW 43.22.270 and 43.22.051. 00-15-077, § 296-127-01362, filed 7/19/00, effective 7/19/00.]

WAC 296-127-01364 Plumbers, pipefitters, and steamfitters. For the purpose of the Washington state public works law, chapter 39.12 RCW, plumbers, pipefitters and steamfitters assemble, install, and maintain piping systems, fixtures and equipment for the transportation of water, steam, gas, air, sewage, oil, fuels, liquids, gases, or similar substances.

The work includes, but is not limited to:

(1) Piping systems installed in structures (e.g., buildings, industrial plants, etc.).

(a) The handling and moving of any plumbing, pipefitting and steamfitting materials, supplies, and equipment on the job site.

(b) Cutting, threading, and bending pipe.

(c) Joining pipes by use of screws, bolts, fittings, solder, welding and caulking, or any other method of making joints in the pipefitting industry.

(d) Assembling, installing, and repairing valves, pipe fittings, and pumps.

(e) Testing the piping system.

(f) Installing and repairing plumbing fixtures, such as sinks, bathtubs, water heaters, and water softeners.

(g) Cutting holes in floors and walls for pipes:

- With point and hammer.

- Core-drilled.

(h) Responsible for all cleanup required in connection with plumbers, pipefitters and steamfitters work.

(2) Distribution lines (e.g., water mains, sewer mains, oil and gas lines, etc.).

(a) The handling and moving of any plumbing, pipefitting and steamfitting materials, supplies, and equipment on the job site.

(b) Steel pipe: Welding of pipe joints and joining pipes with screws, bolts, fittings, solder, caulking, or any other method for making joints in the industry.

(c) Ductile iron pipe: Joining pipes by using any method for making joints in the industry, when the pipe will be under pressure.

Assembling, installing, and repairing valves and pumps.

(d) Testing the piping system.

(e) Responsible for all cleanup required in connection with plumbers, pipefitters and steamfitters work.

[Statutory Authority: Chapter 39.12 RCW, RCW 43.22.270 and 43.22.051. 00-15-077, § 296-127-01364, filed 7/19/00, effective 7/19/00.]

WAC 296-127-01367 Refrigeration mechanic. For the purpose of Washington state public works law, chapter 39.12 RCW, refrigeration mechanics install industrial, commercial, residential, and marine refrigeration systems involved in cold storage, ice making, cooling, heating, air conditioning, humidifying, dehumidifying or dehydrating and charge (pump gas or fluid in the system), start, test, service, and repair the installed systems.

The work includes, but is not limited to:

- Lay out reference points for the installation of the structural and functional components, using tape, transit, plumb bob, level, and square.
- Lay out and drill holes and cut chases and channels, set and erect belts, inserts, stands, brackets, hangers, supports, sleeves, thimbles, conduits and hoses.
- Lay out, cut, thread, bend and connect pipe to functional components and water or power system of premises.
- Move, lift, and install all compressors, pumps, motors, controls, switches, gauges, valves, condensers, evaporators, and other fixtures and appurtenances included in such systems.
- Bolt, rivet, weld, braze and solder parts to structural and functional components.
- All clean-up work required in connection with refrigeration mechanics' work.
- Excluded is the installation of sheet metal duct work leading to and/or from units described above.

[Statutory Authority: Chapter 39.12 RCW, RCW 43.22.270 and 43.22.051. 00-15-077, § 296-127-01367, filed 7/19/00, effective 7/19/00.]

WAC 296-127-01369 Remote controlled cleaning, inspection and sealing of underground sewer and water systems. For the purpose of the Washington state public works law, chapter 39.12 RCW, this special method of repairing in-place, underground sewer and water pipes, includes the following work:

- Cleaning of interior pipe surface.
- Closed circuit television inspection.
- Electronic air testing of joints, cracks and breaks.
- Internal sealing of joints, cracks and breaks with chemical grout.
- All the above functions must be performed by remote control.

[Statutory Authority: Chapter 39.12 RCW, RCW 43.22.270 and 43.22.051. 00-15-077, § 296-127-01369, filed 7/19/00, effective 7/19/00.]

WAC 296-127-01370 Roofers. For the purpose of the Washington state public works law, chapter 39.12 RCW, roofers apply and install any and all types of roofing materials, other than sheet metal. The work of roofers includes, but is not limited to:

als, other than sheet metal. The work of roofers includes, but is not limited to:

(1) The installation of slate and tile and all substitute materials taking the place of slate and tile, with necessary metal flashing to make water-tight.

All cementing in, on or around slate and tile roofs.

All laying of felt or paper beneath the slate and tile.

All dressing, punching and cutting of all roof slate or tile either by hand or machinery.

(2) The installation of all forms of plastic, slate, slag, gravel; asphalt and composition roofing; rock asphalt mastic when used for damp and waterproofing; prepared paper; compressed paper, and chemically prepared paper with or without coating.

The installation of all damp resisting preparations when applied on roofs with mop, three-knot brush, roller, swab or spray system.

(3) The installation of all forms of elastomeric and/or plastic (elasto-plastic) roofing systems, both sheet and liquid applied, whether single-ply or multi-ply.

All types of aggregates, blocks, bricks or stones used to ballast these elasto-plastic systems.

All types of aggregates used as a ballast for inverted roofing membrane assembly, or roof of similar construction where the insulation is laid over the roofing membrane.

All sealing and caulking of seams and joints on these elasto-plastic systems to insure water-tightness.

All liquid-type elasto-plastic preparation for roofing, damp or waterproofing when applied with a squeegee, trowel, roller or spray equipment.

All sheet-type elasto-plastic systems, whether single- or multi-ply, for waterproofing.

All priming of surfaces to be roofed, damp or waterproofed, whether done by roller, mop, swab, three-knot brush, or spray systems.

All types of preformed panels used in waterproofing.

(4) The application of all types of spray-in-place foams such as urethane or polyurethane, and the coatings that are applied over them.

(5) The application of roof insulation, when the insulation material is applied as an integral part of the roofing system, whether the insulation material is applied as the first, last or any other layer in between.

(6) The handling, hoisting and storing of all roofing, damp and waterproofing materials.

(7) The tear-off and/or removal of any type of roofing, including roofing materials containing asbestos, all spudding, sweeping, vacuuming and/or cleanup of any and all areas of any type where a roof is to be relayed, and all other cleanup required in connection with roofing work.

[Statutory Authority: Chapter 39.12 RCW, RCW 43.22.270 and 43.22.051. 00-15-077, § 296-127-01370, filed 7/19/00, effective 7/19/00.]

WAC 296-127-01372 Sheet metal workers. For the purpose of the Washington state public works law, chapter 39.12 RCW, sheet metal workers perform the following work:

(1) The handling, conditioning, assembling, installing, servicing, repairing, altering and dismantling of the duct work for the heating, ventilation and air conditioning systems regardless of the materials used and the setting and the service-

ing of all equipment and all supports and reinforcements in connection therewith.

(2) The installation of expansion and discharge valves, air filters, and water filters in heating, ventilation and air conditioning systems.

(3) The testing and balancing of air-handling equipment and duct work.

(4) The handling, conditioning, assembling, installing, repairing and dismantling (except when a building is demolished) of cornices, gutters and down spouts.

(5) The installation of metal siding and metal roof decking, regardless of the fastening method, or what it is fastened to.

(6) The installation of furnaces and any and all sheet metal work in connection with or incidental to commercial kitchen equipment or refrigerating plants.

(7) The handling, moving, hoisting and storing of all sheet metal materials on the job site and all the cleanup required in connection with sheet metal work.

[Statutory Authority: Chapter 39.12 RCW, RCW 43.22.270 and 43.22.051. 00-15-077, § 296-127-01372, filed 7/19/00, effective 7/19/00.]

WAC 296-127-01374 Sign makers and sign installers.

For the purpose of the Washington state public works law, chapter 39.12 RCW, sign makers and sign installers fabricate, install, repair, alter, maintain and dismantle commercial signs, bulletins and poster panels.

The work includes, but is not limited to:

(1) Electric and luminous tube signs.

- The manufacture of all luminous tubes, which includes the coating and processing of tubes and the bending, repairing and pumping for all tubes.

- The shop assembly and fabrication of signs and displays and the installation, alteration, repair and dismantling of all electric and neon sign displays.

- The wiring, assembly, service and electrical maintenance of all such displays.

- The installation and servicing of fluorescent lighting fixtures.

(2) Painted and photographed signs.

- The preparing of sign surfaces, patterns and layouts.

- Applying all decals.

- Preparing and pouncing of patterns and tracing all patterns.

- Designing, cutting out of all letters made of wood or like materials, such as plastic, masonite, wallboard, cardboard.

- Priming, finishing and gilding of letters.

- Use of stencil knife, perforating wheel and friskit cutting.

- Applying and/or hanging of all cut-out letters.

- All pictorial work on signs, screen process work in its entirety including photography and operation of projector and mimeograph.

- Erecting commercial signs, bulletins and poster panels.

- Repainting of all signs, including painting of capping on bulletins and poster panels, by spraying and use of rollers.

- All work on banners, cloth, plastic, paper and cardboard, walls, bulletins, windows, truck lettering and all lettering on any surface.

- The use of stencil knife on sandblasted signs.

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- The layout and application of all vinyl letters.

(3) All the cleanup required in connection with sign making and installing.

[Statutory Authority: Chapter 39.12 RCW, RCW 43.22.270 and 43.22.051. 00-15-077, § 296-127-01374, filed 7/19/00, effective 7/19/00.]

WAC 296-127-01375 Sprinkler fitters. For the purpose of the Washington state public works law, chapter 39.12 RCW, sprinkler fitters perform the installation, adjustments and corrections, maintenance, repair and dismantling of all fire protection and fire control systems and the installation of all piping for tubing, appurtenances and equipment pertaining thereto.

The work includes, but is not limited to:

(1) Underground water mains, fire hydrants and hydrant mains, stand pipes and hose connections to sprinkler systems and overhead piping.

(2) Sprinkler tank heaters.

(3) Air lines and thermal systems used in connection with sprinkler and alarm systems and all tanks and pumps connected thereto.

(4) Co² and cardox systems, dry chemical systems, halon and foam systems and all other fire protection systems.

(5) Cutting holes in floors and walls for pipes:

- With point and hammer.

- Core-drilled.

(6) The unloading, handling and storing of all the above.

(7) All clean-up work.

Excluded are steam fire protection systems and stand pipes not connected to automatic sprinkler systems.

[Statutory Authority: Chapter 39.12 RCW, RCW 43.22.270 and 43.22.051. 00-15-077, § 296-127-01375, filed 7/19/00, effective 7/19/00.]

WAC 296-127-01376 Stone masons. For the purpose of the Washington state public works law, chapter 39.12 RCW, stone masons shape and set stone blocks to build stone structures, such as piers, walls and abutments, and lay walks, curbstones, or special types of masonry, such as alberene (acid-resistant soapstone) for vats, tanks, and floors, using mason's tools.

The work includes, but is not limited to:

- Shaping stone blocks preparatory to setting, using chisel, hammer, and other shaping tools.

- Spreading mortar over stone and foundation with trowel and setting stone in place by hand or with the aid of a crane.

- Aligning stone with plumbline and finishing joints between stone with a pointing trowel.

- Spreading mortar along mortar guides to insure joints of uniform thickness.

- Cleaning surface of finished structure and removing mortar, using muriatic acid and brush.

[Statutory Authority: Chapter 39.12 RCW, RCW 43.22.270 and 43.22.051. 00-15-077, § 296-127-01376, filed 7/19/00, effective 7/19/00.]

WAC 296-127-01377 Outside telephone line construction. For the purpose of the Washington state public works law, chapter 39.12 RCW, outside telephone line construction includes, but is not limited to, the following work:

(2007 Ed.)

(1) Head groundman. Operates light equipment and drives vehicles.

(2) Telephone equipment operator - light. Operates backhoes, trenching machines and small cable plows.

(3) Telephone equipment operator - heavy. Operates bulldozers, trenchers, backhoes, cable plows and plows pulling other equipment.

Note: This scope of work description does not apply to the compaction and resurfacing of trenches or ditches associated with asphalt and other road repair and replacement.

[Statutory Authority: Chapter 39.12 RCW, 04-16-094, § 296-127-01377, filed 8/3/04, effective 9/15/04. Statutory Authority: Chapter 39.12 RCW, RCW 43.22.270 and 43.22.051, 00-15-077, § 296-127-01377, filed 7/19/00, effective 7/19/00.]

WAC 296-127-01378 Telecommunication technicians. For the purpose of the Washington state public works law, chapter 39.12 RCW, telecommunications technicians install, inspect, maintain, repair and service telecommunication systems.

The work includes, but is not limited to:

(1) Main distribution frame (MDF). The distribution frame where the permanent outside lines entering a building terminate and the subscriber's line multiple cabling and truck multiple cabling originate. It is usually located on the ground floor of a building.

(2) Intermediate distribution frames (IDF). Distribution frames which provide flexibility in allocating the subscriber's number to the line or equipment in the office which is to be associated with the particular line. These frames are located on each floor of a building.

(3) Blocks. Subpanels. They are connecting devices where large feed cables terminate at the distribution frames.

(4) Common equipment or key service unit. Consists of a backboard assembly, an equipment mounting frame, for connecting external telephones and Pacific Northwest Bell lines.

(5) Instruments, terminals, sets. Communications equipment at either end of a circuit. Equipment at a subscriber's or user's terminal including such items as telephones.

(6) Ancillary equipment. Add-on equipment such as bells, buzzers, speakerphones, headsets, automatic dialers, recorders, etc.

(7) Telephone cable.

(a) Network channel service cable owned by the telephone companies.

(b) Riser cables between floors of a building.

(c) Distribution cables installed on each floor of a building in the floor or the ceiling.

(d) Inside wires between the telephone and the connection to the distribution cable.

[Statutory Authority: Chapter 39.12 RCW, RCW 43.22.270 and 43.22.051, 00-15-077, § 296-127-01378, filed 7/19/00, effective 7/19/00.]

WAC 296-127-01379 Terrazzo (artificial marble) workers. For the purpose of the Washington state public works law, chapter 39.12 RCW, terrazzo workers create durable and decorative surfaces on floors, walls and ceilings.

(2007 Ed.)

The work includes, but is not limited to:

(1) Spreading a one-half inch mixture of sand, cement, and water with trowel to form a base over walls, ceilings, and concrete floors where terrazzo is to be applied.

(2) The cutting and setting of metal or wooden strips into the terrazzo base so that the top edges form a design or pattern and define the level of the finished floor surface.

(3) Spreading a mixture of cement terrazzo, magnesite terrazzo, polyacrylate terrazzo, epoxy matrix terrazzo, exposed aggregate, rustic or rough washed for the interior or exterior of buildings, over a terrazzo base with float and trowel to form the finished surface.

(4) Spreading of any other kind of mixture of plastics composed of chips or granules of marble, granite, blue stone, enamel, mother-of-pearl, quartz, ceramic colored quartz and all other kinds of chips or granules when mixed with cement, rubber, neoprene, vinyl, magnesium, chloride or any other resinous or chemical substances used for seamless flooring systems, and all other binding materials when used on any part of the interior and exterior of buildings and on fountains, swimming pools, etc.

[Statutory Authority: Chapter 39.12 RCW, RCW 43.22.270 and 43.22.051, 00-15-077, § 296-127-01379, filed 7/19/00, effective 7/19/00.]

WAC 296-127-01382 Terrazzo workers' helpers, tile and marble setters' helpers (finishers). For the purpose of the Washington state public works law, chapter 39.12 RCW, the scope of work for terrazzo workers' helpers, tile and marble setters' helpers includes, but is not limited to:

- Handling, moving, hoisting, storing and distributing sand, mortar, cement, lime, terrazzo, tile, marble, stone, slate or any other materials that may be used by terrazzo workers, tile layers, marble setters and stone masons.

- Performing all rigging.

- Installing and dismantling of scaffolding or staging.

- Mixing mortar and grout.

- All preparation prior to installation, such as helping with the bedding and cutting, priming, and the installation of ties and wire lath.

- Grinding, cleaning, washing, rubbing and polishing of all tile and marble.

- Applying protective coverings, such as soap compounds, paper products, varnishes and lacquers and all types of tapes and polyethylene coverings.

- Cleanup of the job site.

[Statutory Authority: Chapter 39.12 RCW, RCW 43.22.270 and 43.22.051, 00-15-077, § 296-127-01382, filed 7/19/00, effective 7/19/00.]

WAC 296-127-01384 Tile setters. For the purpose of the Washington state public works law, chapter 39.12 RCW, tile setters apply tile to floors, walls, ceilings, stair treads, promenade roof decks, garden walks, swimming pools, and all places where tiles may be used to form a finished surface for practical use, sanitary finish or decorative purpose.

The tile is defined as all burned clay products, as used in the tile industry, either glazed or unglazed, and all composition materials and all substitute materials in single units up to and including 15" x 20" x 2" (except quarry tiles larger than 9" x 1 1/4"), and all mixtures in the form of cement, plastics and metals that are used as a finished surface.

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The work includes, but is not limited to:

- Measuring and cutting metal lath to size for walls and ceilings with tin snips. Tacking lath to wall and ceiling surfaces with staple gun or hammer. Spreading plaster base over lath with trowel and leveling plaster to specified thickness, using screed.
- Spreading concrete on subfloors with trowel and leveling it with screed.
- Spreading mastic or other adhesive base on roof deck, using serrated spreader to form base for promenade tile.
- Cutting and shaping tile with tile cutters and biters.
- Positioning tile and tapping it with trowel handle to affix tile to plaster or adhesive base.

[Statutory Authority: Chapter 39.12 RCW, RCW 43.22.270 and 43.22.051. 00-15-077, § 296-127-01384, filed 7/19/00, effective 7/19/00.]

WAC 296-127-01386 Traffic control stripers. For intents and purposes of the Washington state public works law, chapter 39.12 RCW, the scope of work for traffic control stripers is as follows:

- (1) All painting, application and installing of lines, arrows, bumpers, curbs, etc., on parking lots, air fields, highways, game courts and other such surfaces.
- (2) The handling, painting and installing of all car stops, stop signs and any other type sign installed for the purpose of regulating traffic on such surfaces.
- (3) The installation of plastic, metal or composition button, or lines used instead of paint.
- (4) Installation of parking gates, ticket spitters and other similar mechanical and automatic control devices.
- (5) Seal coating, slurry coating and other surface protection.
- (6) Line removal; chemical sand and hydro-blast, paint and button.
- (7) Installation of guard rail and posts and similar protective devices.
- (8) Manufacturing and installation of all car stops, per example: Metal, wood, concrete, plastic, etc., and all similar traffic regulators.
- (9) Manufacturing, painting, stenciling, servicing, repairing, placing and removal of traffic safety and control devices (barricades).
- (10) The preparation and maintenance of all surfaces as outlined above.
- (11) Responsible for all the cleanup required in connection with traffic control stripers work.

[Statutory Authority: Chapter 39.12 RCW, RCW 43.22.270 and 43.22.051. 00-15-077, § 296-127-01386, filed 7/19/00, effective 7/19/00.]

WAC 296-127-01387 Power line clearance tree trimming. For the purpose of the Washington state public works law, chapter 39.12 RCW, the scope of work for power line clearance tree trimmers, chippermen and power line clearance tree trimmer apprentices is as follows:

- (1) Power line clearance tree trimmer.
 - Trims trees to clean right of way for electrical power lines to minimize storm and short-circuit hazards.
 - Climbs trees to reach branches interfering with wires and transmission towers, using climbing equipment, or may work from bucket of extended truck boom to reach limbs.

- Prunes treetops, limbs and branches, using saws or pruning shears.

- Falls trees interfering with power service, using chain-saw.

- Repairs trees damaged by storms or lighting, by trimming jagged stumps and painting them to prevent bleeding of sap.

- Removes broken limbs from wires, using hooked extension pole.

(2) Chipperman.

- Assists tree trimmer in clearing trees, branches and brush interfering with electrical power lines. He performs all this work on the ground.

- Hoists tools and equipment to tree trimmers and lowers tree tops, limbs and branches with rope or block and tackle. Positions and steadies ladders. Operates the wood chipper (turns on and off). Saws and chops up tree trunks, tree tops, limbs, branches, and brush and leads them into the chipper. Drives the truck which tows the chipper.

- This classification is being phased out. To be used only for employees hired as "chippermen" prior to July 1, 1985.

(3) Power line clearance tree trimmer apprentice.

- Assist tree trimmer in clearing trees, branches and brush interfering with electrical power lines. He performs all his work on the ground.

- Hoists tools and equipment to tree trimmer and lowers tree tops, limbs and branches with rope of block and tackle. Positions and steadies ladders. Operates the wood chipper (turns it on and off). Saws and chips up tree trunks, tree tops, limbs, branches, and brush and feeds them into the chipper. Drives the truck which tows the chipper.

- Drags tree trunks, limbs, branches, and brush to the chipper, when the chipper is stationed a considerable distance from the location where the tree trimming is done.

[Statutory Authority: Chapter 39.12 RCW, RCW 43.22.270 and 43.22.051. 00-15-077, § 296-127-01387, filed 7/19/00, effective 7/19/00.]

WAC 296-127-01389 Utilities construction (underground sewers and water lines). For the purpose of the Washington state public works law, chapter 39.12 RCW, utilities construction is defined as follows:

The construction, alteration, repair or improvement of water mains, sanitary sewer mains, underground storm sewers and branch lines to buildings but not underneath buildings, within cities, towns, suburbs and subdivisions. The work includes, but is not limited to:

- (1) Clearance of right of way preparatory to the excavation of trenches or ditches.

- (2) Excavation and trimming of trenches or ditches (including establishing and maintaining grade).

- (3) Shoring, building of manholes, catch basins, etc.

- (4) Distribution of pipe and skids, placing of skids and pipe over the trench or ditch.

- (5) The cleaning, sealing, doping and wrapping of the pipe after the joints have been welded and before lowering the pipe into the trench and alignment.

- (6) Lowering of the pipe and the removal of the skids.

- (7) Backfilling, compaction and resurfacing of trenches or ditches (e.g., asphalt work necessary to cover the trench or ditch, but all other asphalt work is excluded).

(8) Cleanup and restoration of right of way (e.g., restore landscaping).

[Statutory Authority: Chapter 39.12 RCW, RCW 43.22.270 and 43.22.051. 00-15-077, § 296-127-01389, filed 7/19/00, effective 7/19/00.]

WAC 296-127-01391 Water well drillers, exploration drillers, water well pump installers, and equipment oilers. For the purpose of the Washington state public works law, chapter 39.12 RCW, the work of water well drillers, exploration drillers, water well pump installers, and equipment oilers includes, but is not limited to:

- (1) Water well drillers. The drilling of wells for:
 - (a) Commercial water supplies.
 - (b) Irrigation water supplies.
 - (c) Water supplies for any other purpose.
 - (d) Dewatering, or similar purposes.
- (2) Exploration drillers.
 - (a) Hole drilling for geologic or hydrologic information.
 - (b) Core drilling for geologic information.
- (3) Water well pump installers. The installation of water well pumps for all purposes, except commercial water supplies.
- (4) Equipment oilers. Assist the drillers and pump installers in the performance of the tasks described above.

[Statutory Authority: Chapter 39.12 RCW, RCW 43.22.270 and 43.22.051. 00-15-077, § 296-127-01391, filed 7/19/00, effective 7/19/00.]

WAC 296-127-01392 Stage rigging mechanics (non-structural). For the purpose of the Washington state public works law, chapter 39.12 RCW, stage rigging mechanics perform nonpermanent mechanical and operational stage rigging work for theatrical performances and productions (regardless of the size of the production), and is work requiring the use of manual hydraulic systems, pneumatic systems, motor systems, electro-mechanic and stage rigging systems and methods for controlling and linking these.

The work includes, but is not limited to:

- Assembling, working with, or disassembling cables, pulleys, tackle, winches, automated scenery, or other gear associated with the lifting or supporting of objects above the floor.
- Installing, maintaining and dismantling the physical means of support for the overhead equipment related to the stage production. Set motor power and truss attachment gear.
- Maintaining suspended stage equipment.

Work performed under this scope does not include: Any work processes as described above which are necessary as part of a public works construction project for new construction, improvement, alteration or repair to maintain structural integrity to an existing system or theatrical facility.

[Statutory Authority: Chapter 39.12 RCW and RCW 43.22.270. 07-01-078, § 296-127-01392, filed 12/19/06, effective 2/1/07.]

WAC 296-127-01393 Street sweepers (nonconstruction). For the purpose of the Washington state public works law, chapter 39.12 RCW, street sweepers perform cleaning or sweeping work under a public works maintenance contract that requires the use of power brooms (sweepers), power vacuums, power blowers, or power washers. This work includes, but is not limited to:

- The cleaning or sweeping of streets, roads, fire lanes, parking lots, school grounds (campus streets), game courts and similar paved surfaces and other nonroadway surfaces or locations on or adjacent to schools, office complexes, parks, and similar publicly owned or maintained facilities or locations.

- Driving a street sweeping vehicle to clean streets, parking lots, and other similar surfaces of debris. Incidental hand sweeping or backpack air blowing may be required in tight areas where the sweeper brooms cannot reach. Fills vehicle water tanks and operates the controls to activate rotary brushes and water spray nozzles to facilitate debris collection, cleaning, and in order to control dust. Disposes of waste material. Performs minor vehicle maintenance of the sweeper by cleaning it, checking fluids and tire pressure.

The cleaning work covered by this scope is limited to a maintenance contract for the cleaning of streets or similar exterior surfaces.

Work performed under this scope does not include: Sweeping work necessary and in conjunction with a public works construction project to maintain and keep streets or similar surfaces clear of debris or the clean-up of streets or similar surfaces necessary during and after a public works construction project and prior to acceptance. Operation of street sweeping equipment during and after a public works construction project would fall under the classification of Operating engineers (equipment operators), WAC 296-127-01354, and operation of hand held or backpack air blowers or hand sweeping would fall under the classification of Laborers, WAC 296-127-01344.

Classifications:

- Equipment operators (riding-type)
- Power brooms
- Power vacuums
- Power blowers
- Power washers

[Statutory Authority: Chapter 39.12 RCW and RCW 43.22.270. 07-01-078, § 296-127-01393, filed 12/19/06, effective 2/1/07.]

WAC 296-127-01394 Tinting and coating installer. For the purpose of the Washington state public works law, chapter 39.12 RCW, tinting and coating installers apply film, tints, and coatings to transparent surfaces. The work includes, but is not limited to:

- The application of any film, tints, and coatings to the interior or exterior of existing windows, glazed doors, partitions, shop fronts, etc. This includes special dyes, UV absorbers and metal coatings. This work also includes tints and coatings applied to reduce heat gain and glare, and low-emittance coatings to improve both heating and cooling performance.

[Statutory Authority: Chapter 39.12 RCW and RCW 43.22.270. 07-01-078, § 296-127-01394, filed 12/19/06, effective 2/1/07.]

WAC 296-127-014 Usual benefits. (1) Employers are not required to establish "usual benefit" programs. If an employer chooses not to provide such benefits, however, wages paid must be at the full prevailing wage rate as defined by RCW 39.12.010.

(2) To be deemed a "usual benefit," the following requirements must be satisfied:

(a) Employer payments for the usual benefit shall be made only in conformance with all applicable federal and state laws, including the requirements of the Employment Retirement Income Security Act of 1974, as amended, and of the Internal Revenue Service; and

(b) Employee payments toward the usual benefit, through self-contribution, payroll deduction, or otherwise, shall not constitute a credit to the employer for prevailing wage purposes.

(3) "Usual benefits" are limited to the following:

(a) Health and welfare payments. This is medical insurance, which may include dental, vision, and life insurance. Insurance programs providing protection against industrial accidents or occupational illnesses which are mandated by state or federal statutes, and all related mandatory forms of protection, shall not qualify as health and welfare insurance.

(b) Employer payments on behalf of a person employed for the purpose of providing retirement income.

(c) Vacation payments made either directly to the employees or into a vacation fund, provided these benefits are paid to the employees.

(d) Apprentice training fund. Payments made to training programs approved or recognized by the Washington state apprenticeship and training council.

(e) Paid holidays. Payments made to employees for specified holidays.

(4) Any fringe benefits required by other local, state, or federal laws do not qualify as "usual benefits."

[Statutory Authority: Chapters 39.04 and 39.12 RCW and RCW 43.22.270. 92-01-104, § 296-127-014, filed 12/18/91, effective 1/31/92; 88-22-046 (Order 88-22), § 296-127-014, filed 10/31/88.]

WAC 296-127-01410 Information concerning prevailing wage usual benefits. (1) Contractors and employers shall conform to all posting and employee notification requirements provided by applicable federal and state laws concerning usual benefits plans.

(2) Contractors and employers must have, and make available to the department upon request, copies of all documents concerning usual benefits, as identified in WAC 296-127-014, for which employer payments are made.

[Statutory Authority: Chapters 39.04 and 39.12 RCW and RCW 43.22.270. 92-01-104, § 296-127-01410, filed 12/18/91, effective 1/31/92.]

WAC 296-127-015 Applicability of prevailing wages for supervisors. Determinations as to whether individuals are workers, laborers, or mechanics are based on the scope of work actually performed by the individuals, rather than the title of their occupations.

(1) Where additional supervisory duties are required of workers, laborers, or mechanics by statute or regulation, the industrial statistician shall establish a rate of pay for a work classification to be called "journey level in charge." These rates shall be published in the semiannual prevailing wage publication.

(2) Supervisors (e.g., foremen, general foremen, superintendents, etc.) are entitled to receive at least the journey level prevailing rate of wage for performing manual or physical labor:

(a) For each hour spent in the performance of manual or physical labor if it is for more than twenty percent but less

than fifty percent of their hours worked on a public works project during any given week.

(b) For all hours worked in any given week if they perform manual or physical labor for fifty percent or more of their hours worked on a public works project during such week.

(3) If supervisors subject to the journey level prevailing wage rate are paid a salary, the compensation (salary divided by number of hours worked) must be equal to or greater than the prevailing wage rate for the type of work performed.

[Statutory Authority: Chapters 39.04 and 39.12 RCW and RCW 43.22.270. 92-01-104, § 296-127-015, filed 12/18/91, effective 1/31/92; 88-22-046 (Order 88-22), § 296-127-015, filed 10/31/88.]

WAC 296-127-017 Notice of wage determinations. Current prevailing wage data will be furnished by the office of the industrial statistician upon request.

[Statutory Authority: Chapters 39.04 and 39.12 RCW and RCW 43.22.270. 92-01-104, § 296-127-017, filed 12/18/91, effective 1/31/92. Statutory Authority: RCW 39.12.015, 39.12.060 and HB 795, 1982 1st ex.s. c 38. 82-18-041 (Order 82-28), § 296-127-017, filed 8/27/82.]

WAC 296-127-018 Coverage and exemptions of workers involved in the production and delivery of gravel, concrete, asphalt, or similar materials. The materials covered under this section are sand, gravel, crushed rock, concrete mix, asphalt, or other similar materials.

(1) Workers are subject to the provisions of chapter 39.12 RCW when they are employed by a contractor as defined by WAC 296-127-010 (5)(c) and:

(a) They are engaged for a public works project in the production of the above-listed materials in a sand or gravel pit, rock quarry, concrete mixing plant, or other similar facility; or

(b) They are engaged in the transportation of the above-listed materials for use on a public works project, whether or not they perform any work on the project site.

(2) All workers, regardless of by whom employed, are subject to the provisions of chapter 39.12 RCW when:

(a) They deliver any of the above-listed materials to a public works project site and perform any spreading, leveling, rolling, or otherwise participate in any incorporation of the materials into the project; or

(b) They wait at or near a public works project site to participate in the incorporation of any of the above-listed materials into the project; or

(c) They remove any materials from a public works construction site pursuant to contract requirements or specifications (e.g., excavated materials, materials from demolished structures, clean-up materials, etc.); or

(d) They work in a materials production facility (e.g., batch plant, borrow pit, rock quarry, etc.) which is established for a public works project for the specific, but not necessarily exclusive, purpose of supplying materials for the project.

(3) Workers are not subject to the provisions of chapter 39.12 RCW when:

(a) The employees' duties do not include spreading, leveling, rolling, or otherwise participating in the incorporation of the delivered materials into a public works project, and they are employed by an established materials supplier either

in the production or delivery of sand, gravel, crushed rock, concrete mix, asphalt or other similar materials;

(b) They are employed by a common or contract carrier trucking company principally or exclusively engaged in the hauling or delivery of such products, and the employees' duties do not include spreading, leveling, rolling, or otherwise participating in the incorporation of the delivered materials into a public works project; or

(c) Their employer is engaged in the production and stockpiling of such materials for unspecified future use by the state of Washington or by municipalities as defined by RCW 39.04.010.

(4) The applicable prevailing wage rate shall be determined by the locality in which the work is performed. Workers subject to the provisions of chapter 39.12 RCW, as outlined in subsection (1) of this section, who produce such materials at an off-site facility shall be paid the applicable prevailing wage rates for the county in which the off-site facility is located. Workers subject to the provisions of chapter 39.12 RCW, as outlined in subsection (1) of this section, who deliver such materials to a public works project site shall be paid the applicable prevailing wage rates for the county in which the public works project is located.

[Statutory Authority: Chapters 39.04 and 39.12 RCW and RCW 43.22.270. 92-01-104 and 92-08-101, § 296-127-018, filed 12/18/91 and 4/1/92, effective 8/31/92.]

WAC 296-127-019 Survey methodology. (1) The industrial statistician shall establish prevailing wage rates by:

(a) Conducting wage and hour surveys for established trades and occupations;

(b) Adopting the wage and benefit adjustments established in collective bargaining agreements for those trades or occupations where the most recently established prevailing wage rates were derived from a collective bargaining agreement; and/or

(c) In instances when the procedures established in (a) and (b) of this subsection are not feasible, employing other methods deemed appropriate by the industrial statistician as set out in subsection (8) of this section.

(2) The department will determine the identity of employers to be surveyed for a specific trade or occupation by:

(a) Mailing trade and occupation questionnaires to all contractors whose registration under chapter 18.27 RCW or license under chapter 19.28 RCW is active;

(b) Mailing trade and occupation questionnaires to Washington state department of transportation prequalified contractors; and

(c) Compiling and maintaining lists of employers that are not required to be registered under chapter 18.27 RCW or licensed under chapter 19.28 RCW, but that employ workers in building service maintenance, in shipbuilding or ship repair, in the fabrication and/or manufacture of nonstandard items produced specifically for a public works project, and/or in the production and delivery of materials as defined in WAC 296-127-018. Trades and occupations utilized by the shipbuilding and ship repair industries shall not have their survey data combined with their construction counterparts, for the purpose of establishing prevailing wage rates for that industry.

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(3)(a) Wage survey forms will be mailed to:

(i) Those contractors and employers whose businesses currently are active and were active during the established survey period, and whose response to the trade and occupation questionnaire indicates that they employ one or more of the trades or occupations being surveyed; and

(ii) Labor unions representing workers in the trades or occupations being surveyed.

(b) The department annually shall mail to statewide trade associations and statewide labor organizations a proposed schedule of trades intended to be surveyed during the upcoming fiscal year. In addition, the department shall notify those statewide trade associations and labor organizations, reasonably known to be affected, of the mailing of wage surveys.

(4) Data reported on survey forms may be verified by the department, and will be used only when submitted on behalf of or by:

(a) Individual contractors identified by a contractor registration number that currently is valid, and was valid during the established survey period;

(b) Employers that are not required to be registered under chapter 18.27 RCW or licensed under chapter 19.28 RCW, that directly employ and supervise workers as employees in building service maintenance, in shipbuilding or ship repair, in the manufacture of nonstandard items specifically produced for a public works project, or in the production and delivery of materials, as defined in WAC 296-127-018;

(c) Labor unions submitting wage and hour data on behalf of contractors and/or employers who are signatory to those unions' collective bargaining agreements covering the trade or occupation being surveyed; or

(d) Interested parties providing wage and hour data by trade and occupation from certified payroll records and/or from hours reported by trade and occupation on affidavits of wages paid, according to guidelines established by the department.

(5) The department shall use affidavit forms that include a requirement that contractors report the actual number of hours worked by each trade and occupation utilized on the public works project for which the affidavit is filed.

(6) Valid data reported on wage surveys shall be calculated, as follows:

(a) If the majority of hours reported for a trade or occupation in the largest city in a county is paid at the same wage rate, then that rate shall be established as the prevailing wage rate.

(b) If the same wage rate is not reported to have been paid for the majority of hours reported in the largest city in a county for a trade or occupation, then the average wage rate shall be established as the prevailing wage rate, based on a weighted average of the hours, wages, and benefits reported in the largest city.

(c) If a statistically significant number of hours fails to be reported for the largest city in a county, then the average wage rate for the county is established as the prevailing wage, based on a weighted average.

(d) If there fails to be reported for an entire county, sufficient hours to validate the survey data, that county's hours shall be combined with those reported for other counties that are adjacent, until the established hours threshold for validation has been met.

(7) Survey data will not be accepted if the data report the hours and wages of those who are exempt from the prevailing wage requirements of chapter 39.12 RCW, as defined in WAC 296-127-026.

(8)(a) The industrial statistician may utilize alternative methods to establish prevailing wage rates consistent with the terms of (b) of this subsection. These methods include, but are not limited to:

(i) The use of wage and hour data from the department of employment security;

(ii) The use of wage and hour data from the industrial insurance division of the department of labor and industries;

(iii) The use of data from surveys performed by the United States Department of Labor, wage and hour division; or

(iv) The use of wage and hour data reported to the department on affidavits of wages paid.

(b) These alternative methods will not be used for trades or occupations for which surveys had been completed as of the effective date of this section unless a subsequent survey produces insufficient data. In addition, these alternative methods may be used under circumstances that include, but are not limited to, the following:

(i) To establish prevailing wage rates for a new trade or occupation where a survey is not immediately feasible;

(ii) In response to an administrative or judicial determination of invalid wage rate or scope of work description;

(iii) In response to changes or additions in licensing, safety, or other requirements of other state agencies, departments or divisions; or

(iv) To establish rates for industries and trades and occupations generally not surveyed, in order to meet the requirement of having established wage rates for publication in contract or bid specifications as required by RCW 39.12.030.

(9) Any party that submits false information under this section shall, after a determination to that effect has been issued by the director after a hearing pursuant to chapter 34.05 RCW, forfeit as a civil penalty the sum of five hundred dollars.

[Statutory Authority: Chapters 39.04 and 39.12 RCW and RCW 43.22.270. 92-01-104, § 296-127-019, filed 12/18/91, effective 1/31/92; 88-22-046 (Order 88-22), § 296-127-019, filed 10/31/88.]

WAC 296-127-020 Interpretation of phrases used in chapter 39.12 RCW. (1) The "acceptance date of the public works project" referred to in RCW 39.12.065 is the date that the contract awarding agency formally accepts the completed public works project pursuant to state law.

(2) RCW 39.12.050 and 39.12.065 refer to "inadvertent filing or reporting error." The department defines an error as "inadvertent" if it is made by a contractor, as defined by WAC 296-127-010(5), or employer that shows that the error was made notwithstanding the use of due care by the contractor or employer. The burden of proving that an error is inadvertent rests with the contractor or employer charged with the error.

(3) The definition of "locality" in RCW 39.12.010(2) contains the phrase "wherein the physical work is being performed." The department interprets this phrase to mean the actual work site. For example, if nonstandard items specifically produced for public works projects are prefabricated in

a county other than the county wherein the public works project is to be completed, the wage for the off-site prefabrication shall be the applicable prevailing wage for the county in which the actual prefabrication takes place. Workers who deliver such nonstandard items, as well as materials pursuant to the terms of WAC 296-127-018, shall be paid the applicable prevailing wage for the county in which the public works project is located.

(4) In the implementation and enforcement of RCW 39.12.050 the terms "contractor" and "subcontractor" include an entity, however organized, with substantially identical corporate and/or operational structure to an entity that has been found to violate RCW 39.12.050. The factors used to determine substantial identity shall include an assessment of whether there is: Substantial continuity of the same business operation; use of the same machinery and/or equipment; similarity of jobs and types of working conditions; continuity of supervisors; and similarity of product or services.

[Statutory Authority: Chapters 39.04 and 39.12 RCW and RCW 43.22.270. 92-01-104, § 296-127-020, filed 12/18/91, effective 1/31/92. Statutory Authority: RCW 39.12.050, 39.12.065, 43.22.270 and 51.04.020. 86-03-063 (Order 85-28), § 296-127-020, filed 1/17/86. Statutory Authority: RCW 39.12.015, 39.12.060 and HB 795, 1982 1st ex.s. c 38. 82-18-041 (Order 82-28), § 296-127-020, filed 8/27/82.]

WAC 296-127-021 Apprentice worker. Any apprentice employed on public works projects for whom an apprenticeship agreement is registered and approved by the state apprenticeship council pursuant to chapter 49.04 RCW within 60 days of hiring may be considered an apprentice and paid the applicable prevailing hourly rate for an apprentice of that trade for all hours worked.

[Statutory Authority: RCW 39.12.015, 39.12.060 and House Bill 795, 1982 1st ex.s. c 38. 82-18-041 (Order 82-28), § 296-127-021, filed 8/27/82.]

WAC 296-127-022 Overtime according to RCW 49.28.065. (1) Work performed on public works contracts will not require the payment of overtime rates for the first two hours worked in excess of eight hours per day when the employer and employee voluntarily enter into an agreement wherein the employee will work up to ten hours per day in a four-day week to accomplish forty hours of work.

(2) Recognizing that there may be days when a full ten hours of work is not available, the remainder of the forty hours may be made up on another work day or days within the same work week, except work performed on Saturdays, Sundays, and holidays is subject to the established prevailing overtime provisions for a given trade or occupation, as provided in chapter 39.12 RCW.

(3) For the purpose of this section an agreement must:

(a) Have been authorized by employees who bargained collectively with their employers through representatives of their own choosing; or

(b) Be obtained in writing, signed, and dated by both parties; and

(c) Be entered into individually with each employee; and

(d) Be entered into separately for each public works project, except that an employer, at its option, may obtain an annual authorization; and

(e) State the name of the public works project with specificity; and

(f) Be entered into voluntarily by the employer and employee.

(4) Each employer must retain copies of the individual employee authorization agreements required pursuant to subsection (3) of this section for three years from the date of acceptance of the public works project by the contract awarding agency. Absence of an authorization record for an employee shall be deemed per se evidence of lack of that employee's authorization. Such records are payroll records, subject to the requirements of WAC 296-127-320.

(5) It is prohibited to work more than ten hours in any calendar day on a public works project except in cases of extraordinary emergency, such as danger to life or property.

(6) Notwithstanding the above provisions, overtime rates must be paid for all hours worked in excess of forty hours per week.

(7) This section provides a minimum public works overtime standard, and does not supersede prevailing overtime wage rates established under the authority of chapter 39.12 RCW.

[Statutory Authority: Chapters 39.04 and 39.12 RCW and RCW 43.22.270. 92-01-104, § 296-127-022, filed 12/18/91, effective 1/31/92. Statutory Authority: RCW 43.22.270. 88-19-055 (Order 88-21), § 296-127-022, filed 9/15/88.]

WAC 296-127-023 Building service maintenance.

The "public building service maintenance contracts" referred to in RCW 39.12.020 shall mean janitorial service contracts and cover only work performed by janitors, waxers, sham-pooers, and window cleaners.

For all building service maintenance contracts, the prevailing wage rates which are in effect on the date when the bids are required to be submitted to the contract awarding public agency are the minimum prevailing wage rates which must be paid for the first year of such contracts and thereafter. However, any building service maintenance contract of more than one year duration, must include wage increase language recognizing the potential for future variance in applicable prevailing wage(s) and specifying that the wages which a contractor shall pay its employees must be altered annually to recognize and follow the most recently promulgated increases in prevailing wages each year after the first year of the contract period. The cost of the increases in the wages due employees shall be borne by the contract awarding agency.

[Statutory Authority: Chapters 39.04 and 39.12 RCW and RCW 43.22.270. 88-22-046 (Order 88-22), § 296-127-023, filed 10/31/88.]

WAC 296-127-025 Applicability of joint federal-state standards. (1) When a public works project is subject to the provisions of the Washington state public works law, chapter 39.12 RCW, and the Federal Davis-Bacon and related acts, the contractor and every subcontractor on that project must pay at least the Washington state prevailing wage rates, if they are higher than the federal prevailing wage rates for the project unless specifically preempted by federal law.

(2) When the federal prevailing wage rates are higher than the Washington state prevailing wage rates, the contractor shall pay the federal rate as required by federal law.

[Statutory Authority: Chapters 39.04 and 39.12 RCW and RCW 43.22.270. 92-01-104, § 296-127-025, filed 12/18/91, effective 1/31/92; 88-22-046 (Order 88-22), § 296-127-025, filed 10/31/88.]

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WAC 296-127-026 Exemptions for sole owners and their spouses, partnerships, corporations, and employees of public agencies. The prevailing wage requirements of chapter 39.12 RCW do not apply to:

(1) Sole owners and their spouses.

(2) Any partner who owns at least thirty percent of a partnership.

(3) The president, vice-president and treasurer of a corporation if each one owns at least thirty percent of the corporation.

(4) Workers regularly employed on monthly or per diem salary by the state or any political subdivision created by its laws.

[Statutory Authority: Chapters 39.04 and 39.12 RCW and RCW 43.22.270. 88-22-046 (Order 88-22), § 296-127-026, filed 10/31/88.]

WAC 296-127-030 Irrigation district exemption.

Contracts awarded by irrigation districts for the reclamation or development of waste or undeveloped lands are not covered by the prevailing wage law, pursuant to RCW 39.04.-010. Any work, construction alteration, repair or improvement that is not solely for the reclamation or development of waste or undeveloped land is covered by the prevailing wage laws and therefore subject to all the laws and regulations contained in and adopted pursuant to chapter 39.12 RCW.

[Statutory Authority: RCW 39.12.015, 39.12.060 and House Bill 795, 1982 1st ex.s. c 38. 82-18-041 (Order 82-28), § 296-127-030, filed 8/27/82.]

WAC 296-127-040 Statement of intent to pay prevailing wages. (1) All statements of intent to pay prevailing wages submitted to the industrial statistician of the department shall be accompanied by a fee of twenty-five dollars for each statement. Fees shall be made payable to the department of labor and industries.

(2) Any agency, division, or department of the state of Washington which through agreement with the department certifies statements of intent for its own contracts shall provide to the industrial statistician each month the number of statements of intent certified and quarterly shall send a fee of twenty dollars for each statement of intent to pay prevailing wages it has certified. This fee shall be sent to the industrial statistician and be made payable to the department of labor and industries.

[Statutory Authority: RCW 39.12.070. 94-01-100, § 296-127-040, filed 12/16/93, effective 1/16/94. Statutory Authority: RCW 43.22.270. 90-24-053, § 296-127-040, filed 12/3/90, effective 1/3/91. Statutory Authority: Chapters 39.04 and 39.12 RCW and RCW 43.22.270. 88-22-046 (Order 88-22), § 296-127-040, filed 10/31/88. Statutory Authority: RCW 39.12.015, 39.12.060 and House Bill 795, 1982 1st ex.s. c 38. 82-18-041 (Order 82-28), § 296-127-040, filed 8/27/82.]

WAC 296-127-045 Affidavit of wages paid. (1) All affidavits of wages paid submitted to the industrial statistician of the department shall be accompanied by a fee of twenty-five dollars for each affidavit of wages paid. All fees shall be made payable to the department of labor and industries.

(2) Any agency, division, or department of the state of Washington which through agreement with the department certifies affidavits of wages paid for its own contracts shall provide to the industrial statistician each month the number of affidavit of wages paid it has certified and quarterly shall

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send a fee of twenty dollars for each affidavit of wages paid it has certified. This fee shall be sent to the industrial statistician and be made payable to the department of labor and industries.

[Statutory Authority: RCW 39.12.070, 94-01-100, § 296-127-045, filed 12/16/93, effective 1/16/94. Statutory Authority: RCW 43.22.270, 90-24-053, § 296-127-045, filed 12/3/90, effective 1/3/91. Statutory Authority: Chapters 39.04 and 39.12 RCW and RCW 43.22.270, 88-22-046 (Order 88-22), § 296-127-045, filed 10/31/88. Statutory Authority: RCW 39.12.015, 39.12.060 and House Bill 795, 1982 1st ex.s. c 38, 82-18-041 (Order 82-28), § 296-127-045, filed 8/27/82.]

WAC 296-127-050 Filing of statements of intent to pay prevailing wages and affidavits of wages paid for contracts under two thousand five hundred dollars. A contract awarding agency may, as part of a public works contract, enter into an agreement with a contractor to approve statements of intent to pay prevailing wages and affidavits of wages paid on behalf of the department for contracts wherein the total amount does not exceed two thousand five hundred dollars as provided in RCW 39.12.040(2), pursuant to the following terms:

(1) The agreement must be incorporated into the bid specifications and contract document;

(2) Statement of intent forms and affidavit of wages paid forms, provided by the department, must be filed with the contract awarding agency by the contractor prior to the disbursement of public funds;

(3) Contract awarding agencies must retain copies of all statements of intent to pay prevailing wages received pursuant to this section for a period of not less than three years;

(4) Contract awarding agencies must send to the department copies of all affidavits of wages paid received pursuant to this section within thirty days of receipt from the contractor;

(5) The contract awarding agency shall accept full responsibility and liability for payment of any valid wage claims directly to the claimant;

(6) The contract awarding agency may proceed against any contractor found to have violated the provisions of the statute, and may debar such contractor from consideration for future contracts for up to one year and will provide the department with the names and contractor registration or other employer identification numbers of any such debarred contractors within thirty days of the debarment; and

(7) Contract awarding agencies and contractors shall not enter into contracts or agreements to perform public work that subdivide or otherwise disaggregate any public works project of more than two thousand five hundred dollars, to enable such public works project to be awarded pursuant to this section.

[Statutory Authority: Chapters 39.04 and 39.12 RCW and RCW 43.22.270, 92-01-104, § 296-127-050, filed 12/18/91, effective 1/31/92.]

WAC 296-127-060 Director of department of labor and industries to arbitrate disputes—General provisions.

(1) The contract executed between a public authority and the successful bidder or contractor and all of his subcontractors shall contain a provision that in case any dispute arises as to what are the prevailing rates of wages for a specific trade, craft or occupation and such dispute cannot be adjusted by the parties in interest, including labor and management repre-

sentatives, the matter shall be referred for arbitration to the director, and his decision shall be final, conclusive, and binding on all parties involved in the dispute.

(2) In exercising his authority to hear and decide disputes the director shall consider among other things, timeliness, the nature of the relief sought, matters of undue hardship or injustice, or public interest. A "timely" request for arbitration is one received within 30 days after the contract has been awarded.

(3) Any party in interest who is seeking a modification or other change in a wage determination under RCW 39.12.015, and who has requested the industrial statistician to make such modification or other change and the request has been denied, after appropriate reconsideration by the assistant director shall have a right to petition for arbitration of the determination.

(a) For purpose of this section, the term "party in interest" is considered to include, without limitation:

(i) Any contractor, or an association representing a contractor, who is likely to seek or to work under a contract containing a particular wage determination, or any worker, laborer or mechanic, or any council of unions or any labor organization which represents a laborer or mechanic who is likely to be employed or to seek employment under a contract containing a particular wage determination, and

(ii) Any public agency concerned with the administration of a proposed contract or a contract containing a particular wage determination issued pursuant to chapter 39.12 RCW.

(b) For good cause shown, the director may permit any party in interest to intervene or otherwise participate in any proceeding held by the director. A petition to intervene or otherwise participate shall be in writing, and shall state with precision and particularity:

(i) The petitioner's relationship to the matters involved in the proceedings, and

(ii) The nature of the presentation which he would make. Copies of the petition shall be served on all parties or interested persons known to be participating in the proceeding, who may respond to the petition. Appropriate service shall be made of any response.

[Statutory Authority: RCW 39.12.015, 39.12.060 and House Bill 795, 1982 1st ex.s. c 38, 82-18-041 (Order 82-28), § 296-127-060, filed 8/27/82.]

WAC 296-127-061 Requests for arbitration. (1) The petition for arbitration (original and four copies) shall be filed with Director, Department of Labor and Industries, General Administration Building, Olympia, Washington 98504. In addition, copies of the petition shall be served personally or by mail upon each of the following:

(a) The public agency or agencies involved,

(b) The industrial statistician, and

(c) Any other person (or the authorized representatives of such person) known to be interested in the subject matter of the petition.

(2) The director shall under no circumstances request any administering agency to postpone any contract performance because of the filing of a petition. This is a matter which must be resolved directly with the administering agency by the petitioner or other party in interest.

(3) A petition for arbitration of a wage determination shall:

- (a) Be in writing and signed by the petitioner or his counsel (or other authorized representative), and
- (b) Identify clearly the wage determination, location of project or projects in question, and the agency concerned, and
- (c) State that the petitioner has requested reconsideration of the wage determination in question and describe briefly the action taken in response to the request, and
- (d) Contain a short and plain statement of the grounds for review, and
- (e) Be accompanied by supporting data, views, or arguments, and
- (f) Be accompanied by a filing fee of \$75.00. Fees shall be made payable to the department of labor and industries.

[Statutory Authority: RCW 39.12.015, 39.12.060 and House Bill 795, 1982 1st ex.s. c 38. 82-18-041 (Order 82-28), § 296-127-061, filed 8/27/82.]

WAC 296-127-062 Conduct of arbitration hearing.

(1) Interested persons other than the petitioner shall have a reasonable opportunity as specified by the director in particular cases to submit to the director written data, views, or arguments relating to the petition. Such material (original and four copies) shall be filed with the Director, Department of Labor and Industries, General Administration Building, Olympia, Washington 98504 and be accompanied by a filing fee of \$35.00. Fees shall be made payable to the department of labor and industries. Copies of any such material shall be served on the petitioner and other interested persons.

(2) Each party in interest shall have the right to appear in person or by or with counsel or other qualified representatives in any proceeding before the director. If all parties agree, oral testimony may be waived and arguments submitted in writing.

(3) Upon his own initiative or upon motion of any interested person or party, the director may consolidate in any proceeding or concurrently consider two or more appeals which involve substantially the same persons or parties, or issues which are the same or closely related, if he finds that such consolidation or concurrent review will contribute to an efficient review and to the ends of justice, and it will not unduly delay consideration of any such appeals.

(4) The director shall prescribe the time and place for hearing. The director shall schedule the hearing within 45 days of the request. For good cause shown, the director may allow a continuance at the request of a party in interest.

(a) With respect to any proceeding before him, the director may upon his own initiative or upon the request of any interested person or party direct the interested persons or parties to appear before the director at a specified time and place in order to simplify the issues presented or to take up any other matters which may tend to expedite or otherwise facilitate the disposition of the proceeding.

(b) All papers submitted to the director under this section shall be filed with the Department of Labor and Industries, General Administration Building, Olympia, Washington 98504. An original and four copies of all papers shall be submitted. Service under this part shall be by the filing party or interested person; service may be personal or may be by mail. Service by mail is complete on mailing.

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(5) The final disposition shall be by the director.

(a) The director may decline review of any case whenever in his judgment a review would be inappropriate or because of the lack of timeliness, the nature of the relief sought, or other reasons.

(b) The director shall decide the case upon the basis of all relevant matter contained in the entire record before him but the director may utilize his experience, technical competence, and specialized knowledge in evaluating the evidence.

(c) Upon reasonable notice to the parties or interested persons, the director may vary the procedures specified in this part in particular cases.

(6) The director may allow all parties a period of ten days for filing post-hearing briefs prior to closing the record and concluding the hearing.

(7) The director shall issue a written decision within 30 days of the conclusion of the hearing. A copy shall be sent to each party in interest.

[Statutory Authority: RCW 39.12.015, 39.12.060 and House Bill 795, 1982 1st ex.s. c 38. 82-18-041 (Order 82-28), § 296-127-062, filed 8/27/82.]

WAC 296-127-130 Filing of complaint. Any interested party, as defined in RCW 39.12.010(4) may file with the department a complaint alleging a violation of the prevailing wage laws. The complaint must describe the alleged violation and identify the alleged violator. It would aid the department's investigation if the complaint also specifies:

- (1) The name and address of the complainant;
- (2) The address of the alleged violator;
- (3) The name and address of the public agency that awarded the contract;
- (4) The date the public agency accepted the completed public work (if applicable);
- (5) The specific rates of wages paid by the violator and the rates that allegedly should be paid;
- (6) The exact amount of prevailing wages that are alleged to remain unpaid; and
- (7) The date the bids were due on the public works project.

[Statutory Authority: RCW 39.12.050, 39.12.065, 43.22.270 and 51.04.020. 86-03-063 (Order 85-28), § 296-127-130, filed 1/17/86.]

WAC 296-127-140 Investigation of complaint. (1) The department shall investigate a complaint filed by an interested party unless the complaint was filed more than thirty days after the date the public agency accepted the public work that gave rise to the complaint. The department may, in its sole discretion, investigate a complaint filed more than thirty days after the acceptance date. However, the department may not charge a contractor with a violation of RCW 39.12.065 if the complaint is filed after the thirty-day limit.

The department's investigation shall determine whether a violation of RCW 39.12.065 or 39.12.050, or both, or of any other provision of chapter 39.12 RCW, occurred.

(2) If the department's investigation substantiates a complaint that alleges that a contractor has violated RCW 39.12.065, the department is required to attempt to collect unpaid wages for the contractor's employees. During the investigation, the department should be able to identify the affected employees. The department shall direct to the affected employees the best notice practicable under the cir-

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cumstances, including individual notice to all employees who can be identified through reasonable effort. The notice shall inform the employee that (a) the department's final order, whether favorable or not, will apply to all employees; (b) any employee may, if he or she desires, move to intervene as a party in any hearing held as a result of the investigation; and (c) that the employee may have a private right of action to collect unpaid prevailing wages.

[Statutory Authority: RCW 39.12.050, 39.12.065, 43.22.270 and 51.04.020. 86-03-063 (Order 85-28), § 296-127-140, filed 1/17/86.]

WAC 296-127-150 Notice of violation. (1) If the department determines after its investigation that there is reasonable cause to believe that the prevailing wage law has been violated, the department shall notify the violator of its determination. The notice of violation shall be served on the violator personally or by certified mail.

(2) The notice of violation shall:

- (a) Describe concisely the violation;
- (b) Specify which statute or statutes were violated;
- (c) If known, identify the laborers, workers, and mechanics who are affected by the violation;
- (d) If known, state the amount of unpaid prevailing wages the violator owes;
- (e) State that an employee cannot by contract or agreement waive the right to receive the prevailing wage;
- (f) State the penalty that the department will assess for a violation, if any, of RCW 39.12.065 and 39.12.050; and
- (g) State the date the complaint was filed with the department.

(3) RCW 39.12.065 and 39.12.050 establish the penalty amounts.

(4) If the notice alleges a violation of RCW 39.12.065, the department shall serve a copy of the notice of violation on the violator's sureties under chapters 39.08, 18.27, 19.28, and 60.28 RCW.

(5) The notice of violation shall inform the violator and, if a violation of RCW 39.12.065 is alleged, its sureties that they may request a hearing on the violations, the amount of unpaid prevailing wages owed, or the penalties assessed. The notice shall specify that if no hearing is requested within thirty days of the date of issuance of the notice the director shall issue a final, unappealable order finding that the violation did occur, ordering the violator to pay any unpaid prevailing wages, and assessing penalties.

[Statutory Authority: RCW 39.12.050, 39.12.065, 43.22.270 and 51.04.020. 86-03-063 (Order 85-28), § 296-127-150, filed 1/17/86.]

WAC 296-127-160 Appeal of notice of violation. The violator or any of its sureties who are interested in the matter may request a hearing on a notice of violation. One original and four copies of the request must be filed with the director within thirty days after the date the department issued the notice. The party requesting the hearing must also serve a copy of the notice on all interested sureties and, if the requestor is a surety, on the violator.

The request for hearing must be in writing and must specify:

- (1) The name and address of the party requesting the hearing;
- (2) The notice of violation that is being appealed;

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(3) The items of the notice of violation that the requestor believes are erroneous; and

(4) The reasons the notice of violation is erroneous.

[Statutory Authority: RCW 39.12.050, 39.12.065, 43.22.270 and 51.04.020. 86-03-063 (Order 85-28), § 296-127-160, filed 1/17/86.]

WAC 296-127-170 Hearing on notice of violation. (1)

The director may hear the appeal personally or may delegate the authority to hold the hearing and draft a proposed decision to an administrative law judge pursuant to chapter 34.12 RCW. The plaintiff in the hearing shall be the department, and the defendants shall be the violator and its interested sureties. The department shall have the burden of proving, by a preponderance of the evidence, that the violations occurred and that any wages were unpaid as stated in the notice.

(2) Any interested party may upon motion, be allowed to intervene as a plaintiff in the hearing. "Standing" shall be construed broadly to effectuate the remedial purposes of the prevailing wage law. An interested party, whether or not admitted as a plaintiff, may submit written arguments and affidavits. The parties shall be given an opportunity to respond to or rebut any arguments and affidavits before the person presiding over the hearing makes his or her decision.

(3) The hearing shall be conducted in accordance with the Uniform procedure rules, chapter 1-08 WAC.

(4) If the director presides over the hearing, the director shall issue a final decision that includes findings of fact and conclusions of law, and if appropriate an order to pay unpaid prevailing wages, a penalty, or both.

(5) If an administrative law judge presides over the hearing, she or he shall issue a proposed decision that includes findings of fact, conclusions of law, and if appropriate an order to pay unpaid prevailing wages, a penalty, or both. The proposed decision shall be served by certified mail or personally on the violator, the interested sureties, the department, and any interested parties who have intervened as plaintiffs. Any of these parties, if aggrieved by the proposed decision, may appeal to the director within thirty days after the date of issuance of the proposed decision. If none of the parties appeals within thirty days, the proposed decision may not be appealed either to the director or the courts.

(6) An appellant must file with the director an original and four copies of its notice of appeal. The notice of appeal must specify which findings and conclusions are erroneous. The appellant must attach to the notice the written arguments supporting its appeal.

The appellant must serve a copy of the notice of appeal and the arguments on the other parties. The respondent parties must file with the director their written arguments within thirty days after the date the notice of appeal and the arguments were served upon them.

(7) The director shall review the proposed decision in accordance with the Administrative Procedure Act, chapter 34.04 RCW. The director may: Allow the parties to present oral arguments as well as the written arguments; require the parties to specify the portions of the record on which the parties rely; require the parties to submit additional information by affidavit or certificate; remand the matter to the administrative law judge for further proceedings; and require a departmental employee to prepare a summary of the record for the director to review. The director shall issue a final deci-

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sion that can affirm, modify, or reverse the proposed decision.

(8) The director shall serve the final decision on all parties. Any aggrieved party may appeal the final decision to superior court pursuant to RCW 34.04.130 unless the final decision affirms an unappealed proposed decision. If no party appeals within the period set by RCW 34.04.130, the director's decision is conclusive and binding on all parties.

[Statutory Authority: RCW 39.12.050, 39.12.065, 43.22.270 and 51.04.020. 86-03-063 (Order 85-28), § 296-127-170, filed 1/17/86.]

WAC 296-127-180 Effect of final decision finding a violation of RCW 39.12.065. If the director issues a final decision that includes a finding that a contractor violated RCW 39.12.065 and that the contractor owes unpaid prevailing wages, and the finding is not timely appealed or is affirmed by the courts, the findings and the decision are res judicata in any action by the department or by any interested party who was a plaintiff at the hearing, against the contractor and its sureties to recover the unpaid prevailing wages. The findings and decision are not res judicata in any action by an interested party who was not a plaintiff at the hearing.

[Statutory Authority: RCW 39.12.050, 39.12.065, 43.22.270 and 51.04.020. 86-03-063 (Order 85-28), § 296-127-180, filed 1/17/86.]

WAC 296-127-190 Filing of lien against retainage or bonds. (1) Upon receipt of a timely complaint that a contractor has violated RCW 39.12.065, and that the contractor owes unpaid prevailing wages, the department may file a lien against the retainage or bond obtained by the contractor under RCW 60.28.010.

(2) Upon issuance by the director of a final decision that finds that a contractor has violated RCW 39.12.065 or 39.12.050, and that sets a civil penalty for the violation, the department shall file liens for the penalty amount against the retainage and bonds the contractor obtained under RCW 39.12.065 (2)(c), 39.08.010, and 60.28.010.

[Statutory Authority: RCW 39.12.050, 39.12.065, 43.22.270 and 51.04.020. 86-03-063 (Order 85-28), § 296-127-190, filed 1/17/86.]

WAC 296-127-200 Surety bond payable to director.

(1) RCW 39.12.065 (2)(c) authorizes the director to require a contractor to obtain a surety bond "running to the director in the amount of the violation found." The intent and wording indicates that the director may require such a bond only after issuing a final decision finding that the contractor has violated RCW 39.12.065.

(2) The director may demand that a violating contractor post the bond when:

(a) The director has issued a final decision that finds that the contractor owes unpaid prevailing wages or a penalty, whether or not the decision has been appealed to the courts; and

(b) The retainage or bonds provided under RCW 60.28.-010, 18.27.040, and 19.28.120 are or may be insufficient to pay the amount of prevailing wages or the penalty owed.

(3) A contractor may at any time voluntarily obtain a bond running to the director to guarantee the payment of the prevailing wages and any penalty. The contractor may allow the director to satisfy any claim for unpaid wages or the pen-

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alty from this bond instead of from the retainage or bonds obtained under RCW 60.28.010, 18.27.040, 19.28.120, and 39.08.010.

[Statutory Authority: RCW 39.12.050, 39.12.065, 43.22.270 and 51.04.020. 86-03-063 (Order 85-28), § 296-127-200, filed 1/17/86.]

WAC 296-127-210 Suit against retainage and bonds.

(1) If the director issues a final decision that includes a finding that the contractor has violated RCW 39.12.065 or 39.12.050, and the finding is not timely appealed or is affirmed by the courts, the department may file suit against the appropriate retainage and bonds to recover the amount of unpaid prevailing wages or the civil penalty.

(2) The department may, before issuance of a final decision, file suit against the appropriate retainage and bonds to recover unpaid prevailing wages if the filing of a suit is necessary to preserve the claim. The suit shall be held in abeyance pending the exhaustion of administrative remedies.

[Statutory Authority: RCW 39.12.050, 39.12.065, 43.22.270 and 51.04.020. 86-03-063 (Order 85-28), § 296-127-210, filed 1/17/86.]

WAC 296-127-220 Distribution of recovery. (1) Upon making a recovery pursuant to RCW 39.12.065(2) against a contractor's retainage or bonds, the department shall distribute the proceeds and any award of attorneys' fees and costs as follows:

(a) The recovery shall be paid to the employees of the violator who did not receive the correct prevailing wage. The distribution among employees shall be based on the evidence of wage loss produced at the hearing on the violation.

(b) Next shall be paid the costs the department incurred in making the recovery. The department shall pay these costs from the attorney's fees and costs awarded by the courts.

(2) A contractor who is the subject of an investigation or who has received a notice of violation may choose not to contest the matter and may tender to the department the amount of unpaid prevailing wages the department determines is owed. The department, after identifying and notifying the affected employees pursuant to WAC 296-127-140, shall accept the tender if the contractor in writing acknowledges that the department, by accepting the tendered amount, does not absolve the contractor from liability to any employee for unpaid prevailing wages.

(3) If an employee for whom the department has recovered unpaid prevailing wages cannot be found, the department shall retain the wages for the one-year period required by RCW 63.29.150. After the statutory period has lapsed, the department shall pay the wages to the department of revenue in accordance with RCW 63.29.170.

[Statutory Authority: RCW 39.12.050, 39.12.065, 43.22.270 and 51.04.020. 86-03-063 (Order 85-28), § 296-127-220, filed 1/17/86.]

WAC 296-127-300 Filing and service. All papers required to be filed with the director under this chapter or chapter 39.12 RCW shall be addressed to Director, Department of Labor and Industries, General Administration Building, Olympia, WA. 98504.

Filing and service shall be made as allowed by WAC 1-08-090 through 1-08-140.

[Statutory Authority: RCW 39.12.050, 39.12.065, 43.22.270 and 51.04.020. 86-03-063 (Order 85-28), § 296-127-300, filed 1/17/86.]

WAC 296-127-310 List of violators. The department shall maintain a list of all contractors who are forbidden to bid on a public works project, or to have a bid accepted, pursuant to RCW 39.12.065(3) or 39.12.050. To the extent required by RCW 39.12.065(3) and 39.12.050, the industrial statistician shall refuse to certify any statement of intent to pay the prevailing wage or affidavit of wages paid that he or she determines was submitted by a contractor on the list. Because the department receives a large number of requests for certification, the department shall not be liable to any person or entity for certifying a statement or an affidavit of a contractor on the list.

The industrial statistician shall make the list available upon request.

[Statutory Authority: RCW 39.12.050, 39.12.065, 43.22.270 and 51.04.020. 86-03-063 (Order 85-28), § 296-127-310, filed 1/17/86.]

WAC 296-127-320 Payroll. (1) Each contractor shall keep accurate payroll records for three years from the date of acceptance of the public works project by the contract awarding agency, showing the name, address, Social Security number, trade or occupation, straight time rate, hourly rate of usual benefits as defined by WAC 296-127-014(1), and overtime hours worked each day and week, including any employee authorizations executed pursuant to WAC 296-127-022, and the actual rate of wages paid, for each laborer, worker, and mechanic employed by the contractor for work performed on a public works project.

(2) A contractor shall, within ten days after it receives a written request, from the department or from any interested party as defined by RCW 39.12.010(4), file a certified copy of the payroll records with the agency that awarded the public works contract and with the department.

(3) A contractor's noncompliance with this section shall constitute a violation of RCW 39.12.050.

[Statutory Authority: Chapters 39.04 and 39.12 RCW and RCW 43.22.270. 92-01-104, § 296-127-320, filed 12/18/91, effective 1/31/92. Statutory Authority: RCW 39.12.050, 39.12.065, 43.22.270 and 51.04.020. 86-03-063 (Order 85-28), § 296-127-320, filed 1/17/86.]

WAC 296-127-400 Applicability. WAC 296-127-400 through 296-127-470 are issued pursuant to RCW 39.12.022, authorizing the director of the department of labor and industries, to the extent necessary in order to prevent curtailment of opportunities for employment, to issue special subprevailing wage certificates for employment of individuals whose earning capacity is impaired by physical or mental deficiency or injury at wages lower than the prevailing rate applicable under RCW 39.12.020. Subprevailing wage certificates shall be subject to the conditions prescribed in these regulations.

[Statutory Authority: RCW 39.12.022. 90-19-061, § 296-127-400, filed 9/17/90, effective 10/18/90.]

WAC 296-127-410 Definitions. For the purposes of WAC 296-127-400 through 296-127-470:

(1) "Developmental disability" means a disability attributable to mental retardation, cerebral palsy, epilepsy, autism, or another neurological or other condition of an individual found by the secretary of social and health services to be closely related to mental retardation or to require treatment similar to that required for individuals with mental retarda-

tion, which disability originates before the individual attains age eighteen, which has continued or can be expected to continue indefinitely, and which constitutes a substantial handicap to the individual.

(2) "Handicapped worker" means an individual whose earning capacity for the work to be performed is impaired by physical or mental deficiency or injury.

(3) "Prevailing rate" means the prevailing rate of wage as defined in RCW 39.12.010 and as determined by the industrial statistician.

[Statutory Authority: RCW 39.12.022. 90-19-061, § 296-127-410, filed 9/17/90, effective 10/18/90.]

WAC 296-127-420 Application for a subprevailing wage certificate. (1) Nonprofit vocational rehabilitation programs may apply for a subprevailing wage certificate authorizing the employment of one or more handicapped workers with a developmental disability at less than the prevailing rate. An application for each worker shall be filed with the office of the industrial statistician not less than annually upon forms approved by the director or an authorized representative of the director.

(2) The application shall be signed jointly by the employer, the handicapped worker for whom such application is being made, and by the parent or guardian of the handicapped worker except as otherwise authorized by the director or an authorized representative of the director.

[Statutory Authority: RCW 39.12.022. 90-19-061, § 296-127-420, filed 9/17/90, effective 10/18/90.]

WAC 296-127-430 Conditions for granting a subprevailing wage certificate. (1) A subprevailing wage certificate may be issued to a nonprofit vocational rehabilitation program if the application is in proper form and sets forth facts showing:

(a) A wage below prevailing rate is necessary to prevent curtailment of the handicapped worker's opportunities for employment;

(b) The handicap impairs the earning capacity of the worker for the work to be performed;

(c) The percentage of full productivity at which the handicapped worker functions; and

(d) A description of the duties to be performed by each handicapped worker;

(e) The nature of the disability; and

(f) An addendum containing a detailed explanation of the nature of the disability.

(2) The industrial statistician shall not require a nonprofit vocational rehabilitation program to provide the information required in subsection (1)(f) of this section if it provides a notarized copy of a federal certificate granted by the United States department of labor under section 14(c) of the Federal Fair Labor Standards Act and any documentation deemed necessary by the industrial statistician identifying the workers with a developmental disability, a description of the duties to be performed, and the percentage of productivity at which each worker functions.

(3) The director or an authorized representative of the director may require the submission of additional information to that required by subsection (1) or (2) of this section shown on the application and may require the handicapped worker

to take a medical examination where it is deemed necessary in order to determine whether or not the issuance of a certificate is justified.

[Statutory Authority: RCW 39.12.022. 90-19-061, § 296-127-430, filed 9/17/90, effective 10/18/90.]

WAC 296-127-440 Issuance of a subprevailing wage certificate. If the application and other available information indicate that the requirements of this regulation are satisfied, the director or an authorized representative of the director may issue a subprevailing wage certificate. If issued, copies of the subprevailing wage certificate shall be mailed to the employer, the handicapped worker, and to the parent or guardian of the handicapped worker. If denied, the employer, the handicapped worker, and the parent or guardian of the handicapped worker shall be given written notice of the denial.

[Statutory Authority: RCW 39.12.022. 90-19-061, § 296-127-440, filed 9/17/90, effective 10/18/90.]

WAC 296-127-450 Terms of subprevailing wage certificate. (1) A subprevailing wage certificate shall specify, among other things, the names of the handicapped workers, the name of the employer, the duties to be performed by the handicapped worker, the percentage of the prevailing rate authorized to be paid, and the period of time during which that percentage of the prevailing rate may be paid. A certificate shall also indicate that the percentage of the prevailing rate to be paid a handicapped worker shall change to reflect an increase or decrease in the worker's productivity when the worker's productivity is determined to change.

(2) A subprevailing wage certificate shall be effective for a period of one year or less as designated by the director or an authorized representative of the director. A handicapped worker employed under such certificate may be paid at the specified percentage of the prevailing rate only during the effective period of the certificate.

(3) Notwithstanding the requirements of chapter 49.46 RCW and its administrative regulations, the percentage of the prevailing rate authorized to be paid shall be fixed at a figure designed to reflect adequately the percentage of productivity at which the handicapped worker functions.

(4) Any money received by a handicapped worker by reason of any state or federal pension or compensation program for handicapped persons shall not be considered as offsetting any part of the wage or remuneration due the handicapped worker by the employer.

(5) A handicapped worker shall be paid not less than one and one-half times the rate specified in the subprevailing wage certificate for hours worked in excess of forty hours per workweek or eight hours per day.

(6) The terms of any subprevailing wage certificate, including the percentage of the prevailing rate authorized to be paid, may be amended by the director or an authorized representative of the director upon written notice to the parties concerned, if the facts justify such amendment.

[Statutory Authority: RCW 39.12.022. 90-19-061, § 296-127-450, filed 9/17/90, effective 10/18/90.]

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WAC 296-127-460 Renewal of subprevailing wage certificate. Application for renewal of any subprevailing wage certificate shall be filed in the same manner as an original application. An application for renewal shall include the most recent evaluation conducted within the past year of the productivity level at which the handicapped worker functions. If such application has been filed prior to the expiration date of the certificate, the certificate shall remain in effect until the application for renewal has been granted or denied.

[Statutory Authority: RCW 39.12.022. 90-19-061, § 296-127-460, filed 9/17/90, effective 10/18/90.]

WAC 296-127-470 Review. Any person aggrieved by any action of the director or an authorized representative of the director taken pursuant to this regulation may, within fifteen days after notice of such action has been mailed, file with the director a petition for review of the action complained of, setting forth grounds for seeking such review. If reasonable grounds exist, the director or an authorized representative of the director may grant such review and to the extent deemed appropriate afford all interested persons an opportunity to be heard on such review.

[Statutory Authority: RCW 39.12.022. 90-19-061, § 296-127-470, filed 9/17/90, effective 10/18/90.]

WAC 296-127-990 Severability. If any provision of this chapter or its application to any persons or circumstances is held invalid by state or federal court, the remainder of the chapter or the application of the provision to other persons or circumstances is not affected.

[Statutory Authority: Chapters 39.04 and 39.12 RCW and RCW 43.22.270. 92-01-104, § 296-127-990, filed 12/18/91, effective 1/31/92.]

Chapter 296-128 WAC MINIMUM WAGES

WAC

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296-128-315	Amending and revoking certificates.		
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296-128-535	Are professional computer employees exempt from the Washington Minimum Wage Act?		
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296-128-550	Regular rate of pay.	296-128-4459	Uniforms. [Order 71-5, § 296-128-4459, filed 5/26/71, effective 7/1/71.] Repealed by Order 77-32, filed 12/30/77. Later promulgation, see chapter 296-125 WAC.
296-128-560	Compensating time off in lieu of overtime pay.		
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296-128-410	Counselor staff occupations in organized seasonal recreational camps—Women and minors. [Industrial Welfare Order 11-63, filed 9/13/63; Minimum Wage and Welfare Order 54, filed 3/23/60.] Repealed by Order 77-32, filed 12/30/77. Later promulgation, see chapter 296-125 WAC.	296-128-446	Minor work permits. [Order 71-5, § 296-128-446, filed 5/26/71, effective 7/1/71.] Repealed by Order 77-32, filed 12/30/77. Later promulgation, see chapter 296-125 WAC.
296-128-415	Food processing industry—Women and minors. [Industrial Welfare Order 5-62, filed 11/25/64; Minimum Wage and Welfare Order 51, filed 3/23/60.] Repealed by Order 77-32, filed 12/30/77. Later promulgation, see chapter 296-125 WAC.	296-128-4461	Posting of order. [Order 71-5, § 296-128-4461, filed 5/26/71, effective 7/1/71.] Repealed by Order 77-32, filed 12/30/77. Later promulgation, see chapter 296-125 WAC.
296-128-420	Fresh fruit and vegetable packing industry—Women and minors. [Industrial Welfare Order 6-62, filed 11/25/64; Minimum Wage and Welfare Order 52, filed 3/23/60.] Repealed by Order 77-32, filed 12/30/77. Later promulgation, see chapter 296-125 WAC.	296-128-4462	Separability. [Order 71-5, § 296-128-4462, filed 5/26/71, effective 7/1/71.] Repealed by Order 77-32, filed 12/30/77. Later promulgation, see chapter 296-125 WAC.
296-128-425	General amusement and recreation industry—Women and minors. [Industrial Welfare Order 8-62, filed 11/25/64; Minimum Wage Order 45-A, filed 3/23/60.] Repealed by Order 77-32, filed 12/30/77. Later promulgated, see chapter 296-125 WAC.	296-128-4463	Penalties. [Order 71-5, § 296-128-4463, filed 5/26/71, effective 7/1/71.] Repealed by Order 77-32, filed 12/30/77. Later promulgation, see chapter 296-125 WAC.
296-128-430	Health care industry—Women and minors. [Industrial Welfare Order 68-3, filed 5/8/68, effective 7/15/68; Industrial Welfare Order 10-62, filed 11/25/64; Minimum Wage Order 46, filed 3/23/60.] Repealed by Order 77-32, filed 12/30/77. Later promulgation, see chapter 296-125 WAC.	296-128-450	Office workers—Women and minors. [Industrial Welfare Order 13-63, filed 11/25/64; Minimum Wage Order 43, filed 3/23/60; Statement of interpretation of applicability of Industrial Welfare Committee Order 13-63, office workers, filed 11/25/64.] Repealed by Order 77-32, filed 12/30/77. Later promulgation, see chapter 296-125 WAC.
296-128-435	Laundry, dry-cleaning and dye works industry—Women and minors. [Industrial Welfare Order 3-62, filed 11/25/64; Minimum Wage and Welfare Order 48,	296-128-455	Personal service industry—Women and minors. [Industrial Welfare Order 4-62, filed 11/25/64.] Repealed by Order 77-32, filed 12/30/77. Later promulgation, see chapter 296-125 WAC.
		296-128-460	Public housekeeping industrial—Women and minors. [Order 71-5 (Industrial Welfare Order No. 9-71), § 296-128-460, filed 5/26/71, effective 7/1/71; Industrial Welfare Order 9-62, filed 11/25/64; Minimum Wage Order 46, filed 3/23/60.] Repealed by Order 77-32, filed

- 12/30/77. Later promulgation, see chapter 296-125 WAC.
- 296-128-4601 Applicability. [Order 71-5, § 296-128-4601, filed 5/26/71, effective 7/1/71.] Repealed by Order 77-32, filed 12/30/77. Later promulgation, see chapter 296-125 WAC.
- 296-128-4602 Definitions. [Order 71-5, § 296-128-4602, filed 5/26/71, effective 7/1/71.] Repealed by Order 77-32, filed 12/30/77. Later promulgation, see chapter 296-125 WAC.
- 296-128-4603 Minimum wages. [Order 71-5, § 296-128-4603, filed 5/26/71, effective 7/1/71.] Repealed by Order 77-32, filed 12/30/77. Later promulgation, see chapter 296-125 WAC.
- 296-128-4604 Deductions. [Order 71-5, § 296-128-4604, filed 5/26/71, effective 7/1/71.] Repealed by Order 77-32, filed 12/30/77. Later promulgation, see chapter 296-125 WAC.
- 296-128-4605 Statements furnished. [Order 71-5, § 296-128-4605, filed 5/26/71, effective 7/1/71.] Repealed by Order 77-32, filed 12/30/77. Later promulgation, see chapter 296-125 WAC.
- 296-128-4606 Records. [Order 71-5, § 296-128-4606, filed 5/26/71, effective 7/1/71.] Repealed by Order 77-32, filed 12/30/77. Later promulgation, see chapter 296-125 WAC.
- 296-128-4607 Meals and lodging. [Order 71-5, § 296-128-4607, filed 5/26/71, effective 7/1/71.] Repealed by Order 77-32, filed 12/30/77. Later promulgation, see chapter 296-125 WAC.
- 296-128-4608 Meal and rest periods. [Order 71-5, § 296-128-4608, filed 5/26/71, effective 7/1/71.] Repealed by Order 77-32, filed 12/30/77. Later promulgation, see chapter 296-125 WAC.
- 296-128-4609 Working conditions. [Order 71-5, § 296-128-4609, filed 5/26/71, effective 7/1/71.] Repealed by Order 77-32, filed 12/30/77. Later promulgation, see chapter 296-125 WAC.
- 296-128-461 Uniforms. [Order 71-5, § 296-128-461, filed 5/26/71, effective 7/1/71.] Repealed by Order 77-32, filed 12/30/77. Later promulgation, see chapter 296-125 WAC.
- 296-128-4611 Minor work permits. [Order 71-5, § 296-128-4611, filed 5/26/71, effective 7/1/71.] Repealed by Order 77-32, filed 12/30/77. Later promulgation, see chapter 296-125 WAC.
- 296-128-4612 Posting of order. [Order 71-5, § 296-128-4612, filed 5/26/71, effective 7/1/71.] Repealed by Order 77-32, filed 12/30/77. Later promulgation, see chapter 296-125 WAC.
- 296-128-4613 Separability. [Order 71-5, § 296-128-4613, filed 5/26/71, effective 7/1/71.] Repealed by Order 77-32, filed 12/30/77. Later promulgation, see chapter 296-125 WAC.
- 296-128-4614 Penalties. [Order 71-5, § 296-128-4614, filed 5/26/71, effective 7/1/71.] Repealed by Order 77-32, filed 12/30/77. Later promulgation, see chapter 296-125 WAC.
- 296-128-465 Telephone and telegraph industry—Women and minors. [Industrial Welfare Order 12-63, filed 11/25/64; Minimum Wage and Welfare Order 53, filed 3/23/60.] Repealed by Order 77-32, filed 12/30/77. Later promulgation, see chapter 296-125 WAC.
- 296-128-470 Theatrical amusement and recreation industry—Women and minors. [Industrial Welfare Order 7-62, filed 11/25/64; Minimum Wage Order 45, filed 3/23/60.] Repealed by Order 77-32, filed 12/30/77. Later promulgation, see chapter 296-125 WAC.

RECORDKEEPING PROVISIONS

WAC 296-128-010 Records required. For all employees who are subject to RCW 49.46.020, employers shall be required to keep and preserve payroll or other records containing the following information and data with respect to each and every employee to whom said section of said act applies:

(1) Name in full, and on the same record, the employee's identifying symbol or number if such is used in place of name

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on any time, work, or payroll records. This shall be the same name as that used for Social Security record purposes;

(2) Home address;

(3) Occupation in which employed;

(4) Date of birth if under 18;

(5) Time of day and day of week on which the employee's workweek begins. If the employee is part of a workforce or employed in or by an establishment all of whose workers have a workweek beginning at the same time on the same day, a single notation of the time of the day and beginning day of the workweek for the whole workforce or establishment will suffice. If, however, any employee or group of employees has a workweek beginning and ending at a different time, a separate notation shall then be kept for that employee or group of employees;

(6) Hours worked each workday and total hours worked each workweek (for purposes of this section, a "workday" shall be any consecutive 24 hours);

(7) Total daily or weekly straight-time earnings or wages; that is, the total earnings or wages due for hours worked during the workday or workweek, including all earnings or wages due during any overtime worked, but exclusive of overtime excess compensation;

(8) Total overtime excess compensation for the workweek; that is, the excess compensation for overtime worked which amount is over and above all straight-time earnings or wages also earned during overtime worked;

(9) Total additions to or deductions from wages paid each pay period. Every employer making additions to or deductions from wages shall also maintain a record of the dates, amounts, and nature of the items which make up the total additions and deductions;

(10) Total wages paid each pay period;

(11) Date of payment and the pay period covered by payment;

(12) Employer may use symbols where names or figures are called for so long as such symbols are uniform and defined.

[Regulation 294.7.001 (part), filed 12/30/60.]

WAC 296-128-011 Special recordkeeping requirements. (1) In addition to the records required by WAC 296-128-010, employers who employ individuals as truck or bus drivers subject to the provisions of the Federal Motor Carrier Act shall maintain records indicating the base rate of pay, the overtime rate of pay, the hours worked by each employee for each type of work, and the formulas and projected work hours used to substantiate any deviation from payment on an hourly basis pursuant to WAC 296-128-012. The records shall indicate the period of time for which the base rate of pay and the overtime rate of pay are in effect.

For the purposes of this section and WAC 296-128-012, "base rate of pay" means the amount of compensation paid per hour or per unit of work in a workweek of forty hours or less. A base rate of pay shall be established in advance of the work performed and may be based on hours or work units such as mileage, performance of specified duties, or a specified percentage of the gross proceeds charged for specified work. A base rate of pay shall not be established that will result in compensation at less than the minimum wage pre-

scribed in RCW 49.46.020. "Overtime rate of pay" means the amount of compensation paid for hours worked within the state of Washington in excess of forty hours per week and shall be at least one and one-half times the base rate of pay.

(2) The records required by this section shall be made available by the employer at the request of the department. Any current or past employee may obtain copies of the formula, the base rate of pay, the overtime rate of pay, and that employee's records. Job applicants seeking employment by the employer as truck or bus drivers subject to the provisions of the Federal Motor Carrier Act, may obtain copies of the formula, the base rate of pay, and the overtime rate of pay.

[Statutory Authority: RCW 43.22.270, 49.46.130 and 1989 c 104. 89-22-120, § 296-128-011, filed 11/1/89, effective 12/2/89.]

WAC 296-128-012 Overtime for truck and bus drivers. (1)(a) The compensation system under which a truck or bus driver subject to the provisions of the Federal Motor Carrier Act is paid shall include overtime pay at least reasonably equivalent to that required by RCW 49.46.130 for working within the state of Washington in excess of forty hours a week. To meet this requirement, an employer may, with notice to a truck or bus driver subject to the provisions of the Federal Motor Carrier Act, establish a rate of pay that is not on an hourly basis and that includes in the rate of pay compensation for overtime. An employer shall substantiate any deviation from payment on an hourly basis to the satisfaction of the department by using the following formula or an alternative formula that, at a minimum, compensates hours worked within the state of Washington in excess of forty hours per week at an overtime rate of pay and distributes the projected overtime pay over the average number of hours projected to be worked. The following formula is recommended for establishing a uniform rate of pay to compensate work that is not paid on an hourly basis and for which compensation for overtime is included:

1. Define work unit first. E.g., miles, loading, unloading, other.
2.

Average number of work units	=	Average number of work units accomplished per week
<hr style="width: 100%;"/> per hour		<hr style="width: 100%;"/> Average number of hours projected to be worked per week
3. Weekly Base Rate = Number of units per hour x 40 hours x base rate of pay
4. Weekly Overtime rate = Number of units per hour x number of hours over 40 x overtime rate of pay
5. Total weekly pay = Weekly base rate plus weekly overtime rate
6. Uniform rate of pay =

Total weekly pay	=	Total work units
<hr style="width: 100%;"/>		<hr style="width: 100%;"/>

Example: A truck driver is paid on a mileage basis for a two hundred thirty mile trip performed about ten times a week. The base rate of pay is twenty cents a mile. The overtime rate of pay is thirty cents a mile. The average length of the trip is four and one-half hours.

1. $\frac{2300 \text{ mi.}}{\text{per week}} \div \frac{45 \text{ hours}}{\text{per week}} = \frac{51.1 \text{ miles}}{\text{per hour}}$
2. (a) $51.1 \text{ miles/hour} \times 40 \text{ hours} \times .20/\text{mile} = \408.80
 (b) $51.1 \text{ miles/hour} \times 5 \text{ hours} = 255.5 \text{ miles}$
 (c) $255.5 \text{ miles} \times .30/\text{mile} = \76.65
 (d) $\$408.80 \text{ plus } \$76.65 = \$485.45 \text{ divided by } 2300 \text{ miles} = 21.1 \text{ cents mile}$

(b) In using a formula to determine a rate of pay, the average number of hours projected to be worked and the average number of work units accomplished per week shall reflect the actual number of hours worked and work units projected to be accomplished by persons performing the same type of work over a representative time period within the past two years consisting of at least twenty-six consecutive weeks.

(c) The department may evaluate alternative rates of pay and formulas used by employers in order to determine whether the rates of pay established under this section result in the driver receiving compensation reasonably equivalent to one and one-half times the base rate of pay for actual hours worked within the state of Washington in excess of forty hours per week.

(2) Where an employee receives a different base rate of pay depending on the type of work performed, the rate that is paid or used for hours worked within the state of Washington in excess of forty hours per week shall be at least the overtime rate of pay for the type of work in which most hours were worked.

[Statutory Authority: RCW 43.22.270, 49.46.130 and 1989 c 104. 89-22-120, § 296-128-012, filed 11/1/89, effective 12/2/89.]

WAC 296-128-015 Definitions of workday and work-week. (1) A workweek is a fixed and regularly recurring period of 168 hours or seven consecutive 24-hour periods. It may begin on any day of the week and any hour of the day, and need not coincide with a calendar week.

(2) A workday is a fixed and regularly recurring period of 24 hours. It may begin at any hour of a calendar day and must begin at the same time each calendar day.

[Regulation 294.7.001 (part), filed 12/30/60.]

WAC 296-128-020 Term for keeping records. Unless otherwise specifically authorized by the director all records required under WAC 296-128-010 shall be kept for a period of at least three years.

[Regulation 294.7.001 (part), filed 12/30/60.]

WAC 296-128-025 Place for keeping records and availability for inspection. Each employer shall keep the records required by this regulation safe and accessible at the place or places of employment or at one or more established central recordkeeping offices where such records are customarily maintained. All such records shall be open at any time to inspection and transcription or copying by the director and his duly authorized representative and to the employee, upon request for that employee's work record, at any reasonable time.

[Statutory Authority: RCW 43.22.270, 49.12.020, 49.12.091, 49.12.050, 49.46.020 and 49.46.070. 89-22-016 (Order 89-16), § 296-128-025, filed 10/24/89, effective 11/24/89; Regulation 294.7.001 (part), filed 12/30/60.]

WAC 296-128-030 Petitions for exceptions. (1) **Submission of petitions for relief.** Any employer or group of employers who, due to peculiar conditions under which he or they must operate, desires authority to maintain records in a manner other than required in this regulation, or to be relieved of preserving certain records for the period specified in the regulation, may submit a written petition to the director setting forth the authority desired and the reasons therefor.

(2) **Action on petitions.** If, on review of the petition and after completion of any necessary investigation supplementary thereto, the director shall find that the authority prayed for, if granted, will not hamper or interfere with enforcement of the provisions of the act or any regulation or orders issued thereunder, he may then grant such authority but limited by such conditions as he may determine are requisite, and subject to subsequent revocation. Where the authority granted hereunder is sought to be revoked for failure to comply with the conditions determined by the director to be requisite to its existence, the employer or groups of employers involved shall be notified in writing of the facts constituting such failure and afforded an opportunity to achieve or demonstrate compliance.

(3) **Compliance after submission of petitions.** The submission of a petition or the delay of the director in acting upon such petition shall not relieve any employer or group of employers from any obligations to comply with all the requirements of the regulations in this part applicable to him or them. However the director shall give notice of the denial of any petition with due promptness.

[Regulation 294.7.001 (part), filed 12/30/60.]

WAC 296-128-035 Payment interval. All wages due shall be paid at no longer than monthly intervals to each employee on established regular pay days. To facilitate book-keeping, an employer may implement a regular payroll system in which wages from up to seven days before pay day may be withheld from the pay period covered and included in the next pay period.

[Statutory Authority: RCW 43.22.270, 49.12.020, 49.12.091, 49.12.050, 49.46.020 and 49.46.070. 89-22-016 (Order 89-16), § 296-128-035, filed 10/24/89, effective 11/24/89.]

HANDICAPPED WORKERS

WAC 296-128-050 Applicability of this regulation. This regulation is issued pursuant to RCW 49.46.060, Washington minimum wage and hour law, which authorized the director of the department of labor and industries, to the extent necessary in order to prevent curtailment of opportunities for employment, to issue special certificates for employment of individuals whose earning capacity is impaired by age or physical or mental deficiency or injury at wages lower than the minimum wage applicable under RCW 49.46.020. Such certificates shall be subject to the conditions prescribed in this regulation.

[§ 1, Regulation 294.6.005, filed 12/30/60.]

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WAC 296-128-055 Definition. "Handicapped worker" means an individual whose earning capacity is impaired by age or physical or mental deficiency or injury for the work he is to perform.

[§ 2, Regulation 294.6.005, filed 12/30/60.]

WAC 296-128-060 Application for certificate. (1) Application for a certificate authorizing the employment of handicapped workers shall be made upon forms made available by the director or his authorized representatives.

(2) The application shall set forth, among other things, the nature of the disability, a description of the occupation at which the handicapped worker is to be employed, and the wage the employer proposes to pay the handicapped worker per hour. The nature of the disability must be set out in detail.

(3) The application shall be signed jointly by the employer and the handicapped worker for whom such application is being made, except as otherwise authorized by the director or his authorized representative.

[§ 3, Regulation 294.6.005, filed 12/30/60.]

WAC 296-128-065 Conditions for granting a certificate. (1) If the application is in proper form and sets forth facts showing:

(a) A subminimum wage is necessary to prevent curtailment of the handicapped worker's opportunities for employment;

(b) The handicap impairs the earning capacity of the worker for the work he is to perform, a certificate may be issued.

(2) The director or his authorized representative may require the submission of additional information to that shown on the application and may require the handicapped worker to take a medical examination where it is deemed necessary in order to determine whether or not the issuance of a certificate is justified.

[§ 4, Regulation 294.6.005, filed 12/30/60.]

WAC 296-128-070 Issuance of certificate. If the application and other available information indicate that the requirements of this regulation are satisfied, the director or his authorized representative shall issue a certificate. Otherwise he shall deny a certificate. If issued, copies of the certificate shall be mailed to the employer and the handicapped worker and if denied, the employer and the handicapped worker shall be given written notice of the denial.

[§ 5, Regulation 294.6.005, filed 12/30/60.]

WAC 296-128-075 Terms of certificate. (1) A certificate shall specify, among other things, the name of the handicapped worker, the name of the employer, the occupation in which the handicapped worker is to be employed, the authorized subminimum wage rate and the period of time during which such wage rate may be paid.

(2) A certificate shall be effective for a period to be designated by the director or his authorized representative and a handicapped worker employed under such certificate may be paid subminimum wages only during the effective period of the certificate.

(3) The wage rate set in the certificate shall be fixed at a figure designed to reflect adequately the handicapped worker's earning capacity. No wage rate shall be fixed at less than 75 percent of the applicable minimum wage under RCW 49.46.020 unless, after investigation a lower rate appears to be clearly justified.

(4) Any money received by a handicapped worker by reason of any state or federal pension or compensation program for handicapped persons shall not be considered as offsetting any part of the wage or remuneration due the handicapped worker by the employer.

(5) The worker or trainee shall be paid not less than one and one-half times the regular rate for hours worked in excess of 40 in the workweek or 8 in the workday.

(6) The terms of any certificate, including the subminimum wage rate specified therein, may be amended by the director or his authorized representative upon written notice to the parties concerned, if the facts justify such amendment.

[§ 6, Regulation 294.6.005, filed 12/30/60.]

WAC 296-128-080 Renewal of certificate. Application for renewal of any certificate shall be filed in the same manner as an original application. If such application has been filed prior to the expiration date of the certificate, the certificate shall remain in effect until the application for renewal has been granted or denied.

[§ 7, Regulation 294.6.005, filed 12/30/60.]

WAC 296-128-085 Review. Any person aggrieved by any action of the director or his authorized representative taken pursuant to this regulation may, within 15 days after notice of such action has been mailed, file with the director a petition for review of the action complained of, setting forth grounds for seeking such review. If reasonable grounds exist, the director or his authorized representative may grant such review and to the extent deemed appropriate afford all interested persons an opportunity to be heard on such review.

[§ 8, Regulation 294.6.005, filed 12/30/60.]

WAC 296-128-090 Amendment of this regulation. Any person desiring revision of any of the terms of this regulation may submit in writing to the director a petition setting forth the changes desired and the reasons for proposing them. If the director believes that reasonable cause for amendment of this regulation is set forth he will schedule a hearing in accordance with RCW 49.46.080.

[§ 9, Regulation 294.6.005, filed 12/30/60.]

EMPLOYMENT OF LEARNERS

WAC 296-128-100 Authority. This regulation is promulgated in accordance with RCW 49.46.060.

[§ 1, Regulation 294.6.003, filed 3/23/60.]

WAC 296-128-105 Definitions. As used in this regulation:

(1) A "learner" is a worker whose total experience in an authorized learner occupation is less than the period of time

[Title 296 WAC—p. 1872]

allowed as a learning period for that occupation in a learner certificate issued pursuant to these regulations.

(2) An "experienced worker" is a worker whose total experience in an authorized learner occupation is at least equal to the period of time allowed as a learning period for that occupation in a learner certificate issued pursuant to these regulations.

(3) "Experienced worker available for employment" means an experienced worker residing within the area from which the employer customarily draws its labor supply or within a reasonable commuting distance of such area, and who is willing and able to accept employment with the employer; or an experienced worker residing outside of the area from which the employer customarily draws its labor supply, who has in fact made himself available for employment.

[§ 2, Regulation 294.6.003, filed 3/23/60.]

WAC 296-128-110 Application for learner certificate. (1) Whenever the employment of learners at wages lower than the minimum wage applicable under RCW 49.46.020 is believed necessary to prevent curtailment of opportunities for employment by a specified employer, an application for a certificate authorizing the employment of such learners at subminimum wage rates may be filed by the employer with the director of the department of labor and industries or his authorized representative.

(2) Application must be made on the official form provided by the department and furnish all information called for on said form.

(3) Separate application must be made with respect to each establishment or place of business operated by the applicant and in which he desires to employ learners at subminimum wage rates.

[§ 3, Regulation 294.6.003, filed 3/23/60.]

WAC 296-128-115 Procedure for action upon an application. (1) Upon receipt of an application for a learner certificate or renewal of such certificate the director or his authorized representative shall consider all relevant facts and, subject to the conditions specified in WAC 296-128-120, shall issue or deny a learner certificate or, in appropriate circumstances, provide an opportunity to interested parties to present their views on the application prior to granting or denying a learner certificate.

(2) If a learner certificate is granted, notice of such fact and the terms of the certificate shall be posted at the employer's place of business for 15 days after receipt thereof and any interested person may file with the director written requests for reconsideration or review. Such application should set forth the applicant's interest in the review and the reasons he seeks review.

(3) If a learner certificate is denied, notice of such denial shall be mailed to the employer and it shall be without prejudice to the subsequent filing of an application.

[§ 4, Regulation 294.6.003, filed 3/23/60.]

WAC 296-128-120 Conditions governing issuance of learner certificates. The following conditions shall govern

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the issuance of a special certificate authorizing the employment of learners at subminimum wage rates:

(1) An adequate supply of qualified experienced workers is not available for employment; the experienced workers presently employed in occupations in which learners are requested, are afforded an opportunity for full time employment; learners are available for employment; and the granting of a certificate is necessary to prevent curtailment of employment opportunities.

(2) Reasonable efforts have been made to obtain experienced workers, including the placement of an order with the employment security office of the state of Washington.

(3) The issuance of a learner certificate will not tend to create unfair competitive labor cost advantages nor have the effect of impairing or depressing wage or working standards established for experienced workers for work of a like or comparable character in the industry.

(4) Abnormal labor conditions such as a strike, lock-out or other similar condition do not exist at the place of business for which a learner certificate is requested.

(5) There are no serious outstanding violations of the provisions of learner certificates previously issued to the employer, nor have there been any serious violations of the Washington Minimum Wage and Hour Act which provide reasonable grounds to believe that the terms of a certificate may not be complied with.

(6) The occupation or occupations in which learners are to receive training require a sufficient degree of skill to necessitate an appreciable training period.

(7) Learners shall be afforded every reasonable opportunity for continued employment upon completion of the learning period.

(8) Unless otherwise specified in the learner certificate, a learning program shall not exceed 480 hours of employment, and the total hours worked in any establishment by learners shall not exceed 10 percent of the total hours normally worked by experienced workers in such establishment: Provided, That where less than 10 experienced workers are employed by an employer, a learner certificate may authorize the employment of learners for a maximum of 40 hours per week under a bona fide learner program.

[§ 5, Regulation 294.6.003, filed 3/23/60.]

WAC 296-128-125 Terms and conditions of employment under learner certificates. (1) A learner certificate, if issued, shall specify, among other things:

(a) The number or proportion of learners authorized to be employed on any one day;

(b) The occupations in which learners may be employed;

(c) The subminimum wage rates permitted for each learner occupation during the authorized learning period; which shall not be less than 85 percent of the minimum wage specified in RCW 49.46.020, as it may be amended, unless otherwise specified in the certificate;

(d) The learning period for each authorized learner occupation;

(e) The effective and expiration dates of the certificate.

(2) A learner certificate may be issued for a period of not longer than one year. A renewal certificate will not be issued

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without a clear showing that conditions set forth in WAC 296-128-120 still prevail.

(3) Learners hired pursuant to a learner certificate prior to the date on which such certificate expires may be continued in employment at the authorized subminimum wage rate for the duration of their authorized learning period even though the certificate expired before the learning period is completed.

(4) A copy of the learner certificate shall be posted by the employer during its effective period in a conspicuous place in the department where learners are to be employed.

(5) No learner shall be hired under a learner certificate if, at the time the employment begins, experienced workers capable of equaling the performance of a worker of minimum acceptable skill are available for employment.

(6) No learner shall be hired under a learner certificate while abnormal labor conditions exist such as a strike, lock-out, or other similar conditions in the place of business for which a learner certificate has been issued.

(7) The number of hours of previous employment in a learner occupation for which the learner has been hired must be deducted from the authorized learning period if within the three years immediately preceding the hiring of such learner he has been employed in the learner occupation for less than the total number of hours authorized as a learning period and shall also be deducted from the authorized learning period all hours spent in pertinent training in a vocational training school on the occupation for which the learner has been employed.

(8) No provision of any learner certificate will excuse noncompliance with higher standards applicable to learners which may be established under any other state law, federal law, or trade union agreement.

(9) Unless otherwise specified in the learner certificate a learning program shall not exceed 480 hours of employment and the total hours worked in any establishment by learners shall not exceed 10 percent of the total hours normally worked by experienced workers in such establishment: Provided, That where less than 10 experienced workers are employed by an employer a learner certificate may authorize the employment of learners for a maximum of 40 hours per week under a bona fide learner program.

[§ 6, Regulation 294.6.003, filed 3/23/60.]

WAC 296-128-130 Records to be kept by employers of learners. The director or his authorized representative may specify additional records to be kept by employers of learners as a condition to compliance with the learner certificate.

[§ 7, Regulation 294.6.003, filed 3/23/60.]

WAC 296-128-135 Amendment and revocation of learner certificate. The director may amend or revoke a learner certificate when it is necessary by reason of changes in these regulations, or where the employer has violated its terms, or where the certificate was obtained by misleading or false statements, or where changed conditions warrant it in the opinion of the director.

[§ 8, Regulation 294.6.003, filed 3/23/60.]

WAC 296-128-140 Supplemental regulations. (1)

Upon application of any person or persons, representing any industry or branch thereof, or upon his own motion, the director, if he deems it advisable, may, after appropriate and timely notice to interested parties, cause a hearing to be held to determine the need for employment of learners at wages lower than the minimum wage applicable under RCW 49.46.020 in order to prevent curtailment of employment opportunities in any industry or branch thereof; and if such need is found to exist, determine the occupations which require a learning period and the limitations as to wages, time, number, proportion, and length of learning period. Such hearing shall be held before the director or his duly authorized representative. Following such hearing the director may, by supplemental regulations, prescribe the conditions under which special certificates shall be issued for the employment of learners in such industry or branch thereof, if he finds that there is a need therefor to prevent curtailment of opportunities for employment.

(2) At such hearing the director may cause to be brought before him or his authorized representative any witness whose testimony he deems material to the subject matter before him.

[§ 9, Regulation 294.6.003, filed 3/23/60.]

WAC 296-128-145 Reconsideration and review. (1)

Any person aggrieved by the action of the director or his authorized representative denying or granting a learner certificate may within 15 days after mailing of notice of such action file a written request for reconsideration with the director.

(2) A request for a reconsideration shall be accompanied by a statement of the additional evidence which the applicant believes may materially affect the decision.

(3) A request for review shall be granted where reasonable grounds are set forth in the request and if such review is granted all interested persons shall be afforded an opportunity to be heard.

[§ 10, Regulation 294.6.003, filed 3/23/60.]

WAC 296-128-150 Procedure for amendment. The director may at any time upon his own motion or upon written request of any interested persons setting forth reasonable grounds therefor amend or revoke any of the terms of this regulation or of any supplemental regulations promulgated in accordance with WAC 296-128-140 after hearing as provided in RCW 49.46.080.

[§ 11, Regulation 294.6.003, filed 3/23/60.]

STUDENT LEARNERS**WAC 296-128-175 Applicability of the regulation.**

This regulation is issued in accordance with RCW 49.46.060, to provide for the employment under special certificates of student learners at wages less than the minimum provided in RCW 49.46.020, in order to prevent curtailment of opportunities for employment. Such certificates shall be subject to the terms and conditions hereinafter set forth.

[§ 1, Regulation 294.6.004, filed 3/23/60.]

[Title 296 WAC—p. 1874]

WAC 296-128-180 Definitions. (1)

A "student learner" is a student who is receiving instruction in an accredited school, college, or university, and who is employed on a part-time basis in a bona fide vocational training program, or in a job-training program established by an accredited school and approved by the director of the department of labor and industries.

(2) A "bona fide vocational training program" is one authorized and approved by the state board of vocational education and provides for part-time employment which may be scheduled for part of the workday or workweek, for alternating weeks or for other limited periods during the year, supplemented by and integrated with a definitely organized plan of instruction designed to teach technical knowledge or related industrial information given as a regular part of the student learner's course by an accredited school, college, or university.

[§ 2, Regulation 294.6.004, filed 3/23/60.]

WAC 296-128-185 Application for certificate. (1)

Whenever the employment of a student learner at wages lower than the minimum wage applicable under RCW 49.46.020 is believed necessary to prevent curtailment of opportunities for employment, an application for a special certificate authorizing the employment of such student learner at subminimum wages shall be filed by the employer with the director of the department of labor and industries or his authorized representative.

(2) Application shall be on forms furnished by the department of labor and industries and must be signed by the employer, an appropriate school official and the student learner. Such application shall, among other things, show: The nature of the training program; the total number of workers employed by the employer; the number and hourly wage rate of experienced workers employed in the occupation in which the student learner is to be trained; the hourly wage rate or progressive wage schedule which the employer proposes to pay the student learner; the age of the student learner; the period of employment training at subminimum wages; the number of hours of employment training a week; the number of hours of school instruction a week.

[§ 3, Regulation 294.6.004, filed 3/23/60.]

WAC 296-128-190 Procedure for action upon application. (1)

Upon receipt of application for the employment of a student learner the director or his authorized representative shall either issue a special certificate or deny the application. To the extent deemed necessary the director or his authorized representative may provide an opportunity to interested persons to be heard on the application prior to granting or denying it.

(2) If a special certificate is issued it shall be mailed to the employer and a copy of it shall be mailed to the school official who signs the application.

[§ 4, Regulation 294.6.004, filed 3/23/60.]

WAC 296-128-195 Conditions governing issuance of special student learner certificate. The following conditions must be satisfied before a special certificate may be

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issued authorizing employment of student learners at subminimum wages:

(1) Any training program under which the student learner will be employed must be a bona fide vocational training program as defined in WAC 296-128-180 or be a part of a job-training program established by the governing body of the school and approved by the director of the department of labor and industries.

(2) The employment of the student learner at subminimum wages must be necessary to prevent curtailment of opportunities for employment.

(3) The occupation for which the student learner is receiving preparatory training must require a sufficient degree of skill to necessitate a substantial learning period.

(4) The employment of a student learner must not have the effect of displacing a worker employed in the establishment in which the student learner is to be employed.

(5) The employment of the student learner at subminimum wages must not tend to impair or depress the wage rates or working standards established for experienced workers for work of a like or comparable nature.

(6) The issuance of such a certificate must not tend to prevent the development of apprenticeships or must not impair established apprenticeship standards in the occupation or industry involved.

[§ 5, Regulation 294.6.004, filed 3/23/60.]

WAC 296-128-200 Terms and conditions of special student learner certificate. (1) The special student learner certificate if issued shall specify among other things: (a) The name of the student learner; (b) the name and address of the employer; (c) the name of the school which provides the related school instruction; (d) the occupation in which the student is to be trained; (e) the maximum number of hours of employment training in any one week at a specified subminimum wage rate; (f) the number of hours per week in which the student is engaged in his school training program; (g) the effective and expiration dates of the certificate.

(2) The subminimum wage rate shall be not less than 75 percent of the minimum wage provided in RCW 49.46.020.

(3) Unless otherwise authorized by the director or his authorized representative the number of hours of employment training each week at subminimum wages pursuant to certificate, when added to the hours of school instruction shall not exceed 40 hours: Provided, however, That when school is not in session on any school day or school week, the student learner may work a number of hours in addition to the weekly number of hours of employment training authorized by the certificate, provided that the hours do not exceed 8 in such day or 40 in such week.

(4) Unless otherwise authorized by the director or his authorized representative the total number of hours worked by all student learners employed by an employer shall not exceed 10 percent of the total hours worked by all regular employees of said employer in the establishment in which such student learners are employed.

[§ 6, Regulation 294.6.004, filed 3/23/60.]

WAC 296-128-205 Term of special certificate. A special student learner certificate may be issued for a period not (2007 Ed.)

to exceed the length of one school year unless the director finds that a longer period is justified by extraordinary circumstances.

[§ 7, Regulation 294.6.004, filed 3/23/60.]

WAC 296-128-210 Review. Any person aggrieved by the action of the director or his authorized representative in denying or granting a special student learner certificate may within 15 days after the mailing of notice of such action file a written request for review which will be granted where such request sets forth reasonable grounds therefor. To the extent the director or his authorized representative deems it necessary he shall afford all persons interested in said review an opportunity to be heard.

[§ 8, Regulation 294.6.004, filed 3/23/60.]

WAC 296-128-215 Amendment of this regulation. Any person desiring revision of any of the terms of this regulation may submit in writing to the director a petition setting forth the changes desired and the reasons for proposing them. If the director believes that reasonable cause for amendment of this regulation is set forth he will schedule a hearing in accordance with RCW 49.46.080.

[§ 9, Regulation 294.6.004, filed 3/23/60.]

APPRENTICES

WAC 296-128-225 Employment of apprentices at subminimum wages. The director or his authorized representative, to the extent necessary to prevent curtailment of employment opportunities, shall issue special certificates to employers or apprenticeship committees as defined in RCW 49.04.040 authorizing the employment of apprentices in skilled trades at wages lower than the minimum wage applicable under RCW 49.46.020, subject to the limitations and conditions set forth in this regulation.

[§ 1, Regulation 294.6.002, filed 12/30/60.]

WAC 296-128-230 Definition of apprentice. The term "apprentice" shall mean a person at least 16 years of age who is covered by a written agreement registered with the Washington state apprenticeship council providing for not less than 4,000 hours of reasonably continuous employment for such person, and for his participation in an approved schedule of work experience through employment which should be supplemented by 144 hours per year of related technical instruction.

[§ 2, Regulation 294.6.002, filed 12/30/60.]

WAC 296-128-235 Registration of apprenticeship agreement. Before an apprentice may be employed at subminimum wages, the employer or apprenticeship committee shall have submitted an apprenticeship agreement for registration with the director of apprenticeship or the apprenticeship council of the department of labor and industries.

[§ 3, Regulation 294.6.002, filed 12/30/60.]

WAC 296-128-240 Procedure for issuing certificates authorizing employment of apprentices at subminimum wages. (1) Upon being informed by the director of apprenticeship that such apprenticeship agreement has been accepted for registration in accordance with RCW 49.04.030, and that such agreement calls for employment of apprentices at subminimum wages, the director, or his authorized representative, may issue a special certificate in accordance with WAC 296-128-225. Otherwise, he shall deny the special certificate.

(2) The special certificate, if issued, shall be mailed to the employer or apprenticeship committee and a copy shall be mailed to the apprentice. If the certificate is denied, the employer or apprenticeship committee will be so notified by mail.

(3) A special certificate will not be issued where there are serious outstanding violations involving an employer for whom a special certificate is being requested, or where there are any serious outstanding violations of a certificate previously issued, or where there have been any serious violations of the act which provide reasonable grounds to conclude that the terms of a certificate may not be complied with, if issued.

[§ 4, Regulation 294.6.002, filed 12/30/60.]

WAC 296-128-245 Terms of special certificate. (1) Each special certificate shall specify the conditions and limitations under which it is granted, including the name of the apprentice, the skilled trade in which he is to be employed, the subminimum wage rates and the periods of time during which such wage rates may be paid.

(2) The terms of any special certificate, including the wages specified therein may be amended for cause.

[§ 5, Regulation 294.6.002, filed 12/30/60.]

WAC 296-128-250 Hearing procedure. The director or his authorized representative may conduct an investigation, which may include a hearing, prior to issuing or denying an application for special certificate. To the extent he deems appropriate, the director, or his authorized representative, may provide an opportunity for other interested persons to be heard prior to granting or denying an apprentice certificate.

[§ 6, Regulation 294.6.002, filed 12/30/60.]

EMPLOYMENT OF STUDENT WORKERS

WAC 296-128-275 Applicability. The regulations hereinafter set forth are issued pursuant to RCW 49.46.060 to provide for the employment by educational institutions under special certificates of student workers as learners at wages lower than the minimum wage applicable under RCW 49.46.020. Such certificates shall be subject to the terms and conditions hereinafter set forth.

[§ 1, Regulation 294.6.001, filed 3/23/60.]

WAC 296-128-280 Definitions. As used in the regulations:

(1) A "student worker" is a student who is receiving instruction in a bona fide educational program in an educational institution and who is employed on a part-time basis by the educational institution from which the student is receiving

his instruction, for the purpose of enabling the student to defray part of his school expenses.

(2) "Department" means department of labor and industries.

(3) "Director" means director of department of labor and industries.

(4) "Supervisor" means supervisor of wage and hour division of the department of labor and industries.

[§ 2, Regulation 294.6.001, filed 3/23/60.]

WAC 296-128-285 Filing applications. Whenever the employment of student workers as learners at wages lower than the minimum wage applicable under RCW 49.46.020 is believed necessary to prevent curtailment of opportunities for employment in a specified educational institution, applications for special certificates authorizing the employment of such student workers as learners at subminimum wage rates may be filed by an appropriate official of the educational institution with the director, supervisor, or duly authorized representative of the wage and hour division of the department of labor and industries on official forms furnished by the department.

[§ 3, Regulation 294.6.001, filed 3/23/60.]

WAC 296-128-290 Issuing or denying certificates. Upon receipt of an application for the employment of student workers as learners, the director or his authorized representative shall issue or deny a special certificate authorizing employment of student workers. To the extent he deems appropriate, the director or his authorized representative may provide an opportunity to other interested persons to present data and views on the application prior to granting or denying a student worker certificate. If a student worker certificate is granted, it shall be mailed to the educational institution. If a student worker certificate is denied, notice of such denial shall be mailed to the educational institution and such denial shall be without prejudice to the filing of any subsequent application.

[§ 4, Regulation 294.6.001, filed 3/23/60.]

WAC 296-128-295 Conditions governing issuance of certificates. The following conditions shall govern the issuance of a special certificate authorizing the employment of student workers as learners by an educational institution at subminimum wage rates:

(1) The employment of the student workers at subminimum wages authorized by the certificate must be necessary to prevent curtailment of opportunities for employment in a specified educational institution.

(2) The issuance of the student worker certificate will not tend to create unfair competitive labor cost advantages nor have the effect of impairing or depressing wage or working standards established for experienced workers for work of a like or comparable character in the industry or community.

(3) The occupations to be filled by the student workers shall not be in the production of goods or services which would be sold in competition with privately owned businesses, nor in enterprises operated by the educational institution in competition with privately owned businesses.

(4) There have been no serious outstanding violations of the provisions of a student workers certificate previously issued to the educational institution, nor have there been any serious violations of the act which provide reasonable grounds to conclude that the terms of a student worker certificate may not be complied with, if issued.

[§ 5, Regulation 294.6.001, filed 3/23/60.]

WAC 296-128-300 Data required on certificate. The student worker certificate, if issued, shall specify, among other things:

- (1) The name and address of the educational institution employing the student workers;
- (2) The occupations in which the student workers are employed;
- (3) The number of student workers to be employed in any one day;
- (4) The authorized subminimum wage rate to be paid for each occupation;
- (5) The effective and expiration dates of the certificate.

[§ 6, Regulation 294.6.001, filed 3/23/60.]

WAC 296-128-305 Wage rate. The subminimum wage rate shall be not less than 75 percent of the minimum wage rate established by RCW 49.46.020, as it may be amended.

[§ 7, Regulation 294.6.001, filed 3/23/60.]

WAC 296-128-310 Records. In addition to any other records required by reason of the Washington Minimum Wage and Hour Act, the educational institution shall keep and maintain the following records specifically relating to student workers employed at subminimum wage rates:

- (1) Each student worker employed under a student worker certificate shall be designated as such on the payroll records kept by the institution, with each student worker's occupation and rate of pay being shown.
- (2) The records required including a copy of any special certificate issued, shall be kept and made available for inspection at all times for at least three years from the effective date of the certificate.

[§ 8, Regulation 294.6.001, filed 3/23/60.]

WAC 296-128-315 Amending and revoking certificates. The director of the department of labor and industries or his authorized representative may amend the provisions of a student worker certificate or he may revoke such certificate where it is shown to his satisfaction that its provisions have not been complied with.

[§ 9, Regulation 294.6.001, filed 3/23/60.]

WAC 296-128-400 Minors. (1) Applicability of order. This order shall apply to all minors employed in any industry or establishment in the state of Washington who are not expressly covered by another minimum wage and welfare order issued by the industrial welfare committee, except: Minors employed:

- (a) By common carrier railroads, sleeping car companies and freight or express companies subject to regulations of federal law.

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- (b) In agricultural labor.

- (c) In domestic work or chores performed in or about private residences.

- (d) In a vocational education, work experience or apprentice training program, when such program is properly supervised by school personnel or in accordance with written agreements and approved training schedules.

- (e) Directly by a telephone or telegraph company. This order shall not apply to newspaper vendors and newspaper carriers.

- (2) Definitions. For the purpose of this order:

- (a) A "minor" is a person of either sex under the age of eighteen years.

- (b) The term "employee" shall mean any minor who is employed to work in any industry or establishment in the state of Washington other than those expressly excluded by the foregoing paragraphs.

- (c) The term "employer" shall mean any person, association, corporation, co-partnership, or municipal corporation, engaged in any industry or establishment covered by this order and who (or which) employs any minor covered by this order.

- (d) The term "agricultural labor" shall mean employment.

- (i) On a farm, in the employ of any person in connection with the cultivating of the soil, or in connection with raising or harvesting any agricultural or horticultural commodity, including raising, shearing, feeding, caring for, training and management of livestock, bees, poultry, and furbearing animals and wildlife, or in the employ of the owner or tenant or other operator of a farm in connection with the operation, management, conservation, improvement, or maintenance of such farm and its tools and equipment; or

- (ii) In handling, planting, packing, packaging, grading, storing, or delivering to storage or to a market or to a carrier for transportation to market, any agricultural or horticultural commodity; but only if such service is performed as an incident to ordinary farming operations, or, in the case of fruits and vegetables in their raw and natural state, as an incident to the preparation of such fruits and vegetables for market. The provisions of this paragraph shall not be deemed to be applicable with respect to services performed in connection with commercial canning or commercial freezing or any other commercial processing which changes the character of the product from its raw and natural state or in connection with any agricultural or horticultural commodity after its delivery to a terminal market for distribution for consumption.

- (3) **Minimum wages.**

- (a) Minimum wages for all minors covered by this order, in the state of Washington shall be fifty cents per hour, regardless of the manner in which they are computed, except when another order (or orders) issued by the industrial welfare committee of the state of Washington provides a different minimum.

- (b) Whenever the administrator of the wage and hour division of the United States department of labor shall issue a certificate or certificates permitting the employment of learners, apprentices, messengers, and handicapped workers, at wage rates below the minimums herein fixed, the payment of wages in accordance with such permits shall not constitute a violation of this order.

(4) Hours.

(a) No minor shall be employed more than five hours without a meal period, on the employee's time, of at least thirty minutes.

(b) There shall be a rest period on the employer's time of ten minutes in every four-hour period of employment.

(c) Minors 14 and 15 years of age shall not be employed more than eight hours in any one day or six days in any one week. In computing the hours, one-half the total attendance hours in school shall be included. When school is not in session said minors shall not be employed more than forty hours in any one week.

(d) Minors 16 and 17 years of age shall not be employed more than eight hours in any one day or six days in any one week except in seasonal industries or in cases of emergency.

(e) Minors 14 and 15 years of age shall not be permitted to work after the hours of 7:00 p.m. or before 6 a.m. (pacific standard time), unless such employment is specifically authorized by the terms of this order, or by a permit specifically authorizing such employment issued by the industrial welfare committee of the state department of labor and industries, or its duly designated agent for the issuance of such permit.

(f) Minor boys 14 and 15 years of age may be issued permits to work in approved amusement industries not more than six days a week and not later than 7:00 p.m. (pacific standard time).

(g) Minors 16 and 17 years of age attending school may be employed after 7:00 p.m. (pacific standard time) for such hours not exceeding eight hours in any one day, and in such employments, as shall be specifically authorized in the individual permits issued to each minor, when upon investigation by the supervisor of women and minors in industry the conditions of employment are found not detrimental to the welfare of the minors or their school program. Such permits shall not be issued to girls unless satisfactory assurance is given the industrial welfare committee of the state department of labor and industries or its authorized agent that such minors are to be safely conveyed to their homes.

(5) Work permits and proof of age certificates.

(a) No minor shall be employed in any occupation covered by this order unless the employer has on file during the period of employment an unexpired work certificate or permit issued by the industrial welfare committee of the state department of labor and industries or its duly designated agent for the issuance of such permit. Such permit will not be issued except upon presentation of such evidence of age as is required by the industrial welfare committee.

(b) The issuance of a certificate or permit to work shall not authorize or excuse a violation of the state of Washington compulsory school attendance law, and shall not be issued to any minor legally required to attend school when school is in session except with the approval of the school authorities.

(6) Employment prohibited to all minors.

(a) No minor shall be employed in any occupation which the state department of labor and industries, through its industrial welfare committee, shall upon due notice and hearing find and by order declare to be particularly hazardous for the employment of minors under the ages specified in such order as detrimental to their health or morals.

(b) No minor shall be permitted to work in any of the following occupations:

(i) In any place where intoxicating liquor is served in the same room.

(ii) As driver or helper on state licensed motor vehicles in traffic congested areas.

(iii) In operating, tending or in dangerous proximity to dangerous power driven machinery.

(iv) In connection with the commercial operation of a 35 millimeter projection machine in a motion picture theatre or public building.

(v) To give signals to engineers in logging operations, or to receive and forward signals.

(vi) As an engineer, or within dangerous proximity to any cables, rigging or hazardous machinery.

(7) Employment prohibited to all minor girls. No minor girl shall be employed as:

(a) A shaker in a laundry, except on hand towels, handkerchiefs, napkins and similar small articles.

(b) In or in connection with a barber shop.

(c) A canvasser or peddler from house to house.

(d) An elevator operator.

(e) A clerk selling cigars or tobacco.

(f) A hotel messenger.

(g) A cabaret performer.

(h) In shooting galleries, penny arcades, bowling alleys.

(i) A public messenger (i.e., one whose services are available to the public for hire), except that girls 16 and 17 years of age will be permitted as building messengers in buildings within a radius of three blocks from one another.

(8) Employment entirely prohibited to minors under 16 years of age. Minors under sixteen years of age shall not be permitted to operate machinery in connection with processing or manufacturing plants.

(9) Employments prohibited to minors under 14 years of age. Minors under fourteen years of age shall not be employed in the following occupations unless such employment is specifically authorized by a permit issued by a judge of the superior court of the state of Washington:

(a) In stock room work in warehouses.

(b) As clerks in mercantile establishments.

(c) In offices as errand or office maintenance workers.

(d) In cafes as bus boys or dishwashers or helpers.

(e) As service station attendants.

(f) In other occupations which the industrial welfare committee, after due notice and hearing, shall have determined to be hazardous or detrimental to the welfare of the minor.

(10) Employment of minors 14 to 18 years of age. Minors 14 to 18 years of age may be employed in any occupation or industry except where such employment is expressly prohibited by this order or by statute of the state of Washington, provided that all the conditions and requirements of this order are complied with.

(11) Working conditions.

(a) All places where minors are employed shall be maintained in a safe and sanitary condition. The requirements for safety, sanitation and first aid shall be in conformity with the safety standards, rules and regulations as adopted by the division of safety of the department of labor and industries.

(b) Every room in which minors are employed shall be adequately heated and ventilated, and supplied with adequate

natural or artificial light in accordance with the general safety standards of the department of labor and industries.

(c) Each such room shall be provided with a smooth, tight floor, which can be kept clean and sanitary. Where wet processes are employed, the floors must be adequately drained so that there will be no unreasonable depth of liquid at any point. Where floors are wet, wooden racks or grating of an adequate height shall be provided at such points.

(d) Toilet rooms shall be provided for women and female minors sufficiently separated and isolated to insure privacy, which rooms shall be maintained in a sanitary condition, adequately lighted, heated and ventilated. A sufficient number of wash bowls or sink space shall be located either within the toilet room or adjacent to the toilet room. Any wash bowls or sinks not so located shall be installed in an approved location. Sufficient soap and either individual or paper towels shall be provided.

(e) Employers shall provide for adequate keeping of employee's outer clothing during working hours, and for their work clothes during nonworking hours. When the occupation requires a change of clothing, a suitable space adequately heated shall be provided where employees may make such change in privacy.

(f)(i) A suitable rest room for women and female minors shall be provided, and shall be properly ventilated and heated.

(ii) An adequate cloak room shall be provided.

(iii) An adequate lunch room furnished with tables and chairs, and facilities for heating water shall be provided: Provided, however, That where less than ten women and female minors are regularly employed, the supervisor of women and minors in industry, upon application and showing, may permit a modified compliance with the foregoing part of this section or any part of the same.

(g) No female minor shall be required or permitted to lift or carry an excessive weight.

(h) No female minor shall be knowingly employed for a period of four weeks before confinement for pregnancy or four weeks thereafter.

(12) **Records.** Records showing the name of minors employed, dates of employment, wages paid and the hours worked by them, shall be kept by the employer and available for inspection by the representatives of the industrial welfare committee of the state department of labor and industries at all reasonable times.

(13) **Posting of order.** The employer shall post a copy of this order in all places where minor workers are employed.

(14) **Separability.** If the application of any provision of this order, or any section, subsection, subdivision, sentence, clause, phrase, word or portion of this order shall be held invalid or unconstitutional, the remaining provisions thereof shall not be affected thereby but shall continue to be given full force and effect as if the part so held invalid or unconstitutional had not been included therein.

(15) **Penalties.** The supervisor of women and minors in industry shall investigate the complaint of any individual alleging that this order has been violated. Any person employing a minor in violation of this order shall upon conviction thereof be punished in accordance with the applicable laws of the state of Washington, RCW 49.12.170, now states as follows: "Any person employing a woman or minor for

whom a minimum wage or standard conditions of labor have been specified, at less than said minimum wage, or under conditions of labor prohibited by order of the committee; or violating any other of the provisions of RCW 49.12.010 through 49.12.180, shall be deemed guilty of a misdemeanor, and shall, upon conviction thereof, be punished by a fine of not less than twenty-five dollars nor more than one hundred dollars."

[Minimum Wage and Welfare Order No. 49, filed 3/23/60.]

WAC 296-128-500 Purpose. This regulation is adopted in accordance with chapter 49.46 RCW to define the terms "bona fide executive, administrative, or professional capacity or in the capacity of outside salesman," to define salary basis and to establish a procedure for computing overtime pay.

An employee who meets the definitions of executive, administrative, or professional and who is paid on a salary basis (except as provided for in WAC 296-128-530(5)) is considered exempt from the requirements of chapter 49.46 RCW. Payment of a salary does not in and of itself exempt a worker from the minimum wage and overtime requirements.

[Statutory Authority: RCW 49.46.005, 49.46.010, 49.46.120, and chapter 49.46 RCW. 03-03-109, § 296-128-500, filed 1/21/03, effective 2/21/03; Order 76-5, § 296-128-500, filed 2/24/76.]

WAC 296-128-510 Executive. The term "individual employed in a bona fide executive . . . capacity" in RCW 49.46.010 (5)(c) shall mean any employee:

(1) Whose primary duty consists of the management of the enterprise in which he is employed or of a customarily recognized department or subdivision thereof; and

(2) Who customarily and regularly directs the work of two or more other employees therein; and

(3) Who has the authority to hire or fire other employees or whose suggestions and recommendations as to the hiring or firing and as to the advancement and promotion or any other change of status of other employees will be given particular weight; and

(4) Who customarily and regularly exercises discretionary powers; and

(5) Who does not devote more than 20 percent, or, in the case of an employee of a retail or service establishment who does not devote as much as 40 percent, of his hours worked in the work week to activities which are not directly and closely related to the performance of the work described in paragraphs (1) through (4) of this section: Provided, That this paragraph (5) shall not apply in the case of an employee who is in sole charge of an independent establishment or a physically separated branch establishment, or who owns at least a 20 percent interest in the enterprise in which he is employed; and

(6) Who is compensated for his services on a salary basis at a rate of not less than \$155 per week exclusive of board, lodging, and other facilities: Provided, That an employee who is compensated on a salary rate of not less \$250 per week (exclusive of board, lodging, or other facilities), and whose primary duty consists of the management of the enterprise in which he is employed or of a customarily recognized department or subdivision thereof, and includes the customary and regular direction of the work of two or more other employees

therein, shall be deemed to meet all of the requirements of this section.

[Order 76-5, § 296-128-510, filed 2/24/76.]

WAC 296-128-520 Administrative. The term "individual employed in a bona fide . . . administrative . . . capacity" in RCW 49.46.010 (5)(c) shall mean any employee:

(1) Whose primary duty consists of the performance of office or non-manual field work directly related to management policies or general business operations of his employer or his employer's customers; or

(2) The performance of functions in the administration of a school system, or educational establishment or institution, or of a department or subdivision thereof, in work directly related to the academic instruction or training carried on therein; and

(3) Who customarily and regularly exercises discretion and independent judgment; and

(a) Who regularly and directly assists a proprietor, or an employee employed in a bona fide executive or administrative capacity (as such terms are defined in this regulation), or

(b) Who performs under only general supervision work along specialized or technical lines requiring special training, experience or knowledge, or

(c) Who executes under only general supervision special assignments and tasks; and

(4) Who does not devote more than 20 percent, or, in the case of an employee of a retail or service establishment who does not devote as much as 40 percent of his hours worked in the work week to activities which are not directly and closely related to the performance of the work described in paragraphs (1) through (3) of this section; and

(a) Who is compensated for his services on a salary or fee basis at a rate of not less than \$155 per week exclusive of board, lodging, or other facilities; or

(b) Who, in the case of academic administrative personnel is compensated for his services as required by paragraph (4)(a) of this section, or on a salary basis which is at least equal to the entrance salary for teachers in the school system, educational establishment, or institution by which he is employed: Provided, That an employee who is compensated on a salary or fee basis at a rate of not less than \$250 per week (exclusive of board, lodging, or other facilities), and whose primary duty consists of the performance of office or non-manual work directly related to management policies or general business operations of his employer or his employer's customers; which includes work requiring the exercise of discretion and independent judgment, shall be deemed to meet all of the requirements of this section.

[Order 76-5, § 296-128-520, filed 2/24/76.]

WAC 296-128-530 Professional. The term "individual employed in a bona fide . . . professional capacity" in RCW 49.46.010 (5)(c) shall mean any employee:

(1) Whose primary duty consists of the performance of work:

(a) Requiring knowledge of an advanced type in a field of science or learning customarily acquired by a prolonged course of specialized intellectual instruction and study, as distinguished from a general academic education and from an

apprenticeship, and from training in the performance of routine mental, manual, or physical processes, or

(b) Original and creative in character in a recognized field of artistic endeavor (as opposed to work which can be produced by a person endowed with general manual or intellectual ability and training), and the result of which depends primarily on the intention, imagination, or talent of the employee; or

(c) Teaching, tutoring, instructing, or lecturing in the activity of imparting knowledge and who is employed and engaged in this activity as a teacher in the school system or educational establishment or institution by which he is employed; and

(2) Whose work requires the consistent exercise of discretion and judgment in its performance; and

(3) Whose work is predominantly intellectual and varied in character (as opposed to routine mental, manual, mechanical or physical work) and is of such a character that the output produced or the result accomplished cannot be standardized in relation to a given period of time; and

(4) Who does not devote more than 20 percent of his hours worked in the work week to activities which are not an essential part of and necessarily incident to the work described in paragraphs (1) through (3) of this section; and

(5) Who is compensated for his services on a salary or fee basis at a rate of not less than \$170 per week exclusive of board, lodging, or facilities: Provided, That this paragraph (5) shall not apply in the case of an employee who is the holder of a valid license or certificate permitting the practice of law, medicine, or dentistry and who is actually engaged in the practice thereof: Provided, That an employee who is compensated on a salary or fee basis at a rate of not less than \$250 per week (exclusive of board, lodging, or other facilities), and whose primary duty consists of the performance of work either requiring knowledge of an advanced type in a field of science or learning, which includes work requiring the consistent exercise of discretion and judgment, or requiring invention, imagination, or talent in a recognized field of artistic endeavor, shall be deemed to meet all of the requirements of this section.

[Order 76-5, § 296-128-530, filed 2/24/76.]

WAC 296-128-532 Deductions for salaried, exempt employees. (1) **When does this section apply?** This section applies to any employee who is paid on a salary basis and who meets the definitions of executive, administrative, or professional.

(2) **What does salary basis mean?** Salary is where an employee regularly receives for each pay period of one week or longer (but not to exceed one month) a predetermined monetary amount (the salary) consisting of all or part of his or her compensation, which amount will not be less than required to be paid pursuant to WAC 296-128-510 through 296-128-530. The salary shall not be subject to deduction because of variations in the quantity or quality of the work performed, except as provided in this section. Under RCW 49.46.130 (2)(a), salaried employees may receive additional compensation or paid time off and still be considered exempt.

(3) When are deductions from salary allowed?

(a) If the employee performs no work in a particular week, regardless of the circumstances, the employer may deduct for the entire week.

(b) When the employee takes at least a whole day off for personal reasons other than sickness or accident, the employer may deduct in full day increments.

(c) Deductions for absences due to sickness or disability may be made in full day increments if the deduction is made according to the employer's bona fide plan, policy or practice of providing paid sick and disability leave (other than industrial accidents or disability).

(i) Deductions are permitted when either leave is exhausted or the employee has not yet qualified under the plan.

(ii) Deductions are permitted even if an employee receives compensation under that plan or under workers' compensation laws.

(d) When an employee is eligible for the federal Family and Medical Leave Act 29 U.S.C. Sec. 2611 et seq., deductions may be made for partial day absences due to leave taken according to that law and the applicable provisions in chapter 49.78 RCW.

(e) In the first and final week of employment, an employee's salary may be prorated for the actual days worked.

(f) Deductions are allowed for disciplinary absences that are imposed for violations of safety rules of major significance. This includes only those relating to the prevention of serious danger to the plant, the public, or other employees, such as rules prohibiting smoking in explosive plants or around hazardous or other flammable materials.

(g) Deductions are allowed when authorized under RCW 49.48.010, 49.52.060, or WAC 296-126-025.

(4) What are improper deductions from salary?

(a) Deductions are not permitted for partial days of work, except as permitted by subsection (3)(d) of this section or by WAC 296-128-533.

(b) Deductions are not permitted for lack of work for any amount of time less than a full week.

(c) Deductions are not permitted when the employee participates in jury duty, attendance as a witness, or temporary military leave if the employee performs any work during that week. The employer may, however, offset any amounts received by an employee as jury or witness fees or military pay.

(d) Deductions are not permitted for absences due to sickness or disability if the employer does not have a bona fide plan, policy or practice in place for sick or disability leave.

(e) Any other deductions not allowed under subsection (3) of this section.

(5) Is a "window of correction" permitted? A limited window of correction will be permitted when an improper deduction is shown to be infrequent and inadvertent and the employer immediately begins taking corrective steps to promptly resolve the improper deduction when brought to the attention of the supervisor or other appropriate representative of the employer. Such corrections will be allowed only to the extent that the deduction is not due to lack of work or part of a pattern of the same or substantially similar deductions.

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(6) What deductions may be made from leave banks?

(a) Deductions may be made from compensatory time in any increment.

(b) Deductions may be made from bona fide leave banks in partial or full day increments. However, partial day deductions may be made only on the express or implied request of the employee for time off from work. Leave bank deductions may not be made for less than one hour.

A "bona fide leave bank" is a benefit provided to employees in the case of absence from work due to sickness or personal time off, including vacation. It must be in writing and contained in contract or agreement, or in a written policy that is distributed to employees. A leave bank policy, or a leave bank provision in a contract or agreement, is not "bona fide" if it is used as a subterfuge to circumvent or evade the requirements of this regulation.

(c) When leave banks are exhausted, deductions from salary may not be made, except as permitted in subsection (3) of this section.

[Statutory Authority: RCW 49.46.005, 49.46.010, 49.46.120, and chapter 49.46 RCW. 03-03-109, § 296-128-532, filed 1/21/03, effective 2/21/03.]

WAC 296-128-533 Public employees. (1) How do the provisions specified in WAC 296-128-532 affect public employees? WAC 296-128-532 (1) through (5) is applicable to public employees, except that deductions from salary or leave banks are permitted in the following additional circumstances.

(a) Deductions from salary for partial day absences: A public employee who otherwise meets the requirements of WAC 296-128-532 will not be disqualified from the executive, administrative, or professional exemptions on the basis that such public employee is paid according to a pay system that:

(i) Is established by statute, ordinance, or regulation, or by a policy or practice established according to principles of public accountability, under which the public employee accrues sick or personal leave (annual, vacation, etc.); and

(ii) Permits the public employee's pay to be reduced or the public employee to be placed on leave without pay for absences for personal reasons or because of illness or injury of less than one work day when accrued leave is not used by a public employee.

(b) Deductions from leave banks: Deductions may be made from a public employee's accrued leave banks in any increment in accordance with any statute, ordinance, or regulation, or by a policy or practice established according to principles of public accountability.

(c) Deductions for furlough: Deductions from the salary of a public employee for absences where authorized by law due to a budget-required leave of absence will not disqualify the public employee from being paid on a "salary basis" except in the workweek in that the absence occurs and for which the public employee's pay is accordingly reduced.

(2) What does "public employee" mean? Public employee means an employee directly employed by a county, incorporated city or town, municipal corporation, state agency, institution of higher education, political subdivision or other public agency and includes any department, bureau, office, board, commission or institution of such public entities.

[Title 296 WAC—p. 1881]

[Statutory Authority: RCW 49.46.005, 49.46.010, 49.46.120, and chapter 49.46 RCW. 03-03-109, § 296-128-533, filed 1/21/03, effective 2/21/03.]

WAC 296-128-535 Are professional computer employees exempt from the Washington Minimum Wage Act? (1) Any employee who is a computer system analyst, computer programmer, software engineer, software developer or other similarly skilled worker will be considered a "professional employee" and will be exempt from the minimum wage and overtime provisions of the Washington Minimum Wage Act if:

(a) Their primary duty is of one of the following:

(i) Applying systems analysis techniques and procedures to determine hardware, software, or system functional specifications for any user of such services; or

(ii) Following user or system design specifications to design, develop, document, analyze, create, test or modify any computer system, application or program, including prototypes; or

(iii) Designing, documenting, testing, creating or modifying computer systems, applications or programs for machine operation systems; or

(iv) Any combination of the above primary duties whose performance requires the same skill level; and

(b) Their rate of pay is at least \$27.63 per hour.

(2) **This professional exemption only applies to** highly skilled employees who:

(a) Possess a high degree of theoretical knowledge and understanding of computer system analysis, programming and software engineering; and

(b) Have the ability to practically apply that theoretical knowledge and understanding to highly specialized computer fields; and

(c) Generally attain the necessary level of expertise and skill to qualify for an exemption through a combination of education and experience in the field; and

(d) Consistently exercise discretion and judgment in the application of their special knowledge as opposed to performing purely mechanical or routine tasks; and

(e) Engage in work that is predominantly intellectual and inherently varied in character as opposed to work that is routinely mental, manual, mechanical, or physical.

(3) While many employees who qualify for this exemption hold a bachelor's or higher degree, **no degree is required for this exemption.**

(4) This professional exemption **does not apply to:**

(a) Trainees or employees in entry level positions learning to become proficient in computer systems analysis, programming and software engineering; or

(b) Employees in computer systems analysis, programming and software engineering positions who have not attained a level of skill and expertise which allows them to generally work independently and without close supervision; or

(c) Employees engaged in the operation of computers; or

(d) Employees engaged in the manufacture, repair or maintenance of computer hardware and related equipment; or

(e) Employees covered by a collective bargaining agreement.

[Statutory Authority: RCW 49.46.010 (5)(c). 98-02-027, § 296-128-535, filed 12/31/97, effective 2/1/98.]

[Title 296 WAC—p. 1882]

WAC 296-128-540 Outside salesman. The term "individual employed in the capacity of outside salesman" in RCW 49.46.010 (5)(c) shall mean any employee:

(1) Who is employed for the purpose of and who is customarily and regularly engaged away from his employer's place or places of business, as well as on the premises (where the employee regulates his own hours and the employer has no control over the total number of hours worked) in the following alternative activities:

(a) In making sales; including any sale, exchange, contract to sell, consignment for sale, shipment for sale or other disposition; or

(b) In obtaining orders or contracts for services or for the use of facilities for which a consideration will be paid by the client or customer; or

(c) In demonstrating products or equipment for sale; or

(d) In the sale of services and performance of the service sold when the compensation to the employee is computed on a commission basis; and

(2) Whose hours of work of a nature other than that described in (1)(a), (b), (c) and (d) of this section do not exceed 20 percent of the hours worked in the work week by nonexempt employees of the employer: Provided, That work performed incidental to and in conjunction with the employee's own outside sales or solicitations, including incidental deliveries and collections, shall not be regarded as nonexempt work; and

(3) Who is compensated by the employer on a guaranteed salary, commission or fee basis and who is advised of his status as "outside salesman."

[Order 76-5, § 296-128-540, filed 2/24/76.]

WAC 296-128-550 Regular rate of pay. The regular rate of pay shall be the hourly rate at which the employee is being paid, but may not be less than the established minimum wage rate. Employees who are compensated on a salary, commission, piece rate or percentage basis, rather than an hourly wage rate, unless specifically exempt, are entitled to one and one-half times the regular rate of pay for all hours worked in excess of 40 per week. The overtime may be paid at one and one-half times the piecework rate during the overtime period, or the regular rate of pay may be determined by dividing the amount of compensation received per week by the total number of hours worked during that week. The employee is entitled to one and one-half times the regular rate arrived at for all hours worked in excess of 40 per week.

[Order 76-5, § 296-128-550, filed 2/24/76.]

WAC 296-128-560 Compensating time off in lieu of overtime pay. The provisions of chapter 49.46 RCW requiring one and one-half times the regular rate of pay for hours worked in excess of 40 per week does not apply to any person who requests compensating time off in lieu of overtime pay. Therefore, compensating time may be as agreed upon by the employer and the individual employee at the request of the employee, but may not be imposed by the employer in lieu of overtime pay upon any employee who has not so requested such compensating time off.

[Order 76-5, § 296-128-560, filed 2/24/76.]

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Chapter 296-130 WAC

FAMILY CARE

WAC

296-130-010	Purpose.
296-130-020	Definitions.
296-130-030	Employee rights.
296-130-035	Prohibited action.
296-130-040	Employee complaints.
296-130-050	Posting.
296-130-060	Notices of infraction.
296-130-065	Service on employers.
296-130-070	Appeal of infraction notice.
296-130-080	Penalty assessment.
296-130-100	Collective bargaining not impaired.

DISPOSITION OF SECTIONS FORMERLY CODIFIED IN THIS CHAPTER

296-130-500	Collective bargaining not impaired. [Statutory Authority: RCW 43.22.270 and 1988 c 236. 88-18-044 (Order 88-20), § 296-130-500, filed 8/31/88.] Repealed by 03-03-010, filed 1/6/03, effective 1/6/03. Statutory Authority: RCW 49.12.033, 49.12.280, 49.12.285, 43.22.270, 2002 c 243, and chapters 49.12 and 43.22 RCW. Later promulgation, see WAC 296-130-100.
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WAC 296-130-010 Purpose. It is in the public interest for employers to accommodate employees by providing reasonable leaves from work for family reasons. This chapter serves to establish a minimum standard allowing an employee to use the employee's sick leave or other paid time off to care for a sick family member.

[Statutory Authority: RCW 49.12.033, 49.12.280, 49.12.285, 43.22.270, 2002 c 243, and chapters 49.12 and 43.22 RCW. 03-03-010, § 296-130-010, filed 1/6/03, effective 1/6/03. Statutory Authority: RCW 43.22.270 and 1988 c 236. 88-18-044 (Order 88-20), § 296-130-010, filed 8/31/88.]

WAC 296-130-020 Definitions. (1) "Employer" means any person, firm, corporation, partnership, business trust, legal representative, or other business entity which engages in any business, industry, profession, or activity in this state and employs one or more employees. Employer also includes the state, any state institution, any state agency, political subdivisions of the state, and any municipal corporation or quasi-municipal corporation.

(2) "Employee" means a worker who is employed in the business of an employer. "Employee," for the purposes of this chapter, also includes workers performing in an executive, administrative, professional, or outside sales capacity.

(3) "Employ" means to engage, suffer, or permit to work.

(4) "Child" means a biological, adopted, or foster child, a stepchild, a legal ward, or a child of a person standing *in loco parentis* who is:

(a) Under eighteen years of age; or

(b) Eighteen years of age or older and incapable of self-care because of a mental or physical disability.

(5) "Grandparent" means a parent of a parent of an employee.

(6) "Parent" means a biological or adoptive parent of an employee or an individual who stood *in loco parentis* to an employee when the employee was a child.

(7) "Parent-in-law" means a parent of the spouse of an employee.

(8) "Sick leave or other paid time off" means time allowed under the terms of an appropriate collective bargaining agreement or employer policy, as applicable, to an

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employee for illness, vacation, and personal holiday. If paid time is not allowed to an employee for illness with a sick leave or pay benefit, "sick leave or other paid time off" also means time allowed under the terms of an appropriate state law, collective bargaining agreement, or employer policy, as applicable, to an employee for disability. A disability plan, fund, program or practice is excluded if it is covered by the Employee Retirement Income Security Act (ERISA) of 1974, 29 U.S.C. Sec. 1001 et seq.; and those established or maintained through the purchase of insurance.

(9) "Spouse" means a husband or wife, as the case may be.

(10) "Health condition that requires treatment or supervision" includes:

(a) Any medical condition requiring treatment or medication that the child cannot self administer;

(b) Any medical or mental health condition which would endanger the child's safety or recovery without the presence of a parent or guardian; or

(c) Any condition warranting treatment or preventive health care such as physical, dental, optical or immunization services, when a parent must be present to authorize and when sick leave may otherwise be used for the employee's preventive health care.

(11) "Serious health condition" means an illness, injury, impairment, or physical or mental condition that involves any period of incapacity or treatment connected with inpatient care (i.e., an overnight stay) in a hospital, hospice, or residential medical care facility, and any period of incapacity or subsequent treatment or recovery in connection with such inpatient care; or that involves continuing treatment by or under the supervision of a health care provider or a provider of health care services and which includes any period of incapacity (i.e., inability to work, attend school or perform other regular daily activities).

(12) "Emergency condition" means a health condition that is a sudden, generally unexpected occurrence or set of circumstances related to one's health demanding immediate action, and is typically very short term in nature.

(13) "Incapable of self-care" means that the individual requires active assistance or supervision to provide daily self-care in several of the "activities of daily living" (ADLs) or "instrumental activities of daily living" (IADLs). Activities of daily living include adaptive activities such as caring appropriately for one's grooming and hygiene, bathing, dressing and eating. Instrumental activities of daily living include cooking, cleaning, shopping, taking public transportation, paying bills, maintaining a residence, using telephones and directories, using a post office, etc.

(14) "Physical or mental disability" means a physical or mental impairment that limits one or more activities of daily living or instrumental activities of daily living.

(15) "Infraction" means an alleged violation of RCW 49.12.270 through 49.12.295 as cited by the department.

(16) "Administrative law judge" means any person appointed by the chief administrative law judge, as defined in RCW 34.12.020(2) to preside at contested cases convened under RCW 49.12.270 through 49.12.295.

(17) "Department" means the department of labor and industries.

[Statutory Authority: Chapter 49.12 RCW and 2005 c 499. 06-09-070, § 296-130-020, filed 4/18/06, effective 6/1/06. Statutory Authority: RCW 49.12.033, 49.12.280, 49.12.285, 43.22.270, 2002 c 243, and chapters 49.12 and 43.22 RCW. 03-03-010, § 296-130-020, filed 1/6/03, effective 1/6/03. Statutory Authority: RCW 43.22.270 and 1988 c 236. 88-18-044 (Order 88-20), § 296-130-020, filed 8/31/88.]

WAC 296-130-030 Employee rights. (1) If, under the terms of a collective bargaining agreement or employer policy applicable to an employee, the employee is entitled to sick leave or other paid time off, then an employer must allow an employee to use any or all of the employee's choice of sick leave or other paid time off to care for:

(a) A child of the employee with a health condition as defined in WAC 296-130-020(10); or

(b) A spouse, parent, parent-in-law, or grandparent of the employee who has a serious health condition or emergency condition, also defined in WAC 296-130-020 (11) and (12).

(2) An employee may not take leave until it has been earned. The employee taking leave under the circumstances described in this section must comply with the terms of the collective bargaining agreement or employer policy applicable to the leave, except for any terms relating to the choice of leave. Use of leave other than sick leave or other paid time off to care for a child, spouse, parent, parent-in-law, or grandparent under the circumstances described in this section shall be governed by the terms of the appropriate collective bargaining agreement or employer policy, as applicable.

Note: Many employers combine paid leave categories such as sick leave and vacation leave, often described as "paid time off" or PTO. Such PTO allows employees the choice as to their use of this leave, thereby maintaining the intent of this chapter. In addition, employers may require employees to use PTO (provided it may be used for any purpose) as a prerequisite to using leave designated for a specific purpose, such as an extended illness leave, without violating this chapter, provided other leave is available for employees to use to care for sick family members on the same terms that it is available for an employee's health condition.

[Statutory Authority: RCW 49.12.033, 49.12.280, 49.12.285, 43.22.270, 2002 c 243, and chapters 49.12 and 43.22 RCW. 03-03-010, § 296-130-030, filed 1/6/03, effective 1/6/03. Statutory Authority: RCW 43.22.270 and 1988 c 236. 88-18-044 (Order 88-20), § 296-130-030, filed 8/31/88.]

WAC 296-130-035 Prohibited action. An employer must not discharge, threaten to discharge, demote, suspend, discipline, or otherwise discriminate against an employee because the employee:

(1) Has exercised, or attempted to exercise, any right provided under RCW 49.12.270 through 49.12.295; or

(2) Has filed a complaint, testified, or assisted in any proceeding under RCW 49.12.270 through 49.12.295.

[Statutory Authority: RCW 49.12.033, 49.12.280, 49.12.285, 43.22.270, 2002 c 243, and chapters 49.12 and 43.22 RCW. 03-03-010, § 296-130-035, filed 1/6/03, effective 1/6/03. Statutory Authority: RCW 43.22.270 and 1988 c 236. 88-23-117 (Order 88-29), § 296-130-035, filed 11/23/88.]

WAC 296-130-040 Employee complaints. (1) An employee who believes that his or her employer has not complied with RCW 49.12.270 through 49.12.295, or this chapter, may file a complaint with the department within six months of the alleged violation. The complaint should contain the following:

(a) The name and address of the employee making the complaint;

[Title 296 WAC—p. 1884]

(b) The name, address, and telephone number of the employer against whom the complaint is made; and

(c) A statement of the specific fact which constitutes the alleged violation, including the date(s) on which the alleged violation occurred.

(2) Upon receipt of a complaint, the department will forward written notice of the complaint to the employer, along with a warning of prohibited actions as stated in WAC 296-130-035.

(3) The department may investigate any complaint it deems appropriate. If the department determines that a violation of this chapter has occurred, it may issue a notice of infraction pursuant to WAC 296-130-060.

[Statutory Authority: RCW 49.12.033, 49.12.280, 49.12.285, 43.22.270, 2002 c 243, and chapters 49.12 and 43.22 RCW. 03-03-010, § 296-130-040, filed 1/6/03, effective 1/6/03. Statutory Authority: RCW 43.22.270 and 1988 c 236. 88-18-044 (Order 88-20), § 296-130-040, filed 8/31/88.]

WAC 296-130-050 Posting. (1) The department will furnish each employer a poster describing an employee's rights and an employer's obligations provided in this chapter.

(2) The employer must keep posted a current edition department poster stipulating the provisions of this chapter. The employer must display this poster in a conspicuous place.

(3) The employer must post its leave policies, if any, in a conspicuous place accessible to the employees at the employer's place of business.

(4) The posting requirement for employees whose leave policies are specified by individual contracts may be satisfied by stating that leave for such employees will be governed by the terms of such contracts.

(5) Employers with informal leave policies which are established on a case-by-case basis may satisfy the posting requirement by posting a statement explaining that policy.

[Statutory Authority: RCW 49.12.033, 49.12.280, 49.12.285, 43.22.270, 2002 c 243, and chapters 49.12 and 43.22 RCW. 03-03-010, § 296-130-050, filed 1/6/03, effective 1/6/03. Statutory Authority: RCW 43.22.270 and 1988 c 236. 88-18-044 (Order 88-20), § 296-130-050, filed 8/31/88.]

WAC 296-130-060 Notices of infraction. The department may issue a notice of infraction to an employer who violates RCW 49.12.270 through 49.12.295. The employment standards supervisor will direct that notices of infraction contain the following when issued:

(1) A statement that the notice represents a determination that the infraction has been committed by the employer named in the notice and that the determination will be final unless contested;

(2) A statement that the infraction is a noncriminal offense for which imprisonment will not be imposed as a sanction;

(3) A statement of the specific violation which necessitated issuance of the infraction;

(4) A statement of the penalty involved if the infraction is established;

(5) A statement informing the employer of the right to a hearing conducted pursuant to chapter 34.05 RCW if requested within twenty days of issuance of the infraction;

(6) A statement that at any hearing to contest the notice of infraction the state has the burden of proving, by a prepon-

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derance of the evidence, that the infraction was committed, and that the employer may subpoena witnesses including the agent that issued the notice of infraction;

(7) If a notice of infraction is personally served upon a supervisory or managerial employee of a firm or corporation, the department will within ten days of service send a copy of the notice by certified mail to the employer; and

(8) Constructive service may be made by certified mail directed to the employer named in the notice of infraction.

[Statutory Authority: RCW 49.12.033, 49.12.280, 49.12.285, 43.22.270, 2002 c 243, and chapters 49.12 and 43.22 RCW. 03-03-010, § 296-130-060, filed 1/6/03, effective 1/6/03. Statutory Authority: RCW 43.22.270 and 1988 c 236. 88-18-044 (Order 88-20), § 296-130-060, filed 8/31/88.]

WAC 296-130-065 Service on employers. (1) If an employer is a corporation or a partnership, the department is not required to serve the employer personally. In such a case, if no officer or partner of a violating employer is present, the department may issue a notice of infraction to any supervisor or managerial employee.

(2) If the department serves a notice of infraction on a supervisory or managerial employee, and not on an officer, or partner of the employer, the department will mail by certified mail a copy of the notice of infraction to the employer or registered agent of the company. The department will mail a second copy by ordinary mail.

[Statutory Authority: RCW 49.12.033, 49.12.280, 49.12.285, 43.22.270, 2002 c 243, and chapters 49.12 and 43.22 RCW. 03-03-010, § 296-130-065, filed 1/6/03, effective 1/6/03. Statutory Authority: RCW 43.22.270 and 1988 c 236. 88-18-044 (Order 88-20), § 296-130-065, filed 8/31/88.]

WAC 296-130-070 Appeal of infraction notice. (1) If an employer desires to contest the notice of infraction issued, the employer will file two copies of a notice of appeal with the department at the office designated on the notice of infraction, within twenty days of issuance of the infraction.

(2) The department must:

(a) Conduct a hearing in accordance with chapter 34.05 RCW and chapter 10-08 WAC; and

(b) Notify the employee who filed the initial complaint that resulted in the notice of infraction.

(3) Employers may appear before the administrative law judge through counsel, or may represent themselves. The department must be represented by the office of the attorney general.

(4) All relevant evidence shall be admissible in a hearing convened pursuant to RCW 49.12.270 through 49.12.295. Admission of evidence is subject to the Administrative Procedure Act, chapter 34.05 RCW.

(5) The administrative law judge will issue a proposed decision that includes findings of fact, conclusions of law, and if appropriate, any legal penalty. The proposed decision will be served by certified mail or personally on the employer and the department. The employer or department may appeal to the director within thirty days after the date of issuance of the proposed decision. If none of the parties appeals within thirty days, the proposed decision may not be appealed either to the director or the courts.

(6) An appellant must file with the director an original and four copies of its notice of appeal. The notice of appeal must specify which findings and conclusions are erroneous.

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The appellant must attach to the notice the written arguments supporting its appeal.

The appellant must serve a copy of the notice of appeal and the arguments on the other parties. The respondent parties must file with the director their written arguments within thirty days after the date the notice of appeal and the arguments were served upon them.

(7) The director or his/her designee will review the proposed decision in accordance with the Administrative Procedure Act, chapter 34.05 RCW. The director may: Allow the parties to present oral arguments as well as the written arguments; require the parties to specify the portions of the record on which the parties rely; require the parties to submit additional information by affidavit or certificate; remand the matter to the administrative law judge for further proceedings; and require a departmental employee to prepare a summary of the record for the director to review. The director shall issue a final decision that can affirm, modify, or reverse the proposed decision.

(8) The director or his/her designee will serve the final decision on all parties. Any aggrieved party may appeal the final decision to superior court pursuant to the Administrative Procedure Act, chapter 34.05 RCW unless the final decision affirms an unappealed proposed decision. If no party appeals within twenty days, the director's decision is conclusive and binding on all parties.

[Statutory Authority: RCW 49.12.033, 49.12.280, 49.12.285, 43.22.270, 2002 c 243, and chapters 49.12 and 43.22 RCW. 03-03-010, § 296-130-070, filed 1/6/03, effective 1/6/03. Statutory Authority: RCW 43.22.270 and 1988 c 236. 88-18-044 (Order 88-20), § 296-130-070, filed 8/31/88.]

WAC 296-130-080 Penalty assessment. An employer found to have committed an infraction under RCW 49.12.270 through 49.12.295 may be assessed the maximum penalty of a fine of two hundred dollars for the first noncompliance violation. An employer that continues to violate the terms of the statute may be subject to a fine not to exceed one thousand dollars for each violation.

[Statutory Authority: RCW 49.12.033, 49.12.280, 49.12.285, 43.22.270, 2002 c 243, and chapters 49.12 and 43.22 RCW. 03-03-010, § 296-130-080, filed 1/6/03, effective 1/6/03. Statutory Authority: RCW 43.22.270 and 1988 c 236. 88-18-044 (Order 88-20), § 296-130-080, filed 8/31/88.]

WAC 296-130-100 Collective bargaining not impaired. Nothing in this chapter will be deemed to interfere with, impede, or in any way diminish the right of employees to bargain collectively with their employers through representatives of their own choosing in order to establish leave benefits in excess of the applicable provisions of this chapter.

[Statutory Authority: RCW 49.12.033, 49.12.280, 49.12.285, 43.22.270, 2002 c 243, and chapters 49.12 and 43.22 RCW. 03-03-010, § 296-130-100, filed 1/6/03, effective 1/6/03.]

Chapter 296-131 WAC

AGRICULTURAL EMPLOYMENT STANDARDS

WAC

296-131-001	Applicability.
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296-131-010	Payment interval.

296-131-015	Pay statements.
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296-131-100	Permits to employ minors.
296-131-105	Parental and school authorization.
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296-131-125	Prohibited and hazardous employment.
296-131-126	Lifting.
296-131-130	Recordkeeping.
296-131-135	Revocation of permits.
296-131-140	Variances.

WAC 296-131-001 Applicability. These standards, adopted pursuant to sections 83 through 86, chapter 380, Laws of 1989, shall apply to persons employed in agricultural labor as defined in RCW 50.04.150 and WAC 296-131-005. The standards in this chapter beginning at WAC 296-131-100 shall apply only to minors employed in agricultural labor. The standards in this chapter do not apply to the immediate family members of the officers of any business engaged in agricultural production of crops or livestock.

[Statutory Authority: RCW 49.30.030, 90-14-038, § 296-131-001, filed 6/29/90, effective 11/1/90. Statutory Authority: RCW 43.22.270, 1989 c 380 and chapter 49.46 RCW. 89-22-015 (Order 89-15), § 296-131-001, filed 10/24/89, effective 11/24/89.]

WAC 296-131-005 Definitions. For the purpose of these rules:

(1) A "minor" is a person of either gender, employed in agricultural labor, who is under the age of eighteen years.

(2) "Agricultural labor" is defined as services performed:

(a) On a farm, in the employ of any person, in connection with the cultivation of the soil, or in connection with raising or harvesting any agricultural or horticultural commodity, including raising, shearing, feeding, caring for, training, and management of livestock, bees, poultry, and furbearing animals and wildlife, or in the employ of the owner or tenant or other operator of a farm in connection with the operation, management, conservation, improvement, or maintenance of such farm and its tools and equipment; or

(b) In packing, packaging, grading, storing, or delivering to storage, or to market or to a carrier for transportation to market, any agricultural or horticultural commodity; but only if such service is performed as incident to ordinary farming operations.

"Agricultural labor" does not include employment in commercial packing houses, commercial storage establishments, commercial canning, commercial freezing, or any other commercial processing with respect to services performed in connection with the cultivation, raising, harvesting and processing of oysters or raising and harvesting of mushrooms or in connection with any agricultural or horticultural commodity after its delivery to a terminal market for distribution for consumption.

(3) "Department" means the department of labor and industries.

(4) "Director" means the director of the department of labor and industries.

(5) "Employ" means to engage, suffer, or permit to work in agricultural labor.

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(6) "Employee" means any person employed by an employer, except those who are members of the immediate family of an employer.

(7) "Employer" means any person, firm, corporation, partnership, business trust, legal representative, or other business entity that engages in any agricultural activity in this state and employs one or more employees.

[Statutory Authority: RCW 49.30.030, 90-14-038, § 296-131-005, filed 6/29/90, effective 11/1/90.]

WAC 296-131-006 Authority to enter, inspect, and investigate places of employment and records, and to conduct interviews. In order to carry out the purposes of this chapter, the director or the director's authorized representative is authorized:

(1) To enter without delay any work site or area or other environment where work is performed by an employee or where employment records are, or are required to be, maintained; and

(2) To inspect, transcribe, and copy all pertinent records, and to inspect and investigate any such place of employment and all pertinent conditions, structures, machines, apparatus, devices, equipment, and materials therein, and to question privately any employer, owner, operator, agent, or employee.

[Statutory Authority: RCW 49.30.030 and 43.22.310, 92-15-099, § 296-131-006, filed 7/20/92, effective 8/20/92.]

WAC 296-131-010 Payment interval. All wages due shall be paid at no longer than monthly intervals to each employee on established regular pay days, unless federal law requires more frequent pay intervals. To facilitate bookkeeping, an employer may implement a regular payroll system in which wages from up to seven days before pay day may be withheld from the pay period covered and included in the next pay period.

[Statutory Authority: RCW 43.22.270, 1989 c 380 and chapter 49.46 RCW. 89-22-015 (Order 89-15), § 296-131-010, filed 10/24/89, effective 11/24/89.]

WAC 296-131-015 Pay statements. A pay statement shall be provided to each employee at the time wages are paid. The pay statement shall identify the employee, show the number of hours worked or the number of days worked based on an eight-hour day, the rate or rates of pay, the number of piece work units earned if paid on a piece work basis, the gross pay, the pay period, all deductions and the purpose of each deduction for the respective pay period. A pay statement shall also include the employer's name, address, and telephone number.

[Statutory Authority: RCW 43.22.270, 1989 c 380 and chapter 49.46 RCW. 89-22-015 (Order 89-15), § 296-131-015, filed 10/24/89, effective 11/24/89.]

WAC 296-131-017 Employment records. (1) Every employer shall keep for at least three years a record of the name, address, and occupation of each employee, dates of employment, rate or rates of pay, amount paid each pay period to each such employee and the hours worked.

(2) Every employer shall make the records described in subsection (1) of this section available to the director or the director's authorized representative at any time for inspection

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and transcription or copying and to the employee, upon request for that employee's work record, at any reasonable time.

[Statutory Authority: RCW 43.22.270, 1989 c 380 and chapter 49.46 RCW. 89-22-015 (Order 89-15), § 296-131-017, filed 10/24/89, effective 11/24/89.]

WAC 296-131-020 Meals and rest periods. (1) Every employee employed more than five hours shall receive a meal period of at least thirty minutes. Employees working eleven or more hours in a day shall be allowed at least one additional thirty-minute meal period.

(2) Every employee shall be allowed a rest period of at least ten minutes, on the employer's time, in each four-hour period of employment. For purposes of computing the minimum wage on a piecework basis, the time allotted an employee for rest periods shall be included in the number of hours for which the minimum wage must be paid.

[Statutory Authority: RCW 49.30.030. 90-14-037, § 296-131-020, filed 6/29/90, effective 8/1/90.]

WAC 296-131-100 Permits to employ minors. (1) Within three days after the commencement of employment of one or more minors, an employer shall file with the department an application for a permit to employ minors. When validated by the supervisor of employment standards, this permit will authorize the employer to employ for one year any number of minor workers at the workplace specified in accordance with the conditions of the permit and the regulations established in this chapter.

(2) An employer shall at all times employ minors in accordance with the regulations established in this chapter, regardless whether the employer has filed with the department an application for a permit to employ minors as required in subsection (1) of this section.

(3) The department shall annually publicize the requirements of this chapter through departmental publications and other appropriate means designed to assist employers in complying with the law.

[Statutory Authority: RCW 49.30.030. 90-14-038, § 296-131-100, filed 6/29/90, effective 11/1/90.]

WAC 296-131-105 Parental and school authorization. (1) An employer of a minor shall be required to annually obtain written authorization from a minor's parent before employing the minor.

(2) Except when performing intermittent weekend work, a minor who is legally required to attend school and who is working during the school year shall obtain from his or her school written authorization to work a specified number of hours per day and per week up to the maximum permitted in WAC 296-131-120, based on an evaluation of the impact of work on the student's academic performance. School authorization is not required for high school graduates.

(3) The parental and school authorization required by this chapter shall be on forms supplied by the department and shall be kept on file by the employer.

(4) Neither parent nor school authorization is required for minors who are emancipated by court order.

(5) For purposes of this section, "intermittent weekend work" is defined as work during the weekend arranged to be

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performed after the end of the preceding school week. Work performed after the beginning of the next school day is not considered to be intermittent weekend work and requires school authorization. Work during more than two weekends per quarter is not considered to be intermittent weekend work.

[Statutory Authority: RCW 49.30.030. 90-14-038, § 296-131-105, filed 6/29/90, effective 11/1/90.]

WAC 296-131-110 Posting. (1) At least one copy of a valid permit to employ minors shall be posted in a conspicuous place at the workplace specified in the permit.

(2) An informational poster supplied by the department, describing in English and Spanish the rights of agricultural employees under this chapter, also shall be posted in a conspicuous place at the workplace specified in the permit.

[Statutory Authority: RCW 49.30.030. 90-14-038, § 296-131-110, filed 6/29/90, effective 11/1/90.]

WAC 296-131-115 Age of employment. No minor under the age of fourteen shall be employed in agriculture at any time except as follows: Minors twelve and thirteen years of age may be employed in the hand harvest of berries, bulbs, and cucumbers and in the hand cultivation of spinach during weeks when school is not in session.

[Statutory Authority: RCW 49.30.030. 90-14-038, § 296-131-115, filed 6/29/90, effective 11/1/90.]

WAC 296-131-117 Minimum wages—Minors. Except where a higher minimum wage is required by Washington state or federal law:

(1) Every employer shall pay to each employee who has reached their sixteenth or seventeenth year of age a rate of pay per hour which is equal to the hourly rate required by RCW 49.46.020 for employees eighteen years of age or older, whether computed on an hourly, commission, piecework, or other basis, except as may be otherwise provided under this chapter.

(2) Every employer shall pay to each employee who has not reached their sixteenth year of age a rate of pay per hour that is not less than eighty-five percent of the hourly rate required by RCW 49.46.020 for employees eighteen years of age or older, whether computed on an hourly, commission, piecework, or other basis, except as may be otherwise provided under this chapter.

(3) These minimum wage provisions shall not apply when a minor student is in a work place to carry out an occupational training experience assignment directly supervised on the premises by a school official or an employer under contract with a school, and when no appreciable benefit is rendered to the employer by the presence of the minor student.

[Statutory Authority: RCW 43.22.270, 49.46.020, and chapters 43.22, 49.30, and 49.46 RCW. 01-13-012, § 296-131-117, filed 6/11/01, effective 7/12/01.]

WAC 296-131-120 Hours of work for minors in agriculture. (1) Minors legally required to attend school may not be employed during school hours except by special permission from school officials as provided in RCW 28A.27.010 and 28A.27.090.

(2)(a) Minors under the age of sixteen may work up to three hours a day on school days, up to eight hours a day on nonschool days and up to twenty-one hours a week during weeks when school is in session. Minors under the age of sixteen may work up to eight hours a day and up to forty hours a week during weeks when school is not in session.

(b) Except as otherwise provided, on days when school is in session, minors under the age of sixteen may not be employed before 7:00 a.m. nor after 8:00 p.m. On days when school is not in session, minors under the age of sixteen may not be employed before 5:00 a.m. nor after 9:00 p.m. On days when school is in session, minors under the age of sixteen employed in animal agriculture or whose employment in crop production requires daily attention to irrigation, may be employed beginning at 6:00 a.m.

(3)(a) Minors who are sixteen and seventeen years of age may work up to twenty-eight hours a week, up to four hours a day on school days and up to eight hours a day on nonschool days during weeks when school is in session. Minors who are sixteen and seventeen years of age may work up to ten hours per day and up to fifty hours per week during weeks when school is not in session. Minors who are sixteen and seventeen years of age may work up to sixty hours per week in the mechanical harvest of peas, wheat, and hay during weeks when school is not in session.

(b) Minors who are sixteen and seventeen years of age may not be employed before 5:00 a.m. nor after 10:00 p.m. Minors who are sixteen and seventeen years of age may not work later than 9:00 p.m. on more than two consecutive nights preceding a school day.

(4) Except for minors employed in dairy or livestock production, in the harvest of hay, or whose employment in crop production requires daily attention to irrigation, no minor shall be employed more than six days in any one week.

(5) The provisions of this section shall not apply to minors sixteen years of age and older who can demonstrate emancipation by either (a) providing a marriage certificate as proof of marriage, or (b) providing a birth certificate that names the minor as a parent. Copies of such documents must be retained by the employer for one year, pursuant to the requirements of WAC 296-131-130.

[Statutory Authority: RCW 49.30.030 and 43.22.310. 92-15-099, § 296-131-120, filed 7/20/92, effective 8/20/92. Statutory Authority: RCW 49.30.030. 90-14-038, § 296-131-120, filed 6/29/90, effective 11/1/90.]

WAC 296-131-125 Prohibited and hazardous employment. (1) Employment in the following occupations in agriculture is prohibited to minors under the age of sixteen:

(a) Operating a tractor of over 20 PTO horsepower, or connecting or disconnecting an implement or any of its parts to or from such a tractor.

(b) Operating or assisting to operate (including starting, stopping, adjusting, feeding, or any other activity involving physical contact associated with the operation) any of the following machines:

(i) Corn picker, cotton picker, grain combine, hay mower, forage harvester, hay baler, potato digger, or mobile pea viner;

(ii) Feed grinder, crop dryer, forage blower, auger conveyor, or the unloading mechanism of a nongravity-type self-unloading wagon or trailer; or

(iii) Power post-hole digger, power post driver, or non-walking type rotary tiller.

(c) Operating or assisting to operate (including starting, stopping, adjusting, feeding, or any other activity involving physical contact associated with the operation) any of the following machines:

(i) Trencher or earthmoving equipment;

(ii) Fork lift; or

(iii) Potato combine.

(d) Working on a farm in a yard, pen, or stall occupied by a:

(i) Bull, boar, or stud horse maintained for breeding purposes; or

(ii) Sow with suckling pigs, or cow with newborn calf (with umbilical cord present).

(e) Felling, bucking, skidding, loading, or unloading timber with butt diameter of more than six inches.

(f) Working from a ladder or scaffold (painting, repairing, or building structures, pruning trees, picking fruit, etc.) at a height of over twenty feet.

(g) Driving a bus, truck, or automobile when transporting passengers, or riding on a tractor as a passenger or helper.

(h) Working inside:

(i) A fruit, forage, or grain storage designed to retain an oxygen deficient or toxic atmosphere;

(ii) An upright silo within two weeks after silage has been added or when a top unloading device is in operating position;

(iii) A manure pit; or

(iv) A horizontal silo while operating a tractor for packing purposes.

(i) Working in any manufacturing occupation.

(j) Working in any processing operations, including food processing.

(k) Working in transportation, warehouse, and storage or construction.

(l) Work in or about engine or boiler rooms.

(m) Work in freezers, meat coolers, and all work in preparing meats for sale. (Wrapping, sealing, labeling, weighing, pricing, and stocking are permitted if work is performed away from meat-cutting and preparation areas.)

(2) Employment in the following occupations in agriculture is prohibited to all minors:

(a) Handling, mixing, loading or applying (including cleaning or decontaminating equipment, disposal or return of empty containers, or serving as a flagman for aircraft applying) agricultural chemicals classified under the Federal Insecticide, Fungicide, and Rodenticide Act (7 U.S.C. 135 et seq.) as Category I of toxicity, identified by the word "poison" and the "skull and crossbones" on the label; or Category II of toxicity, identified by the word "warning" on the label.

(b) Handling or using a blasting agent, including but not limited to, dynamite, black powder, sensitized ammonium nitrate, blasting caps, and primer cord.

(c) Transporting, transferring, or applying anhydrous ammonia.

(d) Work involving circular, band or chain saws, power driven wood working machines, power driven metal forming, punching and shearing machines, and guillotine shears.

(e) Work involving slaughtering, meat packing, or processing and rendering.

- (f) Work involving wrecking and demolition.
- (g) Work involving roofing.
- (h) Work involving mechanical excavation.
- (i) Work in any place where a strike or lockout exists.

(3) The employment prohibited by subsection (1) of this section shall not apply to the employment of any minor as a vocational agriculture student-learner in any of the occupations described in subsection (1)(a), (b), (c), (d), (e), or (f) of this section when each of the following requirements are met:

(a) The student-learner is enrolled in a vocational education training program in agriculture under a recognized state or local educational authority, or in a substantially similar program conducted by a private school;

(b) Such student-learner is employed under a written agreement which provides that the work of the student-learner is incidental to his training; that such work shall be intermittent, for short periods of time, and under the direct and close supervision of a qualified and experienced person; that safety instruction shall be given by the school and correlated by the employer with on-the-job training; and that a schedule of organized and progressive work processes to be performed on the job have been prepared;

(c) Such written agreement contains the name of the student-learner, and is signed by the employer and by a person authorized to represent the educational authority or school; and

(d) Copies of each such agreement are kept on file by both the educational authority or school and by the employer.

(4) The employment prohibited by subsection (1) of this section shall not apply to the employment of any minor in those occupations for which the minor has successfully completed one or more federal extension service training programs described in 29 C.F.R. section 570.72(b) and who has been instructed by the employer in the safe and proper operation of the specific equipment to be used, who is continuously and closely supervised by the employer where feasible or, where not feasible, in work such as cultivating, whose safety is checked by the employer at least at midmorning, noon, and midafternoon, or during the first and second halves of the workday, whichever is more frequent.

(5) The employment prohibited by subsection (1) of this section shall not apply to the employment of any minor in those occupations for which the minor has successfully completed one or more of the vocational agriculture training programs described in 29 C.F.R. section 570.72(c) and who has been instructed by the employer in the safe and proper operation of the specific equipment to be used, who is continuously and closely supervised by the employer where feasible or, where not feasible, in work such as cultivating, whose safety is checked by the employer at least at midmorning, noon, and midafternoon, or during the first and second halves of the workday, whichever is more frequent.

(6) No minor shall be permitted to ride in or work in the vicinity of a vehicle driven by any person who is under the age of sixteen or anyone who does not possess a valid driver's license.

(7) No minor shall be employed in agriculture in the harvest of any crop to which agricultural chemicals described in subsection (2)(a) of this section have been applied, prior to the expiration of the preharvest interval or within fourteen

days after the application if no preharvest interval has been established.

(8) If, upon inspection or investigation, the director or the director's designee believes that an employer is violating this section creating a danger from which there is a substantial probability that death or serious physical harm could result to a minor employee, the director or the director's designee may issue an order under RCW 34.05.479 immediately restraining the condition, practice, method, process, or means creating the danger and suspend the employer's permit authorizing employment of minors until action is taken to avoid, correct, or remove the danger.

(9) A copy of the federal regulations referenced in subsections (4) and (5) of this section may be obtained from the department upon request.

[Statutory Authority: RCW 49.30.030. 90-14-038, § 296-131-125, filed 6/29/90, effective 11/1/90.]

WAC 296-131-126 Lifting. Where weights in excess of twenty pounds are to be lifted, carried, pushed, or pulled as a normal part of an employee's responsibility, the employer shall instruct minors on correct weight lifting techniques prior to the commencement of work and display a poster developed by the department illustrating correct weight lifting techniques.

[Statutory Authority: RCW 49.30.030. 90-14-038, § 296-131-126, filed 6/29/90, effective 11/1/90.]

WAC 296-131-130 Recordkeeping. In addition to the records required under WAC 296-131-017, an employer is responsible for obtaining and keeping on file for one year the following information concerning each minor employee:

(1) Proof of age by means of a copy of one of the following: Birth certificate; driver's license; baptismal record; Bible record; insurance policy at least one year old indicating the date of birth; witnessed statement of the parent or guardian; or a completed federal employment eligibility verification (Form I-9);

(2) Parental authorization required by WAC 296-131-105;

(3) School authorization required by WAC 296-131-105;

(4) Documentation of emancipation as provided by WAC 296-131-120(5).

Every employer shall make the records described in this section available to the director or the director's authorized representative at any time for inspection and transcription or copying and to the employee, upon request for that employee's work record, at any reasonable time.

[Statutory Authority: RCW 49.30.030 and 43.22.310. 92-15-099, § 296-131-130, filed 7/20/92, effective 8/20/92. Statutory Authority: RCW 49.30.030. 90-14-038, § 296-131-130, filed 6/29/90, effective 11/1/90.]

WAC 296-131-135 Revocation of permits. (1) The department may revoke any employer's permit to employ minors upon a showing that the conditions of its issuance are not being met, or that other conditions exist which are detrimental to the health, safety, or welfare of the minor.

(2) The department may refuse to issue or renew a permit to employ minors. If the department refuses to issue or renew a permit, it shall send the employer a notice of denial. The notice of denial shall explain the grounds for denial of the

permit. The department may refuse to renew a permit if the conditions of its initial issuance are not being met.

(3) Any employer aggrieved by any action taken by the department under this section may appeal the action or decision by filing notice of the appeal with the director within thirty days of the department's action or decision. Upon receipt of an appeal, a hearing shall be held in accordance with chapter 34.05 RCW. The director shall issue all final orders after the hearing. Final orders are subject to appeal in accordance with chapter 34.05 RCW. Orders not appealed within the time period specified in chapter 34.05 RCW are final and binding.

[Statutory Authority: RCW 49.30.030. 90-14-038, § 296-131-135, filed 6/29/90, effective 11/1/90.]

WAC 296-131-140 Variances. (1) Upon written application from an employer or an organization representing employers, a variance permitting employment of minors otherwise prohibited under WAC 296-131-120 or 296-131-125 may be granted for good cause shown. The employer or the organization representing employers shall give written notice to the employees so that they may submit their views to the department on any variance request.

(2) The department may afford the applicant and any involved employee, or employee representatives, the opportunity for oral presentation whenever circumstances of the particular application warrant.

(3) "Good cause" shall mean, but not be limited to, those situations in which the employer demonstrates that (a) the granting of the variance would not have a harmful effect upon the health, safety, or welfare of the minor employees involved; (b) the granting of the variance would not have a deleterious effect on school attendance or the academic performance of minors; and (c) the variance is necessary to meet usual crop cultural or harvest requirements.

(4) Upon application from an employer or an organization representing employers a variance permitting employment of minors otherwise prohibited under these rules may be granted by the director or an authorized representative of the director in response to a weather emergency.

[Statutory Authority: RCW 49.30.030. 90-14-038, § 296-131-140, filed 6/29/90, effective 11/1/90.]

Chapter 296-133 WAC

PROCEDURAL RULES SUPPLEMENTARY TO THE HEALTH CARE ACTIVITIES LABOR RELATIONS ACT, CHAPTER 156, LAWS OF 1972 EX. SESS.

WAC

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WAC 296-133-010 Intent and purpose. These rules are adopted pursuant to the authority of section 8, chapter 156, Laws of 1972 ex. sess., (hereinafter referred to as the "act") as supplementary to the act for the purpose of providing rules of procedure to aid and assist the department of labor and industries, its authorized agents, and interested parties in proceedings under the act. The department of labor and industries, (hereinafter referred to as "department") and its authorized agents may waive any requirements of these rules, unless a party shows that it would be prejudiced by such waiver or unless the rule to be waived involves a mandatory provision of the act.

[Order 72-13, § 296-133-010, filed 7/31/72.]

WAC 296-133-020 Policy. It is the policy of the department to expedite the settlement of labor disputes between health care activities and their employees and to promote peace in labor relations and nothing in these rules should be construed to prevent the department and its authorized agents, where not inconsistent with the intent and purpose of the act, from using its best efforts to adjust through conciliation any labor dispute arising between employers, employees or employee organizations subject to the provisions of the act.

[Order 72-13, § 296-133-020, filed 7/31/72.]

WAC 296-133-030 Construction. These rules shall be liberally construed to effectuate the purposes and provisions of the act.

[Order 72-13, § 296-133-030, filed 7/31/72.]

WAC 296-133-040 General. Any terms used in these rules that are defined in the act shall have the same meaning as set forth therein.

[Order 72-13, § 296-133-040, filed 7/31/72.]

WAC 296-133-050 Petitioner. "Petitioner" shall mean any person, employer or employee association authorized to request the department to take action under the provisions of the act or these rules.

[Order 72-13, § 296-133-050, filed 7/31/72.]

WAC 296-133-060 Authorized agent. "Authorized agent" of the department shall mean the director, the supervisor of industrial relations, a labor mediator or a hearing

officer specifically authorized by the director to conduct proceedings under the act.

[Order 72-13, § 296-133-060, filed 7/31/72.]

WAC 296-133-070 Employee association or organization—Qualifications. In order to qualify as an employee association as referred to in section 3 of the act, any such organization or association:

(1) Upon request by the authorized agent, or any party of interest, must produce authentic records of how, when and by whom the organization was formed.

(2) Shall have a written constitution and/or bylaws which plainly indicates that one of the primary purposes of the organization or association is to represent employees in labor relations matters with employers and is consistent with the requirements of the act and is available for review by any member.

(3) The constitution and/or bylaws must provide:

(a) An approved, customary or recognized method for the nomination and election of officers in accordance with accepted parliamentary procedures, the terms of such officers not to exceed four years.

(b) An approved method of financial record keeping and a financial audit at least once a year, which audit is available to any member for review.

(c) That at least four regular meetings must be held each year with adequate notice of meetings to all members.

(d) That a specific and reasonable minimum number of members or a percentage of the membership must be present to form a quorum before any organization business may be transacted at regular or special meetings.

[Order 72-13, § 296-133-070, filed 7/31/72.]

WAC 296-133-080 Bargaining representative—Selection of—Petition. Applications to the department regarding the selection of a bargaining representative to represent employees of a bargaining unit of an employer shall be by petition on such form or forms as may be provided by the department. A written petition may be accepted by the department if the petition contains substantially the same information required by the forms provided by the department.

[Order 72-13, § 296-133-080, filed 7/31/72.]

WAC 296-133-090 Filing of petition. The petition for certification, decertification or amendment of certification of the representative of a bargaining unit must be filed either:

(1) With the Supervisor, Division of Industrial Relations, Department of Labor and Industries, General Administration Building, Olympia, Washington 98504; or

(2) If the health care activity is situated in western Washington with the Labor Mediator, Division of Industrial Relations, Department of Labor and Industries, 300 West Harrison Street, Seattle, Washington 98119; or

(3) If the health care activity is situated in eastern Washington with the Labor Mediator, Division of Industrial Relations, Department of Labor and Industries, North 1322 Post Street, Spokane, Washington 99207.

[Order 72-13, § 296-133-090, filed 7/31/72.]

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WAC 296-133-100 Contents of petition—General. Petitions for the certification, decertification, or amendment of certification of an employee representative of a bargaining unit shall contain the following:

(1) A statement as to whether the petition is filed by a health care activities employee organization, a health care activities employee or a health care activities employer.

[Order 72-13, § 296-133-100, filed 7/31/72.]

WAC 296-133-110 Contents of petition filed by employee or employee organization. Petitions for certification decertification or amendment of certification filed by a health care activities employee organization or a health care activities employees, shall contain:

(1) A description of the bargaining unit which the petitioner claims to be appropriate, a statement as to whether there is any disagreement between the petitioner and interested parties as to the nature and scope of the proposed bargaining unit; and statement that the petitioner is authorized to represent at least thirty percent of the employees within the proposed bargaining unit.

(2) The names and addresses of any persons or employee organizations, known to the petitioner, who claim to represent any employees in the proposed appropriate bargaining unit; the expiration dates and brief descriptions of any collective bargaining agreements which may be in effect between an employer and an employee organization covering all or a portion of the employees in the proposed bargaining unit.

(3) The number and job titles of the employees in the proposed bargaining unit.

(4) A statement that the employer declines to recognize the petitioner as the employee representative, or that the health care activities employer is about to recognize another employee organization as the exclusive bargaining representative or the presently recognized or certified employee organization is no longer the representative of the employees in the proposed bargaining unit.

(5) The name, affiliation, if any, and the address of the petitioner.

(6) Whether a work stoppage or picketing is in progress at the health care activity and, if so, the approximate number of employees participating and the date that such work stoppage or picketing commenced.

(7) Any other relevant factual information.

(8) A specific statement of the relief or remedy that the petitioner seeks the department to invoke.

[Order 72-13, § 296-133-110, filed 7/31/72.]

WAC 296-133-120 Contents of petition filed by employer. Petitions for certification or amendment of certification of a bargaining representative filed by a health care activities employer, shall contain:

(1) A factual statement setting forth that one or more individuals or employee organizations has presented to the petitioner a claim to be recognized as the exclusive bargaining representative of all employees in a bargaining unit claimed to be appropriate; the job titles of the employees of such bargaining unit; the number of employees in such unit; and a statement of reasons as to whether the petitioner agrees

or disagrees as to the nature or scope of such requested bargaining unit.

(2) The name or names, affiliation, if any, and addresses of individuals or employee organizations known to the petitioner making such claim for recognition as to the exclusive bargaining representative of employees in the health care activity.

(3) A statement regarding whether the petitioner has contracts with any employee organization or other representatives of employees, and if so, the expiration dates of such agreements.

(4) A statement as to whether or not a work stoppage or picketing is in progress at the health care activity involved, and if so, the approximate number of employees participating, and the date such work stoppage or picketing commenced.

(5) A statement of other relevant facts.

(6) A statement regarding the remedy or relief the petitioner requests the department to invoke.

[Order 72-13, § 296-133-120, filed 7/31/72.]

WAC 296-133-130 Intervention. Any third party having a legitimate interest in any proceedings commenced under the act may file a petition seeking intervention in such proceedings setting forth facts sufficient to establish such interests and setting forth in such petition the remedy or relief the petitioner seeks the department to invoke.

For the purposes of third party intervention, "legitimate interest" means that the petitioner must allege in the petition for intervention and be prepared to prove if requested that it is authorized to represent at least thirty percent of the employees within a proposed bargaining unit before leave to intervene may be granted. Any employee organization which has a signed, valid collective bargaining agreement encompassing the proposed bargaining unit or any portion thereof shall be considered to have a legitimate interest upon presentation to the department of an executed authentic copy of such collective bargaining agreement.

[Order 72-13, § 296-133-130, filed 7/31/72.]

WAC 296-133-140 Conferences—Notice of hearing. Upon the filing of petition for certification, decertification or amendment of certification of an exclusive bargaining representative of employees and the determination of an appropriate bargaining unit, an authorized agent shall confer with and may hold informal conferences with the known interested parties in an effort to ascertain the agreed upon facts of the controversy. The authorized agent shall encourage the parties to agree upon an appropriate bargaining unit within the limitations of the act. Whenever the authorized agent shall determine that the parties are unable to agree upon an appropriate bargaining unit, and is unable to settle the controversy without hearing, a hearing shall be conducted. Notice of such hearing, with the time and place of such hearing, shall be given to all parties by mail at least six days prior to the date of hearing, excluding Saturdays, Sundays and legal holidays. Within a reasonable time following the determination of an appropriate bargaining unit, the authorized agent shall provide for a bargaining representation election in accordance

with the provisions of section 3 of the act and as further provided in these rules.

[Order 72-13, § 296-133-140, filed 7/31/72.]

WAC 296-133-150 Petition—Amendments or withdrawals. At any time prior to the issuance of the written notice of a bargaining representation election, a petitioning party may, subject to the discretion of the authorized agent, amend or withdraw his petition.

[Order 72-13, § 296-133-150, filed 7/31/72.]

WAC 296-133-160 Unit determinations—Considerations. Whenever the department is called upon to make a determination of an appropriate bargaining unit within a health care activity, within the limitations of the act, the department shall consider the duties, skills and working conditions of the health care activities employees; the history of collective bargaining by the health care activities employees and their bargaining representative within the proposed bargaining unit and in the health care industry; the extent of organization among the health care activities employees; the desires of such employees and the affect of the proposed bargaining unit upon the efficiency of administration of the health care activity.

[Order 72-13, § 296-133-160, filed 7/31/72.]

WAC 296-133-170 Representation questions—Timeliness. The department will not consider any question of representation within any bargaining unit or subdivision thereof in any health care activity within which in the preceding twelve-month period a valid election has been held. Nor will the department entertain any petition giving rise to the question of representation within any bargaining unit or portion thereof with a health care activity having a collective bargaining agreement in effect, except during the period not more than ninety nor less than sixty days prior to the expiration date of any such agreement. A collective bargaining agreement which contains a provision for automatic renewal or extension of the agreement or which is effective for a term of more than three years shall not be deemed to be a valid collection bargaining agreement for the purposes of this section.

[Order 72-13, § 296-133-170, filed 7/31/72.]

WAC 296-133-180 Employee lists. Health care activities employers shall furnish a current list of the names and addresses of all employees in a proposed or agreed upon bargaining unit prior to any scheduled representation hearing. The lists of such employees shall be available upon request to any organization which has been qualified under these rules and meeting the requirements of section 3 of the act.

[Order 72-13, § 296-133-180, filed 7/31/72.]

WAC 296-133-190 Authorization cards—Acceptability. In order to be acceptable as evidence of representation for the purposes of the thirty percent requirements of section 3 of the act, individual authorization cards must be signed and dated by the employee expressing his intention to be represented by a specific bargaining representative. A card signed and dated six months or more prior to the date on

which examination of cards for representation purposes commences shall be considered invalid and not acceptable for representation purposes.

[Order 72-13, § 296-133-190, filed 7/31/72.]

WAC 296-133-200 Conduct of election. In the event a representation election is conducted for the purposes of certification, the following rules shall apply:

(1) Notice of election shall be given to all interested parties, and shall be prominently posted by the employer at a place or places within the health care services facility reasonably accessible to all employees. Notices of election shall be sent by mail to all interested parties no less than ten days prior to the date of the election excluding Saturdays, Sundays and legal holidays. Notices of election shall contain the following information; the date of election, hours and place of election, a list of employees eligible to vote, a description of the bargaining unit and a listing of employee organizations from which eligible employees may choose by ballot as well as a choice that such employees do not wish to be represented by any bargaining representative.

(2) Employee shall be deemed eligible to vote in an election for the certification of an exclusive bargaining representative of the employees of an appropriate bargaining unit who are regularly employed within the bargaining unit, either full or part time, and who are in the employ of the employer within fourteen days prior to the date of the issuance of the notice of election and on the date of election, except, supervisors as defined in section 2, subsection 5 of the act, and guards as defined in section 2, subsection 6 of the act, unless the bargaining unit is exclusively devoted to employees serving in the capacity of guards. Employees otherwise eligible to vote in a certification election may be permitted to vote by absentee ballot upon the filing of an affidavit with the authorized agent indicating that such person is eligible to vote in the certification election and that by reason of physical incapacity will be unable to be present at the balloting place on the date of election. The casting of ballots in a representation election by proxy will not be permitted.

(3) Each of the interested parties may designate one person as observer at the polls. Unless otherwise stipulated by the interested parties, observers must be nonsupervisory employees of the health care activities employer.

(4) Any observer, or the authorized agent, for good cause may challenge any employee's eligibility to vote. A challenged ballot shall be placed in an envelope bearing no identifying marks. It shall be placed in another envelope upon which shall be written the name of the employee desiring to cast a ballot, the reasons for which the ballot was challenged, by whom it was challenged, the polling place at which it was challenged, and the envelope shall be sealed and initialed by the authorized agent.

(5) The challenged ballots previously placed in separate envelopes shall be placed in a sealed envelope marked "challenged ballots" and sent along with the tally sheet to the authorized agent. The challenged ballots shall not be opened or counted unless the counting of such ballots might affect the results of the election. If the challenged ballots might affect the results of the election, the authorized agent shall conduct an investigation into and if requested conduct a for-

mal hearing on the validity of the challenges made. If it is concluded that the challenge was properly made, that ballot shall be excluded from the count. Otherwise, such ballot shall be counted as cast.

(6) Ballots may not be tallied until after the time for the closing of the polls unless all eligible voters have cast their ballot.

(7) Within five days after the tally of the ballots has been furnished, any party may file with the authorized agent an original and three copies of objections to the conduct of the election, or conduct affecting the results of the election, which shall contain a short factual statement of the reasons for the objections. Such filing must be timely, whether or not the challenged ballots are sufficient in number to affect the results of the election. Copies of such objections shall immediately be served by mail upon the other parties by the party filing them. If objections are filed to the conduct of the election, or conduct affecting the result of the election, the authorized agent shall investigate such objections. If the objections to the conduct of the election were sustained and the objections would affect the results of the election, the authorized agent, if requested by one of the interested parties, shall conduct a formal hearing.

[Order 72-13, § 296-133-200, filed 7/31/72.]

WAC 296-133-210 Run-off election procedure.

Where more than one employee organization is on the ballot, and neither of the three or more choices receives votes from a majority of the votes cast in the election, a run-off election shall be held. The run-off ballot shall contain the two choices which receive the largest and second largest number of votes.

[Order 72-13, § 296-133-210, filed 7/31/72.]

WAC 296-133-220 Certification. If no timely objections are filed, the authorized agent will certify, as an exclusive bargaining representative, the employee organization which receives votes from a majority of the employees who vote in the election or any run-off election or will certify that no employee organization receive votes from a majority of the employees who voted in the election or any run-off election. A copy of such certification shall be mailed to all interested parties within ten days of certification, along with a certification of the results of the election.

[Order 72-13, § 296-133-220, filed 7/31/72.]

WAC 296-133-230 Unfair labor practices—Who may file. Any employee or employee organization or a health care activities employer may file in writing an unfair labor practice charge with the department of labor and industries, alleging an unfair labor practice as set forth in the applicable provisions of sections 4 and 5 of the act: Provided, That this section and other sections of these rules relating to unfair labor practice charges, shall not be construed to prohibit an employee, an employee organization or an employer from instituting court proceedings as authorized under section 7 of the act without first having exhausted the remedies provided by these rules, except, in those cases in which an employee, an employee organization or an employer requests the director of labor and industries to exercise the authority invested in him to institute court proceedings to seek relief from the com-

mission of an unfair labor practice. Any decision by a court rendered upon the merits of an unfair labor practice charge pursuant to a legal action instituted under the authority of section 7 shall be deemed res judicata and a bar to maintaining proceedings under this section and other sections of these rules relating to unfair labor practice charges.

[Order 72-13, § 296-133-230, filed 7/31/72.]

WAC 296-133-240 Filing of charges. Unfair labor practice charges shall be filed on such form or forms provided by the department and shall contain the following:

(1) The name and address of the health care activities employer.

(2) The name and address of the person or organization who is filing the charges.

(3) The statement as to the basis of the charge which shall be specific as to facts, names, addresses, dates and places.

(4) A statement as to whether or not the complainant has instituted legal proceedings under the authority of section 7 of the act seeking relief from the alleged commission of an unfair labor practice.

(5) The unfair labor practice charges shall be verified under oath in substantially the following form:

....., being first sworn on oath, deposes and says: That he is the complainant named in the foregoing unfair labor practice charges, that he has read the unfair labor practice charges, knows the contents thereof and believes the same to be true and correct to the best of his knowledge and belief.

.....
(Signature of Complainant)

Subscribed and sworn to before me on this
..... day of 1972.

.....
Notary Public in and for the
State of Washington, Residing at
.....

[Order 72-13, § 296-133-240, filed 7/31/72.]

WAC 296-133-250 Actionable charges—Dismissals.

Upon receipt of an unfair labor practice charge, the department shall determine whether or not the complainant has alleged actionable charges of unfair labor practices under the provisions of the act. If the department finds that actionable charges have been alleged by the complainant, the department may give notice of not less than three days to the parties to the controversy that an informal hearing conference will be held at which conference testimony and evidence will be taken under oath to determine whether such charges are factually meritorious or frivolous. If the charges are found to be actionable charges and the evidence obtained at the informal hearing conference discloses that the charges are made in good faith and give rise to substantial questions of fact or law, the department shall issue a complaint and schedule the matter for hearing. If the informal hearing conference discloses that the unfair labor practice charges are frivolous and not made in good faith and do not give rise to substantial questions of fact or law, the unfair labor practice charges shall be dismissed and those persons or organizations named in such

charges shall be notified in writing of such dismissal and the reasons for the dismissal. If the department finds that actionable charges have not been alleged under the provisions of the act, the unfair labor practice charges shall be dismissed and those persons or organizations named in such charges shall be notified in writing of such dismissal and the reasons for the dismissal.

[Order 72-13, § 296-133-250, filed 7/31/72.]

WAC 296-133-260 Remedial orders. Remedial orders may be issued by the department which shall afford an appropriate remedy or relief consistent with the provisions of the act and the findings and conclusions of the authorized agent, which may include the prominent posting of such remedial orders within the health care activity at such place or places reasonably accessible to all employees for periods of time not to exceed six months.

[Order 72-13, § 296-133-260, filed 7/31/72.]

WAC 296-133-270 Extensions of time. Whenever in these rules provision is made for the conducting of a hearing by the authorized agent for the purpose of taking testimony and evidence after the giving of a notice of the time and place of such hearing, the authorized agent may upon his own motion change the time for such hearing to a later date and change the place for such hearing. In addition, any party to the hearing process may upon written application to the authorized agent upon the basis of good cause shown in such application be granted an extension of time and a change of the date or place or both for such hearing which is reasonably convenient to the parties.

[Order 72-13, § 296-133-270, filed 7/31/72.]

WAC 296-133-280 Impasse-determination. Whenever either a health care activities employer or the exclusive bargaining representative of the bargaining unit of such health care activity are of the opinion that an impasse has arisen between the parties in the process of collective bargaining, either party may request the department in writing to determine whether an impasse exists in the collective bargaining process.

For the purpose of these rules and supplementary to section 9 of the act, an impasse in the collective bargaining process will be presumed to have been reached when the parties have not agreed upon a collective bargaining contract and an issue or issues remain upon which neither party is willing to agree, nor make in good faith concessions or make further concessions in good faith, nor agree upon any good faith proposal nor make further proposals in good faith for the settlement of any issue remaining unresolved.

For the purpose of these rules and supplementary to the act, the terms "collective bargaining" means the performance of the mutual obligations of the employer and the bargaining representative of the employees to meet at reasonable times, to confer in good faith with respect to wages, hours and other terms and conditions of employment, or the negotiations of an agreement, or any question arising thereunder, and the execution of a written contract incorporating any agreement reached, but such obligation does not compel either party to agree to a proposal or require the making of a concession.

In any case in which the department is requested to determine whether an impasse has been reached in the collective bargaining process, the authorized agent shall request the parties representing the employer, and the parties representing the exclusive bargaining representative in the negotiations to meet and confer with the authorized agent for the purpose of an informal hearing conference to enable a determination of the facts to be made as to whether an impasse has been reached in the collective bargaining process. For that purpose the authorized agent may take evidence and testimony under oath. If the authorized agent determines that an impasse has been reached in the collective bargaining process, he shall forthwith enter findings and conclusions forming the basis of his belief that an impasse has been reached and setting forth therein the specific issues remaining unresolved between the parties which constitute the impasse accompanied by an order declaring an impasse and ordering the parties to forthwith choose and impanel a board of arbitrators pursuant to the provisions of section 9 of the act. Which order shall further require the parties to furnish copies of the authorized agent's findings and conclusions and order declaring an impasse to each member of the panel of arbitrators for their guidance upon the subject of the issues remaining unresolved constituting the impasse.

If an impasse is found not to have been reached in the process of collective bargaining, the authorized agent shall enter findings and conclusions and order the parties to resume the process of collective bargaining.

[Order 72-13, § 296-133-280, filed 7/31/72.]

WAC 296-133-290 Administrative appeals to the director. Any employer or employee of a health care activity or employee organization or other person or organization who was a party in the proceeding before the authorized agent and aggrieved by any action taken or decision made by any authorized agent may appeal such action or decision to the director of the department of labor and industries by filing a notice of such appeal with the director of the department of labor and industries and the authorized agent within thirty days of such action or decision. The notice of appeal shall be accompanied by a concise numbered statement of the assignments of error which are to be relied upon and are the subject of the appeal. Copies of the notice of appeal and assignments of error shall be served upon all parties to the proceeding before the authorized agent. Proof of such service shall be filed in the office of the director. The notice of appeal may in the discretion of the director suspend such action or decision of the authorized agent pending the determination of the appeal by the director. The director shall review the record and written briefs on appeal filed by the respective parties and may bear oral argument regarding the issues on appeal. The director shall decide the issues raised by the appeal and shall notify all parties in writing of his decision. The decision of the director in the absence of an appeal to the superior court pursuant to the Administrative Procedure Act shall be final at the expiration of thirty days from the date of filing of such decision.

[Order 72-13, § 296-133-290, filed 7/31/72.]

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WAC 296-133-300 Appeal briefs. Typewritten memoranda of authority or appeal briefs shall be filed in the office of the director by the respective parties to the appeal thirty days following the filing of the notice of appeal. Any party to the appeal filing an appeal brief may request that a hearing of oral arguments upon the appeal be held before the director. Parties to the appeal not filing an appeal brief will not be granted oral hearing of arguments before the director nor permitted to present oral arguments to the director at any hearing that may be held for the presentation of arguments on appeal. The time and place for hearing oral arguments, when requested, will be fixed at the expiration of the time for filing briefs and notice of any such hearing will be sent to all parties to the appeal.

[Order 72-13, § 296-133-300, filed 7/31/72.]

WAC 296-133-310 Appeal briefs—Contents. In addition to the cover or title pages of the brief and any index, appeal briefs shall consist of the following subdivisions, titled with distinctive type and in the order indicated:

(1) Statement of the case. Under this heading the following shall be included: A brief statement of the nature of the case which is the subject of the appeal and a clear and concise statement of the facts appropriate to an understanding of the nature of the controversy, with page references to the record on appeal.

(2) Assignments of error. Each error relied upon and served with the notice of appeal shall be clearly pointed out and discussed under the appropriately designed headings. No alleged error of the authorized agent will be considered unless the same be definitely pointed out in the assignments of error in the appellant's brief. Whenever error is assigned to any findings of fact or conclusion of the authorized agent, so much of the findings or conclusions claimed to be erroneous shall be set out verbatim in the brief.

(3) Argument of counsel for appellant shall set forth and discuss the authorities in support of the position of the appellant and shall be appropriately designed and arranged for discussion and argument of the assignments of error and the issues arising out of such assignments of error with references where appropriate to the record on appeal.

(4) Argument of counsel for respondent. The brief of respondent on appeal need not contain a subdivision containing the assignments of error on appeal, but in the argument of counsel for respondent there shall be directed, under appropriately titled sections, argument and discussion in opposition to the assignments of error of the appellant, or in support of the decision of rulings of the authorized agent and where appropriate with supporting references to the pages of the record on appeal.

[Order 72-13, § 296-133-310, filed 7/31/72.]

WAC 296-133-320 Record on appeal. Upon receipt of a copy of the notice of appeal, the authorized agent shall promptly cause to be prepared and forwarded to the office of the director the record on appeal which shall include, a transcript of the proceedings of any hearing held by the authorized agent, the originals of all exhibits or documentary evidence admitted in evidence or rejected in evidence by the authorized agent and any other papers or evidence before the

[Title 296 WAC—p. 1895]

authorized agent relied upon in arriving at his decision. All exhibits shall be appropriately and plainly marked for reference. In addition the authorized agent shall certify in the appropriately titled case the record on appeal as containing all of the evidence, matters and things coming before the authorized agent at the hearing, or relied upon in making his findings, conclusions, decision and any remedial order. A copy of the record on appeal, or any portion thereof, may be obtained by any party to the appeal upon payment to the authorized agent of the reasonable cost per page.

[Order 72-13, § 296-133-320, filed 7/31/72.]

Chapter 296-134 WAC

PARENTAL (FAMILY) LEAVE

WAC

296-134-001	Declaration of purpose.
296-134-010	Definitions.
296-134-030	Entitlement to leave.
296-134-040	Notice.
296-134-050	Medical confirmation.
296-134-060	Leave from same employer.
296-134-070	Returning to employment.
296-134-090	Penalties.

WAC 296-134-001 Declaration of purpose. It is in the public interest that employers provide reasonable leave upon the birth or adoption of a child or to allow for the care of a child under eighteen years old with a terminal health condition. This chapter serves to implement chapter 11, Laws of 1989 1st ex. sess., establishing a minimum standard for employee leave in furtherance of family stability and economic security.

These rules are not comprehensive and should be implemented in conjunction with the statutory requirements of chapter 49.78 RCW.

[Statutory Authority: 1989 1st ex.s. c 11. 89-23-044, § 296-134-001, filed 11/13/89, effective 12/14/89.]

WAC 296-134-010 Definitions. For the purposes of this chapter:

(1) "Chapter" means this chapter of the Washington Administrative Code or chapter 11, Laws of 1989 1st ex. sess.

(2) "Department" means the department of labor and industries.

(3) "Employee" means a person, other than an independent contractor, employed by an employer on a continuous basis for the previous fifty-two weeks for at least an average of thirty-five hours a week. In computing the average number of hours worked, hours over fifty hours a week shall not be included.

A person is employed on a continuous basis despite a temporary interruption in the performance of the person's job duties if (a) the interruption is caused by the employee taking authorized leave; (b) the interruption is caused by the employer's temporary cessation of all or most operations and the employees do not qualify for unemployment compensation benefits due to a continuing employment relationship, e.g., school employees; or (c) the employee qualified for unemployment compensation benefits as a "stand-by" worker

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as defined in WAC 192-12-150 for time periods of two weeks or less.

(4) "Employer" means any person, firm, corporation, partnership, business trust, legal representative, or other business entity which engages in any business, industry, profession, or activity in this state, and any unit of local government, which (a) employed a daily average on one hundred or more employees during the last calendar quarter at the place where the employee requesting leave reports for work, or (b) employed a daily average of one hundred or more employees within a twenty mile radius of the place where the employee requesting leave reports for work, the employer maintains a central hiring location and customarily transfers employees among workplaces.

Any employer that has demonstrated the ability to transfer employees between workplaces within the twenty mile radius for the purpose of covering a temporary labor shortage or a permanent or temporary reassignment is considered to be an employer that customarily transfers employees.

A "central hiring location" is an office of the employer or its agent where two or more of the following functions are performed for two or more workplaces:

- (i) Employment applications are accepted or screened;
- (ii) Preemployment or employment interviews are conducted;
- (iii) Hiring decisions are made.

"Employer" also includes the state, state institutions, and state agencies.

(5) "Infraction" means a violation of chapter 11, Laws of 1989 1st ex. sess. or this chapter, as found by the department.

(6) "Workweek" means a fixed and regularly recurring period of one hundred sixty-eight hours or seven consecutive twenty-four hour periods. It may begin on any day of the week and any hour of the day, and need not coincide with a calendar week.

[Statutory Authority: 1989 1st ex.s. c 11. 89-23-044, § 296-134-010, filed 11/13/89, effective 12/14/89.]

WAC 296-134-030 Entitlement to leave. (1) Subject to restrictions within the statute and these rules, an employee is entitled to twelve workweeks of family leave during any twenty-four month period. Use of family leave shall not preclude an employee from using other leave to which the employee is entitled during that period according to the terms of the appropriate collective bargaining agreement or employer leave policy.

(2) Employers may limit or deny family leave to designated key personnel or the highest paid ten percent of the employer's employees in the state.

(a) Designated key personnel may not exceed ten percent of the employer's employees in the state. Key personnel shall be designated based upon criteria determined by the employer which may not include the employee's age or gender or other criteria for the purpose of evading the requirements of this chapter. Any designation of key personnel shall take effect thirty days after the employee is notified.

(b) If the employer chooses to limit or deny family leave to the highest paid ten percent of the employer's employees within the state, the employer shall within forty-five days after a determination notify the employees who fall within the highest paid ten percent. In calculating the highest paid

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ten percent of the employer's employees within the state, the employer shall include total wages, salary, or bonuses paid. An employer may not limit or deny family leave to the highest paid ten percent of the employer's employees until thirty days after the employees are notified. The notice shall be good for up to one year regardless of changes in compensation and may be changed no more than once in any twelve-month period.

[Statutory Authority: 1989 1st ex.s. c 11. 89-23-044, § 296-134-030, filed 11/13/89, effective 12/14/89.]

WAC 296-134-040 Notice. (1) An employee planning to take family leave to care for a newborn or newly adopted child shall provide the employer with written notice at least thirty days in advance of the anticipated date of delivery or adoption, stating the dates during which the employee intends to take family leave. This notice is not intended to substitute for notice to take maternity disability leave which an employer may require.

(2) Failure of an employee to provide written notice of the intention to take family leave for any authorized reason shall allow an employer to increase or reduce the leave requested by up to three weeks.

[Statutory Authority: 1989 1st ex.s. c 11. 89-23-044, § 296-134-040, filed 11/13/89, effective 12/14/89.]

WAC 296-134-050 Medical confirmation. An employer seeking confirmation by an employee's health care provider regarding the date of a child's birth, the date on which incapacity or disability commenced or will probably commence and its probable duration, or the fact that a child has a terminal health condition, shall notify the employee within seven calendar days or five working days of receipt of the employee's notice of leave except where the employer requires medical confirmation as part of the initial leave request. If disputes arise regarding premature birth, incapacitation of the mother, maternity disability, or the terminal condition of a child, the opinions of additional health care providers shall be obtained within fourteen calendar days or ten working days of the employer's receipt of the opinion of the employee's health care provider except where the employee is unable to schedule an appointment or otherwise fails to cooperate or where the employee's doctor is responsible for the delay.

[Statutory Authority: 1989 1st ex.s. c 11. 89-23-044, § 296-134-050, filed 11/13/89, effective 12/14/89.]

WAC 296-134-060 Leave from same employer. When both parents of a child are employed by the same employer, the employer may limit the family leave to a total of twelve workweeks during a twenty-four month period. For purposes of this section, an "employer" is the same entity as that defined in WAC 296-134-010(4) for determining the scope of this chapter. Each state agency or institution shall be considered a separate employer.

[Statutory Authority: 1989 1st ex.s. c 11. 89-23-044, § 296-134-060, filed 11/13/89, effective 12/14/89.]

WAC 296-134-070 Returning to employment. (1) Subject to the exceptions in subsections (2) and (3) of this

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section, an employee who exercises any right to family leave under this chapter shall be entitled, upon return from leave or during any reduced leave schedule, to the same position, with the same pay, benefits, hours and shift, as held when the leave commenced, or to a position with equivalent benefits and pay at a workplace within twenty miles of the employee's workplace when leave commenced. Upon a written request of the employee, the employer shall provide a written explanation to the employee if the employee is not allowed to return to the same position.

(2) If the employer's circumstances have changed so that the employee cannot be reinstated to the same position or to a position with equivalent pay and benefits, an employee returning from family leave shall be reinstated in any position which is vacant and for which the employee meets the minimum qualifications. The filling of a position held by an employee on family leave does not by itself constitute changed circumstances.

(3) Reinstatement of an employee returning from family leave need not occur as provided under subsection (1) or (2) of this section if:

(a) The specific job is eliminated by a bona fide restructuring, or a reduction in force resulting from lack of funds or lack of work;

(b) The employee's workplace is completely shut down at the time for at least thirty days;

(c) The employer moves the workplace of the employee to a location at least sixty miles from the location of the workplace with leave commenced;

(d) An employee on family leave takes a position with another employer outside the home; or

(e) The employee fails to provide the required notice of intent to take family leave or fails to return on the established ending date of leave.

[Statutory Authority: 1989 1st ex.s. c 11. 89-23-044, § 296-134-070, filed 11/13/89, effective 12/14/89.]

WAC 296-134-090 Penalties. (1) The department may fine an employer up to two hundred dollars for the first infraction of this chapter or its enabling legislation.

(2) An employer that commits three or more infractions within a two-year period shall be considered an employer that continues to violate the statute, subject to a fine of up to one thousand dollars for each infraction. An infraction that affects more than one employee and that an employer refuses to correct within a reasonable time after notification by the department, such as the employer's refusal to display in a conspicuous place a poster informing employees of their rights under this chapter, shall also constitute a continuing violation, subject to a fine of up to one thousand dollars for each day the infraction continues.

[Statutory Authority: 1989 1st ex.s. c 11. 89-23-044, § 296-134-090, filed 11/13/89, effective 12/14/89.]

Chapter 296-150C WAC COMMERCIAL COACHES

WAC

296-150C-0010	Authority, purpose, and scope.
296-150C-0020	What definitions apply to this chapter?
296-150C-0030	How is this chapter enforced?

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296-150C-0040	Will you keep my manufacturing information confidential?
296-150C-0050	Can you prohibit the sale or lease of my commercial coach?
296-150C-0060	Who handles consumer complaints about commercial coaches?
296-150C-0070	Do you have reciprocal agreements with other states to inspect commercial coaches?
296-150C-0080	Do you allow a local enforcement agency to inspect commercial coaches at the manufacturing location?
296-150C-0100	What happens if I disagree with your decision regarding my compliance with this chapter?
296-150C-0110	Do you have an advisory board to address commercial coach issues?
296-150C-0120	Where can I obtain technical assistance regarding commercial coaches?
296-150C-0140	Do you allow the use of alternate materials, alternate design and method of construction?
296-150C-0150	How does the department regulate commercial coaches that are used as medical units as defined in chapter 296-150V WAC?

INSIGNIA

296-150C-0200	Who must obtain commercial coach insignia?
296-150C-0210	What are the insignia requirements?
296-150C-0220	How do I obtain insignia information and the required forms?
296-150C-0230	What are the insignia application requirements?
296-150C-0240	What documentation do you need to perform an alteration inspection?
296-150C-0250	How do I replace lost or damaged insignia?

DESIGN PLAN

296-150C-0300	When is design-plan approval required?
296-150C-0310	Who can approve design plans?

DESIGN-PLAN APPROVAL BY THE DEPARTMENT

296-150C-0320	What must I provide with my request for commercial coach design-plan approval by the department?
296-150C-0340	What must an engineering analysis for design plans include?
296-150C-0350	What must test procedures and results for design plans include?
296-150C-0380	What happens if you approve my design plan?
296-150C-0390	If my design plan is not approved, how much time do I have to submit a corrected design plan?
296-150C-0400	What happens after my design plan is approved?
296-150C-0410	When does my design plan expire?
296-150C-0415	Who approves addendums to design plans approved by the department?

DESIGN-PLAN APPROVAL BY A LICENSED PROFESSIONAL OR FIRM

296-150C-0420	Who can be authorized to approve design plans?
296-150C-0430	What information must a professional or firm provide to be authorized to approve design plans?
296-150C-0440	How will I know whether I am authorized to approve design plans?
296-150C-0450	How long is a licensed professional or firms authorization effective?
296-150C-0460	What information must a manufacturer provide when a professional or firm does the design-plan approval?
296-150C-0470	What happens after we receive the professional or firm approved design plan and information?
296-150C-0480	Do you have a list of professionals or firms that are authorized to approve design plans?
296-150C-0490	Who approves addendums to design plans approved by a professional or firm?

INSPECTIONS PRIOR TO ISSUANCE OF AN INSIGNIA

296-150C-0500	When is an inspection required?
296-150C-0510	How do I request an inspection?
296-150C-0520	What happens if my commercial coach passes inspection?
296-150C-0530	Am I charged if I request an inspection but I am not prepared?
296-150C-0540	Who inspects commercial coach installation at the building site?
296-150C-0550	Do you allow a commercial coach to be completed at the installation site?
296-150C-0560	What happens if I receive a notice of noncompliance after inspection of the alteration to my commercial coach?

USED COMMERCIAL COACHES WITHOUT AN INSIGNIA

296-150C-0580	Must I obtain an insignia for used commercial coaches?
296-150C-0590	How do I obtain insignia for used commercial coaches?

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296-150C-0700	Must manufacturers of commercial coaches notify you if they manufacture at more than one location?
296-150C-0710	Must manufacturers of commercial coaches notify you of a change in business name or address?
296-150C-0720	Must manufacturers of commercial coaches notify you of a change in business ownership?

COMMERCIAL COACH CONSTRUCTION CODE

GENERAL

296-150C-0800	What manufacturing codes apply to commercial coaches?
296-150C-0805	Are there any special requirements for portable school classrooms?
296-150C-0810	Construction definitions.

STRUCTURAL

296-150C-0820	What are the basic structural requirements of a commercial coach?
296-150C-0830	Fastening of structural systems.
296-150C-0840	Live loads.
296-150C-0850	Roof loads.
296-150C-0860	Snow loads.
296-150C-0870	Standard wind loads.
296-150C-0880	Windstorm protection—Provisions for support and anchoring.
296-150C-0900	Interior walls and partitions.
296-150C-0910	Minimum uniform and concentrated live loads.
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296-150C-0930	Structural load tests.

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296-150C-0940	Fastening of structural systems.
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296-150C-1110	Combustible limitations.
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 296-150C-1340 Mechanical definitions.
 296-150C-1346 When HVAC equipment is supplied with more than one CFM rating, which rating do I use?
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 296-150C-1360 Gas piping—Piping design.
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 296-150C-1380 Concealed tubing.
 296-150C-1390 Gas piping—Pipe-joint compound.
 296-150C-1400 Gas piping—Hangers and supports.
 296-150C-1410 Gas piping—Electrical ground.
 296-150C-1420 Identification of gas supply connections.
 296-150C-1430 Gas piping system openings.
 296-150C-1440 Gas piping—Valves.
 296-150C-1450 Gas piping—Testing for leakage before appliances are connected.
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VENTILATION AND INDOOR AIR QUALITY

296-150C-1470 Ventilation and indoor air quality—General.
 296-150C-1480 Ventilation and indoor air quality definitions.
 296-150C-1490 Appliances—Installation.
 296-150C-1500 Safety devices—Water heater relief valves.
 296-150C-1510 Air ducts—Expandable or multiple commercial coach connections.
 296-150C-1520 Air ducts—Duct and plenum insulation.

PLUMBING

296-150C-1530 Plumbing—General.
 296-150C-1540 Plumbing—Definitions.
 296-150C-1545 Does the department require a water system expansion tank be installed?
 296-150C-1550 Drainage—Cap or plug.
 296-150C-1560 Drainage—Clearance from drain outlet.
 296-150C-1570 Water supply connection.

COMMERCIAL COACH FEES

296-150C-3000 Commercial coach fees.

DISPOSITION OF SECTIONS FORMERLY CODIFIED IN THIS CHAPTER

296-150C-0330 What must I provide with my request for a commercial coach vendor unit design-plan approval by the department? [Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-0330, filed 10/23/96, effective 11/25/96.] Repealed by 00-01-188, filed 12/22/99, effective 2/8/00. Statutory Authority: RCW 43.22.480.
 296-150C-0980 Wall coverings. [Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-0980, filed 10/23/96, effective 11/25/96.] Repealed by 98-14-078, filed 6/30/98, effective 7/31/98. Statutory Authority: Chapter 43.22 RCW.
 296-150C-1345 May the electrical disconnect required for mechanical equipment be inside of or mounted on the equipment? [Statutory Authority: RCW 43.22.340 and 43.22.480. 99-13-010, § 296-150C-1345, filed 6/4/99, effective 7/5/99.] Repealed by 05-01-102, filed 12/14/04, effective 2/1/05. Statutory Authority: Chapter 43.22 RCW and 2003 c 291.
 296-150C-1580 What manufacturing codes apply when converting structures to vendor units? [Statutory Authority: Chapter 43.22 RCW. 98-14-078, § 296-150C-1580, filed 6/30/98, effective 7/31/98. Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-1580, filed 10/23/96, effective 11/25/96.] Repealed by 00-01-188, filed 12/22/99, effective 2/8/00. Statutory Authority: RCW 43.22.480.

296-150C-1590 Is a structural analysis required when converting a vehicle or structure to a vendor unit? [Statutory Authority: Chapter 43.22 RCW. 98-14-078, § 296-150C-1590, filed 6/30/98, effective 7/31/98. Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-1590, filed 10/23/96, effective 11/25/96.] Repealed by 00-01-188, filed 12/22/99, effective 2/8/00. Statutory Authority: RCW 43.22.480.

296-150C-1600 What are the live load requirements of a vendor unit? [Statutory Authority: Chapter 43.22 RCW. 98-14-078, § 296-150C-1600, filed 6/30/98, effective 7/31/98. Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-1600, filed 10/23/96, effective 11/25/96.] Repealed by 00-01-188, filed 12/22/99, effective 2/8/00. Statutory Authority: RCW 43.22.480.
 296-150C-1610 Design load deflection. [Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-1610, filed 10/23/96, effective 11/25/96.] Repealed by 00-01-188, filed 12/22/99, effective 2/8/00. Statutory Authority: RCW 43.22.480.

296-150C-1620 Structural load tests. [Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-1620, filed 10/23/96, effective 11/25/96.] Repealed by 00-01-188, filed 12/22/99, effective 2/8/00. Statutory Authority: RCW 43.22.480.

296-150C-1630 Roof coverings/membrane/weather resistant. [Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-1630, filed 10/23/96, effective 11/25/96.] Repealed by 00-01-188, filed 12/22/99, effective 2/8/00. Statutory Authority: RCW 43.22.480.

296-150C-1640 Floors. [Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-1640, filed 10/23/96, effective 11/25/96.] Repealed by 00-01-188, filed 12/22/99, effective 2/8/00. Statutory Authority: RCW 43.22.480.

296-150C-1650 Floor closure material. [Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-1650, filed 10/23/96, effective 11/25/96.] Repealed by 00-01-188, filed 12/22/99, effective 2/8/00. Statutory Authority: RCW 43.22.480.

296-150C-1660 Chassis approval. [Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-1660, filed 10/23/96, effective 11/25/96.] Repealed by 00-01-188, filed 12/22/99, effective 2/8/00. Statutory Authority: RCW 43.22.480.

296-150C-1670 Standards for equipment and installations. [Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-1670, filed 10/23/96, effective 11/25/96.] Repealed by 00-01-188, filed 12/22/99, effective 2/8/00. Statutory Authority: RCW 43.22.480.

296-150C-1680 Flame-spread limitations. [Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-1680, filed 10/23/96, effective 11/25/96.] Repealed by 00-01-188, filed 12/22/99, effective 2/8/00. Statutory Authority: RCW 43.22.480.

296-150C-1690 Cabinet protection. [Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-1690, filed 10/23/96, effective 11/25/96.] Repealed by 00-01-188, filed 12/22/99, effective 2/8/00. Statutory Authority: RCW 43.22.480.

296-150C-1700 Insulation standards. [Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-1700, filed 10/23/96, effective 11/25/96.] Repealed by 00-01-188, filed 12/22/99, effective 2/8/00. Statutory Authority: RCW 43.22.480.

296-150C-1710 Light and ventilation. [Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-1710, filed 10/23/96, effective 11/25/96.] Repealed by 00-01-188, filed 12/22/99, effective 2/8/00. Statutory Authority: RCW 43.22.480.

- 296-150C-1720 What requirements apply to vending unit exits? [Statutory Authority: Chapter 43.22 RCW. 98-14-078, § 296-150C-1720, filed 6/30/98, effective 7/31/98. Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-1720, filed 10/23/96, effective 11/25/96.] Repealed by 00-01-188, filed 12/22/99, effective 2/8/00. Statutory Authority: RCW 43.22.480.
- 296-150C-1730 What code and installation requirements apply to vendor unit electrical systems? [Statutory Authority: Chapter 43.22 RCW. 98-14-078, § 296-150C-1730, filed 6/30/98, effective 7/31/98. Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-1730, filed 10/23/96, effective 11/25/96.] Repealed by 00-01-188, filed 12/22/99, effective 2/8/00. Statutory Authority: RCW 43.22.480.
- 296-150C-1740 What are the mechanical requirements for a vendor unit? [Statutory Authority: Chapter 43.22 RCW. 98-14-078, § 296-150C-1740, filed 6/30/98, effective 7/31/98. Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-1740, filed 10/23/96, effective 11/25/96.] Repealed by 00-01-188, filed 12/22/99, effective 2/8/00. Statutory Authority: RCW 43.22.480.
- 296-150C-1750 What are the LPG system enclosure and mounting requirements for a vendor unit? [Statutory Authority: Chapter 43.22 RCW. 98-14-078, § 296-150C-1750, filed 6/30/98, effective 7/31/98.] Repealed by 00-01-188, filed 12/22/99, effective 2/8/00. Statutory Authority: RCW 43.22.480.
- 296-150C-1751 What are the fuel gas piping design requirements for a vendor unit? [Statutory Authority: Chapter 43.22 RCW. 98-14-078, § 296-150C-1751, filed 6/30/98, effective 7/31/98.] Repealed by 00-01-188, filed 12/22/99, effective 2/8/00. Statutory Authority: RCW 43.22.480.
- 296-150C-1752 Can gas tubing be concealed in a vendor unit? [Statutory Authority: Chapter 43.22 RCW. 98-14-078, § 296-150C-1752, filed 6/30/98, effective 7/31/98.] Repealed by 00-01-188, filed 12/22/99, effective 2/8/00. Statutory Authority: RCW 43.22.480.
- 296-150C-1753 What are the pipe-joint compound requirements for gas piping in a vendor unit? [Statutory Authority: Chapter 43.22 RCW. 98-14-078, § 296-150C-1753, filed 6/30/98, effective 7/31/98.] Repealed by 00-01-188, filed 12/22/99, effective 2/8/00. Statutory Authority: RCW 43.22.480.
- 296-150C-1754 What are the gas piping hanger and support requirements for a vendor unit? [Statutory Authority: Chapter 43.22 RCW. 98-14-078, § 296-150C-1754, filed 6/30/98, effective 7/31/98.] Repealed by 00-01-188, filed 12/22/99, effective 2/8/00. Statutory Authority: RCW 43.22.480.
- 296-150C-1755 What are the electrical bonding requirements for gas piping in a vendor unit? [Statutory Authority: Chapter 43.22 RCW. 98-14-078, § 296-150C-1755, filed 6/30/98, effective 7/31/98.] Repealed by 00-01-188, filed 12/22/99, effective 2/8/00. Statutory Authority: RCW 43.22.480.
- 296-150C-1756 How are gas supply connections in a vendor unit identified? [Statutory Authority: Chapter 43.22 RCW. 98-14-078, § 296-150C-1756, filed 6/30/98, effective 7/31/98.] Repealed by 00-01-188, filed 12/22/99, effective 2/8/00. Statutory Authority: RCW 43.22.480.
- 296-150C-1757 What requirements apply to gas piping system openings? [Statutory Authority: Chapter 43.22 RCW. 98-14-078, § 296-150C-1757, filed 6/30/98, effective 7/31/98.] Repealed by 00-01-188, filed 12/22/99, effective 2/8/00. Statutory Authority: RCW 43.22.480.
- 296-150C-1758 Are gas piping shut-off valves required in a vendor unit? [Statutory Authority: Chapter 43.22 RCW. 98-14-078, § 296-150C-1758, filed 6/30/98, effective 7/31/98.] Repealed by 00-01-188, filed 12/22/99, effective 2/8/00. Statutory Authority: RCW 43.22.480.
- 296-150C-1759 What requirements apply to testing for gas piping leaks before vendor unit appliances are connected? [Statutory Authority: Chapter 43.22 RCW. 98-14-078, § 296-150C-1759, filed 6/30/98, effective 7/31/98.] Repealed by 00-01-188, filed 12/22/99, effective 2/8/00. Statutory Authority: RCW 43.22.480.
- 296-150C-1760 What requirements apply to testing for gas piping leaks after vendor unit appliances are connected? [Statutory Authority: Chapter 43.22 RCW. 98-14-078, § 296-150C-1760, filed 6/30/98, effective 7/31/98.] Repealed by 00-01-188, filed 12/22/99, effective 2/8/00. Statutory Authority: RCW 43.22.480.
- 296-150C-1770 Appliances—Installation. [Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-1770, filed 10/23/96, effective 11/25/96.] Repealed by 00-01-188, filed 12/22/99, effective 2/8/00. Statutory Authority: RCW 43.22.480.
- 296-150C-1780 Safety devices—Water heater relief valves. [Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-1780, filed 10/23/96, effective 11/25/96.] Repealed by 00-01-188, filed 12/22/99, effective 2/8/00. Statutory Authority: RCW 43.22.480.
- 296-150C-1790 Plumbing—General. [Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-1790, filed 10/23/96, effective 11/25/96.] Repealed by 00-01-188, filed 12/22/99, effective 2/8/00. Statutory Authority: RCW 43.22.480.
- 296-150C-1800 Plumbing—Definitions. [Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-1800, filed 10/23/96, effective 11/25/96.] Repealed by 00-01-188, filed 12/22/99, effective 2/8/00. Statutory Authority: RCW 43.22.480.
- 296-150C-1810 Drainage—Cap or plug. [Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-1810, filed 10/23/96, effective 11/25/96.] Repealed by 00-01-188, filed 12/22/99, effective 2/8/00. Statutory Authority: RCW 43.22.480.
- 296-150C-1820 Drainage—Clearance from drain outlet. [Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-1820, filed 10/23/96, effective 11/25/96.] Repealed by 00-01-188, filed 12/22/99, effective 2/8/00. Statutory Authority: RCW 43.22.480.
- 296-150C-1830 Water supply connection. [Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-1830, filed 10/23/96, effective 11/25/96.] Repealed by 00-01-188, filed 12/22/99, effective 2/8/00. Statutory Authority: RCW 43.22.480.

WAC 296-150C-0010 Authority, purpose, and scope.

(1) This chapter is authorized by RCW 43.22.340 through 43.22.435 covering the construction, alteration and approval of commercial coaches sold, leased, or used in Washington state.

(2) This chapter applies to the approval of commercial coach manufacturers, dealers and to any person who manufactures or alters the plumbing, mechanical, or electrical system or the body or frame of a commercial coach.

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-0010, filed 10/23/96, effective 11/25/96.]

WAC 296-150C-0020 What definitions apply to this chapter? "Alteration" is the replacement, addition, modification, or removal of any equipment or installation that affects the construction, fire and life safety, or the plumbing, mechanical, and electrical systems of a commercial coach.

The following are not considered alterations:

- Repairs with approved parts;
- Modification of a fuel-burning appliance according to the listing agency's specifications; or
- Adjustment and maintenance of equipment.

"Approved" is approved by the department of labor and industries.

"Building site" is a tract, parcel, or subdivision of land on which a commercial coach will be installed.

"Consumer" is a person or organization, excluding a manufacturer or dealer of commercial coaches, who buys or leases a commercial coach.

"Commercial coach" is a structure (referred to as a unit) that:

- Can be transported in one or more sections;
- Is used for temporary commercial purposes;
- Is built on a permanent chassis;
- Conforms to the construction standards of this chapter;
- May include plumbing, mechanical, electrical and other systems.

Note: A commercial coach may not be used as a single-family dwelling or hazardous storage building. A commercial coach does not have to be placed on a permanent foundation.

"Damaged in transit" means damage that affects the integrity of a structural design or any of the systems.

"Dealer" is a person, company, or corporation whose business is leasing, selling, offering for lease or sale, buying, or trading commercial coaches.

"Department" is the department of labor and industries. The department may be referred to as "we" or "us" in this chapter. Note: You may contact us at: Department of Labor and Industries, Specialty Compliance, PO Box 44440, Olympia, WA 98504-4440.

"Design plan" is a plan for the construction or alteration of a commercial coach or conversion of a vehicle to a commercial coach including floor plans, elevation drawings, specifications, engineering data, or test results necessary for a complete evaluation of the design.

"Design option" is a design that a manufacturer may use as an option to its commercial coach design plan.

"Educational facility" is a building or portion of a building used primarily for educational purposes by six or more persons at one time for twelve hours per week or four hours in any one day. Educational occupancy includes: Schools (preschool through grade twelve), colleges, academies, universities, and trade schools.

"Equipment" is all material, appliances, devices, fixtures, fittings, or accessories used in the manufacture, assembly, conversion to, or alteration of a commercial coach.

"Factory assembled structure (FAS) advisory board" is a board authorized to advise the director of the department regarding the issues and adoption of rules relating to commercial coaches. (See RCW 43.22.420.)

"Health or personal care facilities" are buildings or parts of buildings that contain, but are not limited to, facilities that are required to be licensed by the department of social and health services or the department of health (e.g., hospitals, nursing homes, private alcoholism hospitals, private psychiatric hospitals, boarding homes, alcoholism treatment facilities, maternity homes, birth centers or childbirth centers, residential treatment facilities for psychiatrically impaired children and youths, and renal hemodialysis clinics) and medical, dental or chiropractic offices or clinics, outpatient or ambulatory surgical clinics, and such other health care occupancies where patients who may be unable to provide for their own needs and safety without the assistance of another person are treated. (Further defined in WAC 296-46B-010.)

(2007 Ed.)

"Insignia" is a label that we attach to a commercial coach to verify that the structure meets the requirements of this chapter and the applicable codes.

"Install" is to erect, construct, assemble, or set a commercial coach in place.

"Institutional facility" is a building or portion of a building used primarily for detention and correctional occupancies where some degree of restraint or security is required for a time period of twenty-four or more hours. Such occupancies include, but are not restricted to: Penal institutions, reformatories, jails, detention centers, correctional centers, and residential-restrained care.

"Labeled" is to bear the department's insignia.

"Listed" is a piece of equipment or apparatus that has been approved by a testing agency to the appropriate standard.

"Local enforcement agency" is an agency of city or county government with power to enforce local regulations governing the installation of a commercial coach.

"Master design plan" is a design plan that expires when a new state building code has been adopted.

"One-year design plan" is a design plan that expires one year after approval or when a new state building code has been adopted.

"System" is part of a commercial coach designed to serve a particular function. Examples include structural, plumbing, electrical, or mechanical systems.

[Statutory Authority: Chapter 43.22 RCW. 05-23-002, § 296-150C-0020, filed 11/3/05, effective 12/4/05. Statutory Authority: Chapter 43.22 RCW and 2003 c 291. 05-01-102, § 296-150C-0020, filed 12/14/04, effective 2/1/05. Statutory Authority: RCW 43.22.480. 00-01-187, § 296-150C-0020, filed 12/22/99, effective 2/8/00. Statutory Authority: Chapter 43.22 RCW. 98-14-078, § 296-150C-0020, filed 6/30/98, effective 7/31/98. Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-0020, filed 10/23/96, effective 11/25/96.]

WAC 296-150C-0030 How is this chapter enforced?

(1) To enforce this chapter, we or another governmental inspection agency will inspect each commercial coach manufactured, sold, leased, or used in Washington state as required by this chapter. (See WAC 296-150C-0070 - reciprocal agreements.)

(2) We will inspect all commercial coach alterations.

(3) We will conduct inspections during normal work hours or at other reasonable times.

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-0030, filed 10/23/96, effective 11/25/96.]

WAC 296-150C-0040 Will you keep my manufacturing information confidential? We will only release manufacturing information such as design plans, specifications, and test results according to the requirements of the Public Records Act (see RCW 42.17.310 (1)(h)) unless we are ordered to do so by a court or otherwise required by law.

[Statutory Authority: RCW 43.22.340 and 43.22.420. 97-16-043, § 296-150C-0040, filed 7/31/97, effective 12/1/97. Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-0040, filed 10/23/96, effective 11/25/96.]

WAC 296-150C-0050 Can you prohibit the sale or lease of my commercial coach? (1) We may prohibit the sale or lease of your commercial coach because it is unlawful for any person to sell, lease, or offer for sale a commercial coach within this state if it violates any of the requirements of this chapter. (See RCW 43.22.345.)

(2) If an inspection reveals that a commercial coach violates this chapter, we may post a notice prohibiting the sale or lease of a commercial coach.

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-0050, filed 10/23/96, effective 11/25/96.]

WAC 296-150C-0060 Who handles consumer complaints about commercial coaches? (1) Consumer may file complaints within one year of the date of manufacture.

(2) The complaint should be in writing and describe the item(s) that may not comply with this chapter.

(3) After we receive the complaint, we will send the manufacturer and the dealer a copy of the complaint.

(4) The manufacturer and/or dealer have thirty days to respond. We shall base our actions on the response.

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-0060, filed 10/23/96, effective 11/25/96.]

WAC 296-150C-0070 Do you have reciprocal agreements with other states to inspect commercial coaches?

(1) We have entered into reciprocal agreements with states who have inspection standards equal or greater than our standard.

(2) When we have a reciprocal agreement with another state:

(a) The reciprocal state inspects the commercial coaches manufactured in that state before shipment into Washington to ensure compliance with our laws. After inspection, the reciprocal state applies our insignia.

(b) The department inspects commercial coaches manufactured in Washington before shipment into the reciprocal state to ensure compliance with their laws. After inspection, we apply the insignia of the reciprocal state.

(3) We have reciprocal agreements on file.

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-0070, filed 10/23/96, effective 11/25/96.]

WAC 296-150C-0080 Do you allow a local enforcement agency to inspect commercial coaches at the manufacturing location? (1) A local enforcement agency (city or county), under contract with us, can inspect commercial coaches. In some cases, their contract may be limited to specific portions of an inspection at specified manufacturing locations.

(2) After approving a unit, the local enforcement agency will attach the insignia, which indicates that the unit has passed inspection.

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-0080, filed 10/23/96, effective 11/25/96.]

[Title 296 WAC—p. 1902]

WAC 296-150C-0100 What happens if I disagree with your decision regarding my compliance with this chapter? (1) If we determine that you are in violation of this chapter, you will receive a notice of noncompliance. (See WAC 296-150C-0560.)

(2) If you disagree with our decision, you can send us a written request for a hearing, stating why you disagree.

(3) After we receive your hearing request, we will:

(a) Schedule a hearing within thirty days after we receive your request.

(b) Notify you of the time, date, and place for the hearing. If you fail to appear, your case will be dismissed.

(c) Hear your case.

(d) Send you written notice of our decision.

If you disagree with our decision, you may appeal it under the Administrative Procedure Act (chapter 34.05 RCW).

[Statutory Authority: RCW 43.22.340 and 43.22.420. 97-16-043, § 296-150C-0100, filed 7/31/97, effective 12/1/97. Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-0100, filed 10/23/96, effective 11/25/96.]

WAC 296-150C-0110 Do you have an advisory board to address commercial coach issues? The factory assembled structures (FAS) board advises us on issues relating to body and frame design, construction, alterations, plumbing, mechanical, electrical, installation, inspections, and rule adoption for commercial coaches. (See RCW 43.22.420.)

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-0110, filed 10/23/96, effective 11/25/96.]

WAC 296-150C-0120 Where can I obtain technical assistance regarding commercial coaches? We offer field technical service to commercial coach manufacturers for an hourly fee. (See WAC 296-150C-3000.) Field technical service may include evaluation, consultation, plan examination, interpretation, and clarification of technical data relating to the application of our rules. It does not include inspections.

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-0120, filed 10/23/96, effective 11/25/96.]

WAC 296-150C-0140 Do you allow the use of alternate materials, alternate design and method of construction? An applicant may apply for the use of alternate materials, alternate design and methods of construction different from the requirements of this chapter by filing a written request with the department.

(1) Responsibilities of applicant. The applicant must submit in writing the following information and sign and date the request.

(a) The applicant's name, address and phone number;

(b) The specific requirement or requirements from which the alternate material, alternate design or method of construction is requested;

(c) Justification that the requirements of this chapter cannot be met without using alternate materials, alternate design or method of construction;

(d) How the use of alternate materials, alternate design or method of construction will achieve the same result as the

requirement and any specific alternative measures to be taken to show the alternate provides the same level of protection to life, safety and health as the requirements.

The department has a form that you may use for your request. Contact the department at the address shown in the definition section.

(2) Responsibilities of the department. The department will provide a written response to the applicant within thirty days of receipt of the written request. The written response will state the acceptance or denial of the request, including the reasons for the department's decision. At a minimum the department will base its decision based on:

(a) The applicant's request as described in subsection (1) of this section;

(b) Research into the request;

(c) Expert advice.

(3) Applicant's response to denials. The applicant may appeal the department's decision by following the procedure in WAC 296-150C-0100.

[Statutory Authority: RCW 43.22.340, 43.22.350, 43.22.355, 43.22.360, 43.22.400, 43.22.432, 43.22.433, 43.22.434, 43.22.450, 43.22.480, and 43.22.485. 00-17-148, § 296-150C-0140, filed 8/22/00, effective 9/30/00. Statutory Authority: RCW 43.22.340 and 43.22.480. 99-13-010, § 296-150C-0140, filed 6/4/99, effective 7/5/99.]

WAC 296-150C-0150 How does the department regulate commercial coaches that are used as medical units as defined in chapter 296-150V WAC? (1) Commercial coaches that are used as medical units may either:

(a) Comply with the requirements of this chapter; or

(b) Receive approval by the department to comply with the applicable requirements found in chapter 296-150V WAC.

(2) You must contact the department to receive the approval required in subsection (1)(b) of this section prior to using the commercial coach as a medical unit by demonstrating that the commercial coach is being used for medical unit purposes.

[Statutory Authority: RCW 43.22.340, 43.22.400, 43.22.432, 43.22.433, 43.22.434, 43.22.480, and 43.22.485, 2002 c 268, and chapter 43.22 RCW. 03-12-044, § 296-150C-0150, filed 5/30/03, effective 6/30/03.]

INSIGNIA

WAC 296-150C-0200 Who must obtain commercial coach insignia? (1) You must obtain an insignia from us for each commercial coach manufactured, sold, leased, or used in Washington state.

(2) You do not need an insignia for a commercial coach:

(a) When a unit has been used outside of the state for six months before being brought into Washington state (see RCW 43.22.380); or

(b) If a unit was manufactured prior to July 1, 1968. (See RCW 43.22.370.)

Note: All commercial coaches must have insignia if they are altered, this includes the exceptions in subsection (2)(a) and (b) of this section.

(3) You must obtain an insignia when commercial coaches are altered in Washington state.

(4) You must obtain an alteration insignia when a commercial coach is damaged in transit after leaving the manu-

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facturing location or during an on-site installation, and an alteration or repair is necessary. The insignia indicates the commercial coach was altered or repaired.

(5) You must have an approved design plan and pass our inspection before we will attach an insignia.

[Statutory Authority: RCW 43.22.340, 43.22.350, 43.22.355, 43.22.360, 43.22.400, 43.22.432, 43.22.433, 43.22.434, 43.22.450, 43.22.480, and 43.22.485. 00-17-148, § 296-150C-0200, filed 8/22/00, effective 9/30/00. Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-0200, filed 10/23/96, effective 11/25/96.]

WAC 296-150C-0210 What are the insignia requirements? (1) If you are applying for insignia, you must have your design plan approved and your commercial coach inspected and approved by us.

(2) If you are a manufacturer, dealer or owner applying for an alteration insignia, your alteration must be inspected and approved by us. Approval of the design plan may also be required.

(3) We will attach the insignia to your commercial coach after:

(a) We receive the required forms and fees from you (see WAC 296-150C-3000); and

(b) Your commercial coach has passed final inspection.

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-0210, filed 10/23/96, effective 11/25/96.]

WAC 296-150C-0220 How do I obtain insignia information and the required forms? Upon request, we will provide you with a packet of information that includes the required forms.

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-0220, filed 10/23/96, effective 11/25/96.]

WAC 296-150C-0230 What are the insignia application requirements? (1) If you are requesting insignia for commercial coaches that you intend to manufacture under a *new design plan*, your completed application must include:

(a) A completed design-plan approval request form;

(b) One complete set of design plans, specifications, engineering analysis, and test procedures and results, plus one additional set for each manufacturing location where the design plan will be used.

(c) At least one set of design plans must have an original wet stamp from a professional engineer or architect licensed in Washington state. We will retain the set with the original wet stamp; and

(d) A one-time initial filing fee, the design-plan fee (if you want us to approve your design plan), and the fee for each insignia. (See WAC 296-150C-3000.)

(2) If you are requesting insignia under an *approved design plan*, your completed application must include:

(a) A completed insignia application form; and

(b) The fee for each commercial coach insignia (see WAC 296-150C-3000).

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-0230, filed 10/23/96, effective 11/25/96.]

WAC 296-150C-0240 What documentation do you need to perform an alteration inspection? (1) If you alter a commercial coach, we must inspect the alteration.

(2) Before we perform an alteration inspection and attach an alteration insignia, you must send us:

- (a) A description of the proposed alteration;
- (b) Applicable specifications, engineering analysis, test procedures and results for design-plan review;
- (c) The plan review fee (if you want us to approve your design plan);
- (d) The inspection fee; and
- (e) The insignia application and fee. (See WAC 296-150C-3000.)

(3) A design plan review is not required if the alteration can be made without altering any of the existing structure.

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-0240, filed 10/23/96, effective 11/25/96.]

WAC 296-150C-0250 How do I replace lost or damaged insignia? (1) If an insignia is lost or damaged after it is placed on a commercial coach, you may obtain a replacement insignia.

(2) You should contact us and provide the following information:

- (a) Your name, address, and telephone number;
- (b) The name of the manufacturer or person converting the vendor unit;
- (c) The serial number;
- (d) The manufacturer number (CC#) if available;
- (e) The insignia number if available; and
- (f) The required fee. (See WAC 296-150C-3000.)

(3) If we can determine that your unit previously had an insignia, we will:

(a) Perform an inspection to ensure that no unauthorized remodeling has occurred;

Note: If unauthorized remodeling has occurred see WAC 296-150C-0200;

(b) Attach an insignia to your unit once we receive your insignia fee. (See WAC 296-150C-3000.)

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-0250, filed 10/23/96, effective 11/25/96.]

DESIGN PLAN

WAC 296-150C-0300 When is design-plan approval required? Design plans for commercial coaches are required for units that are sold, leased, or used in Washington state and must be approved when:

- (1) You build a new unit;
- (2) You modify an approved design plan through addendums;
- (3) You add options to an approved design plan through addendums; or
- (4) You change the occupancy classification of the building.

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-0300, filed 10/23/96, effective 11/25/96.]

[Title 296 WAC—p. 1904]

WAC 296-150C-0310 Who can approve design plans? (1) Design plans can be approved by us or by a licensed professional or firm authorized by us. (See WAC 296-150C-0420 and 296-150C-0430.)

(2) All electrical design plans for new or altered electrical installations for educational institutions, health care facilities, and other buildings required by chapter 296-46 WAC, Safety standards—Installing electric wires and equipment—Administrative rules, must be reviewed and approved by us.

(3) A professional cannot approve plans submitted under a reciprocal agreement.

[Statutory Authority: Chapter 43.22 RCW. 98-14-078, § 296-150C-0310, filed 6/30/98, effective 7/31/98. Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-0310, filed 10/23/96, effective 11/25/96.]

DESIGN-PLAN APPROVAL BY THE DEPARTMENT

WAC 296-150C-0320 What must I provide with my request for commercial coach design-plan approval by the department? All requests for design-plan approval must include:

- (1) A completed design-plan approval request form;
- (2) Two sets of design plans plus elevation drawings, specifications, engineering analysis, and test results and procedures necessary for a complete evaluation of the design; (see WAC 296-150C-0340 and 296-150C-0350.)

(3) At least one set of design plans must have an original wet stamp from a professional engineer or architect licensed in Washington state. All new, renewed, and resubmitted plans, specifications, reports and structural calculations prepared by or prepared under his or her direct supervision shall be signed, dated and stamped with their seal. Specifications, reports, and structural calculations may be stamped only on the first sheet, provided this first sheet identifies all of the sheets that follow are included and identified in the same manner. Plans that have not been prepared by or under the engineer's or architect's supervision shall be reviewed by them and they shall prepare a report concerning the plans reviewed. This report shall:

- (a) Identify which drawings have been reviewed by drawing number and date;
- (b) Include a statement that the plans are in compliance with current Washington state regulations; and
- (c) The report shall be stamped and signed by the reviewer.

Any deficiencies shall be corrected on the drawings before submitting to the department or be included in the report and identify as to how they are to be corrected. This report shall be attached to the plan(s) that were reviewed. We will retain the set with the original wet stamp;

(4) Receipt of a one-time initial design plan filing fee and the initial design plan fee (see WAC 296-150C-3000);

(5) A "key drawing" to show the arrangement of modules if the plan covers three or more modules;

(6) The occupancy class of the commercial coach according to the occupancy classifications in The Uniform Building Code;

(7) Electrical plan review for educational, institutional or health care facilities and other buildings. Plan review is a part

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of the electrical inspection process; its primary purpose is to determine:

(a) That loads and service/feeder conductors are calculated and sized according to the proper NCE or WAC article or section;

(b) The classification of hazardous locations; and

(c) The proper design of emergency and standby systems.

(8) All electrical plans for new or altered electrical installations in educational, institutional, and health or personal care occupancies classified or defined in this chapter must be reviewed and approved before the electrical installation or alteration is started. Approved plans must be available for use during the electrical installation or alteration and for use by the electrical inspector.

(9) All electrical plans for educational facilities, hospitals and nursing homes must be prepared by, or under the direction of, a consulting engineer registered under chapter 18.43 RCW in compliance with chapters 246-320, 180-29, and 388-97 WAC as applicable and stamped with the engineer's mark and signature.

(10) Plans to be reviewed by the department must be legible, identify the name and classification of the facility, clearly indicate the scope and nature of the installation and the person or firm responsible for the electrical plans. The plans must clearly show the electrical installation or alteration in floor plan view, include switchboard and/or panel board schedules and when a service or feeder is to be installed or altered, must include a riser diagram, load calculation, fault current calculation and interrupting rating of equipment. Where existing electrical systems are to supply additional loads, the plans must include documentation that proves adequate capacity and ratings. The plans must be submitted with a plan review submittal form available from the department.

[Statutory Authority: Chapter 43.22 RCW. 05-23-002, § 296-150C-0320, filed 11/3/05, effective 12/4/05. Statutory Authority: RCW 43.22.340 and 43.22.480. 99-13-010, § 296-150C-0320, filed 6/4/99, effective 7/5/99. Statutory Authority: Chapter 43.22 RCW. 98-14-078, § 296-150C-0320, filed 6/30/98, effective 7/31/98. Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-0320, filed 10/23/96, effective 11/25/96.]

WAC 296-150C-0340 What must an engineering analysis for design plans include? (1) The engineering analysis must show that the structural design meets the requirements of this chapter.

(2) An engineering analysis must be conducted according to accepted engineering practices and must be signed by a professional engineer or architect licensed in Washington. (See WAC 296-150C-3000.)

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-0340, filed 10/23/96, effective 11/25/96.]

WAC 296-150C-0350 What must test procedures and results for design plans include? (1) Tests to a design must be witnessed by a professional engineer or architect licensed in Washington or by a departmental employee.

(2) Test reports must contain the following items:

(a) A description of the methods or standards that applied to the test;

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(b) Drawings and a description of the item tested;

(c) A description of the test set-up;

(d) The procedure used to verify the correct load;

(e) The procedure used to measure each condition;

(f) Test data, including applicable graphs and observations of the characteristics and behavior of the item tested; and

(g) Analysis, comments, and conclusion.

(3) The written test procedures and conclusions must reference the applicable design plan.

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-0350, filed 10/23/96, effective 11/25/96.]

WAC 296-150C-0380 What happens if you approve my design plan? (1) Your design plan will be approved if it meets the requirements of this chapter.

(2) We will send you an approved copy of the design plan with the design-plan approval number.

(3) You must keep copies of the approved design plan available for inspection at each location where the commercial coach is built.

(4) If your design plan is not approved, you will be notified in writing of plan deficiencies. You may send a corrected design plan to us. (See WAC 296-150C-3000.)

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-0380, filed 10/23/96, effective 11/25/96.]

WAC 296-150C-0390 If my design plan is not approved, how much time do I have to submit a corrected design plan? (1) You have ninety days to correct and resubmit your original design plan and send us the resubmittal fee after we notify you of plan deficiencies. After ninety days, your initial design plan is returned to you.

(2) If you submit your corrected design plan after ninety days, the initial design plan fee is required instead of the resubmittal fee. (See WAC 296-150C-3000.)

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-0390, filed 10/23/96, effective 11/25/96.]

WAC 296-150C-0400 What happens after my design plan is approved? Once your design plan is approved, we will inspect each commercial coach.

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-0400, filed 10/23/96, effective 11/25/96.]

WAC 296-150C-0410 When does my design plan expire? Commercial Coach - Master Design Plan:

(1) Your commercial coach master design plan expires when there is a code change. You must submit new design plans for approval when there is a state building code cycle change. You may use your approved master design plans to order insignia as long as they comply with the applicable codes.

Commercial Coach - One-Year Design Plan:

(2) Your commercial coach one-year design plan expires either one year after approval or when there is a code change. You must submit new design plans for approval when there is

a state building code cycle change. You may use your design plans to order insignia as long as they comply with the applicable codes.

(3) All National Electrical Code amendments may be incorporated by an addendum to your design plan.

Note: The state building code is on a three-year code cycle which coincides with the state building code council amendment cycle. The National Electrical Code (NEC) cycle, however, does not coincide with the other code cycles.

[Statutory Authority: RCW 43.22.480, 00-01-187, § 296-150C-0410, filed 12/22/99, effective 2/8/00. Statutory Authority: Chapter 43.22 RCW, 98-14-078, § 296-150C-0410, filed 6/30/98, effective 7/31/98. Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480, 96-21-146, § 296-150C-0410, filed 10/23/96, effective 11/25/96.]

WAC 296-150C-0415 Who approves addendums to design plans approved by the department? You must have us approve an addendum to a design plan, if we initially approved your design plan.

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480, 96-21-146, § 296-150C-0415, filed 10/23/96, effective 11/25/96.]

DESIGN-PLAN APPROVAL BY A LICENSED PROFESSIONAL OR FIRM

WAC 296-150C-0420 Who can be authorized to approve design plans? (1) A professional engineer, architect or firm licensed by the state of Washington according to the Engineers Registration Act, chapter 18.43 RCW and/or the Architects Registration Act, chapter 18.08 RCW; or

(2) A professional engineer, architect or firm licensed in another state that has licensing or certification requirements that meet or exceed Washington requirements.

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480, 96-21-146, § 296-150C-0420, filed 10/23/96, effective 11/25/96.]

WAC 296-150C-0430 What information must a professional or firm provide to be authorized to approve design plans? (1) Name, a copy of your certificate of registration, and address of the professional engineer or architect; or

(2) Name, a copy of your certificate of authority, and address of the firm; and

(3) A description of the services the professional engineer, architect, or firm will provide; and

(4) A description of the professional's area(s) of expertise and qualifications which include:

(a) A summary of the professional's or firm's experience; and

(b) Verification of experience in your area of expertise such as structural, mechanical, plumbing, energy, electrical, fire and life safety, and ventilation and indoor air quality.

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480, 96-21-146, § 296-150C-0430, filed 10/23/96, effective 11/25/96.]

WAC 296-150C-0440 How will I know whether I am authorized to approve design plans? Within sixty days after you submit the information requested in WAC 296-

150C-0430, we will send you a letter either approving or denying your authorization request.

(1) If we approve your request, your name is added to the list of licensed professionals and firms authorized to approve design plans.

(a) We will authorize a professional to approve portions of a design plan within his or her area of expertise; and

(b) We will authorize an engineering or architectural firm to approve plans if the firm employs or contracts with professionals within the area of expertise necessary for the design plan.

(2) If we do not approve your request, we will notify you in writing why we are denying your request for authorization. If you disagree with our decision, you can send us a written request for a hearing, stating why you disagree. (See WAC 296-150C-0100.)

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480, 96-21-146, § 296-150C-0440, filed 10/23/96, effective 11/25/96.]

WAC 296-150C-0450 How long is a licensed professional or firms authorization effective? Your authorization to approve design plans is effective until your license expires, is revoked or is suspended.

(1) You must notify us of your license renewal at least fifteen days before your license expires, to prevent your name from being removed from our licensed professional and firm list.

(2) You must notify us immediately if your license is revoked or suspended. Your name is then removed from the list of licensed professionals and firms authorized to approve design plans.

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480, 96-21-146, § 296-150C-0450, filed 10/23/96, effective 11/25/96.]

WAC 296-150C-0460 What information must a manufacturer provide when a professional or firm does the design-plan approval? You must provide the following information with your approved design plans:

(1) A completed departmental design-plan approval request form;

(2) Two or more sets of design plans plus elevation drawings, specifications, engineering analysis, and test results and procedures necessary for a complete evaluation of the design. These design plans must have an original wet stamp, be signed, and dated by the approving professional(s) (see WAC 296-150C-0340 and 296-150C-0350);

(3) A cover sheet on the design plan noting which professional approved each portion of the design plan;

(4) A copy of the authorization letter from us;

(5) The design plan fee for design plans approved by professionals or firms; (see WAC 296-150C-3000.)

(6) A professional who designs and certifies that the commercial coach design meets state requirements cannot also approve the design plan in the plan approval process;

(7) A professional cannot approve those electrical designs listed in WAC 296-150C-0310(2); and

(8) A professional cannot approve plans submitted under a reciprocal agreement.

[Statutory Authority: Chapter 43.22 RCW. 98-14-078, § 296-150C-0460, filed 6/30/98, effective 7/31/98. Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-0460, filed 10/23/96, effective 11/25/96.]

WAC 296-150C-0470 What happens after we receive the professional or firm approved design plan and information? (1) After we receive your approved design plans and information, we will review the information and assign a plan approval number. We will send a copy of the design plan with the plan approval number to the manufacturer.

(2) We may periodically audit design plans approved by a professional engineer, architect, or firm to ensure compliance with design plan requirements. The department's periodic audit should not be construed as certifying that the plans are safe.

(3) If the audit reveals that the design plans approved by the professionals and firms do not comply with this chapter, you will be notified and required to pay our fees for review and approval of the design plans. (See WAC 296-150C-3000.)

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-0470, filed 10/23/96, effective 11/25/96.]

WAC 296-150C-0480 Do you have a list of professionals or firms that are authorized to approve design plans? We will maintain a list of the licensed professionals and firms that are authorized to approve design plans for commercial coaches.

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-0480, filed 10/23/96, effective 11/25/96.]

WAC 296-150C-0490 Who approves addendums to design plans approved by a professional or firm? (1) You must have the professional or firm approve an addendum to a design plan, if they initially approved your design plan.

(2) If the professional or firm who approved your design plan is no longer on the department list you may have us approve your addendum.

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-0490, filed 10/23/96, effective 11/25/96.]

INSPECTIONS PRIOR TO ISSUANCE OF AN INSIGNIA

WAC 296-150C-0500 When is an inspection required? (1) Before we issue an insignia, each unit manufactured or converted must be inspected as many times as required to show compliance with this chapter.

Note: Each commercial coach must have a serial number so we can track inspections.

(2) Before we issue an insignia, each commercial coach must be inspected at the manufacturing location as many times as required. Inspections may include but are not limited to:

(a) A "cover" inspection during construction of the unit before the electrical, plumbing, mechanical, and structural systems are covered;

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(b) Insulation and vapor barrier inspection, if required; and

(c) A final inspection after the commercial coach is complete.

(3) If we discover a violation during inspection, we will issue a notice of noncompliance. You can correct the violation during the inspection. If you cannot correct the violation during inspection, you must leave the item uncovered until we approve your correction.

(4) If a commercial coach is damaged in transit to the building site or during on-site installation, it must be inspected. This is considered an alteration inspection. (See WAC 296-150C-0240.)

(5) Approved design plans must be available in compliance with the applicable sections of the adopted state codes.

(6) Once your unit is inspected and approved we will attach the insignia.

[Statutory Authority: RCW 43.22.480. 00-01-187, § 296-150C-0500, filed 12/22/99, effective 2/8/00. Statutory Authority: Chapter 43.22 RCW. 98-14-078, § 296-150C-0500, filed 6/30/98, effective 7/31/98. Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-0500, filed 10/23/96, effective 11/25/96.]

WAC 296-150C-0510 How do I request an inspection? (1) You must contact us, and we will let you know where your request for inspection should be submitted. Our address is noted in the definition of department.

(2) We must receive in-state inspection requests at least seven calendar days prior to the date that you want the inspection.

(3) We must receive out-of-state inspection requests at least fourteen calendar days prior to the date that you want the inspection.

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-0510, filed 10/23/96, effective 11/25/96.]

WAC 296-150C-0520 What happens if my commercial coach passes inspection? If your commercial coach passes inspection and you have met the other requirements of this chapter, we will attach the insignia.

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-0520, filed 10/23/96, effective 11/25/96.]

WAC 296-150C-0530 Am I charged if I request an inspection but I am not prepared? (1) If you ask us to inspect a commercial coach within Washington state but you are not prepared when we arrive, you must pay the inspection fee and travel. (See WAC 296-150C-3000.)

(2) If you ask us to inspect a commercial coach outside Washington state but you are not prepared when we arrive, you must pay the inspection fee, travel, and per diem expenses. (See WAC 296-150C-3000.)

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-0530, filed 10/23/96, effective 11/25/96.]

WAC 296-150C-0540 Who inspects commercial coach installation at the building site? The local enforcement agency (city or county) must approve the installation.

[Title 296 WAC—p. 1907]

- Note: The local enforcement agency may not open the concealed construction of a commercial coach to inspect it if our insignia is attached.
- Note: Alterations to commercial coaches must be inspected and approved by us.

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-0540, filed 10/23/96, effective 11/25/96.]

WAC 296-150C-0550 Do you allow a commercial coach to be completed at the installation site? Commercial coaches must be completed at the manufacturing location before an insignia is attached.

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-0550, filed 10/23/96, effective 11/25/96.]

WAC 296-150C-0560 What happens if I receive a notice of noncompliance after inspection of the alteration to my commercial coach? (1) If your commercial coach alteration does not pass our inspection, you will receive a notice of noncompliance. The notice of noncompliance explains what items must be corrected.

(2) You have twenty days after receiving the notice of noncompliance to send us a written response to explain how you will correct the violations.

(3) You are not allowed to sell, lease, offer for sale or use the altered commercial coach until you correct the violations. We must inspect and approve the corrections, and you must pay the inspection and insignia fees, if required (see WAC 296-150C-3000).

[Statutory Authority: Chapter 43.22 RCW. 98-14-078, § 296-150C-0560, filed 6/30/98, effective 7/31/98. Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-0560, filed 10/23/96, effective 11/25/96.]

USED COMMERCIAL COACHES WITHOUT AN INSIGNIA

WAC 296-150C-0580 Must I obtain an insignia for used commercial coaches? All used commercial coaches that are to be installed on a building site or used in Washington state must have an insignia of approval from us. (See exceptions WAC 296-150C-0200 (1)(a)(b).)

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-0580, filed 10/23/96, effective 11/25/96.]

WAC 296-150C-0590 How do I obtain insignia for used commercial coaches? We consider used commercial coaches as new units for purposes of insignia approval. To obtain insignia, you must:

- (1) Have the design plan approved (see WAC 296-150C-0300 through 296-150C-0480);
- (2) Purchase insignia (see WAC 296-150C-0200 through 296-150C-0230); and
- (3) Pass a unit inspection (see WAC 296-150C-0500 through 296-150C-0560).

- Note: You will be required to open up as much of the construction of the unit as is necessary for inspection to show compliance with your approved design plan.

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-0590, filed 10/23/96, effective 11/25/96.]

MANUFACTURER'S NOTICE TO THE DEPARTMENT

WAC 296-150C-0700 Must manufacturers of commercial coaches notify you if they manufacture at more than one location? (1) If you are manufacturing commercial coaches at more than one location, approved design plans must be available at each manufacturing location.

(2) You must send us the following information for each manufacturing location:

- (a) Company name;
 - (b) Mailing and physical address; and
 - (c) Phone and fax number if available.
- (3) You must update this information as it changes.

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-0700, filed 10/23/96, effective 11/25/96.]

WAC 296-150C-0710 Must manufacturers of commercial coaches notify you of a change in business name or address? (1) If you are moving you must notify us in writing prior to a change of business name or address.

(2) Your notice must include the change of name and address.

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-0710, filed 10/23/96, effective 11/25/96.]

WAC 296-150C-0720 Must manufacturers of commercial coaches notify you of a change in business ownership? (1) When a manufacturer changes ownership, the new owner must notify us in writing immediately.

(2) A new owner may continue to manufacture the units according to a prior approved design plan if the prior owner provides written releases of the design plan.

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-0720, filed 10/23/96, effective 11/25/96.]

COMMERCIAL COACH CONSTRUCTION CODE

GENERAL

WAC 296-150C-0800 What manufacturing codes apply to commercial coaches? (1) All design, construction, and installations of commercial coaches must conform with the following codes and the requirements of this chapter:

- (a) The latest adopted version of the Washington State Ventilation and Indoor Air Quality Code, as adopted by chapter 51-13 WAC;
- (b) The structural and other requirements of this chapter;
- (c) Occupancy classification only from chapter 3 of The International Building Code, 2003 edition as adopted and amended by chapter 51-50 WAC, except commercial coaches must not be group H or R-3 occupancy;
- (d) Accessibility requirements of chapter 11 of The International Building Code, 2003 edition as adopted and amended by chapter 51-50 WAC;

(e) Section 1607 Uniform and concentrated floor loads and footnotes of The International Building Code, 2003 edition as adopted and amended by chapter 51-50 WAC;

(f) The International Mechanical Code, 2003 edition as adopted and amended by chapter 51-52 WAC except when conflicting with the provisions of this chapter, this chapter controls;

(g) The National Electrical Code as referenced in chapter 19.28 RCW and chapter 296-46B WAC;

(h) The latest adopted version of the Washington State Energy Code, as adopted according to chapter 19.27A RCW;

(i) The Uniform Plumbing Code, as adopted and amended according to chapter 19.27 RCW;

(j) Where there is a conflict between codes, an earlier named code takes precedent over a later named code. Where, in any specific case, different sections of this code specify different materials, methods of construction or other requirements, the most restrictive governs. Where there is a conflict between a general requirement and a special requirement, the specific requirement must be applicable.

(2) All construction methods and installations must use accepted engineering practices, provide minimum health and safety to the occupants of commercial coaches and the public, and demonstrate journeyman quality of work of the various trades.

(3) Requirements for any size, weight, or quality of material modified by the terms "minimum," "not less than," "at least," and similar expressions are minimum standards. The manufacturer may exceed these rules provided the deviation does not result in inferior installation or defeat the purpose and intent of this chapter.

Note: The codes, RCW's and WAC's referenced in this rule are available to view at the Washington State Library, the Washington State Law Library, and may also be available at your local library.

[Statutory Authority: Chapter 43.22 RCW and 2003 c 291. 05-01-102, § 296-150C-0800, filed 12/14/04, effective 2/1/05. Statutory Authority: RCW 43.22.350, 43.22.434, 43.22.480, 43.22.500, 18.27.040, 18.27.070, 18.27.075, 70.87.030, 19.28.041, 19.28.051, 19.28.101, 19.28.121, 19.28.161, 19.28.201, 19.28.211, 19.28.341, 2001 c 7, 2002 c 249, and chapters 19.28, 43.22, 18.27, and 70.87 RCW. 02-12-022, § 296-150C-0800, filed 5/28/02, effective 6/28/02. Statutory Authority: Chapter 43.22 RCW. 98-14-078, § 296-150C-0800, filed 6/30/98, effective 7/31/98. Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-0800, filed 10/23/96, effective 11/25/96.]

WAC 296-150C-0805 Are there any special requirements for portable school classrooms? In addition to the requirements in this chapter, the department of health has rules regulating primary and secondary schools in chapter 246-366 WAC. One of those requirements in WAC 246-366-050(2) is that "Instructional areas shall have a minimum average ceiling height of 8 feet."

[Statutory Authority: RCW 43.22.340 and 43.22.480. 99-13-010, § 296-150C-0805, filed 6/4/99, effective 7/5/99.]

WAC 296-150C-0810 Construction definitions. The following definitions and the definitions in each of the state codes adopted in WAC 296-150C-0800 apply to commercial coach construction.

"Anchoring system" is the means used to secure a commercial coach to ground anchors or to other approved fasten-

ing devices. It may include straps, cables, turnbuckles, bolts, fasteners, or other components.

"Ceiling height" is the clear vertical distance from the finished floor to the finished ceiling.

"Chassis" means that portion of the transportation system comprised of the following: Drawbar coupling mechanism and frame.

EXCEPTION: The running gear assembly shall not be considered as part of the chassis.

"Dead load" is the vertical load resulting from the weight of all permanent structural and nonstructural parts of a commercial coach including walls, floors, roof, partitions, and fixed service equipment.

"Diagonal tie" is a tie intended primarily to resist horizontal or shear forces and secondarily may resist vertical, uplift, and overturning forces.

"Dormitory" is a room designed to be occupied by more than two persons.

"Exit" is a continuous and unobstructed means of egress to a public way.

"Frame" means the fabricated rigid substructure, which provides support to the affixed commercial coach structure both during transport and onsite. It is considered a part of the commercial coach.

"Glazed opening" is a glazed skylight or an exterior window or glazing of a door of a commercial coach.

"Gross floor area" is the net floor area within the enclosing walls of a room where the ceiling is at least five feet high.

"Habitable room" is a room or enclosed floor space arranged for living, eating, food preparation, or dormitory sleeping purposes. It does not include bathrooms, toilet compartments, foyers, hallways, or other accessory floor spaces. Any reference to "habitable dwelling" in this chapter means a temporary structure not used as a single family dwelling.

"Interior finish" is the surface material of walls, fixed or movable partitions, ceilings and other exposed interior surfaces affixed to the commercial coach structure, including paint and wallpaper. Decorations or furnishings attached to the commercial coach structure are considered part of the interior finish.

"Live load" is the weight superimposed by the use and occupancy of the commercial coach, including wind load and snow load, but not including dead load.

"Perimeter blocking" is support placed under exterior walls.

"Shear wall" is a wall designed and constructed to transfer lateral loads.

"Tiedown" is a device designed to anchor a commercial coach to ground anchors.

"Use" or "occupancy classification" is the designed purpose of a commercial coach according to The Uniform Building Code.

"Wind load" is the lateral or vertical pressure or uplift created by wind blowing in any direction.

[Statutory Authority: RCW 43.22.340 and 43.22.480. 99-13-010, § 296-150C-0810, filed 6/4/99, effective 7/5/99. Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-0810, filed 10/23/96, effective 11/25/96.]

STRUCTURAL

WAC 296-150C-0820 What are the basic structural requirements of a commercial coach? Each commercial coach must be designed and constructed as a completely integrated structure capable of sustaining the design-load requirements of this chapter. It shall be capable of:

(1) Transmitting these loads to stabilizing devices without causing unsafe deformation or abnormal structural movement; and

(2) Withstanding the adverse effects of transportation shock and vibration as an integrated structure.

[Statutory Authority: Chapter 43.22 RCW. 98-14-078, § 296-150C-0820, filed 6/30/98, effective 7/31/98. Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-0820, filed 10/23/96, effective 11/25/96.]

WAC 296-150C-0830 Fastening of structural systems. Roof framing must be securely fastened to wall framing, walls to floor structure, and floor structure to chassis. This must secure and maintain continuity between the floor and chassis and resist wind uplift, overturning, and sliding as imposed by design loads.

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-0830, filed 10/23/96, effective 11/25/96.]

WAC 296-150C-0840 Live loads. (1) The design live loads must be established according to this chapter and must be considered to be uniformly distributed.

(2) The roof live load must not be considered as acting simultaneously with the wind load. The roof and the floor live loads must not be considered as resisting the overturning moment due to wind. The roof live load and the floor live load must be considered to act both simultaneously and separately in order to determine the critical design loading for stresses and deflections.

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-0840, filed 10/23/96, effective 11/25/96.]

WAC 296-150C-0850 Roof loads. All roofs must be designed to sustain loads as follows:

(1) Dead loads plus a minimum unit live load of 30 lb/ft² (2 months load duration); and

(2) A vertical net uplift load of 9 lb/ft² (1 day load duration).

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-0850, filed 10/23/96, effective 11/25/96.]

WAC 296-150C-0860 Snow loads. The roof of a commercial coach must be designed for the loads to which it will be subjected in areas where snow records or experience indicate snow loads in excess of 30 lb/ft².

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-0860, filed 10/23/96, effective 11/25/96.]

[Title 296 WAC—p. 1910]

WAC 296-150C-0870 Standard wind loads. The commercial coach and each wind resisting part must be designed for the following wind loads:

Horizontal	15 lb/ft ²	(1 day load duration)
Vertical upward	9 lb/ft ²	(1 day load duration)
Vertical downward	(see WAC 296-150C-0850 Roof loads)	

A commercial coach must be designed for higher wind loads if area records or experience indicate that it will be subjected to wind loads in excess of the above loads if required by the local jurisdiction.

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-0870, filed 10/23/96, effective 11/25/96.]

WAC 296-150C-0880 Windstorm protection—Provisions for support and anchoring. (1) Each commercial coach must have provisions for support and anchoring systems that, when properly designed and installed, will resist overturning and lateral movement of the commercial coach as imposed by the respective design loads. Support and anchoring systems can be installed according to the Table in WAC 296-150C-1210 or designed by a professional engineer.

(2) The manufacturer of each commercial coach is required to make provision for the support and anchoring systems but is not required to provide the anchoring equipment or stabilizing devices.

(3) The manufacturer must provide printed instructions with each commercial coach specifying the location and required capacity of stabilizing devices on which the design is based.

Single-Wide Commercial Coaches:

(4) The provisions made for anchoring systems must be based on the following design criteria for single-wide commercial coaches:

(a) The minimum number of ties required per side is noted in WAC 296-150C-1210.

(b) Ties must be as evenly spaced as practicable along the length of the commercial coach. No more than eight feet open-end spacing must occur on each end.

(c) If continuous straps are provided as vertical ties, they must be positioned at rafters and studs. If a vertical tie and diagonal tie are located at the same place, both ties may be connected to a single ground anchor, as long as, the anchor used is capable of carrying both loads.

(d) Add-on sections of expandable commercial coaches must have provisions for vertical ties at the exposed ends.

Double-Wide Commercial Coaches:

(5) Double-wide commercial coaches require only diagonal ties specified in the table in WAC 296-150C-1210. The ties must be placed along the outer side walls.

(6) Protection must be provided at sharp corners where the anchoring system requires the use of external cables or straps. Protection must also be provided to minimize damage to roofing or siding by the cable or strap.

(7) Anchoring equipment must be capable of resisting an allowable working load equal to or exceeding 3,150 pounds and must be capable of withstanding a 50 percent overload

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(4,725 pounds total) without failure of either the anchoring equipment or the attachment point on the commercial coach.

(8) Exposed anchoring equipment must have a resistance to weather deterioration at least equal to that provided by a coating of zinc on steel of at least 0.30 ounces per square foot of surface coated.

(a) Slit or cut edges of zinc-coated steel strapping do not need to be zinc-coated.

(b) Type 1, Class B, Grade 1 steel strapping, 1 1/4 inches wide and 0.035 inch thick, conforming with Federal Specification QQ-S-781-G, meets the requirements of this paragraph.

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-0880, filed 10/23/96, effective 11/25/96.]

WAC 296-150C-0900 Interior walls and partitions.

Interior walls and partitions must be:

(1) Constructed with structural capacity adequate for the intended purpose; and

(2) Capable of resisting a horizontal load of at least five pounds per square foot without exceeding the deflections specified in WAC 296-150C-0920.

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-0900, filed 10/23/96, effective 11/25/96.]

WAC 296-150C-0910 Minimum uniform and concentrated live loads. See use or occupancy of the 2003 edition of The International Building Code for group occupancy loads.

[Statutory Authority: Chapter 43.22 RCW and 2003 c 291. 05-01-102, § 296-150C-0910, filed 12/14/04, effective 2/1/05. Statutory Authority: RCW 43.22.340, 43.22.350, 43.22.355, 43.22.360, 43.22.400, 43.22.432, 43.22.433, 43.22.434, 43.22.450, 43.22.480, and 43.22.485. 00-17-148, § 296-150C-0910, filed 8/22/00, effective 9/30/00. Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-0910, filed 10/23/96, effective 11/25/96.]

WAC 296-150C-0920 Design load deflection. When a structural assembly is subjected to total design live loads, the deflection for structural framing members must not exceed the following:

L = The clear span between supports or two times the length of a cantilever.

Floor	L/240
Roof and ceiling	L/180
Headers, beams, girders	L/180
Walls and partitions	L/180

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-0920, filed 10/23/96, effective 11/25/96.]

WAC 296-150C-0930 Structural load tests. (1) A structural assembly or subassembly tested for qualification must sustain the design dead load plus the superimposed design live loads (see WAC 296-150C-0840) equal to 1.75 times the required live loads for a period of twelve hours without failure of the assembly or subassembly, unless otherwise specified in this chapter.

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(2) An assembly or subassembly failure is defined as a rupture, fracture, or residual deflection which is greater than the limits set in WAC 296-150C-0920. The type and quality of material used in each test assembly or subassembly must be identified. The assembly or subassembly tested must represent the minimum quality of material.

(3)(a) Nationally recognized standards or engineering practices must be used for structural load tests for commercial coaches.

(b) Tests must be witnessed by a professional engineer or architect.

Note: We will provide test procedure forms upon request.

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-0930, filed 10/23/96, effective 11/25/96.]

CONSTRUCTION

WAC 296-150C-0940 Fastening of structural systems. Roof framing must be securely fastened to wall framing, walls to floor structure, and floor structure to chassis to secure and maintain continuity between the floor and chassis and to resist wind uplift, overturning, and sliding as imposed by design loads.

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-0940, filed 10/23/96, effective 11/25/96.]

WAC 296-150C-0950 Roof coverings/membrane/weather resistant. (1)(a) The roof covering must be securely fastened in an approved manner to the supporting roof construction and must provide weather protection for the commercial coach and the occupants. The roof covering must be installed according to the manufacturer's instructions and approved by us.

(b) Roofing membranes must be rigid enough to prevent deflection that would permit ponding of water or separation of seams due to snow or wind or during assembly or transportation.

(2) Exterior covering materials, including metal coverings, must be moisture and weather-resistant and contain corrosion resistant fasteners to prevent wind and rain deterioration.

Note: Electro-plated, electro-deposited zinc, and electro-galvanized staples are not considered corrosion resistant materials.

(3) All exterior openings or penetrations into the commercial coach around piping, ducts, plenums, or vents must be sealed with moisture resistant material.

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-0950, filed 10/23/96, effective 11/25/96.]

WAC 296-150C-0960 What requirements apply to commercial coach roof trusses? (1) The construction of roof trusses must be approved by a professional engineer. Roof trusses may be produced by one of the following methods:

(a) Use of graded materials when an approved testing agency certifies truss construction and load requirements are met; the testing agency must prepare an approved quality

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control program which allows them to test the trusses with appropriate testing procedures.

(b) Use of nongraded materials, if each truss is tested in an approved testing jig at the manufacturer's site with a load equivalent to full design load (1.75 times the full design load sustained for 12 hours). See WAC 296-150C-0930.

(2)(a) Representative trusses must be tested from the production line, when we request. The approved testing agency or engineer must submit the testing report to us.

(b) All test reports are to be stamped, signed, and dated by the approved testing agency or engineer who performs the test.

(c) These tests must not occur more than two times a year per design unless there are problems with the roof trusses.

(d) The manufacturer is required to maintain an acceptable quality level not exceeding one percent using acceptable sampling procedures.

Note: The acceptable quality level is defined as the maximum allowable percentage of defective units.

[Statutory Authority: RCW 43.22.340 and 43.22.480. 99-13-010, § 296-150C-0960, filed 6/4/99, effective 7/5/99. Statutory Authority: Chapter 43.22 RCW. 98-14-078, § 296-150C-0960, filed 6/30/98, effective 7/31/98. Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-0960, filed 10/23/96, effective 11/25/96.]

WAC 296-150C-0970 Roof construction. (1) All roofs must be framed and tied into the framework and supporting walls to form an integral part of the commercial coach.

(2) All trusses must be laterally braced.

(3) All roof decks must be designed and built with sufficient slope or camber to assure adequate drainage, or must be designed to support maximum loads including possible ponding of water due to deflection.

(4) Cutting roof framework members for passage of electrical, plumbing, or mechanical systems is prohibited except where substantiated by engineering analysis.

(5) Electrical, plumbing, or mechanical systems must not penetrate the roofing membrane unless the penetration point is adequately sealed.

(6) Ventilation. Enclosed attics and enclosed rafter spaces formed where ceilings are applied directly to the underside of roof rafters shall have cross ventilation for each separate space by ventilating openings protected against the entrance of rain and snow. Where eave or cornice vents are installed, insulation shall not block the free flow of air. A minimum of 1 inch of air space shall be provided between the insulation and roof sheathing. The net free ventilating area shall not be less than 1/150 of the space ventilated, except:

(a) The area may be 1/300, provided 50 percent of the required opening area is provided by ventilators located in the upper portion of the space to be ventilated at least 3 feet above eave or cornice vents; or

(b) A vapor barrier not exceeding 1 perm is installed on the warm side of the attic insulation.

[Statutory Authority: RCW 43.22.340, 43.22.350, 43.22.355, 43.22.360, 43.22.400, 43.22.432, 43.22.433, 43.22.434, 43.22.450, 43.22.480, and 43.22.485. 00-17-148, § 296-150C-0970, filed 8/22/00, effective 9/30/00. Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-0970, filed 10/23/96, effective 11/25/96.]

[Title 296 WAC—p. 1912]

WAC 296-150C-0990 Sealing wall exterior openings.

All exterior wall openings or penetrations into the commercial coach around piping, ducts, plenums, or vents must be sealed with moisture-resistant material.

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-0990, filed 10/23/96, effective 11/25/96.]

WAC 296-150C-1000 Drilling or notching of wood wall structural members. (1) **Cutting and notching.** In exterior walls and bearing partitions, any wood stud may be cut or notched to a depth not exceeding 25 percent of its width. Cutting or notching of studs to a depth not greater than 40 percent of the width of the stud is permitted in nonbearing partitions supporting no loads other than the weight of the partition.

(2) **Bored holes.** A hole not greater in diameter than 40 percent of the stud width may be bored in any wood stud. Bored holes not greater than 60 percent of the width of the stud are permitted in nonbearing partitions or in any wall where each bored stud is doubled, provided not more than two such successive doubled studs are so bored.

In no case shall the edge of the bored hole be nearer than 5/8 inch (16mm) to the edge of the stud. Bored holes shall not be located at the same section of stud as a cut or notch.

(3) Drilling or notching of studs greater than allowed in subsection (1) or (2) of this section must be substantiated by engineering analysis.

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-1000, filed 10/23/96, effective 11/25/96.]

WAC 296-150C-1020 Wall construction. Walls must be of sufficient strength to withstand the load requirements of this chapter. The connections between the bearing walls, floor, and roof framework members must be fabricated to provide support for the material used to enclose the commercial coach and to provide for the transfer of all lateral and vertical loads to the floor and the chassis.

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-1020, filed 10/23/96, effective 11/25/96.]

WAC 296-150C-1030 Fire-blocking. (1) Fire-blocking must be provided in commercial coaches to cut off all concealed draft openings in all stud walls and partitions, including furred spaces at the ceiling and floor levels and at ten foot intervals both vertical and horizontal.

(2) Fire-blocking must be provided around vents, pipes, ducts, chimneys, fireplaces, and similar openings which afford a passage for fire at ceiling and floor levels, with non-combustible material.

(3) Fire blocking must be two inch nominal lumber, gypsum board, cement asbestos board, mineral fiber or other approved materials securely fastened in place.

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-1030, filed 10/23/96, effective 11/25/96.]

WAC 296-150C-1040 Floors. (1) Wood floors or sub-floors in kitchens, bathrooms (including toilet compart-

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ments), laundry rooms, water heater compartments, and any other areas subject to excessive moisture must be moisture resistant; or they must be made moisture resistant by sealing or by an overlay of nonabsorbent material applied with water-resistant adhesive.

(2) Carpeting cannot be used under a heat producing appliance unless the appliance is listed for such use.

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-1040, filed 10/23/96, effective 11/25/96.]

WAC 296-150C-1050 Drilling or notching of wood joist structural members. (1) Notches on the ends of joists must not exceed one-fourth the joist depth, unless substantiated by engineering design or approved tests.

(2) Holes bored in joists must not be within two inches of the top or bottom of the joist, and the diameter of any such hole must not exceed one-third of the depth of the joist.

(3) Notches in the top or bottom of the joists must not exceed one-sixth the depth and must not be located in the middle third of the span.

(4) Joists in transverse floor framing systems, which do not have perimeter blocking, must not be drilled or notched, unless substantiated by engineering design or approved tests.

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-1050, filed 10/23/96, effective 11/25/96.]

WAC 296-150C-1060 Fastening of structural systems. Roof framing must be securely fastened to wall framing, walls to floor structure, and floor structure to chassis to secure and maintain continuity between these elements to resist wind uplift, overturning and sliding imposed by the design loads.

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-1060, filed 10/23/96, effective 11/25/96.]

WAC 296-150C-1070 Floor closure material. The closure material must meet ASTM D-781 standard or equal and be installed as follows:

(1) Fibrous material (with or without patches) must meet or exceed the level of 48 inch-pounds of puncture resistance as tested.

(2) The material must be installed according to installation instructions furnished by the supplier of the material.

(3) Patching material must be suitable for patches and the patch life must be equivalent to the material life.

(4) Floor closure material around piping, ducts, plenums, or vents must prevent damage to the underside of the commercial coach due to air, water, insects, dust, and must be rodent resistant.

[Statutory Authority: RCW 43.22.340, 43.22.350, 43.22.355, 43.22.360, 43.22.400, 43.22.432, 43.22.433, 43.22.434, 43.22.450, 43.22.480, and 43.22.485. 00-17-148, § 296-150C-1070, filed 8/22/00, effective 9/30/00. Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-1070, filed 10/23/96, effective 11/25/96.]

WAC 296-150C-1080 What design and construction requirements apply to a commercial coach chassis? Each

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commercial coach chassis must be designed and constructed to be capable of:

(1) Effectively sustaining the design loads consisting of the dead load plus five PSF load on the floor and the superimposed dynamic load resulting from highway movement, in no case shall the dynamic load be required to exceed twice the dead load; and

(2) Accepting the shock and vibration from the roadway and towing vehicle through the use of adequate running gear assemblies.

(3) In the set up mode, the commercial coach must be designed to accommodate the design live floor load established in WAC 296-150C-0800 (1)(e).

[Statutory Authority: Chapter 43.22 RCW and 2003 c 291. 05-01-102, § 296-150C-1080, filed 12/14/04, effective 2/1/05. Statutory Authority: RCW 43.22.340 and 43.22.480. 99-13-010, § 296-150C-1080, filed 6/4/99, effective 7/5/99. Statutory Authority: Chapter 43.22 RCW. 98-14-078, § 296-150C-1080, filed 6/30/98, effective 7/31/98. Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-1080, filed 10/23/96, effective 11/25/96.]

MATERIALS

WAC 296-150C-1090 Standards for equipment and installations. The manufacturer's equipment and installation specifications must be followed. Other approved standards are acceptable when:

- Installed according to the manufacturer's installation instructions; and
- Approved by a listing or testing agency.

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-1090, filed 10/23/96, effective 11/25/96.]

WAC 296-150C-1100 Flame-spread limitations. (1) The interior finish of all walls and partitions must have a flame-spread rating not exceeding two hundred except as otherwise specified in this section. The flame-spread limitation does not apply to:

(a) Molding, trim, windows, doors, or series of doors four feet wide or less;

(b) Permanently attached decorative items such as pictures or accent panels constituting a maximum of ten percent of the aggregate wall surface in any room or space or more than thirty-two square feet in surface area, whichever is less.

(2) All ceiling interior finish must have a maximum flame-spread rating of two hundred, excluding molding and trim two inches wide or less.

(3) Furnace and water heater spaces must be enclosed by walls, ceiling, and doors having an interior finish with a maximum flame-spread of twenty-five.

(4) Combustible kitchen cabinet doors, countertops, exposed bottom and end panels must have a maximum flame-spread of twenty-five. Cabinet rails, stiles, mullions, and toe strips are exempted.

(5) Exposed interior finishes adjacent to the cooking range must have a flame-spread of fifty. Adjacent surfaces are the exposed vertical surfaces between the range top and the overhead cabinets or ceiling and within six horizontal inches of the cooking range.

(6) Finish surfaces of plastic bath tubs, shower units and tub or shower doors must have a flame-spread of two hundred.

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-1100, filed 10/23/96, effective 11/25/96.]

WAC 296-150C-1110 Combustible limitations. (1)

The exposed wall adjacent to the cooking range, must be fifty flame-spread or less, such as 5/16 inch gypsum board or material having equivalent fire protective properties.

(2) All openings for pipes and vents in furnace and water heater spaces shall be tight-fitted or fire-stopped.

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-1110, filed 10/23/96, effective 11/25/96.]

WAC 296-150C-1120 Kitchen cabinet protection.

The bottom and sides of combustible kitchen cabinets over cooking ranges or tops including a space of six inches from the edge of the burners must be protected with at least materials rated at 25 or less flame-spread covered with at least twenty-six gauge sheet metal (.017 stainless steel, .024 aluminum or .020 copper) or equivalent protection. The protective metal over the range must form a hood with at least a three-inch eyebrow (measuring horizontally from face of cabinet). The hood must be centered over and at least as wide as the top of the cooking range.

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-1120, filed 10/23/96, effective 11/25/96.]

WAC 296-150C-1130 Insulation standards. Insulation standards for commercial coaches must comply with the Washington State Energy Code, unless another state law supersedes the Washington State Energy Code.

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-1130, filed 10/23/96, effective 11/25/96.]

WAC 296-150C-1140 Room sizes. (1) Every habitable room must have a minimum ceiling height of not less than seven feet.

(2) No habitable room, except a kitchen, must be less than five feet in any clear horizontal dimension.

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-1140, filed 10/23/96, effective 11/25/96.]

WAC 296-150C-1150 Hallways. (1) Hallways in structures required to meet accessibility standards must have a minimum horizontal dimension that conforms to accessibility standards set by the Washington state Uniform Building Code standards set in the accessibility standard in WAC 296-150C-0800 (1)(d).

(2) Hallways in nonaccessible construction site trailers must have a minimum horizontal dimension of 32 inches.

[Statutory Authority: Chapter 43.22 RCW and 2003 c 291. 05-01-102, § 296-150C-1150, filed 12/14/04, effective 2/1/05. Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-1150, filed 10/23/96, effective 11/25/96.]

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WAC 296-150C-1160 Accessibility standards. When applicable, a commercial coach must meet the accessibility standards set by the Washington State Building Code in RCW 19.27.030(5).

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-1160, filed 10/23/96, effective 11/25/96.]

WAC 296-150C-1170 What are the lighting and ventilation requirements of a commercial coach? (1) Habitable rooms must be provided with exterior windows or doors having a total glazed area of at least ten percent of the floor area, or they must have artificial light.

(2) An area equal to a minimum of five percent of the floor area must be available for unobstructed ventilation. Glazed areas do not need to be opened if a mechanical ventilation system is provided. The mechanical ventilation system must be capable of producing a change of air in the room every thirty minutes with at least one-fifth of the air supply taken from outside the commercial coach.

(3) Each bathroom must be provided with artificial light and with external windows or a mechanical exhaust must be provided. The external window must have at least 1/2 square feet of glazed area fully able to open. A mechanical ventilation system must be capable of producing a change of air every twelve minutes. Any mechanical ventilation system must exhaust directly to the outside of the commercial coach.

[Statutory Authority: Chapter 43.22 RCW. 98-14-078, § 296-150C-1170, filed 6/30/98, effective 7/31/98. Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-1170, filed 10/23/96, effective 11/25/96.]

WAC 296-150C-1175 Glass and glazed openings. The provisions of this section shall apply to the installation of glass or glazed openings, including hazardous locations.

(1) Standards. Standards for material shall meet International Building Code Section 2406.1.

(2) Identification. Flat glass shall bear the manufacturer's label designating the type and thickness of glass. Safety glazing shall have the manufacturer's identification etched or ceramic fired on the glass and be visible when the unit is glazed.

(3) Wind loads. Exterior glass and glazing shall be capable of withstanding a wind pressure of 20 pounds per square foot.

(4) Hazardous locations. The following shall be considered specific hazardous locations for the purposes of glazing:

(a) Glazing in ingress and egress doors;

(b) Glazing in fixed and sliding panels of sliding door assemblies and panels in swinging doors other than wardrobe doors;

(c) Glazing in storm doors;

(d) Glazing in fixed or operable panels adjacent to a door where the nearest exposed edge of the glazing is within a 24-inch arc of either vertical edge of the door in a closed position;

(e) Glazing in a fixed or operable panel, other than locations in (d) of this subsection, that meets all of the following conditions:

(i) Exposed area of an individual pane greater than 9 square feet.

- (ii) Exposed bottom edge less than 18 inches above the floor;
- (f) Shower doors and tub enclosures.

[Statutory Authority: Chapter 43.22 RCW and 2003 c 291. 05-01-102, § 296-150C-1175, filed 12/14/04, effective 2/1/05. Statutory Authority: RCW 43.22.340, 43.22.350, 43.22.355, 43.22.360, 43.22.400, 43.22.432, 43.22.433, 43.22.434, 43.22.450, 43.22.480, and 43.22.485. 00-17-148, § 296-150C-1175, filed 8/22/00, effective 9/30/00.]

WAC 296-150C-1180 Commercial coach exits. When applicable, a commercial coach must comply with International Building Code, Chapter 11 Accessibility and with the following requirements:

(1) Commercial coaches must have at least two exterior doors that are remote from each other. Remote means that in:

(a) Single-wide units the doors may not be less than twelve feet apart; and

(b) Multiwide units the doors may not be less than twenty feet apart, center to center from each other measured in a straight line direction regardless of the length of travel between doors.

Exception: A commercial coach that is twenty-four feet long or less needs only one exit door, unless it has a dormitory sleeping area.

(2) Exterior doors must be constructed for exterior use. Exterior doors must provide at least a thirty-five inch wide by seventy-nine inch high clear opening (36" x 80" door). Each swinging exterior door must have a key-operated lock that has a deadlock latch. A deadlock with a passage set installed below the deadlock may be used as an acceptable alternate for each exterior door. The locking mechanism must be engaged or disengaged by the use of a lever or other device from the interior of the commercial coach. Locks must not require the use of a key for operation from the inside.

(3) Every room designed for dormitory sleeping, unless it has an exterior exit door, must have at least one window which can be opened from the inside without using tools. This window must provide a clear opening of at least twenty-two inches in its smallest dimension and five square feet in area with the bottom of the opening not more than three feet above the floor. If a screen or storm window is used it must be readily removable without using tools.

[Statutory Authority: Chapter 43.22 RCW and 2003 c 291. 05-01-102, § 296-150C-1180, filed 12/14/04, effective 2/1/05. Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-1180, filed 10/23/96, effective 11/25/96.]

WAC 296-150C-1190 Interior privacy. If a commercial coach interior door, such as a bathroom door, has a privacy lock, the lock must contain an emergency release. The emergency release must be on the outside to permit entry when the door is locked from the inside.

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-1190, filed 10/23/96, effective 11/25/96.]

WAC 296-150C-1195 Fire warning equipment—Automatic smoke detectors. (1) At least one smoke detector (which may be a single station smoke detector) must be installed in each commercial coach to protect each separate bedroom. Smoke detectors must meet the requirements of the

Standard for Single and Multiple Station Smoke Detectors of the Underwriters Laboratories Inc. (UL 217). All dormitories must have at least one installed smoke detector.

(2) A smoke detector must be installed in the hallway or area next to the bedroom, and must be mounted, where possible, between the commercial area and the first bedroom door on an interior wall. Where mounting cannot be achieved due to limited interior wall space, the smoke detector must be located as close as practical to the first bedroom door on an interior wall. Commercial coaches having bedrooms separated by one or a combination of common use areas (such as a kitchen, dining area, or a commercial area, but, not a bathroom) must have at least two smoke detectors, one smoke detector protecting each bedroom.

(3) Smoke detectors must be installed per their listing. The smoke detector mounting must be attached to an electrical outlet box and the detector must be permanently wired into a general purpose electrical circuit. There must be no switches in the circuits to the detectors other than the circuit breaker serving the circuits.

(4) The commercial coach manufacturer must provide a copy of the testing and maintenance instructions supplied by the manufacturer of the smoke detector for the information of the consumer and users of the commercial coach.

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-1195, filed 10/23/96, effective 11/25/96.]

WAC 296-150C-1200 Installation instructions. The manufacturer must provide printed instructions upon request for each commercial coach specifying the following:

(1) The location and required capacity of stabilizing devices, such as tie downs, piers, and blocking;

(2) Devices and methods used to connect all components and systems including, chassis and utilities; and

(3) Leveling, including releveleving.

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-1200, filed 10/23/96, effective 11/25/96.]

WAC 296-150C-1210 Table: Number of ties required per side of commercial coach.

NUMBER OF TIES REQUIRED PER SIDE OF COMMERCIAL COACH

Note: This table is based on a minimum working load per anchor of three thousand one hundred fifty pounds with a fifty percent overload (four thousand seven hundred twenty-five pounds total).

Length of Commercial Coach (Feet)-	No. of Vertical Ties	No. of Diagonal Ties
00-40	2	3
41-46	2	3
47-49	2	3
50-54	2	3
55-58	2	4
59-64	2	4
65-70	2	4

(1) Double-width commercial coaches require only the diagonal ties specified, and these must be placed along the outer side walls;

(2) Length of commercial coach (as used in this table) means length excluding draw bar;

(3) Diagonal ties in this method must deviate at least forty degrees from a vertical direction; or

(4) The number of ties required can be designed by a professional engineer.

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-1210, filed 10/23/96, effective 11/25/96.]

ELECTRICAL

WAC 296-150C-1220 Electrical—General. This chapter applies to the installation of electrical equipment in any commercial coach bearing or required to bear a department insignia.

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-1220, filed 10/23/96, effective 11/25/96.]

WAC 296-150C-1230 Electrical definitions. Definitions contained in the current adopted edition National Electrical Code (NEC), and the following definitions apply to the commercial coach electrical standards in this chapter.

"Converter" is a device that changes electrical energy from one form to another, as from alternating current to direct current.

"Feeder assembly" or "subpanel" is the overhead or under-chassis feeder conductor, including the grounding conductor, fittings, and equipment, or power-supply cord approved for commercial coach.

The feeder assembly or subpanel is used in commercial coaches and designed to deliver energy from the source of electrical supply to the distribution panelboard within the commercial coach.

"Low voltage" is an electromotive force rated at thirty-two volts or less, supplied from a transformer, converter, or battery.

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-1230, filed 10/23/96, effective 11/25/96.]

WAC 296-150C-1240 Branch circuit and feeder calculations. Branch circuit and feeder calculations must be determined according to the National Electrical Code.

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-1240, filed 10/23/96, effective 11/25/96.]

WAC 296-150C-1250 Disconnecting means and branch circuit protective equipment. (1) The branch circuit equipment may be combined with the disconnecting means as a single assembly. Such a combination may be designated as a distribution panelboard. If a fused distribution panelboard is used, the maximum fuse size for the mains must be plainly marked with lettering at least 1/4 inch high and visible when fuses are changed.

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Note: See the National Electrical Code concerning identification of each disconnecting means and each feeder or branch circuit at the point where it originated and type of marking needed.

(2) Plug fuses and fuseholders must be tamper-resistant, Type "S," enclosed in dead-front fuse panelboards.

(3) A single disconnecting means must be provided in each commercial coach. It must consist of a circuit breaker or a switch, fuses, and their accessories installed in a readily accessible location near the point of entrance of the supply cord or conductors into the commercial coach. The main circuit breakers or fuses must be plainly marked "main." This equipment must contain a solderless type of grounding connector or bar for the purposes of grounding, with sufficient terminals for all grounding conductors. The neutral bar termination of the grounded circuit conductors must be insulated.

(4) The disconnecting equipment must have a rating suitable for the connected load. The distribution equipment, either circuit breaker or fused type, must be located a minimum of twenty-four inches from the bottom of such equipment to the floor level of the commercial coach. There must be an accessible space of at least thirty inches wide by thirty-six inches deep by seventy-eight inches high in front of the electrical disconnect equipment. The main circuit breakers or switches must be plainly marked "main." There must be a label attached to the panelboard stating:

"This panelboard must be connected by a feeder assembly having overcurrent protection rated at not more than _____ amperes." (The correct ampere rating must be marked in the blank space.)

(5) Branch circuit distribution equipment must be installed in each commercial coach and must include overcurrent protection for each branch circuit consisting of either circuit breakers or fuses.

(6) The branch circuit overcurrent devices must be rated:

(a) Not more than the circuit conductors; and

(b) Not more than one hundred fifty percent of the rating of a single appliance rated ten amperes or more; but

(c) Not more than the overcurrent protection rating marked on the motor-operated appliance. A device not approved for branch circuit protection, such as a thermal cut-out or motor overload protective device, must not be considered as the overcurrent device protecting the circuit.

(7) A 20-ampere fuse or circuit breaker must be considered adequate protection for fixture leads, cords for portable appliances and No. 14 AWG (American Wire Gauge) tap conductors, not over six feet long, for recessed lighting fixtures.

(8) If more than one outlet or load is on a branch circuit, a 15-ampere receptacle must be considered protected by a 20-ampere fuse or circuit breaker.

(9) When circuit breakers are provided for branch circuit protection, 240-volt circuits must be protected by two-pole common or companion trip circuit breakers.

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-1250, filed 10/23/96, effective 11/25/96.]

WAC 296-150C-1260 Power supply—Feeder assembly equipment. A commercial coach must be provided with feeder assembly equipment, installed by the manufacturer

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according to National Electrical Code and the provisions of this chapter. The assembly must be either:

- (1) One overhead assembly containing the required number of insulated color-coded feeder conductors, one of which must be a grounding conductor; or
- (2) One under-vehicle assembly consisting of conduit running from the commercial coach branch circuit panelboard to the underside of the commercial coach. Conduit must be sized in accordance with the National Electrical Code; or
- (3) Other installations approved by the department.

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-1260, filed 10/23/96, effective 11/25/96.]

WAC 296-150C-1270 Identification of feeder assembly connection. (1) Each commercial coach equipped with a 120-volt electrical system must have a label, permanently attached on the outside wall adjacent to the point of entrance of the feeder assembly, that reads:

"THIS CONNECTION IS FOR 110-125 VOLT AC SERVICE. DO NOT CONNECT HIGHER VOLTAGE."

(2) Each commercial coach equipped with a 120/240-volt AC electrical system must have a label, permanently attached on the outside wall, adjacent to the point of entrance of the supply assembly or permanently installed feeders, that reads:

"THIS CONNECTION IS FOR 120/240 VOLT AC _____ AMPERE SERVICE." (The correct service rating shall be stamped in the blank space.)

(3) Each commercial coach equipped with a 480/277-volt electrical system must have a label, permanently attached on the outside wall, adjacent to the point of entrance of the supply assembly or permanently installed feeders, that reads:

"THIS CONNECTION IS FOR 480/277 VOLT AC _____ AMPERE SERVICE." (The correct service rating shall be stamped in the blank space.)

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-1270, filed 10/23/96, effective 11/25/96.]

WAC 296-150C-1280 Wiring methods—Wiring of expandable or multiple units. (1) Where circuits in expandable or multiple units are designed to be energized from one main panelboard, permanent-type wiring methods and materials must be used for connecting the units to each other.

(2) Commercial coaches may have individual branch circuit panelboards installed in each unit subject to the requirements of this chapter.

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-1280, filed 10/23/96, effective 11/25/96.]

WAC 296-150C-1290 Under-chassis wiring. Outdoor or under-chassis wiring (120/240 volts) exposed to moisture and mechanical damage must be protected by rigid metal conduit, electrical metallic tubing, liquid-tight flexible metal conduit, or nonmetallic conduit. The conductors shall be type RW, TW, or equivalent.

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[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-1290, filed 10/23/96, effective 11/25/96.]

WAC 296-150C-1300 Equipment mounting. Electrical equipment must be securely mounted to prevent displacement during transit. Meter bases must not be mounted on commercial coaches.

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-1300, filed 10/23/96, effective 11/25/96.]

WAC 296-150C-1303 How must storage batteries be installed in a commercial coach? Storage batteries subject to the provisions of this standard must be securely attached to the commercial coach. They must be installed in an area which is vapor-tight to the interior and ventilated directly to the exterior of the coach. When batteries are installed in a compartment, the compartment must be ventilated with openings of not less than two square inches at the top and two square inches at the bottom. Batteries must not be installed in a compartment containing spark or flame producing equipment, except in an engine generator compartment if the only charging source is the generator itself.

[Statutory Authority: Chapter 43.22 RCW. 98-14-078, § 296-150C-1303, filed 6/30/98, effective 7/31/98.]

WAC 296-150C-1310 Grounding—General. Grounding of both electrical and nonelectrical metal parts in a commercial coach must be through connection to a grounding bus in the commercial coach distribution panel. The grounding bus must be grounded through the green conductor in the supply cord. It may also be grounded through the feeder wiring to the service ground in the service-entrance equipment located adjacent to the commercial coach location. Do not connect either the frame of the commercial coach or the frame of any appliance to the neutral conductor in the commercial coach.

(1) The insulated neutral requirements are as follows:

(a) The grounded (neutral) circuit conductor must be insulated from the grounding conductors, from equipment enclosures, and from other grounded parts.

(b) The grounded (neutral) circuit terminals in the distribution panels and in ranges, clothes dryers, counter-mounted cooking units, and wall-mounted ovens must be insulated from the equipment enclosure.

(c) Bonding screws, straps, or buses in the distribution panel or in appliances *must be removed and discarded*.

(d) Connections of ranges and clothes dryers with 120/240 volt, 3-wire ratings must be made with 4-conductor cord and 3-pole, 4-wire grounding-type plugs or by type AC metalclad cable or individual conductors enclosed in flexible metal conduit.

(e) Type NM or type SE cable must not be used to connect a range or a dryer. This does not prohibit the use of type NM or type SE cable between the branch circuit overcurrent protective device and a junction box or range or dryer receptacle.

(f) For 120-volt rated devices, a 3-conductor cord and 2-pole, 3-wire grounding-type plug is permitted.

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(2) The following equipment grounding means must be used:

(a) The green grounding wire in the supply cord or permanent feeder wiring must be connected to the grounding bus in the distribution panel or disconnecting means.

(b) In the electrical system, all exposed metal parts, enclosures, frames, lamp fixture canopies, etc., must be effectively bonded to the grounding terminal or enclosure of the distribution panel.

(c) Cord-connected appliances must be grounded by means of an approved cord with grounding conductor and grounding-type attachment plug.

(3) The following bonding requirements of noncurrent-carrying metal parts must apply:

(a) All exposed noncurrent-carrying metal parts that may become energized must be effectively bonded to the grounding terminal or enclosure of the distribution panelboard. A bonding conductor must be connected between each distribution panelboard and an accessible terminal on the chassis.

(b) Grounding terminals must be of the solderless type and approved as pressure-terminal connectors recognized for the wire size used.

(c) The bonding conductor must be solid or stranded, insulated or bare and must be No. 8 copper minimum or equal. It must be routed so as not to be exposed to physical damage.

(d) Metallic gas, water, and waste pipes and metallic air circulating ducts must be considered bonded if they are connected to the terminal on the chassis by clamps, solderless connectors or by suitable grounding-type straps.

(e) Any metallic roof and exterior covering must be considered bonded if:

(i) The metal panels overlap one another and are securely attached to the wood or metal frame parts by metallic fasteners;

(ii) The lower panel of the metallic exterior covering is secured at a cross member of the chassis by two metal fastener straps per commercial coach unit or section at opposite ends; and

(iii) The bonding strap must be a minimum of 30 gauge galvanized metal and must be a minimum of four inches wide.

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-1310, filed 10/23/96, effective 11/25/96.]

WAC 296-150C-1320 Dielectric strength test. (1)(a) The wiring of each commercial coach must be subjected to a one-minute, 900-volt, dielectric strength test between live parts (including neutral) and the commercial coach ground. All switches must be closed during the test. (Closed switches are in the on position.)

(b) The test may also be performed at 1,080 volts for one second. This test must be performed after branch circuits are complete and after fixtures or appliances are installed.

Exception: Fixtures and appliances are not required to withstand the dielectric strength test.

(2) Each commercial coach designed with a 480-volt electrical system must be subjected to a one-minute 1,275-volt dielectric strength test between current-carrying conduc-

tors and the coach ground. The test may also be performed at 1,500 volts for one second.

(3) Low-voltage circuit conductors in each commercial coach must withstand the applied potential without electrical breakdown of a one-minute, 500-volt, or a one-second, 600-volt, dielectric strength test. The potential must be applied between live and grounded conductors.

(4) The test is to be performed by the manufacturer and witnessed by the inspector.

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-1320, filed 10/23/96, effective 11/25/96.]

MECHANICAL

WAC 296-150C-1330 Mechanical—General. This chapter applies to the installation of mechanical, ventilation, and indoor air quality equipment in any commercial coach bearing or required to bear a department insignia. Mechanical, ventilation, and indoor air quality equipment and installations in or on a commercial coach shall be installed according to the requirements of the Uniform Mechanical Code, the Washington State Ventilation and Indoor Air Quality Code, the rules of this chapter, and the conditions of the equipment approval or listing agency.

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-1330, filed 10/23/96, effective 11/25/96.]

WAC 296-150C-1340 Mechanical definitions. Definitions contained in the current adopted edition of the Uniform Mechanical Code, and the following definitions apply to the commercial coaches.

"Accessible" is having access to a fixture, connection, appliance, or equipment that requires the removal of an access panel, door, or similar obstruction.

"Appliance compartment" is a room having a floor area not in excess of twice the largest plan area of the room's appliance or appliances plus clearances required in this chapter.

"Automatic pilot device" is a device employed with gas-burning equipment that will either automatically shut off the gas supply to the burner being served or automatically activate, electrically or otherwise, a gas shutoff device when the pilot flame is extinguished.

"Btuh" is British thermal units per hour.

"Clearance" is the distance between the appliance, chimney, vent, or chimney or vent connector, or plenum and the nearest surface.

"Combustible material" is a material adjacent to or in contact with a heat-producing appliance, vent connector, chimney, or steam and hot water pipes, made of or surfaced with wood, compressed paper, plant fibers, or other products that will ignite and burn. Such material must be considered combustible even though flame-proofed, fire-retardant treated, or plastered.

"Connector-gas appliance" is a flexible or semi-rigid connector listed as conforming to ANSI Standard Z21.24, Metal Connectors for Gas Appliances, used to convey fuel gas, three feet or less in length (six feet or less for gas ranges), between a gas outlet and a gas appliance in the same room.

"Fuel gas piping system" is the arrangement of piping, tubing, fittings, connectors, valves, and devices designed and intended to supply or control the flow of fuel gas to an appliance.

"Gas" is fuel gas, such as natural gas, manufactured gas, undiluted liquefied petroleum gas (vapor phase only), liquefied petroleum air-gas mixtures, or mixtures of these gases that would ignite in the presence of oxygen.

"Gas-supply connection" is the terminal end or connection to which a gas-supply connector is attached.

"Input rating" is the maximum fuel-burning capacity of any warm-air furnace, recessed heater, or burner expressed in British thermal units per hour.

"Liquefied petroleum gases (LPG)" is any material that is composed predominantly of propane, propylene, butanes (normal butane or isobutane), and butylenes, or any mixture of them.

"Quick-disconnect device" is a hand-operated means of connecting and disconnecting a gas supply or connecting gas systems and is equipped with an automatic device to shut off the gas supply when disconnected.

"Readily accessible" is having direct access without the necessity of removing any panel, door, or similar obstruction.

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-1340, filed 10/23/96, effective 11/25/96.]

WAC 296-150C-1346 When HVAC equipment is supplied with more than one CFM rating, which rating do I use? Where HVAC equipment manufacturers show multiple cubic feet per minute (CFM) ratings and/or multiple water gauge ratings, you must use the highest rated capacity.

[Statutory Authority: RCW 43.22.340, 43.22.350, 43.22.355, 43.22.360, 43.22.400, 43.22.432, 43.22.433, 43.22.434, 43.22.450, 43.22.480, and 43.22.485. 00-17-148, § 296-150C-1346, filed 8/22/00, effective 9/30/00.]

WAC 296-150C-1350 LPG system enclosure and mounting. (1) LPG containers must not be installed, nor stored temporarily, inside any commercial coach.

Exception: This prohibition does not apply to completely self-contained hand torches, lanterns, or similar equipment with containers having a maximum water capacity of two and one-half pounds (approximately one pound LPG capacity).

(2)(a) Containers, control valves and regulating equipment, when installed, must be mounted on the "A" frame of the commercial coach or installed in a compartment that is *vapor-tight* to the inside of the commercial coach and accessible only from the outside.

(b) The compartment must be ventilated at top and bottom to diffuse vapors. The compartment must be ventilated with two vents having an aggregate area of not less than two percent of the floor area of the compartment and must open without restriction to the outside. The required vents must be equally distributed between the floor and ceiling of the compartment. If the lower vent is located in the access door or wall, the bottom edge of the vent shall be flush with the floor level of the compartment. The top vent must be located in the access door or wall with the bottom of the vent not more than twelve inches below the ceiling level of the compartment. All vents must have an unrestricted discharge to the outside atmosphere. Access doors or panels of compartments must

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not be equipped with locks or require special tools or knowledge to open.

(3) Doors, hoods, domes, or portions of housings and enclosures required to be removed or opened for container replacement must incorporate means for clamping them firmly in place and preventing them from working loose during transit. Provisions must be incorporated in the assembly to hold the containers firmly in position and prevent their movement during transit.

(4) LPG containers must be mounted on a substantial support or a base secured firmly to the commercial coach chassis. Neither the container nor its support can extend below the commercial coach frame.

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-1350, filed 10/23/96, effective 11/25/96.]

WAC 296-150C-1360 Gas piping—Piping design.

Commercial coaches requiring fuel gas for any purpose must be equipped with a gas piping system that is designed for LPG only or combination LPG and natural gas.

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-1360, filed 10/23/96, effective 11/25/96.]

WAC 296-150C-1370 Gas piping—Expandable or multiple commercial coaches. Where gas piping is to be installed in more than one portion of an expandable or multiple commercial coach, the design and construction must be as follows:

(1) There must be only one point of cross over, readily accessible from the exterior of the commercial coach.

(2) The connector between units must be a listed flexible gas connector approved for exterior use.

(3) A shut-off valve must be located on the supply side of the connection. Both a flexible gas connector that is approved for exterior use and a quick disconnect type of connector must be tested and approved to IAPMO TSC-9 standard or equal; and both must have a shut-off valve installed that is tested and approved to ANSI Z21.15 standard or equal.

(4) Protective caps or plugs must be permanently attached to the coach and used to seal the system when not in use.

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-1370, filed 10/23/96, effective 11/25/96.]

WAC 296-150C-1380 Concealed tubing. (1) Tubing must not be run inside walls, floors, partitions, or roofs.

(2) If tubing passes through walls, floors, partitions, roofs, or similar installations, the tubing must be protected by the use of weather resistant grommets that snugly fit both the tubing and the hole through which the tubing passes.

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-1380, filed 10/23/96, effective 11/25/96.]

WAC 296-150C-1390 Gas piping—Pipe-joint compound. (1) Screw joints must be made tight with pipe-joint compound that is insoluble in liquefied petroleum gas.

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(2) Pipe-joint compound must be approved for the type of gas used. The pipe-joint compound must be applied to the male threads only.

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-1390, filed 10/23/96, effective 11/25/96.]

WAC 296-150C-1400 Gas piping—Hangers and supports. (1) All gas piping must be adequately supported by galvanized or equivalently protected metal straps or hangers at intervals of not more than four feet, except where adequate support and protection is provided by structural members.

(2) Gas pipe supply connections must be rigidly anchored to a structural member within six inches of the supply connections.

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-1400, filed 10/23/96, effective 11/25/96.]

WAC 296-150C-1410 Gas piping—Electrical ground. (1) Gas piping must not be used for an electrical ground.

(2) The gas line must be bonded.

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-1410, filed 10/23/96, effective 11/25/96.]

WAC 296-150C-1420 Identification of gas supply connections. A label must be permanently attached on the outside of the exterior wall of the commercial coach adjacent to the gas supply connection which provides the following information:

(1) The type of system (i.e., liquid petroleum system or natural gas system or combination liquid petroleum and natural gas system);

(2) The appropriate Btuh input rating; and

(3) If excess ("or more") Btuh input is allowed.

*For example: Natural Gas System
250,000 Btuh
Or More*

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-1420, filed 10/23/96, effective 11/25/96.]

WAC 296-150C-1430 Gas piping system openings. All openings in the gas piping system must be closed gas-tight with threaded pipe plugs or pipe caps.

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-1430, filed 10/23/96, effective 11/25/96.]

WAC 296-150C-1440 Gas piping—Valves. (1) In addition to any valve on the appliance, a shut-off valve must be installed in the fuel piping outside of each gas appliance but inside the commercial coach structure and upstream of the union or connector. The shut-off valve must be located within six feet of a cooking appliance and within three feet of any other appliance. A shut-off valve may serve more than one appliance if located as required above.

(2) Shut-off valves used in connection with gas piping must be of a type designed for use with liquefied petroleum

gas. Shut-off valves must be tested and approved to ANSI Z21.15 standard or equal.

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-1440, filed 10/23/96, effective 11/25/96.]

WAC 296-150C-1450 Gas piping—Testing for leakage before appliances are connected. (1) The piping system must stand a pressure of at least ten psi gauge for a period of not less than fifteen minutes without showing any drop in pressure.

(2) Pressure must be measured with a gauge calibrated to be read in increments of not greater than one-tenth pound.

(3) The source of pressure must be isolated before the pressure tests are made. Before a test is begun, the temperature of the ambient air and of the piping must be approximately the same, and constant air temperature must be maintained throughout the test.

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-1450, filed 10/23/96, effective 11/25/96.]

WAC 296-150C-1460 Gas piping—Testing for leakage after appliances are connected. (1) After gas appliances have been connected, the gas-piping system must be subjected to a pressure test with the burner valves closed. The test consists of air at not less than ten inches nor more than fourteen inches pressure of water column (six to eight ounces). The system must hold this pressure for a period of not less than ten minutes with no leakage. Before beginning the test, the temperature of the gas-piping system and the test air must be equalized, and this shall be maintained throughout the test.

(2) Appliance shut-off valves ahead of gas cooking appliances may be closed for the performance of this test. When the test is satisfactorily performed, these valves must be opened and, while the system is under pressure, the appliance connectors must be tested with an approved leak detector or approved bubble solution.

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-1460, filed 10/23/96, effective 11/25/96.]

VENTILATION AND INDOOR AIR QUALITY

WAC 296-150C-1470 Ventilation and indoor air quality—General. Ventilation and indoor air quality equipment and installations in or on a commercial coach must be made according to the requirements of the Washington State Ventilation and Indoor Air Quality Code, the Uniform Mechanical Code, the rules of this chapter, and the conditions of the equipment approval.

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-1470, filed 10/23/96, effective 11/25/96.]

WAC 296-150C-1480 Ventilation and indoor air quality definitions. Definitions contained in the current adopted edition of the Washington State Ventilation and Indoor Air Quality Code and the Uniform Mechanical Code

and the following definitions apply to the commercial coach ventilation and indoor air quality rules in this chapter.

"Duct" is a conduit or passageway for conveying air to or from heating, cooling, air conditioning, or ventilation equipment, not including the plenum.

"Plenum" is an air compartment that is part of an air-distributing system to which one or more ducts are connected.

- **A furnace-supply plenum** is a plenum attached directly to, or an integral part of, the air-supply outlet of the furnace.
- **A furnace-return plenum** is a plenum attached directly to, or an integral part of, the return inlet of the furnace.

"Vent connector" is a pipe for conveying products of combustion from a fuel-burning appliance to a vent.

"Water heater" is an appliance for heating water for domestic purposes other than for space heating.

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-1480, filed 10/23/96, effective 11/25/96.]

WAC 296-150C-1490 Appliances—Installation. In addition to requirements of the Washington State Ventilation and Indoor Air Quality Code:

(1) The installation of each appliance must conform to the manufacturer's installation instructions. The manufacturer's instructions must be attached to the appliance.

(2) Combustion air inlets and flue gas outlets must be listed as components of the appliance and must be completely separated. The required separation may be obtained by:

(a) The installation of direct vent system (sealed combustion system) appliances; or

(b) The installation of appliances within enclosures so that the appliance combustion system and venting system are separate from the interior atmosphere of the commercial coach. There must not be any door, removable access panel, or other opening into the enclosure from inside the commercial coach. Any openings for ducts, piping, wiring, etc., must be sealed.

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-1490, filed 10/23/96, effective 11/25/96.]

WAC 296-150C-1500 Safety devices—Water heater relief valves. In addition to requirements of the Washington State Ventilation and Indoor Air Quality Code:

(1) All water heaters must be installed with approved fully automatic valve or valves designed to provide temperature and pressure relief. Temperature and pressure relief valves must be tested and approved to ANSI Z21.22 standard or equal.

(2) Any temperature relief valve or combined pressure and temperature relief valve installed for this purpose must have the temperature sensing element immersed in the hottest water within the upper six inches of the tank. It must be set to start relieving at a pressure of 150 psi or the rated working pressure of the tank, whichever is lower, and at or below a water temperature of 210 degrees Fahrenheit.

(3) Relief valves must be provided with full-sized drains. Drains must be directed to the exterior sides of the unit, exit-

ing at least six inches above the ground, and each drain pipe must exhaust with a ninety degree downward turn. Drain lines must be of a material approved for hot water distribution and must drain fully by gravity, must not be trapped, and must not have their outlets threaded.

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-1500, filed 10/23/96, effective 11/25/96.]

WAC 296-150C-1510 Air ducts—Expandable or multiple commercial coach connections. In addition to the requirements of the International Mechanical Code and the Washington State Energy Code air ducts for:

(1) An expandable or multiple commercial coach may have ducts of the heating system installed in the various units. The points of connection must be so designed and constructed that when the commercial coach is fully expanded or coupled, the resulting duct joint will conform to the requirements of this chapter.

(2) Installation instructions for supporting the crossover duct from the commercial coach must be provided for on-site installation. The duct must not touch the ground.

[Statutory Authority: Chapter 43.22 RCW and 2003 c 291. 05-01-102, § 296-150C-1510, filed 12/14/04, effective 2/1/05. Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-1510, filed 10/23/96, effective 11/25/96.]

WAC 296-150C-1520 Air ducts—Duct and plenum insulation. Every heating and cooling duct and plenum must be installed according to the International Mechanical Code and the Washington State Energy Code.

[Statutory Authority: Chapter 43.22 RCW and 2003 c 291. 05-01-102, § 296-150C-1520, filed 12/14/04, effective 2/1/05. Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-1520, filed 10/23/96, effective 11/25/96.]

PLUMBING

WAC 296-150C-1530 Plumbing—General. This chapter also applies to the installation of plumbing equipment in any commercial coach bearing or required to bear a department insignia. Plumbing fixtures, equipment, and installations in commercial coaches must conform to the provisions of the Uniform Plumbing Code and the amendments adopted by the State Building Code Council, except part 1, unless specifically exempted or required by this section.

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-1530, filed 10/23/96, effective 11/25/96.]

WAC 296-150C-1540 Plumbing—Definitions. The definitions listed below, in addition to the Uniform Plumbing Code definitions apply to this chapter.

"Drain outlet" is the discharge end of the commercial coach main drain to which a drain connector may be attached.

"Main drain" is the principal artery of the commercial coach drainage system to which drainage branches may be connected.

"Water-supply connection" is the fitting or point of connection of the commercial coach water distribution system designed for connection to a water connector.

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-1540, filed 10/23/96, effective 11/25/96.]

WAC 296-150C-1545 Does the department require a water system expansion tank be installed? The department will only require that a tee be installed in an accessible location for the future addition of an expansion tank where one may be installed if required.

[Statutory Authority: RCW 43.22.340 and 43.22.480. 99-13-010, § 296-150C-1545, filed 6/4/99, effective 7/5/99.]

WAC 296-150C-1550 Drainage—Cap or plug. Drain outlets must be equipped with a watertight cap or plug that is permanently attached to the vehicle.

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-1550, filed 10/23/96, effective 11/25/96.]

WAC 296-150C-1560 Drainage—Clearance from drain outlet. The drain outlet and couplers must have a minimum clearance of three inches in any direction from all parts of the structure or appurtenances and at least eighteen inches unrestricted clearance directly in front of the drain outlet.

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-1560, filed 10/23/96, effective 11/25/96.]

WAC 296-150C-1570 Water supply connection. (1) Each commercial coach equipped with a water distribution system must have a water-supply connection that terminates within eighteen inches of the outside wall of the commercial coach.

(2) Water-supply connections must be equipped with a watertight cap or plug that is permanently attached to the commercial coach.

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-1570, filed 10/23/96, effective 11/25/96.]

COMMERCIAL COACH FEES

WAC 296-150C-3000 Commercial coach fees.

INITIAL FILING FEE	\$33.20
DESIGN PLAN FEES:	
INITIAL FEE - MASTER DESIGN	\$229.00
INITIAL FEE - ONE YEAR DESIGN	\$93.70
RENEWAL FEE	\$39.60
RESUBMIT FEE	\$66.90
ADDENDUM (Approval expires on same date as original plan)	\$66.90
ELECTRONIC PLAN SUBMITTAL FEE \$4.90 per page for the first set of plans and \$0.30 per page for each additional set of plans. These fees are in addition to any applicable design plan fees required under this section.	
ELECTRICAL PLAN REVIEW (Plan review for educational, institutional or health care facilities and other buildings)	
Electrical Plan submission fee	\$66.90
Service/feeder Ampacity:	
0 - 100	\$29.60
101 - 200	\$36.90
201 - 400	\$69.30
401 - 600	\$81.70
601 - 800	\$105.30
801 - 1000	\$128.90
Over 1000	\$139.90
Over 600 volts surcharge	\$22.10
Thermostats:	
First	\$13.00
Each additional	\$3.00
Low voltage fire alarm and burglar alarm:	
Each control panel and up to four circuits or zones	\$11.90
Each additional circuit or zone	\$2.00
Generators, refer to appropriate service/feeder ampacity fees	
<i>Note: Altered services or feeders shall be charged the above rate per the service/feeder ampacity fees.</i>	
Supplemental submissions of plans (resubmittals, addendums, renewals, code updates, etc.) shall be charged per hour or fraction of an hour*	\$79.20
ELECTRICAL COMMERCIAL/INDUSTRIAL	
Electrical Service/feeders Ampacity	212.80 plus
Service/feeder	\$195.10
Additional Feeder	\$37.00
ELECTRICAL MULTIFAMILY RESIDENTIAL	
Electrical Service/feeders	212.80 plus
Service/feeder	\$103.50
Additional Feeder	\$26.40
MEDICAL GAS PLAN REVIEW:	
SUBMISSION FEE	\$64.10

FIRST STATION	\$64.10
EACH ADDITIONAL STATION	\$23.40
RECIPROCAL PLAN REVIEW:	
INITIAL FEE - MASTER DESIGN	\$102.10
INITIAL FEE - ONE YEAR DESIGN	\$61.70
RENEWAL FEE	\$61.70
ADDENDUM	\$61.70
PLANS APPROVED BY PROFESSIONALS	\$46.50
APPROVAL OF EACH SET OF DESIGN PLANS BEYOND FIRST TWO SETS	\$12.50
DEPARTMENT INSPECTION FEES	
INSPECTION/REINSPECTION (Per hour* plus travel time* and mileage**)	\$66.90
TRAVEL (Per hour)	\$66.90
PER DIEM**	
HOTEL***	
MILEAGE**	
RENTAL CAR***	
PARKING***	
AIRFARE***	
DEPARTMENT AUDIT FEES:	
AUDIT (Per hour*)	\$66.90
TRAVEL (Per hour*)	\$66.90
PER DIEM**	
HOTEL***	
MILEAGE**	
RENTAL CAR***	
PARKING***	
AIRFARE***	
ALTERATION INSPECTION (One hour plus insignia alteration fee)	\$100.10
INSIGNIA FEES:	
FIRST SECTION/ALTERATION	\$20.20
EACH ADDITIONAL SECTION	\$12.50
REISSUED-LOST/DAMAGED	\$12.50
OTHER FEES:	
FIELD TECHNICAL SERVICE (Per hour* plus travel time* and mileage**)	\$66.90
PUBLICATION PRINTING AND DISTRIBUTION OF RCW'S AND WAC'S (One free copy per year upon request)	\$12.50
* Minimum charge of 1 hour; time spent greater than 1 hour is charged in 1/2 hour increments	
** Per state guidelines	
*** Actual charges incurred	

[Statutory Authority: Chapters 18.106, 43.22, and 70.87 RCW. 06-10-066, § 296-150C-3000, filed 5/2/06, effective 6/30/06. Statutory Authority: Chapter 43.22 RCW. 05-23-002, § 296-150C-3000, filed 11/3/05, effective 12/4/05. Statutory Authority: Chapters 18.27, 43.22, and 70.87 RCW. 05-12-032, § 296-150C-3000, filed 5/24/05, effective 6/30/05. Statutory Authority: Chapter 43.22 RCW and 2003 c 291. 05-01-102, § 296-150C-3000, filed 12/14/04, effective 2/1/05. Statutory Authority: Chapters 18.27 and 43.22 RCW. 04-12-048, § 296-150C-3000, filed 5/28/04, effective 6/30/04. Statutory Authority: RCW 43.22.350, 43.22.434, 43.22.480, 43.22.500, 70.87.030, 18.106.070, 18.106.125, 2001 c 7, and chapters 18.106, 43.22, and 70.87 RCW. 03-12-045, § 296-150C-3000, filed 5/30/03, effective 6/30/03. Statutory Authority: RCW 43.22.350, 43.22.434, 43.22.480, 43.22.500, 18.27.040, 18.27.070, 18.27.075, 70.87.030, 19.28.041, 19.28.051, 19.28.101, 19.28.121, 19.28.161, 19.28.201, 19.28.211, 19.28.341, 2001 c 7, 2002 c 249, and chapters 19.28, 43.22, 18.27, and 70.87 RCW. 02-12-022, § 296-150C-3000, filed 5/28/02, effective 6/28/02. Statutory Authority: RCW 43.22.350, 43.22.434, 43.22.480, 43.22.500, 18.27.070, 18.27.075, 70.87.030, 19.28.041, 19.28.051, 19.28.101, 19.28.121, 19.28.161, 19.28.201, 19.28.211, 19.28.341, 2001 c 159, and chapters 43.22, 19.28, 18.27, and 70.87 RCW. 01-12-035, § 296-150C-3000, filed 5/29/01, effective 6/29/01. Statutory Authority: Chapters 43.22, 18.27, 70.87 and 19.28 RCW. 99-12-080, § 296-150C-3000, filed 5/28/99, effective 6/28/99. Statutory Authority: Chapters 18.106, 18.27 and 43.22 RCW. 98-12-041, § 296-150C-3000, filed 5/29/98, effective 6/30/98. Statutory Authority: RCW 70.87.030, 18.27.070, [18.27.]075, 43.22.350, [43.22.]355, [43.22.]434 and [43.22.]480(2). 97-11-053, § 296-150C-3000, filed 5/20/97, effective 6/30/97. Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150C-3000, filed 10/23/96, effective 11/25/96.]

Chapter 296-150F WAC

FACTORY-BUILT HOUSING AND COMMERCIAL STRUCTURES

WAC

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- 296-150F-3000 Factory-built housing and commercial structure fees.

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- 296-150F-0615 May the electrical disconnect required for mechanical equipment be inside of or mounted on the equipment? [Statutory Authority: RCW 43.22.340 and 43.22.480. 99-13-010, § 296-150F-0615, filed 6/4/99, effective 7/5/99.] Repealed by 05-01-102, filed 12/14/04, effective 2/1/05. Statutory Authority: Chapter 43.22 RCW and 2003 c 291.

WAC 296-150F-0010 Authority, purpose, and scope.

(1) This chapter is authorized by RCW 43.22.420, 43.22.434 and 43.22.450 through 43.22.490, covering the construction and approval of factory-built housing and commercial structures before occupancy.

(2) This chapter applies to the approval:

(a) Of factory-built structures used for residences or commercial purposes; and

(b) After occupancy of a factory-built house or commercial structure, all inspections are done by the local enforcement agency.

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150F-0010, filed 10/23/96, effective 11/25/96.]

WAC 296-150F-0020 What definitions apply to this chapter? "Approved" is approved by the department of labor and industries.

"Building site" is a tract, parcel, or subdivision of land on which a factory-built house or commercial structure will be installed.

"Commercial structure" is a structure designed or used for human habitation (such as a dormitory) or human occupancy for industrial, educational, assembly, professional, or commercial purposes. It may also include a component.

"Component" is a discrete element that cannot be inspected at the time of installation either in the factory or in a site-built unit, but is:

- Designed to be installed in a structure;
- Manufactured as a unit; and
- Designed for a particular function or group of functions.

A component may be a floor, wall panel, roof panel, plumbing wall, electrical service wall, or heating assembly.

It may also be a service core. A service core is a factory assembled, three-dimensional section of a building. It may include mechanical, electrical, plumbing, and related systems. It may be a complete kitchen, bathroom, or utility room. Service cores are referred to as "wet boxes," "mechanical cores," or "utility cores."

Note: A roof truss is not considered a component.

"Damaged in transit" is damage that effects the integrity of the structural design or damage to any other system referenced in the codes required by the State Building Code, or other applicable codes.

"Department" is the department of labor and industries. The department may also be referred to as "we" or "us" in this chapter. Note: You may contact us at: Department of Labor and Industries, Specialty Compliance, PO Box 44440, Olympia, WA 98504-4440.

"Design plan" is a plan for the construction of factory-built housing, commercial structures, or components that includes floor plans, elevation drawings, specifications, engineering data, or test results necessary for a complete evaluation of the design.

"Design option" is a design that a manufacturer may use as an option to its design plan.

"Educational facility" is a building or portion of a building used primarily for educational purposes by six or more persons at one time for twelve hours per week or four hours in any one day. Educational occupancy includes: Schools (preschool through grade twelve), colleges, academies, universities, and trade schools.

"Equipment" is all material, appliances, devices, fixtures, fittings, or accessories used in the manufacture, assembly, installation, or alteration of factory-built housing, commercial structures, and components.

"Factory assembled structure (FAS) advisory board" is a board authorized to advise the director of the department regarding the issues and adoption of rules relating to factory-built housing, commercial structures and components. (See RCW 43.22.420.)

"Factory-built housing" is housing designed for human occupancy such as a single-family dwelling. The structure of any room is entirely or substantially prefabricated or assembled at a place other than a building site. It may also include a component. A factory-built house is also referred to as a "modular" structure. Factory-built housing does not include manufactured (mobile) housing. (See RCW 43.22.450(3).)

"Health or personal care facilities" are buildings or parts of buildings that contain, but are not limited to, facilities that are required to be licensed by the department of social and health services or the department of health (e.g., hospitals, nursing homes, private alcoholism hospitals, private psychiatric hospitals, boarding homes, alcoholism treatment facilities, maternity homes, birth centers or childbirth centers, residential treatment facilities for psychiatrically impaired children and youths, and renal hemodialysis clinics) and medical, dental or chiropractic offices or clinics, outpatient or ambulatory surgical clinics, and such other health care occupancies where patients who may be unable to provide for their own needs and safety without the assistance of another person are treated. (Further defined in WAC 296-46B-010.)

"Insignia" is a label that we attach to a structure to verify that a factory-built house or commercial structure meets the requirements of this chapter. It could also be a stamp or label attached to a component to verify that it meets the requirements of this chapter.

"Install" is to erect or set in place a structure at a building site. It may also be the construction or assembly of a component as part of a factory-built house or commercial structure.

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ponent as part of a factory-built house or commercial structure.

"Institutional facility" is a building or portion of a building used primarily for detention and correctional occupancies where some degree of restraint or security is required for a time period of twenty-four or more hours. Such occupancies include, but are not restricted to: Penal institutions, reformatories, jails, detention centers, correctional centers, and residential-restrained care.

"Listed" is a piece of equipment, a component, or an installation that appears in a list published by a testing or listing agency and is suitable for use in a specified manner.

"Listing agency" is an organization whose business is approving equipment, components, or installations for publication.

"Local enforcement agency" is an agency of city or county government with power to enforce local regulations governing the installation of factory-built housing and commercial structures.

"Master design plan" is a design plan that expires when a new State Building Code has been adopted.

"Manufacturing" is making, fabricating, forming, or assembling a factory-built house, commercial structure, or component.

"One-year design plan" is a design plan that expires one year after approval or when a new State Building Code has been adopted.

"Repair" is the replacement, addition, modification, or removal of any construction, equipment, system, or installation to correct damage in transit or during on-site installation before occupancy.

"Unit" is a factory-built house, commercial structure, or component.

[Statutory Authority: Chapter 43.22 RCW. 05-23-002, § 296-150F-0020, filed 11/3/05, effective 12/4/05; 98-14-078, § 296-150F-0020, filed 6/30/98, effective 7/31/98. Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150F-0020, filed 10/23/96, effective 11/25/96.]

WAC 296-150F-0030 How is this chapter enforced?

(1) To enforce this chapter, we or another governmental inspection agency will inspect each factory-built house and commercial structure that is sited in Washington. Inspections will be conducted during normal work hours or at other reasonable times. (See WAC 296-150F-0070.)

(2) We will inspect each unit as required by the codes. (See WAC 296-150F-0500.)

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150F-0030, filed 10/23/96, effective 11/25/96.]

WAC 296-150F-0040 Will you keep my manufacturing information confidential? We will only release manufacturing information such as design plans, specifications, and test results according to the requirements of the Public Records Act (see RCW 42.17.310 (1)(h)) unless we are ordered to do so by a court or otherwise required by law.

[Statutory Authority: RCW 43.22.340 and 43.22.420. 97-16-043, § 296-150F-0040, filed 7/31/97, effective 12/1/97. Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150F-0040, filed 10/23/96, effective 11/25/96.]

WAC 296-150F-0050 Can you prohibit the installation of factory-built housing and commercial structures?

(1) We may prohibit the installation of factory-built housing and commercial structures if they do not conform to the requirements of this chapter. (See RCW 43.22.465.)

(2) If an inspection reveals that a factory-built home or commercial structure violates this chapter, we may obtain a temporary injunction enjoining the installation of any non-conforming structure. The injunction may be made permanent at the discretion of the court.

[Statutory Authority: RCW 43.22.340 and 43.22.480. 99-13-010, § 296-150F-0050, filed 6/4/99, effective 7/5/99.]

WAC 296-150F-0070 Do you have reciprocal agreements with other states to inspect factory-built housing and commercial structures, and components? (1) We have entered into reciprocal agreements with states who have construction standards that are equal to or greater than our standards for factory-built housing and commercial structures.

(2) When we have a reciprocal agreement with another state:

(a) The reciprocal state inspects factory-built housing, commercial structures, and components manufactured in that state before shipment into Washington to ensure compliance with our laws. After inspection, the reciprocal state applies our insignia.

(b) The department inspects factory-built housing, commercial structures, and components manufactured in Washington before shipment into the reciprocal state to ensure compliance with their laws. After inspection, we apply the insignia of the reciprocal state.

(3) We have reciprocal agreements on file.

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150F-0070, filed 10/23/96, effective 11/25/96.]

WAC 296-150F-0080 Do you allow a local enforcement agency to inspect factory-built housing, commercial structures, and components at the manufacturing location? (1) A local enforcement agency (city or county), under contract with us, can inspect factory-built housing, commercial structures, and components. In some cases their contract may be limited to specific portions of an inspection at specified manufacturing locations.

(2) After approving a unit, the local enforcement agency will attach the insignia, which indicates the unit has passed inspection.

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150F-0080, filed 10/23/96, effective 11/25/96.]

WAC 296-150F-0100 What happens if I disagree with your decision regarding my compliance with this chapter? (1) If we determine you are in violation of this chapter, you will receive a notice of noncompliance.

(2) If you disagree with our decision, you can send us a written request for a hearing, stating why you disagree.

(3) After we receive your hearing request, we will:

(a) Schedule a hearing within thirty days after we receive your request.

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(b) Notify you of the time, date, and place for the hearing. If you fail to appear, your case will be dismissed.

(c) Hear your case.

(d) Send you written notice of our decision.

If you disagree with our decision, you may appeal it under the Administrative Procedure Act (chapter 34.05 RCW).

[Statutory Authority: RCW 43.22.340 and 43.22.420. 97-16-043, § 296-150F-0100, filed 7/31/97, effective 12/1/97. Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150F-0100, filed 10/23/96, effective 11/25/96.]

WAC 296-150F-0110 Do you have an advisory board to address factory-built housing and commercial structure issues? The factory assembled structures (FAS) board advises us on issues relating to structural, plumbing, mechanical, electrical, installation, inspections, and rules for factory-assembled structures. (See RCW 43.22.420.)

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150F-0110, filed 10/23/96, effective 11/25/96.]

WAC 296-150F-0120 Where can I obtain technical assistance regarding factory-built housing and commercial structures? We provide field technical service to factory-built housing and commercial structure manufacturers for an hourly fee. Field technical service may include an evaluation, consultation, plan examination, interpretation, and clarification of technical data relating to the application of our rules. It does not include inspections.

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150F-0120, filed 10/23/96, effective 11/25/96.]

WAC 296-150F-0130 How do I register a complaint?

A person who believes that a structure or component does not meet the requirements of this chapter may register a complaint with the department. The complaint must be in writing and must specifically describe the alleged violations of this chapter. Upon receipt of the complaint, the department will forward a copy to the appropriate manufacturer and/or dealer and they shall have thirty days to respond to it. If the department determines that an inspection is necessary, the manufacturer/dealer shall pay the department for the cost of the inspection. The cost of the inspection is based upon the fee schedule in WAC 296-150F-3000 and includes the hourly inspection fee, travel costs and other expenses incurred as a result of the inspection.

[Statutory Authority: Chapter 43.22 RCW. 98-14-078, § 296-150F-0130, filed 6/30/98, effective 7/31/98.]

WAC 296-150F-0140 Do you allow the use of alternate materials, alternate design and method of construction? An applicant may apply for the use of alternate materials, alternate design and methods of construction different from the requirements of this chapter by filing a written request with the department.

(1) Responsibilities of applicant. The applicant must submit in writing the following information and sign and date the request.

(a) The applicant's name, address and phone number;

(2007 Ed.)

(b) The specific requirement or requirements from which the alternate material, alternate design or method of construction is requested;

(c) Justification that the requirements of this chapter cannot be met without using alternate materials, alternate design or method of construction;

(d) How the use of alternate materials, alternate design or method of construction will achieve the same result as the requirement and any specific alternative measures to be taken to show the alternate provides the same level of protection to life, safety and health as the requirements.

The department has a form that you may use for your request. Contact the department at the address shown in the definition section.

(2) Responsibilities of the department. The department will provide a written response to the applicant within thirty days of receipt of the written request. The written response will state the acceptance or denial of the request, including the reasons for the department's decision. At a minimum the department will base its decision based on:

(a) The applicant's request as described in subsection (1) of this section;

(b) Research into the request;

(c) Expert advice.

(3) Applicant's response to denials. The applicant may appeal the department's decision by following the procedure in WAC 296-150F-0100.

[Statutory Authority: RCW 43.22.340, 43.22.350, 43.22.355, 43.22.360, 43.22.400, 43.22.432, 43.22.433, 43.22.434, 43.22.450, 43.22.480, and 43.22.485. 00-17-148, § 296-150F-0140, filed 8/22/00, effective 9/30/00. Statutory Authority: RCW 43.22.340 and 43.22.480. 99-13-010, § 296-150F-0140, filed 6/4/99, effective 7/5/99.]

INSIGNIA

WAC 296-150F-0200 Who must purchase factory-built housing and commercial structure insignia? (1) You must obtain insignia from us for each factory-built house, commercial structure and component sited in Washington state.

(2) If you are a Washington state manufacturer, you do not need to purchase our insignia for your factory-built housing, commercial structures and components sold outside of Washington state.

(3) You must have an approved design plan and have passed inspection before an insignia can be attached to your factory-built home or commercial structure by us or our authorized agent.

(4) If a unit is damaged in transit after leaving the manufacturing location or during an on-site installation, and a repair is necessary, you must purchase an insignia from us. The insignia indicates that the unit was repaired.

[Statutory Authority: Chapter 43.22 RCW. 98-14-078, § 296-150F-0200, filed 6/30/98, effective 7/31/98. Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150F-0200, filed 10/23/96, effective 11/25/96.]

WAC 296-150F-0210 What are the insignia requirements? (1) If you are applying for insignia for factory-built housing, commercial structures and components you must have your design plan approved and your units and components inspected and approved by us.

(2007 Ed.)

(2) We will attach the insignia after:

(a) We receive the required forms and fees from you (see WAC 296-150F-3000); and

(b) Your unit or component has passed final inspection. (See WAC 296-150F-0500.)

[Statutory Authority: Chapter 43.22 RCW. 98-14-078, § 296-150F-0210, filed 6/30/98, effective 7/31/98. Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150F-0210, filed 10/23/96, effective 11/25/96.]

WAC 296-150F-0220 How do I obtain insignia information and the required forms? Upon request, we will provide you with a packet of information that includes the required forms.

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150F-0220, filed 10/23/96, effective 11/25/96.]

WAC 296-150F-0230 What are the insignia application requirements? (1) If you are requesting insignia for units that you intend to manufacture under a *new design plan*, your completed application must include:

(a) A completed design plan approval request form;

(b) One complete set of design plans, specifications, engineering analysis, test procedures and results, plus one additional set for each manufacturing location where the design plan will be used;

(c) At least one set of design plans must have an original wet stamp from a professional engineer or architect licensed in Washington state. We will retain the set with the original wet stamp; and

(d) A one-time initial filing fee, the design plan fee (if we approve your design plan) and the fee for each insignia. (See WAC 296-150F-3000.)

(2) If you are requesting insignia under an *approved design plan*, your completed application must include:

(a) A completed application for insignia form; and

(b) The fee for each insignia requested. (See WAC 296-150F-3000.)

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150F-0230, filed 10/23/96, effective 11/25/96.]

WAC 296-150F-0250 How do I replace lost or damaged insignia? (1) If an insignia is lost or damaged after it is attached to your factory-built house, commercial structure, or component, you may obtain a replacement insignia.

(2) You should contact us and provide the following information:

(a) Your name, address, and telephone number;

(b) The name of the manufacturer;

(c) The serial number;

(d) The manufacturer number (M#), if available;

(e) The insignia number, if available; and

(f) The required fee. (See WAC 296-150F-3000.)

(3) If we can determine that your unit previously had an insignia, we will attach an insignia to your unit once we receive your insignia fee. (See WAC 296-150F-3000.)

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150F-0250, filed 10/23/96, effective 11/25/96.]

DESIGN PLAN

WAC 296-150F-0300 When is design plan approval required? Design plans for factory-built housing and commercial structures prior to installation at the building site in Washington must be approved when:

- (1) You build a new unit;
- (2) You modify an approved design plan through an addendum; or
- (3) You add options to an approved design plan through an addendum.

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150F-0300, filed 10/23/96, effective 11/25/96.]

WAC 296-150F-0310 Who can approve design plans? (1) Design plans can be approved by us or by a licensed professional or firm authorized by us (see WAC 296-150F-0420 and 296-150F-0430).

(2) All electrical design plans for new or altered electrical installations for educational institutions, health care facilities, and other buildings (see chapters 296-46, 296-130, 296-140, and 296-150 WAC Table 1 or 2) must be reviewed and approved by us.

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150F-0310, filed 10/23/96, effective 11/25/96.]

DESIGN-PLAN APPROVAL BY THE DEPARTMENT

WAC 296-150F-0320 What must I provide with my request for design-plan approval by the department? All requests for design-plan approval must include:

- (1) A completed design-plan approval request form;
- (2) One complete set of design plans, specifications, engineering analysis, test procedures and results plus one additional set for each manufacturing location where the design plan will be used (see WAC 296-150F-0340 and 296-150F-0350);

(3) At least one set of design plans must have an original wet stamp from a professional engineer or architect licensed in Washington state. All new, renewed, and resubmitted plans, specifications, reports and structural calculations prepared by or prepared under his or her direct supervision shall be signed, dated and stamped with their seal. Specifications, reports, and structural calculations may be stamped only on the first sheet, provided this first sheet identifies all of the sheets that follow are included and identified in the same manner. Plans that have not been prepared by or under the engineer's or architect's supervision shall be reviewed by them and they shall prepare a report concerning the plans reviewed. This report shall:

- (a) Identify which drawings have been reviewed by drawing number and date;
- (b) Include a statement that the plans are in compliance with current Washington state regulations; and
- (c) The report shall be stamped and signed by the reviewer.

Any deficiencies shall be corrected on the drawings before submitting to the department or be included in the report and identify as to how they are to be corrected. This

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report shall be attached to the plan(s) that were reviewed. We will retain the set with the original wet stamp;

(4) A one-time initial filing fee and the design-plan fee (see WAC 296-150F-3000); and

(5) A "key drawing" to show the arrangement of modules if the plan covers three or more modules.

(6) Electrical plan review for educational, institutional or health care facilities and other buildings. Plan review is a part of the electrical inspection process; its primary purpose is to determine:

(a) That loads and service/feeder conductors are calculated and sized according to the proper NCE or WAC article or section;

(b) The classification of hazardous locations; and

(c) The proper design of emergency and standby systems.

(7) All electrical plans for new or altered electrical installations in educational, institutional, and health or personal care occupancies classified or defined in this chapter must be reviewed and approved before the electrical installation or alteration is started. Approved plans must be available for use during the electrical installation or alteration and for use by the electrical inspector.

(8) All electrical plans for educational facilities, hospitals and nursing homes must be prepared by, or under the direction of, a consulting engineer registered under chapter 18.43 RCW in compliance with chapters 246-320, 180-29, and 388-97 WAC as applicable and stamped with the engineer's mark and signature.

(9) Plans to be reviewed by the department must be legible, identify the name and classification of the facility, clearly indicate the scope and nature of the installation and the person or firm responsible for the electrical plans. The plans must clearly show the electrical installation or alteration in floor plan view, include switchboard and/or panel board schedules and when a service or feeder is to be installed or altered, must include a riser diagram, load calculation, fault current calculation and interrupting rating of equipment. Where existing electrical systems are to supply additional loads, the plans must include documentation that proves adequate capacity and ratings. The plans must be submitted with a plan review submittal form available from the department.

[Statutory Authority: Chapter 43.22 RCW. 05-23-002, § 296-150F-0320, filed 11/3/05, effective 12/4/05. Statutory Authority: RCW 43.22.340 and 43.22.480. 99-13-010, § 296-150F-0320, filed 6/4/99, effective 7/5/99. Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150F-0320, filed 10/23/96, effective 11/25/96.]

WAC 296-150F-0340 What must an engineering analysis for design plans include? (1) The engineering analysis must show that the structural design meets the requirements of this chapter.

(2) An engineering analysis must be conducted according to accepted engineering practices and must be signed by a professional engineer or architect licensed in Washington state.

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150F-0340, filed 10/23/96, effective 11/25/96.]

(2007 Ed.)

WAC 296-150F-0350 What must the test procedures and results for design plans include? (1) Tests to a design for a factory-built home or commercial structure must be witnessed by a professional engineer or architect licensed in Washington state.

(2) Test reports must contain the following items:

(a) A description of the methods or standards that applied to the test;

(b) Drawings and a description of the item tested;

(c) A description of the test setup;

(d) The procedure used to verify the correct load;

(e) The procedure used to measure each condition;

(f) Test data, including applicable graphs and observations of the characteristics and behavior of the item tested; and

(g) Analysis, comments, and conclusion.

(3) The written test procedures, results and conclusions must reference the applicable design plan.

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150F-0350, filed 10/23/96, effective 11/25/96.]

WAC 296-150F-0380 What happens if you approve my design plan? (1) Your design plan will be approved if it meets the requirements of this chapter.

(2) We will send you an approved copy of the design plan with the design-plan approval number.

(3) You must keep copies of the approved design plan at each location where a factory-built house, commercial structure, or component is built.

(4) If your design plan is not approved, you will be notified in writing of plan deficiencies. You may send a corrected design plan to us. (See WAC 296-150F-3000.)

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150F-0380, filed 10/23/96, effective 11/25/96.]

WAC 296-150F-0390 If my design plan is not approved, how much time do I have to submit a corrected design plan? (1) You have ninety days to correct and resubmit your original design plan and send us the resubmittal fee after we notify you of plan deficiencies. After ninety days, your initial design plan is returned to you.

(2) If you submit your corrected design plan after ninety days, you must send the initial design plan fee instead of the resubmittal fee. (See WAC 296-150F-3000.)

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150F-0390, filed 10/23/96, effective 11/25/96.]

WAC 296-150F-0400 What happens after my design plan is approved? Once your design plan is approved, we will inspect each related factory-built house, commercial structure, or component.

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150F-0400, filed 10/23/96, effective 11/25/96.]

WAC 296-150F-0410 When does my design plan expire? Master design plan:

(2007 Ed.)

(1) Your master design plan expires when there is a code change. You must submit new design plans for approval when there is a State Building Code cycle change. You may use your approved master design plans to order insignia as long as they comply with the applicable codes.

One-year design plan:

(2) Your factory-built home or commercial structure one-year design plan expires either one year after approval or when there is a code change. You must submit new design plans for approval when there is a State Building Code cycle change. You may use your design plan to order insignia as long as they comply with the applicable codes.

(3) All National Electrical Code amendments may be incorporated by an addendum to your design plan.

Note: The State Building Code is on a three-year code cycle which coincides with the State Building Code council amendment cycle. The National Electrical Code (NEC) cycle, however, does not coincide with the other code cycles.

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150F-0410, filed 10/23/96, effective 11/25/96.]

WAC 296-150F-0415 Who approves addendums to design plans approved by the department? You must have us approve an addendum to a design plan, if we initially approved your design plan.

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150F-0415, filed 10/23/96, effective 11/25/96.]

DESIGN-PLAN APPROVAL BY A LICENSED PROFESSIONAL OR FIRM

WAC 296-150F-0420 Who can be authorized to approve design plans? (1) A professional engineer, architect or firm licensed by the state of Washington according to the Engineers Registration Act, chapter 18.43 RCW and/or the Architects Registration Act, chapter 18.08 RCW; or

(2) A professional engineer, architect or firm licensed in another state that has licensing or certification requirements that meet or exceed Washington requirements.

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150F-0420, filed 10/23/96, effective 11/25/96.]

WAC 296-150F-0430 What information must a professional or firm provide to be authorized to approve design plans? (1) Name, a copy of your certificate of registration, and address of the professional engineer or architect; or

(2) Name, a copy of your certificate of authority, and address of the firm; and

(3) A description of the services the professional engineer, architect, or firm will provide; and

(4) A description of the professional's area(s) of expertise and qualifications which include:

(a) A summary of the professional's or firm's experience; and

(b) Verification of experience in your area of expertise such as structural, mechanical, plumbing, energy, electrical, fire and life safety, and ventilation and indoor air quality.

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150F-0430, filed 10/23/96, effective 11/25/96.]

WAC 296-150F-0440 How will I know whether I am authorized to approve design plans? Within sixty days after you submit the information requested in WAC 296-150F-0430, we will send you a letter either approving or denying your authorization request.

(1) If we approve your request, your name is added to the list of licensed professionals and firms authorized to approve design plans.

(a) We will authorize a professional to approve portions of a design plan within his or her area of expertise; and

(b) We will authorize an engineering or architectural firm to approve plans if the firm employs or contracts with professionals within the area of expertise necessary for the design plan.

(2) If we do not approve your request, we will notify you in writing why we are denying your request for authorization. If you disagree with our decision, you can send us a written request for a hearing, stating why you disagree. (See WAC 296-150F-0100.)

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150F-0440, filed 10/23/96, effective 11/25/96.]

WAC 296-150F-0450 How long is a licensed professional or firms authorization effective? Your authorization to approve design plans is effective until your license expires, is revoked or is suspended.

(1) You must notify us of your license renewal at least fifteen days before your license expires, to prevent your name from being removed from our licensed professional and firm list.

(2) You must notify us immediately if your license is revoked or suspended. Your name is then removed from the list of licensed professionals and firms authorized to approve design plans.

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150F-0450, filed 10/23/96, effective 11/25/96.]

WAC 296-150F-0460 What information must a manufacturer provide when a professional or firm does the design plan approval? You must provide the following information with your approved design plan:

(1) A completed departmental design plan approval request form;

(2) Two or more sets of the design plans plus elevation drawings, specifications, engineering analysis, and test results and procedures necessary for a complete evaluation of the design. These design plans must have an original wet stamp, be signed, and dated by the approving professional(s) (see WAC 296-150F-0340 and 296-150F-0350);

(3) A cover sheet on the design plan noting which professional approved each portion of the design plan;

(4) A copy of the authorization letter from us;

(5) The design plan fee for design plans approved by professionals or firms (see WAC 296-150F-3000);

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(6) A professional who designs and certifies that the factory-built home or commercial structure design meets state requirements cannot also approve the design plan in the plan approval process;

(7) A professional cannot approve those electrical designs listed in WAC 296-150F-0310(2); and

(8) A professional cannot approve plans submitted under a reciprocal agreement.

[Statutory Authority: Chapter 43.22 RCW. 98-14-078, § 296-150F-0460, filed 6/30/98, effective 7/31/98. Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150F-0460, filed 10/23/96, effective 11/25/96.]

WAC 296-150F-0470 What happens after we receive the professional or firm approved design plan and information? (1) After we receive your approved design plans and information, we will review the information and assign a plan approval number. We will send a copy of the design plan with the plan approval number to the manufacturer.

(2) We may periodically audit design plans approved by a professional engineer, architect, or firm to ensure compliance with design plan requirements. The department's periodic audit should not be construed as certifying that the plans are safe.

(3) If the audit reveals that the design plans approved by the professionals and firms do not comply with this chapter, you will be notified and required to pay our fees for review and approval of the design plans. (See WAC 296-150F-3000.)

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150F-0470, filed 10/23/96, effective 11/25/96.]

WAC 296-150F-0480 Do you have a list of professionals or firms that are authorized to submit design plans? We will maintain a list of the licensed professionals and firms that are authorized to approve design plans for factory-built housing and commercial structures.

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150F-0480, filed 10/23/96, effective 11/25/96.]

WAC 296-150F-0490 Who approves addendums to design plans approved by a professional or firm? (1) You must have the professional or firm approve an addendum to a design plan, if they initially approved your design plan.

(2) If the professional or firm who approved your design plan is no longer on the department list you may have us approve your addendum.

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150F-0490, filed 10/23/96, effective 11/25/96.]

INSPECTIONS PRIOR TO ISSUANCE OF AN INSIGNIA

WAC 296-150F-0500 When is an inspection required? (1) Before we issue an insignia, each factory-built house, commercial structure, and component must be inspected at the manufacturing location as many times as are required by the codes. (See WAC 296-150F-0600.) Inspections may include:

(2007 Ed.)

(a) A "cover" inspection during construction of the unit before the electrical, plumbing, mechanical, and structural systems are covered;

(b) Insulation and vapor barrier inspection, if required;

(c) Other required code inspections;

(d) A final inspection after the factory-built house, commercial structure, or component is complete;

Note: Each factory-built house, commercial structure, and component must have a serial number to enable us to track inspections.

(2) If we discover a violation during inspection, we will issue a notice of noncompliance. You can correct the violation during the inspection. If you cannot correct the violation during inspection, you must leave the item uncovered until we approve your correction.

(3) After a unit is manufactured but before occupancy, we must inspect a factory-built house or commercial structure if it is damaged in transit to the building site or during on-site installation. This is considered a repair inspection. (See WAC 296-150F-0540.)

(4) Approved design plans must be available in compliance with the applicable sections of adopted state codes.

(5) Once your unit is inspected and approved we will attach the insignia.

(6) Components shall be identified as having been approved by attaching an insignia to the first component and all additional components for one job site shall have a label issued by the department as having been approved.

Note: We only inspect factory-built housing and commercial structures before occupancy. After occupancy, the local enforcement agency is the inspection agency.

[Statutory Authority: RCW 43.22.340, 43.22.350, 43.22.355, 43.22.360, 43.22.400, 43.22.432, 43.22.433, 43.22.434, 43.22.450, 43.22.480, and 43.22.485. 00-17-148, § 296-150F-0500, filed 8/22/00, effective 9/30/00. Statutory Authority: Chapter 43.22 RCW. 98-14-078, § 296-150F-0500, filed 6/30/98, effective 7/31/98. Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150F-0500, filed 10/23/96, effective 11/25/96.]

WAC 296-150F-0510 How do I request an inspection? (1) You must contact us, and we will let you know where your request for inspection should be submitted. Our address is noted in the definition of department.

(2) We must receive in-state inspection requests at least seven calendar days prior to the date that you want the inspection.

(3) We must receive out-of-state inspection requests at least fourteen calendar days prior to the date that you want the inspection.

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150F-0510, filed 10/23/96, effective 11/25/96.]

WAC 296-150F-0520 What happens if my factory-built house or commercial structure passes inspection?

(1) If your factory-built house or commercial structure passes inspection and you have met the other requirements of this chapter, we will attach the insignia.

(2) After our final inspection, we will send a notice to the local enforcement agency (NLEA) indicating whether further inspection is necessary. (See WAC 296-150F-0550.)

(2007 Ed.)

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150F-0520, filed 10/23/96, effective 11/25/96.]

WAC 296-150F-0530 Am I charged if I request an inspection but I am not prepared? (1) If you ask us to inspect a factory-built house or commercial structure within Washington state but you are not prepared when we arrive, you must pay the minimum inspection fee and travel. (See WAC 296-150F-3000.)

(2) If you ask us to inspect a factory-built home, commercial structure, or component outside Washington state but you are not prepared when we arrive, you must pay the minimum inspection fee, travel, and per diem expenses. (See WAC 296-150F-3000.)

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150F-0530, filed 10/23/96, effective 11/25/96.]

WAC 296-150F-0540 Who inspects factory-built housing and commercial structures for installation at the building site? (1) The local enforcement agency (city or county) must approve the installation.

(2) The local enforcement agency may also request a set of design plans and specifications for the unit from you.

(3) After the unit is manufactured but before occupancy, we must inspect a factory-built house or commercial structure if it is damaged in transit to the building site or during on-site installation. This is considered a repair inspection.

Note: The local enforcement agency may not open the concealed construction of a factory-built house or commercial structure to inspect if our insignia is attached.

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150F-0540, filed 10/23/96, effective 11/25/96.]

WAC 296-150F-0550 Do you notify the local enforcement agency after your final inspection of factory-built structures at a manufacturing location? After we perform a final inspection of a factory-built, commercial structure, or component, we will send a notice to the local enforcement agency (NLEA) that:

(1) Specifies what connections, standards, and incomplete items the local enforcement agency must check when the unit is installed; and/or

(2) Estimates the expected time of arrival of the factory-built house or commercial structure to the site.

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150F-0550, filed 10/23/96, effective 11/25/96.]

USED FACTORY-BUILT STRUCTURES WITHOUT AN INSIGNIA

WAC 296-150F-0580 Must I obtain an insignia for used factory-built structures? All used factory-built housing and commercial structures that are to be installed on a building site in Washington state must have an insignia of approval from us prior to being installed on a building site.

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150F-0580, filed 10/23/96, effective 11/25/96.]

WAC 296-150F-0590 How do I obtain insignia for used factory-built structures? We consider used factory-built housing and commercial structures as new structures for purposes of insignia approval. To obtain insignia, you must:

- (1) Have the design plan approved by us (see WAC 296-150F-0300 through 296-150F-0480);
- (2) Purchase insignia (see WAC 296-150F-0200 through 296-150F-0230); and
- (3) Pass a unit inspection (see WAC 296-150F-0500 through 296-150F-0550).

Note: You will be required to open up as much of the construction of the unit as is necessary for inspection to show compliance with your approved design plan.

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150F-0590, filed 10/23/96, effective 11/25/96.]

CODES FOR FACTORY-BUILT HOUSING, COMMERCIAL STRUCTURES, AND COMPONENTS

WAC 296-150F-0600 What manufacturing codes apply to factory-built housing and commercial structures? (1) All design, construction, installations, and alterations of factory-built housing, commercial structures, and components must conform with the following codes and the requirements of this chapter:

- (a) The State Building Code, chapter 19.27 RCW;

Note: The Uniform Building Code reference to "building official" means the chief prefabricated building specialist or authorized representative at the department of labor and industries.

- (b) The Energy Related Building Standards, chapter 19.27A RCW;

- (c) The National Electrical Code as referenced in chapter 19.28 RCW and chapters 296-46 and 296-401 WAC.

(2) All construction methods and installations must use accepted engineering practices, provide minimum health and safety to the occupants of factory-built structures and the public, and demonstrate journey person quality of work of the various trades.

(3) Requirements for any size, weight, or quality of material modified by the terms "minimum," "not less than," "at least," and similar expressions are minimum standards. The manufacturer may exceed these standards, provided the deviation does not result in inferior installation or defeat the purpose and intent of the standard.

Note: The codes, RCW's, and WAC's referenced in this rule are available for reference at the Washington State Library, the Washington State Law Library, and may be available at your local library.

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150F-0600, filed 10/23/96, effective 11/25/96.]

WAC 296-150F-0605 May the required toilet facilities be located in an adjacent building? Under the following conditions, the department will allow the required toilet facilities to be located in adjacent building(s):

- (1) The manufacturer shall note in the plan submittal that the requirements of IBC Chapter 29, Section 2902 and Section 2902.1, as amended by the state building code must be verified by the building official; and

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(2) A Notification to Local Enforcement Agency (NLEA) must accompany each unit so that the requirements of IBC Chapter 29, Section 2902 and Section 2902.1 as amended by the state building code can be verified by the building official.

[Statutory Authority: Chapter 43.22 RCW and 2003 c 291. 05-01-102, § 296-150F-0605, filed 12/14/04, effective 2/1/05. Statutory Authority: RCW 43.22.340 and 43.22.480. 99-13-010, § 296-150F-0605, filed 6/4/99, effective 7/5/99.]

WAC 296-150F-0610 Do you require the exit doors to be one-half the diagonal distance apart if each area served has its own exit door? If the area served has an occupant load requiring only one exit and a building contains more than one area where each area is served by individual exits, and a personnel door is added between adjoining rooms, a personnel door in the partition wall will not be construed to create a larger area served. The exits will not be required to be one-half of the diagonal apart.

[Statutory Authority: RCW 43.22.340 and 43.22.480. 99-13-010, § 296-150F-0610, filed 6/4/99, effective 7/5/99.]

WAC 296-150F-0620 Does the department require a water system expansion tank be installed? The department will only require that a tee be installed in an accessible location for the future addition of an expansion tank where one may be installed if required.

[Statutory Authority: RCW 43.22.340 and 43.22.480. 99-13-010, § 296-150F-0620, filed 6/4/99, effective 7/5/99.]

WAC 296-150F-0625 Are there any special requirements for portable school classrooms? In addition to the requirements in the state building code, the department of health has rules regulating primary and secondary schools in chapter 246-366 WAC. One of those requirements is that "Instructional areas shall have a minimum average ceiling height of 8 feet."

[Statutory Authority: RCW 43.22.340 and 43.22.480. 99-13-010, § 296-150F-0625, filed 6/4/99, effective 7/5/99.]

WAC 296-150F-0630 When HVAC equipment is supplied with more than one CFM rating, which rating do I use? Where HVAC equipment manufacturers show multiple cubic feet per minute (CFM) ratings and/or multiple water gauge ratings, you must use the highest rated capacity.

[Statutory Authority: RCW 43.22.340, 43.22.350, 43.22.355, 43.22.360, 43.22.400, 43.22.432, 43.22.433, 43.22.434, 43.22.450, 43.22.480, and 43.22.485. 00-17-148, § 296-150F-0630, filed 8/22/00, effective 9/30/00.]

MANUFACTURER'S NOTICE TO THE DEPARTMENT

WAC 296-150F-0700 Must manufacturers of factory-built housing and commercial structures notify you if they manufacture at more than one location? (1) If you are manufacturing factory-built housing and commercial structures at more than one location, approved design plans must be available at each manufacturing location.

(2) You are required to send us the following information for each manufacturing location:

- (a) Company name;

(2007 Ed.)

- (b) Mailing and physical address; and
- (c) Phone and fax number if available.
- (3) You must update this information as it changes.

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150F-0700, filed 10/23/96, effective 11/25/96.]

WAC 296-150F-0710 Must manufacturers of factory-built housing and commercial structures notify you of a change in business name or address? (1) If you are moving, notify us in writing prior to a change of business name or address.

(2) Your notice must include the change of name and address.

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150F-0710, filed 10/23/96, effective 11/25/96.]

WAC 296-150F-0720 Must manufacturers of factory-built housing and commercial structures notify you of a change in business ownership? (1) When a manufacturer changes ownership, the new owner must notify us in writing immediately.

(2) A new owner may continue to manufacture the units according to a prior approved design plan if the prior owner releases the design plan.

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150F-0720, filed 10/23/96, effective 11/25/96.]

FACTORY-BUILT HOUSING AND COMMERCIAL STRUCTURE FEES

WAC 296-150F-3000 Factory-built housing and commercial structure fees.

INITIAL FILING FEE	\$58.90
DESIGN PLAN FEES:	
INITIAL FEE - MASTER DESIGN (CODE CYCLE)	\$290.70
INITIAL FEE - ONE YEAR DESIGN	\$170.30
RENEWAL FEE	\$58.90
RESUBMIT FEE	\$85.10
ADDENDUM (Approval expires on same date as original plan.)	\$85.10
ELECTRONIC PLAN SUBMITTAL FEE \$4.80 per page for the first set of plans and \$0.30 per page for each additional set of plans. These fees are in addition to any applicable design plan fees required under this section.	
ELECTRICAL PLAN REVIEW (Plan review for educational, institutional or health care facilities and other buildings):	
Electrical Plan submission fee	\$64.80
Service/feeder Ampacity:	
0 - 100	\$28.70
101 - 200	\$35.80
201 - 400	\$67.10
401 - 600	\$79.20
601 - 800	\$102.10
801 - 1000	\$124.90
Over 1000	\$135.50
Over 600 volts surcharge	\$21.40
Thermostats:	
First	\$12.70
Each additional	\$3.00
Low voltage fire alarm and burglar alarm:	
Each control panel and up to four circuits or zones	\$11.60
Each additional circuit or zone	\$2.00
Generators, refer to appropriate service/feeder ampacity fees	
<i>Note: Altered services or feeders shall be charged the above rate per the service/feeder ampacity fees.</i>	
Supplemental submissions of plans (resubmittals, addendums, renewals, code updates, etc.) will be charged per hour or fraction of an hour*	\$76.70
ELECTRICAL COMMERCIAL/INDUSTRIAL	
Electrical Service /feeders Ampacity	212.80 plus
Service/feeder	\$195.10
Additional Feeder	\$37.00
ELECTRICAL MULTIFAMILY RESIDENTIAL	
Electrical Service/feeders	212.80 plus
Service/feeder	\$103.50
Additional Feeder	\$26.40
MEDICAL GAS PLAN REVIEW:	
SUBMISSION FEE	\$80.80
FIRST STATION	\$80.80
EACH ADDITIONAL STATION	\$29.40
RECIPROCAL PLAN REVIEW:	
INITIAL FEE-MASTER DESIGN	\$130.00
INITIAL FEE-ONE YEAR DESIGN	\$78.60

RENEWAL FEE	\$78.60
ADDENDUM	\$78.60
PLANS APPROVED BY DESIGN PROFESSIONALS	\$58.90
APPROVAL OF EACH SET OF DESIGN PLANS BEYOND FIRST TWO SETS	\$15.20
DEPARTMENT INSPECTION FEES	
INSPECTION/REINSPECTION (Per hour* plus travel time* and mileage**)	\$75.30
TRAVEL (Per hour*)	\$75.30
PER DIEM**	
HOTEL***	
MILEAGE**	
RENTAL CAR***	
PARKING***	
AIRFARE***	
DEPARTMENT AUDIT FEES:	
AUDIT (Per hour*)	\$75.30
TRAVEL (Per hour*)	\$75.30
PER DIEM**	
HOTEL***	
MILEAGE**	
RENTAL CAR***	
PARKING***	
AIRFARE***	
INSIGNIA FEES:	
FIRST SECTION	\$240.30
EACH ADDITIONAL SECTION	\$21.70
REISSUED-LOST/DAMAGED	\$58.90
OTHER FEES:	
FIELD TECHNICAL SERVICE (Per hour* plus travel time* and mileage**)	\$75.30
NOTIFICATION TO LOCAL ENFORCEMENT AGENCY (NLEA)	\$32.60
PUBLICATION PRINTING AND DISTRIBUTION OF RCW'S AND WAC'S (One free copy per year upon request)	\$12.20
* Minimum charge of 1 hour; time spent greater than 1 hour is charged in 1/2 hour increments.	
** Per state guidelines.	
*** Actual charges incurred.	

[Statutory Authority: Chapters 18.106, 43.22, and 70.87 RCW. 06-10-066, § 296-150F-3000, filed 5/2/06, effective 6/30/06. Statutory Authority: Chapter 43.22 RCW. 05-23-002, § 296-150F-3000, filed 11/3/05, effective 12/4/05. Statutory Authority: Chapters 18.27, 43.22, and 70.87 RCW. 05-12-032, § 296-150F-3000, filed 5/24/05, effective 6/30/05. Statutory Authority: Chapter 43.22 RCW and 2003 c 291. 05-01-102, § 296-150F-3000, filed 12/14/04, effective 2/1/05. Statutory Authority: Chapters 18.27 and 43.22 RCW. 04-12-048, § 296-150F-3000, filed 5/28/04, effective 6/30/04. Statutory Authority: RCW 43.22.340, 43.22.400, 43.22.432, 43.22.433, 43.22.434, 43.22.480, and 43.22.485, 2002 c 268, and chapter 43.22 RCW. 03-12-044, § 296-150F-3000, filed 5/30/03, effective 5/30/03. Statutory Authority: RCW 43.22.350, 43.22.434, 43.22.480, 43.22.500, 18.27.070, 18.27.075, 70.87.030, 19.28.041, 19.28.051, 19.28.101, 19.28.121, 19.28.161, 19.28.201, 19.28.211, 19.28.341, 2001 c 159, and chapters 43.22, 19.28, 18.27, and 70.87 RCW. 01-12-035, § 296-150F-3000, filed 5/29/01, effective 6/29/01. Statutory Authority: Chapters 43.22, 18.27, 70.87 and 19.28 RCW. 99-12-080, § 296-150F-3000, filed 5/28/99, effective 6/28/99. Statutory Authority: Chapters 18.106, 18.27 and 43.22 RCW. 98-12-041, § 296-150F-3000, filed 5/29/98, effective 6/30/98. Statutory Authority: RCW 70.87.030, 18.27.070, [18.27.]075, 43.22.350, [43.22.]355, [43.22.]434 and [43.22.]480(2). 97-11-053, § 296-150F-3000, filed 5/20/97, effective 6/30/97. Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150F-3000, filed 10/23/96, effective 11/25/96.]

Chapter 296-150M WAC MANUFACTURED HOMES

WAC

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- 296-150M-0600 Who establishes standards for installation of manufactured homes?
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 296-150M-0614 How may I obtain a copy of the American National Standards Institute (ANSI) A225.1-Manufactured Homes Installation?
 296-150M-0615 What are the requirements for temporary placement of manufactured (mobile) homes?
 296-150M-0620 Do local enforcement agencies have special requirements for installing manufactured homes in hazardous areas?
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- 296-150M-0705 Definitions applicable to this part.
 296-150M-0715 May the department audit the records of a contractor?
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- 296-150M-0800 Definitions applicable to this part.
 296-150M-0805 How does the department ensure that a contractor, firm, partnership, or corporation complies with the requirements of chapter 43.22 RCW?
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 296-150M-0815 What information must be included in a notice of infraction?
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 296-150M-0865 When must a contractor, firm, partnership, or corporation pay assessed monetary penalties?

MANUFACTURED HOME FEES

- 296-150M-3000 Manufactured/mobile home fees.

DISPOSITION OF SECTIONS FORMERLY CODIFIED IN THIS CHAPTER

- 296-150M-0400 How do I apply for alteration approval and obtain an alteration insignia? [Statutory Authority: Chapter 43.22 RCW. 98-14-078, § 296-150M-0400, filed 6/30/98, effective 7/31/98. Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150M-0400, filed 10/23/96, effective 11/25/96.] Repealed by 99-13-010, filed 6/4/99, effective 7/5/99. Statutory Authority: RCW 43.22.340 and 43.22.480.
 296-150M-0700 Acceptable types of ground cover. [Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150M-0700, filed 10/23/96, effective 11/25/96.] Repealed by 98-14-078, filed 6/30/98, effective 7/31/98. Statutory Authority: Chapter 43.22 RCW.
 296-150M-0710 Clearance under manufactured homes. [Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150M-0710, filed 10/23/96, effective 11/25/96.] Repealed by 98-14-078, filed 6/30/98, effective 7/31/98. Statutory Authority: Chapter 43.22 RCW.
 296-150M-0720 Water heater relief lines. [Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150M-0720, filed 10/23/96, effective 11/25/96.] Repealed by 98-18-036, filed 8/27/98, effective 9/27/98. Statutory Authority: Chapters 43.22 and 34.05 RCW and Executive Order 97-02.
 296-150M-0730 Heat pump. [Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150M-0730, filed 10/23/96, effective 11/25/96.] Repealed by 98-14-078, filed 6/30/98, effective 7/31/98. Statutory Authority: Chapter 43.22 RCW.

WAC 296-150M-0010 Authority, purpose, and scope. (1) This chapter is authorized by RCW 43.22.340 through 43.22.445. The law requires that any alteration to a manufactured home be approved by the department. A manufactured home with an approved alteration requires an alteration insignia. Alteration insignia can be purchased from us.

(2) The United States Department of Housing and Urban Development (HUD), manufactured housing standards division, has given us the authority to act as a manufactured home production Inspection Primary Inspection Agency (IPIA) and enforce 24 CFR 3280. As an IPIA:

(a) We are required to inspect every manufactured home built in Washington state sometime during production;

(b) We are authorized to audit the quality control program and the performance of quality control inspectors of manufactured home factories located in Washington state;

(c) We are authorized to supply a HUD label to the manufacturer following our inspection and approval of the manufactured home and the manufacturer's quality control program; and

(d) We are authorized to remove HUD labels according to the guidelines stated in the IPIA inspector's manual.

Note: A copy of our IPIA approval letter is on file at the department.

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150M-0010, filed 10/23/96, effective 11/25/96.]

WAC 296-150M-0020 What definitions apply to this chapter? "Alteration" is the replacement, addition, modifi-

cation, or removal of any equipment or installation that affects the construction, planning considerations, fire safety, or the plumbing, mechanical, and electrical systems of a manufactured home. The installation of whole-house water treatment equipment that requires cutting into the existing plumbing is considered an alteration and requires a permit, an inspection and an alteration insignia.

"Alteration insignia" is an insignia issued by the department of labor and industries to verify that an alteration to a manufactured home meets the requirements of federal law 24 CFR 3280 and this chapter.

"Anchoring system" is the means used to secure a mobile home to ground anchors or to other approved fastening devices. It may include straps, cables, turnbuckles, bolts, fasteners, and other components.

"ANSI" is the American National Standards Institute, Inc., and the institute's rules applicable to manufactured homes, ANSI A225.1 Manufactured Homes Installation, 1994 edition, except section 3.5.2 - Ground Cover and section 4.1.3.3 - Clearance.

"Authority having jurisdiction" means that either the department of labor and industries or the local jurisdiction is responsible for establishing specific manufactured home standards. The authority for specific manufactured home standards is divided as follows:

- The department of labor and industries establishes standards for manufactured home installation and alterations and performs alteration inspections;
- The local jurisdiction establishes standards for manufactured homes governing the building site and performs installation inspections.

"Building site" is a tract, parcel, or subdivision of land on which a manufactured home is installed.

"DAPIA" is a Design Approval Primary Inspection Agency as approved by the United States Department of Housing and Urban Development.

"Department" is the department of labor and industries. The department may be referred to as "we" or "us" in this chapter. Note: You may contact us at: Department of Labor and Industries, Specialty Compliance, PO Box 44440, Olympia, WA 98504-4440.

"Design plan" is a design submitted to the department for approval of a manufactured home structural alteration. This also includes other types of work and installations (plumbing, electrical, etc.) that are incidental to the structural alteration.

"Equipment" means the appliances used in the alteration or installation of a manufactured home.

Examples of appliances that require an alteration inspection include:

- Furnace;
- Water heater;
- Air conditioner; and
- Heat pump.

Examples of appliances that do not require an alteration inspection include:

- Microwave oven;
- Washer;
- Dryer; and
- Dishwasher and range that are connected to their source of power by a plug-in cord.

"Equivalent air conditioning/heat pump components" is equipment that performs the same function and is compatible with the equipment of another manufacturer, sometimes referred to as mix and match.

"Footing" is the portion of a support system that transmits loads from the manufactured home to the ground.

"Foundation skirting" or **"skirting"** is the material that surrounds and encloses the space under the manufactured home.

"Homeowner" is an individual who owns a manufactured home. Dealers, distributors, and developers are not regarded as homeowners.

"HUD" is the United States Department of Housing and Urban Development with headquarters located in Washington, D.C.

"Indigent" means a person receiving an annual income, after taxes, of one hundred twenty-five percent or less of the most recently published federal poverty level.

"Installation" is the activity needed to prepare a building site and to set a manufactured home within that site. Site means a tract, parcel, or subdivision of land including a mobile home park.

"Installed manufactured or mobile home" is a manufactured or mobile home that has been placed on either private property or in a park and has been installed for occupancy. Installation includes the approval of the blocking of the home, and the connection of the home to all of the utilities, including water, sewer and electrical.

"IPIA" is a manufactured home production Inspection Primary Inspection Agency approved by the United States Department of Housing and Urban Development. The department of labor and industries is the IPIA for Washington state.

"Local enforcement agency" is an agency of city or county government with power to enforce local regulations governing the building site and installation of a manufactured home.

"Manufactured home" is a single-family dwelling built according to the Department of Housing and Urban Development Manufactured Home Construction and Safety Standards Act, which is a national, preemptive building code. A manufactured home also:

- Includes plumbing, heating, air conditioning, and electrical systems;
- Is built on a permanent chassis; and
- Can be transported in one or more sections with each section at least eight feet wide and forty feet long when transported; or when installed on the site is three hundred twenty square feet or greater (see RCW 46.04.302).

Note: Total square feet is based on exterior dimensions measured after installation using the longest horizontal projections. Dimensions may not include bay windows but may include projections containing interior space such as cabinets and expandable rooms.

Exception: A structure that meets the requirements of a manufactured home as set out in 24 CFR 3282.7(u), except the size requirements is considered a manufactured home, if the manufacturer files with the secretary of HUD a certificate noted in CFR 3282.13.

"Mobile home" is a factory-built dwelling built prior to June 15, 1976, to standards other than the HUD Code, and acceptable under applicable state codes in effect at the time of construction or introduction of the home into the state.

Mobile homes have not been built since the introduction of the HUD Manufactured Home Construction and Safety Standards Act. For the purposes of this chapter references to manufactured homes include mobile homes.

"Park site" is the installation location of a manufactured home within a residential area for manufactured homes.

"Repair" is to restore an item to sound condition, to fix.

"Replacement" is the act or process of replacing, to substitute.

"Structural alteration-custom design" is a design that can only be used once.

"Structural alteration-master design" is a design plan that can be used more than once. The master plan expires when there is a code change applicable to the design.

"System" is part of a manufactured home designed to serve a particular function such as structural, plumbing, mechanical, or electrical functions.

[Statutory Authority: RCW 43.22.340, 43.22.400, 43.22.432, 43.22.433, 43.22.434, 43.22.480, and 43.22.485, 2002 c 268, and chapter 43.22 RCW. 03-12-044, § 296-150M-0020, filed 5/30/03, effective 5/30/03. Statutory Authority: RCW 43.22.340, 43.22.350, 43.22.432, 43.22.434, 43.22.440, and 2001 c 335. 02-03-048, § 296-150M-0020, filed 1/9/02, effective 1/9/02. Statutory Authority: RCW 43.22.340, 43.22.350, 43.22.355, 43.22.360, 43.22.400, 43.22.432, 43.22.433, 43.22.434, 43.22.450, 43.22.480, and 43.22.485. 00-17-148, § 296-150M-0020, filed 8/22/00, effective 9/30/00. Statutory Authority: RCW 43.22.340 and 43.22.480. 99-13-010, § 296-150M-0020, filed 6/4/99, effective 7/5/99. Statutory Authority: Chapter 43.22 RCW. 98-14-078, § 296-150M-0020, filed 6/30/98, effective 7/31/98. Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150M-0020, filed 10/23/96, effective 11/25/96.]

WAC 296-150M-0040 Will you keep my manufacturing information confidential? We will only release manufacturing information such as design plans for structural alterations according to the requirements of the Public Records Act (see RCW 42.17.310 (1)(h)) unless we are ordered to do so by a court or otherwise required by law.

[Statutory Authority: RCW 43.22.340 and 43.22.420. 97-16-043, § 296-150M-0040, filed 7/31/97, effective 12/1/97. Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150M-0040, filed 10/23/96, effective 11/25/96.]

WAC 296-150M-0049 What must be done prior to the sale of an installed manufactured or mobile home by a homeowner? (1) Prior to the sale of any installed manufactured or mobile home, the homeowner must:

(a) Deliver to the buyer a completed property transfer disclosure statement in accordance with chapter 64.06 RCW, unless the seller is exempt or the buyer waives his or her rights pursuant to chapter 64.06 RCW. The disclosure statement must include all the criteria specified in RCW 64.06-020 and any variance(s) granted according to WAC 296-150M-0140. In addition, the homeowner must:

(i) Have all department insignia required by this chapter; or

(ii) Have all department insignia required by this chapter for alterations performed during ownership of the home and include in the property transfer disclosure statement all alterations that were known to have been performed by any previous owner or occupant of the home.

(2007 Ed.)

(b) Nothing in subsection (1) of this section shall have any effect on any written warranty(ies) required by RCW 46.70.135.

(c) Subsection (1)(a)(ii) of this section does not permit the sale of an unsafe manufactured or mobile home when the use of which may constitute a hazard to life, safety, or health.

(2) The homeowner may enter into a conditional sale of an altered manufactured or mobile home. A conditional sales agreement may be executed only if, prior to execution, the seller has complied with subsection (1) of this section. For purposes of this subsection "conditional sale" means an agreement between the seller and the purchaser which is contingent on the seller fulfilling the conditions established by the purchaser (i.e., the sale of the home is contingent on the seller ensuring that alterations performed to the manufactured or mobile home are in compliance with these rules).

(3) The homeowner may request an inspection by the department. If after the inspection the department determines that an alteration may constitute a hazard to life, safety, or health, the department must notify the homeowner in writing within thirty days of completing the inspection. The department may also notify the local official responsible for enforcing the fire code adopted under chapter 19.27 RCW and/or the local health officer.

Note: In addition to the homeowner requesting an inspection by the department, any party including the buyer and/or party financing the sale may also request an inspection. The department will conduct the inspection and if after the inspection the department determines that an alteration may constitute a hazard to life, safety, or health, the department shall notify the interested parties identified by the requesting party in writing within thirty days of completing the inspection. The department may also notify the local official responsible for enforcing the fire code adopted under chapter 19.27 RCW and/or the local health officer.

[Statutory Authority: RCW 43.22.340, 43.22.400, 43.22.432, 43.22.433, 43.22.434, 43.22.480, and 43.22.485, 2002 c 268, and chapter 43.22 RCW. 03-12-044, § 296-150M-0049, filed 5/30/03, effective 5/30/03. Statutory Authority: RCW 43.22.340, 43.22.350, 43.22.432, 43.22.434, 43.22.440, and 2001 c 335. 02-03-048, § 296-150M-0049, filed 1/9/02, effective 1/9/02.]

WAC 296-150M-0050 When can a manufactured home be posted with a prohibited sale or lease notice? (1)

A manufactured home may be posted with a prohibited sale notice when:

(a) The home is being sold or offered for sale by a retailer, dealer, distributor or manufacturer and we find that the home is not an installed manufactured or mobile home per WAC 296-150M-0020 and the home has alterations without required insignia or approval; or

(b) The home is being sold or offered for sale by a homeowner and it is not an installed manufactured or mobile home per WAC 296-150M-0020.

(2) A manufactured home may be posted with a prohibited lease notice whenever the home is offered for lease by any party and we find that the home has alterations that constitute a hazard to life, safety, or health.

[Statutory Authority: RCW 43.22.340, 43.22.400, 43.22.432, 43.22.433, 43.22.434, 43.22.480, and 43.22.485, 2002 c 268, and chapter 43.22 RCW. 03-12-044, § 296-150M-0050, filed 5/30/03, effective 5/30/03. Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150M-0050, filed 10/23/96, effective 11/25/96.]

WAC 296-150M-0051 Can I sell or lease a manufactured home that has been posted with a prohibited sale or lease notice? (1) You may not sell, lease, or offer for sale a manufactured home that is posted with a prohibited sale or lease notice.

(2) A prohibited sale or lease notice shall remain posted until the code violation(s) are corrected, we inspect and approve the correction, and you pay the required fees. (See WAC 296-150M-3000.)

[Statutory Authority: RCW 43.22.340, 43.22.400, 43.22.432, 43.22.433, 43.22.434, 43.22.480, and 43.22.485, 2002 c 268, and chapter 43.22 RCW. 03-12-044, § 296-150M-0051, filed 5/30/03, effective 5/30/03.]

WAC 296-150M-0060 Who handles consumer complaints about manufactured homes? The Washington state department of community, trade and economic development (CTED), office of manufactured housing section, handles consumer complaints about manufactured homes. CTED is the state administrative agency (SAA) for the United States Department of Housing and Urban Development for the federal manufactured home program.

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150M-0060, filed 10/23/96, effective 11/25/96.]

WAC 296-150M-0100 What happens if I disagree with your decision regarding my compliance with the federal standards, ANSI, or this chapter? (1) If we determine that you are in violation with the federal standards, ANSI A225.1, or this chapter, you will receive a notice of noncompliance.

(2) If you disagree with our decision, you can submit a written request for a hearing, stating why you disagree.

(3) After we receive your hearing request, we will:

(a) Schedule a hearing within thirty days after we receive your request.

(b) Notify you of the time, date, and place for the hearing. If you fail to appear, your case will be dismissed.

(c) Hear your case.

(d) Send you written notice of our decision.

If you disagree with our decision, you may appeal it under the Administrative Procedure Act (chapter 34.05 RCW).

[Statutory Authority: RCW 43.22.340 and 43.22.420. 97-16-043, § 296-150M-0100, filed 7/31/97, effective 12/1/97. Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150M-0100, filed 10/23/96, effective 11/25/96.]

WAC 296-150M-0120 Where can I obtain technical assistance regarding manufactured (mobile) homes? We provide field technical service upon written request, on manufactured (mobile) homes for an hourly fee. Field technical service may include an evaluation, consultation, plan examination, interpretation, and clarification of technical data relating to the application of our rules.

[Statutory Authority: Chapter 43.22 RCW and 2003 c 291. 05-01-102, § 296-150M-0120, filed 12/14/04, effective 2/1/05. Statutory Authority: RCW 43.22.340 and 43.22.480. 99-13-010, § 296-150M-0120, filed 6/4/99, effective 7/5/99.]

WAC 296-150M-0140 Do you allow a variance from these rules for the use of alternate materials, alternate

design and methods of construction? An applicant may apply to the director or designee for an order for a variance from the requirements of this chapter for alterations initiated after the expiration of any written warranty(ies) required by RCW 46.70.135 that use alternate materials, alternate design and methods of construction, by filing a written request with the department.

(1) Responsibilities of applicant. The applicant must submit the following information on a form approved by the department and pay the inspection fee in WAC 296-150M-3000.

(a) The applicant's name, address and phone number;

(b) The specific requirement or requirements from which the alternate material, alternate design or method of construction is requested;

(c) Justification why the requirements of this chapter cannot be or were not met; and

(d) How the use of alternate materials, alternate design or method of construction will achieve or has achieved a level of protection that does not constitute a hazard to life, safety or health.

Contact the department at the address shown in the definition section for a copy of the approved form.

(2) Responsibilities of the department. The department will conduct an inspection and provide a written response to the applicant within thirty days of receipt of the written request. The written response will state the acceptance or denial of the request, including the reasons for the department's decision. At a minimum the department will base its decision based on:

(a) The applicant's request as described in subsection (1) of this section;

(b) Research into the request;

(c) Expert advice.

(3) Applicant's response to denials. The applicant may appeal the department's decision by following the procedure in WAC 296-150M-0100.

[Statutory Authority: RCW 43.22.340, 43.22.350, 43.22.432, 43.22.434, 43.22.440, and 2001 c 335. 02-03-048, § 296-150M-0140, filed 1/9/02, effective 1/9/02. Statutory Authority: RCW 43.22.340, 43.22.350, 43.22.-355, 43.22.360, 43.22.400, 43.22.432, 43.22.433, 43.22.434, 43.22.450, 43.22.480, and 43.22.485. 00-17-148, § 296-150M-0140, filed 8/22/00, effective 9/30/00. Statutory Authority: RCW 43.22.340 and 43.22.480. 99-13-010, § 296-150M-0140, filed 6/4/99, effective 7/5/99.]

INSIGNIA

WAC 296-150M-0200 What labels or insignia are required on my manufactured home? (1) A HUD label must be attached to the exterior of each section of a manufactured home built on or after June 15, 1976.

(2) An alteration insignia must be attached to the exterior of a manufactured home. It should be placed next to the HUD label or to the Washington state insignia.

(3) If your manufactured home does not have a HUD label or a Washington state insignia, we will attach the alteration insignia to the exterior end wall opposite the hitch end of the manufactured home. It must be placed approximately one foot above the floor line and one foot from the edge of the manufactured home.

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150M-0200, filed 10/23/96, effective 11/25/96.]

WAC 296-150M-0250 How do I replace a lost or damaged insignia? (1) If an alteration insignia or a Washington state insignia is lost or damaged after it is placed on a manufactured home, you should notify us in writing immediately. You should provide the following information:

- (a) Your name, address, and telephone number;
 - (b) The name and address of the previous owner and date of approval, if you are replacing an alteration insignia that was obtained before you purchased the manufactured home;
 - (c) The vehicle identification number or serial number and model;
 - (d) The insignia or label number if available;
 - (e) The design plan approval number, if available; and
 - (f) The insignia replacement fee and any inspection fees.
- (See WAC 296-150M-3000.)

Note: Washington state insignia (not HUD insignia) were attached to manufactured homes prior to June 15, 1976.

(2) After we receive your notice and payment for replacing the insignia, we may inspect your manufactured home to assure that the replacement insignia reflects compliance with your original insignia.

(3) If your home complies with your original insignia approval, we will attach a replacement alteration insignia or Washington state insignia to your manufactured home.

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150M-0250, filed 10/23/96, effective 11/25/96.]

WAC 296-150M-0260 Who do I contact for replacement HUD labels? The HUD labels have been removed from my home. I can't sell/refinance my home without the HUD label.

You must contact the Department of Housing and Urban Development (HUD). HUD does not reissue labels for manufactured homes. However, HUD can issue a letter verifying a label for the unit for which it can locate the necessary historical information. The label numbers can be found on a data plate inside the home in one of three locations:

- On or near the main electrical panel;
- In a kitchen cabinet; or
- In a bedroom closet.

The data plate has a map of the United States to let the consumer know the land zone and snow load for which their home was built. You can use the following information to request label verification:

Office of Manufactured Housing

Fax: 202-708-4213

E-mail: mhs@hud.gov

Phone: 202-708-6423.

[Statutory Authority: Chapter 43.22 RCW and 2003 c 291. 05-01-102, § 296-150M-0260, filed 12/14/04, effective 2/1/05. Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150M-0260, filed 10/23/96, effective 11/25/96.]

(2007 Ed.)

ALTERATIONS AND INSPECTIONS

Alteration Approval

WAC 296-150M-0300 What approval do I need to alter a manufactured home? If you alter a manufactured home in Washington state, you must obtain our approval prior to making an alteration. This includes:

- (1) Alterations made by an owner, or contractor; and
- (2) Alterations made by a dealer after a manufactured home is sold.

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150M-0300, filed 10/23/96, effective 11/25/96.]

WAC 296-150M-0302 What are some examples of work to manufactured or mobile homes that either require or do not require a permit and inspection?

TYPE OF WORK	ALTERATION PERMIT AND INSPECTION REQUIRED?	
	Yes	No
(1) Air Conditioner/Heat Pump		
(a) New installation	X	
(b) Replacement	X	
(c) Reconnection after moving home	X	
(d) Repair		X
(e) Adjustment and/or maintenance		X
(2) Bottom Board - Repair		X
(3) Clothes Washer		
(a) New installation		X
(b) Replacement		X
(c) Repair with approved parts		X
(d) Adjustment and/or maintenance		X
(4) Clothes Dryer (Electric)		
(a) New installation (Prewired electrical)		X
(b) Replacement		X
(c) Repair with approved parts		X
(d) Adjustment and/or maintenance		X
(e) Replacement with gas clothes dryer when modifications to electrical or gas systems are performed	X	
(5) Clothes Dryer (Gas)		
(a) New installation (Preplumbed gas)		X
(b) Replacement		X
(c) Repair with approved parts		X
(d) Adjustment and/or maintenance		X
(e) Replacement with electric clothes dryer when modifications to electrical or gas systems are performed	X	
(6) Dishwasher		
(a) New installation	X	
(b) Replacement		
(i) Cord connected		X
(ii) Direct wired	X	
(c) Repair		X
(d) Adjustment and/or maintenance		X
(7) Doors (Interior and Exterior)		
(a) Additional*	X	
(b) Replacement of door that fits into the same opening		X
(8) Electrical		
(a) Replacing main electrical panel*****	X	
(b) Adding circuits	X	
(c) Extending existing circuit(s)	X	
(d) Replacing lighting fixtures****		X
(e) Replacing circuit breakers/fuses		X
(f) Replacing switches, receptacles, light bulbs, fluorescent tubes and glass or plastic shades		X
(g) Repairing bath exhaust fans		X

TYPE OF WORK	ALTERATION PERMIT AND INSPECTION REQUIRED?	
	Yes	No
(h) Repairing fans in kitchen range hoods		X
(9) Exterior Finish		
(a) Painting		X
(b) Replacement of siding	X	
(10) Furnace (Electric)		
(a) New installation	X	
(b) Replacement	X	
(c) Repair		X
(d) Adjustment and/or maintenance		X
(e) Replacement with gas furnace	X	
(11) Furnace (Gas)		
(a) New installation	X	
(b) Replacement	X	
(c) Repair		X
(d) Change from LP Gas to Natural Gas or from Natural Gas to LP gas per its listing		X
(e) Adjustment and/or maintenance		X
(f) Replacement with electric furnace	X	
(12) Gas Lines		
(a) New installation	X	
(b) Extend existing gas line	X	
(c) Repair	X	
(13) Interior		
(a) Painting, wall papering and similar finish work		X
(b) Replacement or addition of curtains, drapes, blinds, window shades and other window coverings		X
(c) Replacement of carpeting and other floor-covering materials with similar materials		X
(14) Microwave Oven (Over range)		
(a) New installation when electrical system modifications are performed	X	
(b) Replacement		X
(c) Repair		X
(d) Adjustment and/or maintenance		X
(15) Microwave Oven (Countertop)		X
(16) Pellet Stove		
(a) New installation	X	
(b) Replacement	X	
(c) Repair		X
(d) Adjustment and/or maintenance		X
(17) Plumbing		
(a) Adding plumbing fixtures***	X	
(b) Repairing damage***	X	
(c) Replacing fixtures***		X
(d) Repairing fixtures***		X
(e) Replacement/repair of shower doors and curtains		X
(18) Range/Cook Top/Eye Level Oven (Electric)		
(a) Replacement		
(i) Cord connected		X
(ii) Direct wired	X	
(b) Repair with approved parts		X
(c) Adjustment and/or maintenance		X
(d) Replacement with gas appliance(s)	X	
(19) Range/Cook Top/Eye Level Oven (Gas)		
(a) New installation	X	
(b) Replacement		X
(c) Repair with approved parts		X
(d) Adjustment and/or maintenance		X
(e) Replacement with electric appliance(s)	X	
(20) Roofing		
(a) Reroofing	X	
(b) Applying liquid or mastic roof sealant to a metal roof		X
(c) Repair of damaged composition shingles		X
(21) Structural changes		
(a) Adding a dormer*	X	
(b) Truss repairs*	X	

TYPE OF WORK	ALTERATION PERMIT AND INSPECTION REQUIRED?	
	Yes	No
(c) Add opening in wall**	X	
(d) Add gypsum board to walls or ceilings	X	
(e) Repair or replacing floor decking/joists	X	
(22) Water Heater (Electric)		
(a) Replacement w/electric water heater	X	
(b) Repair		X
(c) Adjustment and/or maintenance		X
(d) Replacement with gas water heater	X	
(23) Water Heater (Gas)		
(a) Replacement w/gas water heater	X	
(b) Repair		X
(c) Change from LP gas to Natural Gas or from Natural Gas to LP gas per its listing		X
(d) Adjustment and/or maintenance		X
(e) Replacement with electric water heater	X	
(24) Windows		
(a) Replacement in same opening with no structural changes*****		X
(b) Replacement when structural changes are required	X	
(c) Replacement of glass		X
(25) Wood Stove/Fireplace		
(a) New installation	X	
(b) Replacement	X	
(c) Repair		X
(d) Adjustment and/or maintenance		X

* May also require a plan review. Please contact your local L&I representative.

** May also require a plan review. The department has detailed drawings you may use for openings in sidewalls. Please contact your local L&I representative.

*** Fixtures include: Faucets, sinks, lavatories, laundry tubs, water closets (toilets), tubs, showers and tub/shower combos.

**** Fixtures must be installed per its listing and intended use.

***** Windows in bedrooms must be of egress type.

***** Meter bases may only be installed by the manufacturer of the home unless repaired or replaced.

NOTE: Exemption from the permit and inspection requirements shall not be deemed to grant authorization for any work to be done in violation of the applicable code, Chapter 296-150M WAC.

[Statutory Authority: Chapter 43.22 RCW and 2005 c 399. 05-24-020, § 296-150M-0302, filed 11/29/05, effective 1/1/06. Statutory Authority: Chapter 43.22 RCW and 2003 c 291. 05-01-102, § 296-150M-0302, filed 12/14/04, effective 2/1/05. Statutory Authority: RCW 43.22.340, 43.22.400, 43.22.432, 43.22.433, 43.22.434, 43.22.480, and 43.22.485, 2002 c 268, and chapter 43.22 RCW. 03-12-044, § 296-150M-0302, filed 5/30/03, effective 5/30/03. Statutory Authority: RCW 43.22.340, 43.22.350, 43.22.432, 43.22.434, 43.22.440, and 2001 c 335. 02-03-048, § 296-150M-0302, filed 1/9/02, effective 1/9/02.]

WAC 296-150M-0306 What codes are used when altering a manufactured/mobile home? Alterations to a manufactured/mobile home must be in compliance with the Manufactured Home Construction and Safety Standards, 24 CFR Part 3280, as adopted by the Secretary for the Department of Housing and Urban Development (HUD) and the amendments to that federal standard adopted in this WAC chapter. The department will accept the following provisions, which supersede the applicable requirements in 24 CFR Part 3280.

(1) Tested equivalent air conditioning/heat pump components that have been tested and listed for use with a particular furnace by a nationally recognized testing laboratory.

(2) Water heaters that are listed by a nationally recognized testing laboratory and installed per the manufacturer's installation instructions.

(3) Pellet stoves for installation that have been listed by a department approved testing laboratory. For a current list of approved laboratories, contact any department field office or the department at the address shown in WAC 296-150M-0020.

(4) All electrical alterations and additions to the manufactured/mobile home shall comply with the current edition of the National Electrical Code.

(5) The International Residential Code for structural alterations.

Note: The replacement of exterior siding is an alteration and requires the approval of the department and an alteration insignia.

[Statutory Authority: Chapter 43.22 RCW and 2005 c 399. 05-24-020, § 296-150M-0306, filed 11/29/05, effective 1/1/06. Statutory Authority: RCW 43.22.340, 43.22.350, 43.22.355, 43.22.360, 43.22.400, 43.22.432, 43.22.433, 43.22.434, 43.22.450, 43.22.480, and 43.22.485. 00-17-148, § 296-150M-0306, filed 8/22/00, effective 9/30/00. Statutory Authority: RCW 43.22.340 and 43.22.480. 99-13-010, § 296-150M-0306, filed 6/4/99, effective 7/5/99. Statutory Authority: Chapter 43.22 RCW. 98-14-078, § 296-150M-0306, filed 6/30/98, effective 7/31/98.]

WAC 296-150M-0307 How may I obtain a copy of the Manufactured Home Construction and Safety Standards, Part 24, CFR 3280? Copies of the federal standard may be obtained by writing to:

Director
Manufactured Housing Standards Division
Department of Housing and Urban Development
451 Seventh Street Southwest
Washington, D.C. 20410

[Statutory Authority: Chapter 43.22 RCW. 98-14-078, § 296-150M-0307, filed 6/30/98, effective 7/31/98.]

WAC 296-150M-0309 How do I apply for alteration approval and obtain an alteration insignia? (1) To apply for alteration approval and the alteration insignia, you must:

(a) Complete an alteration permit form and an application for alteration insignia. We will provide the forms upon request.

(b) Submit the completed forms to us, with the first hour of inspection fee and alteration insignia fee. Alterations requiring more than one inspection shall have the first hour inspection fee paid to the department prior to any inspection. (See WAC 296-150M-3000.)

(2) The request for inspection of your alteration should be at least five days before the date you want the inspection.

(3) Once we approve your alteration, we will attach the alteration insignia to your manufactured home.

Note: Specifications, engineering data, and test results should be available for our inspector. If applicable, your approved design plan must also be available during the inspection.

(4) The department will send written notification to the local jurisdiction in which the mobile home will be located, if the mobile home fails the fire safety inspection.

(2007 Ed.)

[Statutory Authority: Chapter 43.22 RCW and 2005 c 399. 05-24-020, § 296-150M-0309, filed 11/29/05, effective 1/1/06. Statutory Authority: RCW 43.22.340 and 43.22.480. 99-13-010, § 296-150M-0309, filed 6/4/99, effective 7/5/99.]

WAC 296-150M-0310 What happens if I fail to get your approval prior to altering a manufactured home? If you alter a manufactured home without getting our approval and an alteration insignia, your manufactured (mobile) home must meet the requirements of WAC 296-150M-0049.

[Statutory Authority: Chapter 43.22 RCW and 2003 c 291. 05-01-102, § 296-150M-0310, filed 12/14/04, effective 2/1/05. Statutory Authority: Chapter 43.22 RCW. 98-14-078, § 296-150M-0310, filed 6/30/98, effective 7/31/98. Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150M-0310, filed 10/23/96, effective 11/25/96.]

WAC 296-150M-0320 What must I provide to request approval of an alteration? (1) For approval of an alteration, you must complete and return our alteration permit application form. The application must contain:

- (a) A description of the proposed alteration(s);
- (b) Applicable specifications, engineering data, test procedures and results; and
- (c) Payment of the alteration permit fee, alteration insignia fee, and any inspection fees. (See WAC 296-150M-3000.)

Note: The department may waive alteration permit fees for indigent permit applicants. (See WAC 296-150M-0322.)

(2) For approval of a structural alteration, we must approve the design plan. This is in addition to the requirements stated in subsection (1) of this section. (See WAC 296-150M-0370.)

[Statutory Authority: RCW 43.22.340, 43.22.400, 43.22.432, 43.22.433, 43.22.434, 43.22.480, and 43.22.485, 2002 c 268, and chapter 43.22 RCW. 03-12-044, § 296-150M-0320, filed 5/30/03, effective 5/30/03. Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150M-0320, filed 10/23/96, effective 11/25/96.]

WAC 296-150M-0322 Data requirements for the identification of indigent persons. (1) Any one of the following documents shall be considered sufficient evidence upon which to base the final determination of indigent status, when the income information is annualized as may be appropriate:

- (a) A "W-2" withholding statement from all employers for the previous year;
- (b) Pay stubs from all employers for the previous year;
- (c) An income tax return from the most recently filed calendar year;
- (d) Forms approving or denying eligibility for Medicaid and/or state-funded medical assistance;
- (e) Forms approving or denying unemployment compensation; or
- (f) Written statements from all employers for the previous year or welfare agencies.

(2) In the event that the responsible party is not able to provide any of the documentation described above, the department shall rely upon written and signed declarations under penalty of perjury from the responsible party for making a final determination of eligibility for classification as an indigent person.

(3) Information requests, from the department to the responsible party, for the verification of income and family size shall be limited to that which is reasonably necessary to substantiate the responsible party's qualification for indigent status, and may not be used to discourage applications for such status. Only those facts relevant to eligibility may be verified.

[Statutory Authority: RCW 43.22.340, 43.22.400, 43.22.432, 43.22.433, 43.22.434, 43.22.480, and 43.22.485, 2002 c 268, and chapter 43.22 RCW. 03-12-044, § 296-150M-0322, filed 5/30/03, effective 5/30/03.]

WAC 296-150M-0330 How do I obtain alteration insignia information and the forms you require? Upon request, we will provide you with the forms and the fee schedules needed to obtain an alteration insignia or you can contact any department of labor and industries office for the forms. Our address is noted in the definition of department.

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150M-0330, filed 10/23/96, effective 11/25/96.]

WAC 296-150M-0331 Does my alteration permit expire? Yes, your alteration permit will expire one year after the date of purchase. Alteration permits purchased prior to January 1, 1998, will expire on December 31, 1998. Alteration permits purchased after January 1, 1998, will expire one year after the date of purchase.

[Statutory Authority: Chapter 43.22 RCW. 98-14-078, § 296-150M-0331, filed 6/30/98, effective 7/31/98.]

WAC 296-150M-0340 What must an engineering analysis for design plans include? (1) The engineering analysis must show that the structural design meets the requirements of this chapter.

(2) An engineering analysis must be conducted according to accepted engineering practices and must be signed by a professional engineer or architect licensed in Washington or by a DAPIA who approved the original design plan.

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150M-0340, filed 10/23/96, effective 11/25/96.]

WAC 296-150M-0350 What must the test procedures and results for design plans include? (1) Tests to an alteration design must be performed and evaluated by a professional engineer or architect licensed in Washington or by a DAPIA who approved the original design plan.

(2) Test reports must contain the following items:

- (a) A description of the methods or standards that applied to the test;
- (b) Drawings and a description of the item tested;
- (c) A description of the test set-up;
- (d) The procedure used to verify the correct load;
- (e) The procedure used to measure each condition;
- (f) Test data, including applicable graphs and observations of the characteristics and behavior of the item tested;
- (g) Engineering data; and
- (h) Analysis, comments, and conclusion.

(3) The written test procedures, results, and conclusions must reference the applicable structural alteration design plan.

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[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150M-0350, filed 10/23/96, effective 11/25/96.]

WAC 296-150M-0360 When is design plan approval required for an alteration? (1) Design plan approval is required when you make a structural alteration to your manufactured home.

(2) A structural alteration is a change to the body or frame of a manufactured home. For example:

(a) An alteration is made if you change the size of a room or the pitch of a roof on your manufactured home.

(b) Any addition such as a carport that adds structural load to the manufactured home and is not fully self-supporting is an alteration.

(c) Alterations or installations of other types of work (plumbing, electrical, etc.) that are incidental to the structural alteration.

[Statutory Authority: RCW 43.22.340, 43.22.400, 43.22.432, 43.22.433, 43.22.434, 43.22.480, and 43.22.485, 2002 c 268, and chapter 43.22 RCW. 03-12-044, § 296-150M-0360, filed 5/30/03, effective 5/30/03. Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150M-0360, filed 10/23/96, effective 11/25/96.]

WAC 296-150M-0370 How do I obtain alteration design plan approval? (1) You must have your design plan approved by:

(a) A design approval primary inspection agency (DAPIA), if they approved the initial design plan; or

(b) A professional engineer or architect who is licensed in Washington state.

(2) You must submit two copies of your alteration design plan with the appropriate fee to us for review and approval. (See WAC 296-150M-3000.)

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150M-0370, filed 10/23/96, effective 11/25/96.]

WAC 296-150M-0380 How will I know whether you have approved my design plan? (1) Your design plan will be approved if it meets the requirements of this chapter and federal standards in 24 CFR 3280.

(2) We will send you an approved copy of your design plan with the plan approval number.

(3) If your design plan is not approved, you will be notified in writing of plan deficiencies. You may send a corrected design plan to us. (See WAC 296-150M-3000.)

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150M-0380, filed 10/23/96, effective 11/25/96.]

WAC 296-150M-0390 If my design plan is not approved, how much time do I have to submit a corrected plan? (1) You have ninety days to correct and resubmit your original design plan and send us the resubmittal fee after we notify you of plan deficiencies. After ninety days, your initial design plan is returned to you.

(2) If you submit your corrected design plan after ninety days, you must send the initial design plan fee instead of the resubmittal fee. (See WAC 296-150M-3000.)

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[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150M-0390, filed 10/23/96, effective 11/25/96.]

Inspection

WAC 296-150M-0500 When must an inspection be requested? (1) You must request an inspection by us, if you are altering a manufactured home.

(2) You must request an inspection by the local enforcement agency, for manufactured home installations.

(3) The installation of manufactured homes must be enforced and fees charged by the counties and cities in the same manner the State Building Code is enforced under RCW 19.27.050.

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150M-0500, filed 10/23/96, effective 11/25/96.]

WAC 296-150M-0530 Am I charged if I request an inspection but am not prepared when you arrive? If you ask us to inspect your manufactured home or your alteration, but you are not prepared when we arrive, you must pay the minimum inspection fee. (See WAC 296-150M-3000.)

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150M-0530, filed 10/23/96, effective 11/25/96.]

WAC 296-150M-0540 How do I obtain a fire safety certificate to site my pre-HUD home. In order to install a pre-HUD home in Washington, you will need to obtain and pass an inspection by the department. To apply for a fire safety certificate, you must:

(1) Complete an alteration permit form and a fire safety certificate application. We will provide you the forms on request.

(2) A fire safety preinspection checklist can be obtained at your local labor and industries office or on the web at <http://www.lni.wa.gov/tradeslicensing/fas>.

(3) Submit the completed forms to us, with the first hour of inspection fee and the site placement form. Alterations requiring more than one inspection shall have the first hour of inspection paid to the department prior to each additional inspection. The following fees will need to be paid: Electrical fire safety, structural fire safety, insignia fees for fire safety. (See WAC 296-150M-3000, Manufactured/mobile home fees.)

(4) Any other alterations to the home that have not been previously inspected and approved by the department will cause the approval of this inspection to be denied.

(5) Once we approve the inspection, we will provide you with a completed alteration permit and fire safety certificate.

Note: After the home has been sited, any subsequent move will require a separate fire safety certificate.

[Statutory Authority: Chapter 43.22 RCW and 2005 c 399. 05-24-020, § 296-150M-0540, filed 11/29/05, effective 1/1/06.]

WAC 296-150M-0550 What is required to meet the fire safety certificate requirements? You will need to complete the following requirements for your pre-HUD home.

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(1) **Wiring system.** Aluminum wiring is not permitted for use in fifteen and twenty amp branch circuits. You must do one of the following:

(a) Rewire the fifteen and twenty amp branch circuits in copper.

(b) Install receptacles and switches that are approved for the use of either aluminum or copper (i.e., they will be marked AL/CU); or

(c) Install copper "pig tail" connections using wiring nuts approved for aluminum wire between the aluminum wire and the receptacle/switch/light fixture/bath and fans/range hoods.

Additionally, if the circuit breakers in the electrical panel for fifteen and twenty amp circuits are not approved for aluminum wiring, the breakers either need to be replaced with those that are acceptable for aluminum wire or they need to be pit tailed with copper wire and wire nuts acceptable for aluminum wire.

(2) Fire protection.

(a) Walls, doors and ceilings in the water heater and furnace compartments shall be protected by materials with a flame spread rating not exceeding twenty-five. (This can be met with gypsum wallboard having a minimum thickness of 5/16 inch or ceramic tile.)

(b) The range hood must be at least as wide as the appliance and have a lower front edge or "eyebrow" which extends at least three inches past the cabinet above.

(c) The surfaces of the exposed walls adjacent to and within six inches of a range or cooktop appliance must be composed of gypsum wallboard, with a minimum thickness of 5/16 inch, or ceramic tile. Kitchen cabinets constructed of combustible material that is located above a range or cooktop must be a minimum of twenty-four inches above the cooking surface. The cabinets must be protected on the bottom and on the exposed sides within six inches of either side of the appliance, by covering the surface with gypsum wallboard, with a minimum thickness of 5/16 inch, and installing a metal hood above the cooking appliance. A minimum of 3/8 inch gap is required between the cabinet and the gypsum on top of the hood.

(d) No window may be within twelve inches of the edge of a burner or element of the cooking appliance.

(3) Emergency egress.

(a) Every bedroom or other room designed expressly for sleeping purposes must have a window that meets the minimum requirements of at least 5.0 square feet of opening for emergency egress.

(b) Rooms that have a door, with a minimum clear opening of twenty-eight inches wide by seventy-two inches high, which opens directly to the outside do not need to have an emergency egress window.

(c) Windows and devices must be installed in a manner which allows for proper operation.

(d) The bottom of the opening of an egress window shall be no more than thirty-six inches above the floor.

(e) The height of the bottom of the window can be increased to forty-four inches when the clear net area is increased to 5.7 square feet of opening.

(4) Smoke detectors.

(a) Smoke detectors are required at each hallway or area giving access to a bedroom or group of bedrooms. When a furnace is located in the hall giving access to the bedrooms,

the detector is to be located between the living area and the return air grill of the furnace.

(b) Smoke detectors must be installed on a wall and must be permanently wired and installed on a J-box with splices terminating inside the box.

(c) A smoke alarm with a rated life of ten years and provided with a listed ten year battery can be used in lieu of wired smoke detector.

(d) The smoke detector may not be switched and if more than one smoke detector is installed, then each one is to be wired on a different branch circuit.

(e) Smoke detectors do not need to be wired together to sound simultaneous alarms.

[Statutory Authority: Chapter 43.22 RCW and 2005 c 399. 05-24-020, § 296-150M-0550, filed 11/29/05, effective 1/1/06.]

INSTALLATION REQUIREMENTS

Installation, Permit, Inspection, Dispute

WAC 296-150M-0600 Who establishes standards for installation of manufactured homes? (1) The director of labor and industries is responsible for establishing uniform installation standards where possible and practical for persons or entities engaged in performing the installation of manufactured homes within the state.

(2) Local jurisdictions may adopt additional installation requirements only for those installation situations not covered by federal standards. For example, local jurisdictions may impose noise control construction ordinances, prescribe the frost depth and soil bearing capacity at the installation site, and adopt requirements to protect manufactured homes in hazardous areas, (see WAC 296-150M-0620).

Also, local jurisdictions may impose their requirements for snow and wind loads as long as all structures within their jurisdiction are required to comply with the same standard and provided those installing the manufactured home are given options in satisfying that standard. Such an option might include, but not be limited to, allowing an installer to erect an additional structure, which meets local standards, and protects the manufactured home. For example, an installer could erect a free standing ramada over a manufactured home to protect it from local snow loads.

Local jurisdictions **may not**:

(a) Dictate foundation design and construction which is built according to either the manufacturer's installation instructions or a design created by an engineer or architect licensed in Washington state.

(b) Impose regulations on smoke detectors because they are regulated by federal standards.

[Statutory Authority: RCW 43.22.340 and 43.22.480. 99-13-010, § 296-150M-0600, filed 6/4/99, effective 7/5/99. Statutory Authority: Chapter 43.22 RCW. 98-14-078, § 296-150M-0600, filed 6/30/98, effective 7/31/98. Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150M-0600, filed 10/23/96, effective 11/25/96.]

WAC 296-150M-0610 What instructions are used for a manufactured home installation? To the extent that the installation of a manufactured home is not covered by a manufacturer's, engineer's or architect's instructions, the manu-

factured home shall comply with the installation requirements of this section.

(1) Installation of a new manufactured home.

(a) The initial manufactured home installation must be conducted according to the manufacturer's instructions.

(b) If the manufacturer's instructions do not address an aspect of the installation, you may request:

(i) Specific instructions from the manufacturer; or

(ii) Specific instructions from a professional engineer or architect licensed in Washington state.

For example:

(A) A manufactured home is installed over a basement and the manufacturer's instructions do not address this application;

(B) A manufactured home is installed on a site where the specific soil bearing capacity is not addressed in the manufacturer's instructions.

(c) All manufactured homes installed in Washington state must be permanently anchored except for those installed on dealer lots. On dealer lots, temporary sets are permitted without anchoring being installed. A manufactured home must be anchored according to the manufacturer's installation instructions or according to the design of a professional engineer or architect licensed in Washington state. Local jurisdictions **may not** prescribe anchoring methods.

(d) A manufactured home must have a skirting around its entire perimeter. It must be installed per the manufacturer's installation instructions or if the manufacturer is not specific, to the standards in this section. It must be vented and allow access to the under floor area per the manufacturer's installation instructions or per the standards below if the manufacturer's instructions are not available.

If the manufacturer's skirting and access instructions are not specific, skirting, ventilation and access shall be installed as follows:

(i) Skirting:

- Skirting must be made of materials suitable for ground contact.
- Metal fasteners must be made of galvanized, stainless steel or other corrosion resistant material.
- Ferrous metal members in contact with the earth, except those made of galvanized or stainless steel, must be coated with an asphaltic emulsion.
- Skirting must not trap water between the skirting and siding or trim.
- All skirting must be recessed behind the siding or trim.

(ii) Ventilation:

For homes sited in a flood plain, contact the local jurisdiction regarding proper skirting ventilation. Except for those manufactured homes sited in a flood plain, all skirting must be vented as follows:

- Vent openings must be covered with corrosion-resistant wire mesh to prevent the entrance of rodents. The size of the mesh opening cannot exceed 1/4 inch.
- Vent openings must have a net area of not less than one square foot for each one hundred fifty square feet of under floor area.
- Vent openings must be located as close to corners and high as practical and they must provide cross ventilation on at least two opposite sides.

(iii) Access:

- Access to the under floor area of a manufactured home must have a finished opening at least eighteen inches by twenty-four inches in size.
- The access opening must be located so that all areas under a manufactured home are available for inspection.
- The access opening must be covered and that cover must be made of metal, pressure treated wood or vinyl.

(e) A manufactured home site must be prepared per the manufacturer's installation manual or per ANSI A225.1, 1994 edition, section 3.

(f) Heat duct crossovers must be installed per the manufacturer's installation instruction manual or per ANSI A225.1 or the following instructions if the manufacturer's instructions are not available:

Heat duct crossovers must be supported at least one inch above the ground by strapping or blocking. They must be installed to avoid standing water. Also, they must be installed to prevent compression, sharp bends and to minimize stress at the connections.

(g) Dryer vents must exhaust to the exterior side of the wall or skirting. Dryer ducts outside the manufactured home shall comply with the dryer manufacturer's specifications or shall be made of metal with smooth interior surfaces.

(h) Hot water tank pressure relief lines must exhaust to the exterior side of the exterior wall or skirting and must exhaust downward. The end of the pipe must be at least six inches but not more than two feet above the ground.

(i) Water piping must be protected against freezing as per the manufacturer's installation instructions or by use of a heat tape listed for use with manufactured homes and installed per the heat tape manufacturer's installation instructions.

(j) The testing of water lines, waste lines, gas lines and electrical systems must be as per the manufacturer's installation instructions. If the manufacturer's installation instructions require testing of any of these systems, the local jurisdiction is responsible for verifying that the tests have been performed and passed. Electrical connections and testing are the responsibility of the electrical section of labor and industries except where a city has assumed the electrical inspection responsibilities for their jurisdiction. In that case, the city's electrical inspectors are responsible for the electrical connections and testing.

(k) During the installation process, a ground cover must be installed under all manufactured homes. The ground cover must be a minimum of six-mil *black* polyethylene sheeting or its equivalent (exception to ANSI A225.1 (3.5.2)). The ground cover may be omitted if the under floor area of the home has a concrete slab floor with a minimum thickness of three and one-half inches.

(l) Clearances underneath manufactured homes must be maintained at a minimum of eighteen inches beneath at least seventy-five percent of the lowest member of the main frame (I-beam or channel beam) and the ground or footing. No more than twenty-five percent of the lowest member of the main frame of the home shall be less than eighteen inches above the ground or footing. **In no case** shall clearance be

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less than twelve inches **anywhere** under the home (exception to ANSI A225.1 (4.1.3.3)).

(m) Heat pump and air conditioning condensation lines must be extended to the exterior of the manufactured home.

(2) Installation of a relocated manufactured (mobile) home.

(a) A relocated manufactured home installation should be conducted according to the manufacturer's installation instructions.

(b) If the manufacturer's instructions are unavailable, you may use either:

(i) The American National Standard Institute (ANSI) standard ANSI A225.1-Manufactured Homes Installation, 1994 edition instructions; or

(ii) The instructions of a professional engineer or architect licensed in Washington state.

(c) If either (b)(i) or (ii) is used, all of the requirements of WAC 296-150M-0610 (1)(c) through (m) must also be followed.

[Statutory Authority: RCW 43.22.340 and 43.22.480. 99-13-010, § 296-150M-0610, filed 6/4/99, effective 7/5/99. Statutory Authority: Chapter 43.22 RCW. 98-14-078, § 296-150M-0610, filed 6/30/98, effective 7/31/98. Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150M-0610, filed 10/23/96, effective 11/25/96.]

WAC 296-150M-0614 How may I obtain a copy of the American National Standards Institute (ANSI) A225.1-Manufactured Homes Installation? Copies of the standard are available from:

National Fire Protection Agency
Item Number: ANSIA2251
Phone: 800-344-3555
Address: 1 Batterymarch Park
P.O. Box 9101
Quincy, MA 02269-9101

[Statutory Authority: Chapter 43.22 RCW and 2003 c 291. 05-01-102, § 296-150M-0614, filed 12/14/04, effective 2/1/05. Statutory Authority: RCW 43.22.340 and 43.22.480. 99-13-010, § 296-150M-0614, filed 6/4/99, effective 7/5/99.]

WAC 296-150M-0615 What are the requirements for temporary placement of manufactured (mobile) homes? Manufactured (mobile) homes placed on temporary display or in storage by a manufacturer, dealer or distributor in excess of thirty days shall be:

(1) Supported under each main frame beam by supports located within two feet of each end and within four feet of the front and rear axle and other supports so that no span shall exceed sixteen feet; and

(2) Made weathertight at any marriage line joint at the roof and wall lines.

[Statutory Authority: RCW 43.22.340 and 43.22.480. 99-13-010, § 296-150M-0615, filed 6/4/99, effective 7/5/99.]

WAC 296-150M-0620 Do local enforcement agencies have special requirements for installing manufactured homes in hazardous areas? (1) Local enforcement agencies may have special installation requirements for manufactured homes installed in hazardous areas.

(2) A hazardous area is:

(a) An area recognized as a flood plain by the local jurisdiction; or

(b) An area considered hazardous due to the probability of earthquake. In such areas, local jurisdictions may require an earthquake resistant bracing system designed for the earthquake zone in which the home is located by the home manufacturer or by a registered professional engineer or architect.

[Statutory Authority: Chapter 43.22 RCW. 98-14-078, § 296-150M-0620, filed 6/30/98, effective 7/31/98. Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150M-0620, filed 10/23/96, effective 11/25/96.]

WAC 296-150M-0630 Who may install a manufactured home? (1) A manufactured home may be installed by:

- A homeowner;
- A certified installer;
- An individual who is supervised by an on-site certified installer; or
- A specialty trades person, for certain aspects of installation.

(2) A certified installer must be a registered contractor or his or her employee, or an employee of a registered dealership. (See chapter 43.63B RCW for details to which aspects of installation require the presence of a certified installer.)

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150M-0630, filed 10/23/96, effective 11/25/96.]

WAC 296-150M-0640 Does a person who installs a manufactured home need an installation permit? (1) A dealer, owner or agent must not deliver a manufactured home to its site without verifying that an installation permit has been obtained; and

(2) Any permit fees set by the local enforcement agency must be paid in full and included with the permit application.

[Statutory Authority: RCW 43.22.340 and 43.22.480. 99-13-010, § 296-150M-0640, filed 6/4/99, effective 7/5/99. Statutory Authority: Chapter 43.22 RCW. 98-14-078, § 296-150M-0640, filed 6/30/98, effective 7/31/98. Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150M-0640, filed 10/23/96, effective 11/25/96.]

WAC 296-150M-0650 Does a manufactured home installation require an inspection? All manufactured home installations must be inspected and approved by the local enforcement agency.

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150M-0650, filed 10/23/96, effective 11/25/96.]

WAC 296-150M-0655 How does the local enforcement agency gain access to the manufacturer's installation instructions? A manufacturer's installation manual shall be provided for the inspecting jurisdiction whenever any portions of the manufacturer's installation instructions have been used for any portion of the installation.

(1) The installation instructions shall be located between the I-beam and the bottom board within five feet of the main electrical feeder when the skirting has not been installed.

(2) When the skirting has been installed, the installation instructions shall be located between the I-beam and the bottom board within five feet of the access opening.

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(3) Instructions shall be returned to such location when the inspection is completed.

[Statutory Authority: RCW 43.22.340 and 43.22.480. 99-13-010, § 296-150M-0655, filed 6/4/99, effective 7/5/99.]

WAC 296-150M-0660 What are the requirements for on-site structures and who regulates them? On-site structures, sometimes referred to as auxiliary structures, such as, but not limited to, carports, decks and steps should be self-supporting.

(1) Local enforcement agency jurisdiction.

(a) On-site self-supporting structures that do not use any of the systems in the manufactured home are inspected by the local enforcement agency and they should be contacted for specific on-site structure requirements.

(b) Awnings and carports that are self-supported by a beam next to a manufactured (mobile) home are inspected by the local enforcement agency. Note: The awning or carport may be flashed to the manufactured (mobile) home.

(2) Department of labor and industries jurisdiction.

(a) On-site structures that are not self-supporting or use one or more of the systems of the manufactured home require an inspection by us and by the local enforcement agency.

(b) Awnings and carports that are attached to the manufactured (mobile) home without the benefit of a self-supported beam require approval and inspection by the department. Note: This attachment must be designed and approved by an engineer or an architect licensed in Washington state. Furthermore, these stamped plans must be submitted to the department and approved before an inspection can be conducted.

(c) Attached garages:

(i) If the manufactured (mobile) home is built "garage ready" (one hour fire wall, dormer, etc.) at the factory **and** is installed by the manufacturer, an alteration inspection may not be required.

(ii) If the manufactured (mobile) home is not built "garage ready" at the factory, an alteration inspection is required for all changes made to it.

[Statutory Authority: Chapter 43.22 RCW. 98-14-078, § 296-150M-0660, filed 6/30/98, effective 7/31/98. Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150M-0660, filed 10/23/96, effective 11/25/96.]

WAC 296-150M-0670 What happens if a dispute arises concerning an installation requirement? (1) If a dispute arises between any person, business, or local enforcement agency concerning an installation requirement of ANSI A225.1 or this chapter, the issue may be submitted to the factory assembled structures advisory (FAS) board.

(2) The board may provide an opinion on the requirement.

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150M-0670, filed 10/23/96, effective 11/25/96.]

AUDIT

WAC 296-150M-0705 Definitions applicable to this part. "Audit" means an assessment, evaluation, examination or investigation of a contractor's accounts, books and

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records for the purpose of verifying the contractor's compliance with RCW 43.22.360 through 43.23.390 requiring permits for alterations to manufactured and mobile homes.

"Records" include, but are not limited to, all bids, invoices, billing receipts which show that the work was performed on a manufactured/mobile home, permits purchased from labor and industries for alterations to manufactured/mobile homes, purchases of materials and payroll records.

[Statutory Authority: RCW 43.22.340, 43.22.400, 43.22.432, 43.22.433, 43.22.434, 43.22.480, and 43.22.485, 2002 c 268, and chapter 43.22 RCW. 03-12-044, § 296-150M-0705, filed 5/30/03, effective 5/30/03.]

WAC 296-150M-0715 May the department audit the records of a contractor? Yes, based on RCW 43.22.434 the department may audit the records of contractors as defined in chapter 18.27, 18.106, or 19.28 RCW when the department has reason to believe that a violation of the permitting requirements has occurred.

[Statutory Authority: RCW 43.22.340, 43.22.400, 43.22.432, 43.22.433, 43.22.434, 43.22.480, and 43.22.485, 2002 c 268, and chapter 43.22 RCW. 03-12-044, § 296-150M-0715, filed 5/30/03, effective 5/30/03.]

WAC 296-150M-0725 What procedures will the department follow when auditing the records of construction, plumbing and electrical contractors? The department will follow the following procedures when auditing:

(1) The time period covered by the audit may be less than one year but will not exceed three years from the date of notification of an audit.

(2) Every construction, plumbing and electrical contractor must keep records of jobs performed for at least the time frames specified in subsection (1) of this section. Upon the request of the director's authorized representative, these records must be made available to the department for inspection within seven business days.

(3) The department's audits may include, but may not be limited to, the following:

(a) An audit to determine if the contractor performed work on a manufactured or mobile home without procuring the proper permit;

(b) An audit to determine if the contractor failed to correct within twenty days any violations noted on an alteration permit; and

(c) An audit covering a specific time period and examining a contractor's records, which may include billing information, location of where the work was performed, type of work performed, for whom the work was performed, etc.

(4) Any information obtained as a result of an audit under provisions of RCW 43.22.434 is confidential and is not open to public inspection under chapter 42.17 RCW.

[Statutory Authority: RCW 43.22.340, 43.22.400, 43.22.432, 43.22.433, 43.22.434, 43.22.480, and 43.22.485, 2002 c 268, and chapter 43.22 RCW. 03-12-044, § 296-150M-0725, filed 5/30/03, effective 5/30/03.]

PENALTIES

WAC 296-150M-0800 Definitions applicable to this part. **"Administrative law judge"** is any person appointed by the chief administrative law judge (as defined in RCW 34.12.020(2)) to preside at a notice of infraction appeal hearing convened under chapter 43.22 RCW.

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"Appeal hearing" is any proceeding in which an administrative law judge is empowered to determine legal rights, duties or privileges of specific parties on behalf of the director.

"Appellant" means any person, contractor, firm, partnership, corporation, or other entity that has filed an appeal.

"Compliance inspector" refers to the departmental staff responsible for investigating potential violations of chapter 43.22 RCW.

"Contractor" is as defined in chapters 18.27, 18.106, and 19.28 RCW.

"Department" refers to the department of labor and industries.

"Infraction" means a violation of chapter 43.22 RCW as cited by the department's compliance inspectors.

[Statutory Authority: RCW 43.22.340, 43.22.400, 43.22.432, 43.22.433, 43.22.434, 43.22.480, and 43.22.485, 2002 c 268, and chapter 43.22 RCW. 03-12-044, § 296-150M-0800, filed 5/30/03, effective 5/30/03.]

WAC 296-150M-0805 How does the department ensure that a contractor, firm, partnership, or corporation complies with the requirements of chapter 43.22 RCW? The department of labor and industries ensures that contractors, firms, partnerships, and corporations comply with the requirements of chapter 43.22 RCW and this chapter which require a permit and inspection by the department of alterations to manufactured and mobile homes by:

(1) Inspecting manufactured and mobile home job sites by the department's compliance inspectors; or

(2) Auditing the records of contractors per WAC 296-150M-0715.

[Statutory Authority: Chapter 43.22 RCW and 2005 c 399. 05-24-020, § 296-150M-0805, filed 11/29/05, effective 1/1/06. Statutory Authority: RCW 43.22.340, 43.22.400, 43.22.432, 43.22.433, 43.22.434, 43.22.480, and 43.22.485, 2002 c 268, and chapter 43.22 RCW. 03-12-044, § 296-150M-0805, filed 5/30/03, effective 5/30/03.]

WAC 296-150M-0810 What violations of chapter 43.22 RCW can result in the issuance of a notice of infraction? (1) Under chapter 43.22 RCW, the department can issue a notice of infraction to a contractor for:

(a) Failure to obtain a permit before altering a manufactured or mobile home as required by chapter 296-150M WAC;

(b) Failure to correct violations noted as a result of an inspection requested as a result of having purchased a permit.

(2) Each worksite at which a violation occurs constitutes a separate infraction.

(3) Each day on which a violation occurs constitutes a separate infraction.

(4) See WAC 296-150M-0860 for the specific monetary penalties associated with each of the violations discussed in this section.

[Statutory Authority: RCW 43.22.340, 43.22.400, 43.22.432, 43.22.433, 43.22.434, 43.22.480, and 43.22.485, 2002 c 268, and chapter 43.22 RCW. 03-12-044, § 296-150M-0810, filed 5/30/03, effective 5/30/03.]

WAC 296-150M-0815 What information must be included in a notice of infraction? When a contractor violates chapter 43.22 RCW, the department may issue a notice of infraction which must contain the following:

[Title 296 WAC—p. 1947]

- (1) A description of the violation;
- (2) A statement of what is required to correct the violation;
- (3) The date by which the department requires corrections to be achieved; and
- (4) Notice of the individual or department office that must be contacted to obtain a permit or other compliance information.

[Statutory Authority: RCW 43.22.340, 43.22.400, 43.22.432, 43.22.433, 43.22.434, 43.22.480, and 43.22.485, 2002 c 268, and chapter 43.22 RCW. 03-12-044, § 296-150M-0815, filed 5/30/03, effective 5/30/03.]

WAC 296-150M-0820 Who can be issued a notice of infraction? A contractor, firm, partnership, or corporation may be issued a notice of infraction for violations of chapter 43.22 RCW and this chapter.

The department must by certified mail send the written notice of civil penalties imposed under chapter 43.22 RCW and this chapter to the last known address of the party named in the notice.

[Statutory Authority: RCW 43.22.340, 43.22.400, 43.22.432, 43.22.433, 43.22.434, 43.22.480, and 43.22.485, 2002 c 268, and chapter 43.22 RCW. 03-12-044, § 296-150M-0820, filed 5/30/03, effective 5/30/03.]

WAC 296-150M-0830 How does a contractor, firm, partnership, or corporation appeal a notice of infraction? The contractor, firm, partnership, or corporation must:

- (1) File two copies of an appeal notice, specifying the reasons for the appeal, at the office designated on the notice of infraction; and
- (2) File the appeal notice within twenty days of the mailing of the infraction.

[Statutory Authority: RCW 43.22.340, 43.22.400, 43.22.432, 43.22.433, 43.22.434, 43.22.480, and 43.22.485, 2002 c 268, and chapter 43.22 RCW. 03-12-044, § 296-150M-0830, filed 5/30/03, effective 5/30/03.]

WAC 296-150M-0835 Who presides over an appeal hearing and where is it held? An administrative law judge from the office of administrative hearings will preside over the hearing and give a decision. The hearing shall be conducted in the county where the infraction occurred. However, both the appellant and the department have a right to ask the administrative law judge to change the hearing's location.

[Statutory Authority: RCW 43.22.340, 43.22.400, 43.22.432, 43.22.433, 43.22.434, 43.22.480, and 43.22.485, 2002 c 268, and chapter 43.22 RCW. 03-12-044, § 296-150M-0835, filed 5/30/03, effective 5/30/03.]

WAC 296-150M-0840 Who will represent the appellant and the department at the appeal hearing? Appellants may either represent themselves or be represented by an attorney. The department shall be represented by the office of attorney general.

[Statutory Authority: RCW 43.22.340, 43.22.400, 43.22.432, 43.22.433, 43.22.434, 43.22.480, and 43.22.485, 2002 c 268, and chapter 43.22 RCW. 03-12-044, § 296-150M-0840, filed 5/30/03, effective 5/30/03.]

WAC 296-150M-0845 How is the appeal hearing conducted? The hearing process shall be conducted according to chapter 34.05 RCW, Administrative Procedure Act and chapter 10-08 WAC. All appeals of the hearing decision shall be to the superior court according to chapter 34.05 RCW.

[Statutory Authority: RCW 43.22.340, 43.22.400, 43.22.432, 43.22.433, 43.22.434, 43.22.480, and 43.22.485, 2002 c 268, and chapter 43.22 RCW. 03-12-044, § 296-150M-0845, filed 5/30/03, effective 5/30/03.]

WAC 296-150M-0855 What does the department do with the appeal notices that they receive? (1) Appeal notices that are received timely are first reviewed by the department for purposes of reconsideration.

(2) Appeal notices that are not received timely will be returned to the appellant with appeal rights stated.

(3) Appeal notices that are received timely and are not reconsidered according to subsection (1) of this section are recorded and forwarded to the office of the attorney general then to the office of administrative hearings.

[Statutory Authority: RCW 43.22.340, 43.22.400, 43.22.432, 43.22.433, 43.22.434, 43.22.480, and 43.22.485, 2002 c 268, and chapter 43.22 RCW. 03-12-044, § 296-150M-0855, filed 5/30/03, effective 5/30/03.]

WAC 296-150M-0860 What monetary penalties will be assessed for an infraction issued for violations of chapter 43.22 RCW and this chapter? Monetary penalties that may be assessed for a violation of chapter 43.22 RCW and this chapter are:

Monetary Penalties	Dollar Amount
First Violation	\$ 200.00 *
Second Violation	\$ 400.00
Third Violation	\$ 800.00
Each Additional Violation	\$ 1,000.00

* Minimum penalty per violation. Once a violation of chapter 43.22 RCW and this chapter becomes a final judgment, any additional violation is subject to an increased penalty as set forth in the above table.

[Statutory Authority: RCW 43.22.340, 43.22.400, 43.22.432, 43.22.433, 43.22.434, 43.22.480, and 43.22.485, 2002 c 268, and chapter 43.22 RCW. 03-12-044, § 296-150M-0860, filed 5/30/03, effective 5/30/03.]

WAC 296-150M-0865 When must a contractor, firm, partnership, or corporation pay assessed monetary penalties? (1) If a contractor, firm, partnership, or corporation named in a notice of infraction does not choose to appeal the notice, then the contractor, firm, partnership, or corporation must pay the department the amount of the penalty prescribed for the infraction.

(2) After an administrative law judge decides that an infraction has been committed, a contractor who does not appeal the decision to a superior court, has thirty days to pay any outstanding monetary penalties.

[Statutory Authority: RCW 43.22.340, 43.22.400, 43.22.432, 43.22.433, 43.22.434, 43.22.480, and 43.22.485, 2002 c 268, and chapter 43.22 RCW. 03-12-044, § 296-150M-0865, filed 5/30/03, effective 5/30/03.]

MANUFACTURED HOME FEES

WAC 296-150M-3000 Manufactured/mobile home fees.

INITIAL FILING FEE	\$32.20
DESIGN PLAN FEES:	

Manufactured Homes

296-150M-3000

STRUCTURAL ALTERATION - MASTER DESIGN (CODE CYCLE)	\$130.10
STRUCTURAL ALTERATION - ONE YEAR DESIGN	\$87.20
RENEWAL FEE	\$38.80
RESUBMITTAL FEE	\$64.80
ADDENDUM (Approval expires on the same date as original plan.)	\$64.80
ELECTRONIC PLAN SUBMITTAL FEE \$4.90 per page for the first set of plans and \$0.30 per page for each additional set of plans. These fees are in addition to any applicable design plan fees required under this section.	
DEPARTMENT INSPECTION FEES:	
INSPECTION	
MECHANICAL	
Heat Pump	\$31.80
Combination Heat Pump (new) and Furnace (replacement)	\$42.40
Air Conditioning	\$31.80
Combination Air Conditioning (new) and Furnace (replacement)	\$42.40
Furnace Installation (gas*** or electric)	\$31.80
Gas*** Piping	\$31.80
Wood Stove	\$31.80
Pellet Stove	\$31.80
Gas*** Room Heater	\$31.80
Gas*** Decorative Appliance	\$31.80
Range: Changing from electric to gas***	\$31.80
Gas*** Water Heater Replacement	\$21.20
Water Heater: Changing from electric to gas***	\$21.20
Any combination of Furnace, Range, and Water Heater changing from electric to gas*** and includes Gas Piping charge	\$63.70
ELECTRICAL	
Heat Pump	\$42.40
Heat Pump (when home is prewired for a heat pump)	\$10.60
Combination Heat Pump (new) and Furnace (replacement)	\$53.10
Air Conditioner	\$42.40
Air Conditioner (when home is prewired for an air conditioner)	\$10.60
Combination Air Conditioner (new) and Furnace (replacement)	\$53.10
Furnace Installation (gas or electric)	\$42.40
Wood Stove (if applicable)	\$42.40
Pellet Stove (if applicable)	\$42.40
Gas*** Room Heater (if applicable)	\$42.40
Gas*** Decorative Appliance (if applicable)	\$42.40
Range: Changing from gas*** to electric	\$42.40
Electric Water Heater Replacement	\$42.40
Electric Water Heater replacing Gas*** Water Heater	\$42.40
Each added or modified 120 volt circuit (maximum charge is two circuits)	\$42.40
Each added 240 volt circuit (for other than Heat Pumps, Air Conditioners, Furnaces, Water Heaters, Ranges, Hot Tubs or Spas)	\$42.40
Hot Tub or Spa (power from home electrical panel)	\$42.40
Replace main electrical panel	\$42.40
Low voltage fire/intrusion alarm	\$42.40
Fire Safety	\$42.40
Any combination of Furnace, Range and Water Heater changing from electric to gas***	\$42.40
PLUMBING	
Fire sprinkler system (also requires a plan review)	\$21.20
Each added fixture	\$21.20
Replacement of water piping system (this includes two inspections)	\$95.60
STRUCTURAL	
Inspection as part of a mechanical/fire safety installation (cut truss/floor joist, sheet rocking)	\$42.40
Reroofs (may require a plan review)	\$74.30
Changes to home when additions bear loads on home per the design of a professional (also requires a plan review)	\$74.30
Other structural changes (may require a plan review)	\$74.30
Fire Safety (may also require an electrical fire safety inspection)	\$42.40
MISCELLANEOUS	
Other structural changes (may require a plan review)	\$74.30
Plan Review	\$84.90
OTHER REQUIRED INSPECTIONS (Per hour*)	\$58.40
ALL REINSPECTIONS (Per hour*)	\$58.40
Refund	\$10.60
INSIGNIA FEES:	
ALTERATION	\$10.60
FIRE SAFETY CERTIFICATE	\$10.60
REISSUED - LOST/DAMAGED	\$10.60
IPIA	
DEPARTMENT AUDIT FEES	

REGULARLY SCHEDULED IPIA AUDIT:	
First inspection on each section (one time only)	\$29.50
Second and succeeding inspections of unlabeled sections (Per hour*)	\$64.80
OTHER IPIA FEES:	
Red tag removal during a regularly scheduled IPIA audit (Per hour*separate from other fees)	\$64.80
Red tag removal at a time other than a regularly scheduled IPIA audit (Per hour* plus travel time* and mileage**)	\$64.80
Increased frequency surveillance (Per hour* plus travel time* and mileage**)	\$64.80
Attendance at manufacturers training classes (Per hour* only)	\$64.80
Subpart "I" investigations (Per hour* plus travel time* and mileage**)	\$64.80
Alterations to a labeled unit (Per hour* plus travel time* and mileage**)	\$64.80
IPIA Issues/Responses (Per hour* Plus travel time* and mileage**)	\$64.80
Monthly surveillance during a regularly scheduled IPIA audit (Per hour*plus travel time* and mileage**)	\$64.80
Monthly surveillance at a time other than a regularly scheduled IPIA audit (Per hour* plus travel time* and mileage**)	\$64.80
Plant certifications, recertifications and addenda updates (Per hour* plus travel time* and mileage** per each inspector)	\$64.80
Response to HBT Audit during a regularly scheduled IPIA audit (Per hour*)	\$64.80
Response to HBT Audit at a time other than a regularly scheduled IPIA audit (Per hour* plus travel time*and mileage**)	\$64.80
Alternative construction (AC) letter inspections at placement site (Per hour* plus travel time*and mileage**)	\$64.80
Replacement of HUD labels (Per hour* plus travel time* and mileage**)	\$64.80
State Administrative Agency (SAA) inspection fee (Per hour* plus travel time* and mileage**)	\$64.80
OTHER FEES:	
FIELD TECHNICAL SERVICE (Per hour plus travel time* and mileage**)	\$60.00
PUBLICATION PRINTING AND DISTRIBUTION OF RCWs AND WACs (One free copy per year upon request)	\$11.90
VARIANCE INSPECTION FEE	\$84.90
HOMEOWNER REQUESTED INSPECTION	\$84.90
DECERTIFICATION OF A MOBILE/MANUFACTURED HOME	\$84.90
DEMOLITION OF A MOBILE/MANUFACTURED HOME	\$84.90
NOTE: Local jurisdictions may have other fees that apply.	
* Minimum charge of 1 hour; time spent greater than 1 hour is charged in 1/2 hour increments.	
** Per state guidelines.	
*** Gas means all gases; natural, propane, etc.	

[Statutory Authority: Chapters 18.106, 43.22, and 70.87 RCW. 06-10-066, § 296-150M-3000, filed 5/2/06, effective 6/30/06. Statutory Authority: Chapter 43.22 RCW and 2005 c 399. 05-24-020, § 296-150M-3000, filed 11/29/05, effective 1/1/06. Statutory Authority: Chapters 18.27, 43.22, and 70.87 RCW. 05-12-032, § 296-150M-3000, filed 5/24/05, effective 6/30/05. Statutory Authority: Chapters 18.27 and 43.22 RCW. 04-12-048, § 296-150M-3000, filed 5/28/04, effective 6/30/04. Statutory Authority: RCW 43.22.340, 43.22.400, 43.22.432, 43.22.433, 43.22.434, 43.22.480, and 43.22.485, 2002 c 268, and chapter 43.22 RCW. 03-12-044, § 296-150M-3000, filed 5/30/03, effective 5/30/03. Statutory Authority: RCW 43.22.350, 43.22.434, 43.22.480, 43.22.500, 18.27.070, 18.27.075, 70.87.030, 19.28.041, 19.28.051, 19.28.101, 19.28.121, 19.28.161, 19.28.201, 19.28.211, 19.28.341, 2001 c 159, and chapters 43.22, 19.28, 18.27, and 70.87 RCW. 01-12-035, § 296-150M-3000, filed 5/29/01, effective 6/29/01. Statutory Authority: RCW 43.22.340, 43.22.350, 43.22.355, 43.22.360, 43.22.400, 43.22.432, 43.22.433, 43.22.434, 43.22.450, 43.22.480, and 43.22.485. 00-17-148, § 296-150M-3000, filed 8/22/00, effective 9/30/00. Statutory Authority: Chapters 43.22, 18.27, 70.87 and 19.28 RCW. 99-12-080, § 296-150M-3000, filed 5/28/99, effective 6/28/99. Statutory Authority: Chapters 18.106, 18.27 and 43.22 RCW. 98-12-041, § 296-150M-3000, filed 5/29/98, effective 6/30/98. Statutory Authority: RCW 70.87.030, 18.27.070, [18.27.1075, 43.22.350, [43.22.1355, [43.22.1434 and [43.22.1480(2), 97-11-053, § 296-150M-3000, filed 5/20/97, effective 6/30/97. Statutory Authority: RCW 43.22.340, [43.22.1355, [43.22.1360, [43.22.1432, [43.22.1440 and [43.22.1480. 96-21-146, § 296-150M-3000, filed 10/23/96, effective 11/25/96.]

Chapter 296-150P WAC RECREATIONAL PARK TRAILERS

WAC

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296-150P-0020	What definitions apply to this chapter?
296-150P-0030	How is this chapter enforced?
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REQUIREMENTS FOR INSIGNIA AND OTHER IDENTIFICATION

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QUALITY CONTROL PROGRAM/MANUAL

296-150P-0400	What constitutes an acceptable quality control program/manual for state-plan insignia?
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DESIGN PLAN/QUALITY CONTROL MANUAL—REVIEW,
CHANGE/ADDENDUM, EXPIRATION, AND RENEWAL

- 296-150P-0440 Do I need approval to change my design plan or quality control manual after I receive state-plan approval?
- 296-150P-0450 When does state-plan insignia approval expire?

INSPECTION

- 296-150P-0600 When does a manufacturer, individual builder, or a dealer need to request a recreational park trailer inspection?
- 296-150P-0610 How do I request a recreational park trailer inspection and what documentation is required?
- 296-150P-0620 What happens if my recreational park trailer passes inspection?
- 296-150P-0630 What happens if my recreational park trailer does not pass inspection?
- 296-150P-0640 Am I charged if I request an inspection but I am not prepared?

AUDIT

- 296-150P-0700 What does our annual quality control program audit for state-plan insignia include?

LOSS OF STATE-PLAN APPROVAL

- 296-150P-0710 Can you withdraw my state-plan insignia approval?
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RECREATIONAL PARK TRAILER ALTERATIONS

- 296-150P-1000 Who needs approval to alter a recreational park trailer?
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- 296-150P-2000 Must state-plan manufacturers notify you if they manufacture at more than one location?
- 296-150P-2010 Must state-plan manufacturers notify you if they change a business name or address?
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RECREATIONAL PARK TRAILER FEES

- 296-150P-3000 Recreational park trailer fees.

WAC 296-150P-0010 Authority, purpose, and scope.

(1) This chapter is authorized by RCW 43.22.335 through 43.22.434 and covers the requirements for:

(a) Obtaining state-plan status if you manufacture recreational park trailers for sale or lease in Washington state.

(b) Obtaining state-plan insignia if you manufacture recreational park trailers for sale or lease in Washington state.

(2) This chapter applies to:

(a) Manufacturers, dealers and individuals who build for sale, sell, or lease recreational park trailers in Washington state; and

(b) Manufacturers, dealers, and individuals who alter recreational park trailers for sale or lease in Washington state.

[Statutory Authority: RCW 43.22.340 and 43.22.420. 97-16-043, § 296-150P-0010, filed 7/31/97, effective 12/1/97.]

WAC 296-150P-0020 What definitions apply to this chapter? "Alteration" is the replacement, addition, modification, or removal of any equipment or material that affects the fire and life safety provisions, structural system, plumbing systems, fuel systems and equipment or electrical systems of a recreational park trailer.

The following changes are not considered alterations for purposes of this chapter:

- Repairs with approved parts;

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- Modification of a fuel-burning appliance according to the terms of its listing; and

- Adjustment and maintenance of equipment.

"**Alteration insignia**" is an insignia which indicates a recreational park trailer alteration was approved by the department.

"**ANSI**" is the American National Standards Institute, Inc., and the institute's rules applicable to recreational park trailers. For the purposes of this chapter, references to ANSI mean ANSI A119.5 Recreational Park Trailers, 1998 edition.

"**Approved**" is approved by the department of labor and industries.

"**Audit**" by the department is the department inspection of a manufacturer's quality control procedures, comprehensive plans, and recreational park trailers.

"**Comprehensive design plan**" consists of the design plans and copies of drawings such as:

- Floor plans relating to fire and life safety, structural, electrical, plumbing, liquefied petroleum (LP) and/or natural gas systems and appliances and air conditioning systems, if applicable to the plan of each recreational park trailer.

- Plumbing line drawings which describe the size, length and location of gas piping lines, liquid and body waste lines, liquid and body waste tanks, and potable water tanks.

- Electrical drawings. (See WAC 296-150P-0330.)

"**Consumer**" is a person or organization who buys or leases recreational park trailers.

"**Dealer**" is a person or organization whose business is offering recreational park trailers for sale or lease.

"**Department**" is the department of labor and industries. The department may be referred to as "we" or "us" in this chapter. Note: You may contact us at: Department of Labor and Industries, Specialty Compliance, PO Box 44430, Olympia, WA 98504-4430.

"**Equipment**" is all material, appliances, fixtures, and accessories used in the manufacture or alteration of recreational park trailers.

"**Manual**" is a reference containing instructions, procedures, responsibilities and other information used to implement and maintain the quality control program of a recreational park trailer manufacturer.

"**National Electrical Code**" see Appendix 'C' of ANSI A119.5 for reference to the appropriate edition to use for compliance.

"**Recreational park trailer**" is a trailer-type unit that is primarily designed to provide temporary living quarters for recreational, camping or seasonal use, that meets the following criteria:

- Built on a single chassis, mounted on wheels;
- Having a gross trailer area not exceeding 400 square feet (37.15 square meters) in the set-up mode; and
- Certified by the manufacturer as complying with ANSI A119.5.

"**Quality control**" is the plan and method for ensuring that the manufacture, fabrication, assembly, installation, storing, handling, and use of materials complies with this chapter and ANSI.

"**State-plan insignia**" is an insignia which is obtained under the state design-plan approval process.

[Title 296 WAC—p. 1951]

"System" is a part of a recreational park trailer that is designed to serve a particular function such as plumbing, electrical, heating, mechanical or structural system.

[Statutory Authority: RCW 43.22.340, 43.22.400, 43.22.432, 43.22.433, 43.22.434, 43.22.480, and 43.22.485, 2002 c 268, and chapter 43.22 RCW. 03-12-044, § 296-150P-0020, filed 5/30/03, effective 6/30/03. Statutory Authority: RCW 43.22.340 and 43.22.480. 99-13-010, § 296-150P-0020, filed 6/4/99, effective 7/5/99. Statutory Authority: RCW 43.22.340 and 43.22.420. 97-16-043, § 296-150P-0020, filed 7/31/97, effective 12/1/97.]

WAC 296-150P-0030 How is this chapter enforced?

(1) We enforce this chapter through the state-plan insignia approval process (see WAC 296-150P-0300 through 296-150P-0720).

(2) Recreational park trailer inspections occur where the recreational park trailers are manufactured, sold, or leased. We conduct inspections during normal work hours or at other reasonable times. We may require you to remove a part of the recreational park trailer in order to conduct our inspection.

[Statutory Authority: RCW 43.22.340 and 43.22.420. 97-16-043, § 296-150P-0030, filed 7/31/97, effective 12/1/97.]

WAC 296-150P-0040 Will you keep my manufacturing information confidential? We will only release manufacturing information, such as design plans, specifications, test results, and manuals, according to the Public Records Act (see RCW 42.17.310 (1)(h)) unless we are ordered to do so by a court or otherwise required by law.

[Statutory Authority: RCW 43.22.340 and 43.22.420. 97-16-043, § 296-150P-0040, filed 7/31/97, effective 12/1/97.]

WAC 296-150P-0050 Can you prohibit the sale or lease of my recreational park trailer? (1) We may prohibit the sale or lease of your recreational park trailer because it is unlawful for any person to sell, lease, or offer for sale a recreational park trailer within this state if it violates any of the requirements of this chapter (see RCW 43.22.345).

(2) If an inspection reveals that a recreational park trailer violates this chapter, we may post a notice prohibiting the sale or lease of a recreational park trailer.

[Statutory Authority: RCW 43.22.340 and 43.22.480. 99-13-010, § 296-150P-0050, filed 6/4/99, effective 7/5/99.]

WAC 296-150P-0060 Who handles consumer complaints about recreational park trailers? (1) Consumers may file complaints with us, if they have reason to believe a manufacturer and/or dealer is in violation of this chapter and ANSI.

(2) The complaint should be in writing and describe the items that may not comply with this chapter and ANSI.

(3) After we receive the complaint, we will send the manufacturer and/or the dealer a copy of the complaint. The manufacturer and/or dealer has thirty days to respond to the complaint.

(4) If we decide an inspection is warranted and specific code violation(s) are found during the inspection, the manufacturer or dealer is charged for the inspection.

[Statutory Authority: RCW 43.22.340 and 43.22.420. 97-16-043, § 296-150P-0060, filed 7/31/97, effective 12/1/97.]

[Title 296 WAC—p. 1952]

WAC 296-150P-0100 What happens if I disagree with the department's decision regarding my compliance with this chapter and ANSI? (1) If we determine that you are in violation of this chapter and ANSI, you will receive a notice of noncompliance and we may withdraw your certification. (See WAC 296-150P-0710.)

(2) If you disagree with our decision, you can send us a written request for a hearing, stating why you disagree.

(3) After we receive your hearing request, we will:

(a) Schedule a hearing within thirty days after we receive your request.

(b) Notify you of the time, date, and place for the hearing. If you fail to appear, your case will be dismissed.

(c) Hear your case.

(d) Send you written notice of our decision.

If you disagree with our decision, you may appeal it under the Administrative Procedure Act (chapter 34.05 RCW).

[Statutory Authority: RCW 43.22.340 and 43.22.420. 97-16-043, § 296-150P-0100, filed 7/31/97, effective 12/1/97.]

WAC 296-150P-0110 Do you have an advisory board to address recreational park trailer issues? The factory assembled structures (FAS) board advises us on issues relating to plumbing, heating, electrical, installation, alterations, inspections, and rules for recreational park trailers. (See RCW 43.22.420.)

[Statutory Authority: RCW 43.22.340 and 43.22.420. 97-16-043, § 296-150P-0110, filed 7/31/97, effective 12/1/97.]

WAC 296-150P-0120 Where can I obtain technical assistance regarding recreational park trailers? We provide field technical service to recreational park trailer manufacturers for an hourly fee (see WAC 296-150P-3000). Field technical service may include an evaluation, consultation, plan examination, interpretation, and clarification of technical data relating to the application of our rules. It does not include inspections.

[Statutory Authority: RCW 43.22.340 and 43.22.420. 97-16-043, § 296-150P-0120, filed 7/31/97, effective 12/1/97.]

WAC 296-150P-0130 Do you allow recreational park trailers to be displayed without an insignia? We allow one recreational park trailer to be displayed without an insignia, if you:

(1) Get written approval from us in advance of displaying the unit; we should receive your written request at least thirty days prior to display of the unit. Your request must include:

(a) The model and serial number of the unit;

(b) The location where the unit will be displayed; and

(c) The date(s) the unit will be displayed.

(2) Are licensed in Washington state through the department of licensing;

(3) Have your approval letter available at the display;

(4) Place three visible signs on the display unit:

(a) One at the main entry door;

(b) One inside the front of the unit; and

(c) One inside the back of the unit.

The signs must read: NOT FOR SALE - DISPLAY ONLY.

The letters on the sign must be one inch or higher.

(2007 Ed.)

[Statutory Authority: RCW 43.22.340 and 43.22.420. 97-16-043, § 296-150P-0130, filed 7/31/97, effective 12/1/97.]

WAC 296-150P-0140 Do you allow the use of alternate materials, alternate design and method of construction? An applicant may apply for the use of alternate materials, alternate design and methods of construction different from the requirements of this chapter by filing a written request with the department.

(1) Responsibilities of applicant. The applicant must submit in writing the following information and sign and date the request.

- (a) The applicant's name, address and phone number;
- (b) The specific requirement or requirements from which the alternate material, alternate design or method of construction is requested;
- (c) Justification that the requirements of this chapter cannot be met without using alternate materials, alternate design or method of construction;
- (d) How the use of alternate materials, alternate design or method of construction will achieve the same result as the requirement and any specific alternative measures to be taken to show the alternate provides the same level of protection to life, safety and health as the requirements.

The department has a form that you may use for your request. Contact the department at the address shown in the definition section.

(2) Responsibilities of the department. The department will provide a written response to the applicant within thirty days of receipt of the written request. The written response will state the acceptance or denial of the request, including the reasons for the department's decision. At a minimum the department will base its decision based on:

- (a) The applicant's request as described in subsection (1) of this section;
- (b) Research into the request;
- (c) Expert advice.
- (3) Applicant's response to denials. The applicant may appeal the department's decision by following the procedure in WAC 296-150P-0100.

[Statutory Authority: RCW 43.22.340, 43.22.350, 43.22.355, 43.22.360, 43.22.400, 43.22.432, 43.22.433, 43.22.434, 43.22.450, 43.22.480, and 43.22.485. 00-17-148, § 296-150P-0140, filed 8/22/00, effective 9/30/00. Statutory Authority: RCW 43.22.340 and 43.22.480. 99-13-010, § 296-150P-0140, filed 6/4/99, effective 7/5/99.]

REQUIREMENTS FOR INSIGNIA AND OTHER IDENTIFICATION

WAC 296-150P-0200 Who should obtain recreational park trailer insignia? (1) If you manufacture recreational park trailers to be sold or leased in Washington, you must purchase a state-plan insignia for each recreational park trailer.

(2) Individuals that build recreational park trailers to sell or lease in Washington must purchase an insignia.

(3) If you have a recreational park trailer with a state-plan insignia and you plan to alter or have another person alter it, you must obtain an alteration insignia from us.

Note: You do not need to purchase our insignia if you manufacture recreational park trailers in Washington for sale outside the state.

[Statutory Authority: RCW 43.22.340 and 43.22.420. 97-16-043, § 296-150P-0200, filed 7/31/97, effective 12/1/97.]

WAC 296-150P-0210 How do I obtain insignia information and the forms you require? Upon request, we will provide you with a packet of information that includes required forms and fee schedule for obtaining the state-plan insignia. Our address is noted in the definition of department.

[Statutory Authority: RCW 43.22.340 and 43.22.420. 97-16-043, § 296-150P-0210, filed 7/31/97, effective 12/1/97.]

WAC 296-150P-0220 How do I obtain insignia based on state-plan approval? (1) If you are approved to purchase insignia based on state-plan approval, you may purchase the insignia by submitting the insignia application with the required fees. (See WAC 296-150P-3000.)

(2) The application must include:

- (a) A signed statement from you certifying that you are manufacturing your units according to your approved design plans and your quality control program; and
- (b) A list of the approved design plans against which you will apply the insignia.

[Statutory Authority: RCW 43.22.340 and 43.22.420. 97-16-043, § 296-150P-0220, filed 7/31/97, effective 12/1/97.]

WAC 296-150P-0250 How do I replace lost or damaged insignia? (1) If an insignia is lost or damaged after it is placed on a recreational park trailer and you are the manufacturer or owner, you must notify us in writing immediately.

(2) Your notification should include the following information:

- (a) Your name, address, and telephone number;
- (b) The recreational park trailer serial number;
- (c) The insignia number and design-plan approval number, if applicable; and
- (d) The required fee. (See WAC 296-150P-3000.)
- (3) If we can determine that your unit previously had an insignia, we will attach the insignia to your recreational park trailer once we receive your insignia fee. (See WAC 296-150P-3000.)

[Statutory Authority: RCW 43.22.340 and 43.22.420. 97-16-043, § 296-150P-0250, filed 7/31/97, effective 12/1/97.]

WAC 296-150P-0280 What other identification is required? Every new recreational park trailer manufactured, offered for sale or lease, or sold or leased in Washington must also have a vehicle identification number (VIN) label in compliance with the Federal Department of Transportation (DOT) safety standards.

[Statutory Authority: RCW 43.22.340 and 43.22.420. 97-16-043, § 296-150P-0280, filed 7/31/97, effective 12/1/97.]

WAC 296-150P-0290 When and where should the insignia and the identification label be attached to the recreational park trailer? (1) Insignia must be attached to the finished recreational park trailer before it leaves the approved manufacturer's location.

(2) The state-plan insignia must be attached adjacent to the main door, on the strike side of the door, at least twelve inches above the floor line. The strike side of the door is opposite the hinge side of the door.

(3) The alteration insignia must be attached next to the certification insignia.

(4) The identification number (VIN) label must be attached on the recreational park trailer as required by the Federal Department of Transportation. Any other identification label must be attached next to the certification insignia or on the exterior front half of the left side of the recreational park trailer, at least six inches above the floor line.

[Statutory Authority: RCW 43.22.340 and 43.22.420. 97-16-043, § 296-150P-0290, filed 7/31/97, effective 12/1/97.]

STATE PLAN

WAC 296-150P-0300 What is required to obtain insignia based on state-plan approval? If you want to obtain insignia based on state-plan approval, you must:

(1) Have your design plan and quality control manual approved by us; and

(2) Pass a quality control program audit which includes a random inspection of your recreational park trailers.

[Statutory Authority: RCW 43.22.340 and 43.22.420. 97-16-043, § 296-150P-0300, filed 7/31/97, effective 12/1/97.]

WAC 296-150P-0310 What is required after I am approved as a state-plan manufacturer? Once you have obtained approval as a state-plan manufacturer:

(1) You are required to submit comprehensive design plans to us for approval;

(2) You can inspect your own recreational park trailer based upon your quality control manual specifications; and

(3) You are subject to a semiannual audit at your manufacturing location(s).

[Statutory Authority: RCW 43.22.340 and 43.22.420. 97-16-043, § 296-150P-0310, filed 7/31/97, effective 12/1/97.]

DESIGN PLAN

WAC 296-150P-0320 How do I apply for design-plan approval? Upon request, we will send you a design-plan approval request form.

[Statutory Authority: RCW 43.22.340 and 43.22.420. 97-16-043, § 296-150P-0320, filed 7/31/97, effective 12/1/97.]

WAC 296-150P-0330 What is required for comprehensive design-plan approval? If you are the manufacturer applying for state-plan approval:

(1) You must submit two sets of comprehensive design plans (do not send originals) to us for approval. Design plans must be accompanied by the initial filing fee, if appropriate, and the design-plan fee. (See WAC 296-150P-3000.)

(2) Your comprehensive design plan must indicate compliance with the appropriate ANSI standards in the following plans and drawings:

(a) Floor plans relating to fire and life safety, electrical, plumbing, liquefied petroleum (LP) and/or natural gas systems and appliances, and air conditioning systems, if applicable, of each recreational park trailer.

(b) Plumbing line drawings which describe the size, length and location of gas piping lines, liquid and body waste lines, liquid and body waste tanks, and potable water tanks.

(c) Electrical drawings.

[Title 296 WAC—p. 1954]

(d) Structural drawings showing compliance with ANSI A119.5, Chapter 5.

Note: We will provide a check list with detailed requirements for each type of plan upon request.

(3) Current comprehensive design plans must be available at each manufacturing location.

(4) You must have an approved quality control manual. (See WAC 296-150P-0400, 296-150P-0410.)

Note: You do not need a quality control manual if you are an individual asking us to inspect a recreational park trailer.

[Statutory Authority: RCW 43.22.340 and 43.22.420. 97-16-043, § 296-150P-0330, filed 7/31/97, effective 12/1/97.]

WAC 296-150P-0340 What happens if you approve my design plan? (1) Your design plan will be approved if it complies with the requirements of this chapter and ANSI.

(2) We will send you an approved copy of the design plan with the approval number.

(3) You must keep copies of the approved design plan for all models produced at the manufacturing location.

(4) If your design plan is not approved, you will be notified in writing of plan deficiencies. You may send a corrected design plan to us.

[Statutory Authority: RCW 43.22.340 and 43.22.420. 97-16-043, § 296-150P-0340, filed 7/31/97, effective 12/1/97.]

WAC 296-150P-0350 If my design plan is not approved, how much time do I have to submit a correct plan? (1) You have ninety days to correct and resubmit your original design plan and send us the resubmittal fee once we notify you of plan deficiencies. After ninety days, your initial design plan is returned to you.

(2) If you submit your corrected design plan after ninety days, you must send the initial design-plan fee instead of the resubmittal fee. (See WAC 296-150R-3000.)

[Statutory Authority: RCW 43.22.340 and 43.22.420. 97-16-043, § 296-150P-0350, filed 7/31/97, effective 12/1/97.]

QUALITY CONTROL PROGRAM/MANUAL

WAC 296-150P-0400 What constitutes an acceptable quality control program/manual for state-plan insignia? Your quality control program must implement your approved quality control manual. The quality control manual must provide instructions, procedures, and assign responsibilities to assure quality control requirements are met when the recreational park trailers are manufactured. The minimum quality control manual requirements are:

(1) An organization chart which identifies quality assurance positions and describes quality control responsibilities and accountability for the following plant personnel: General manager, plant production manager, plant foreperson, lead persons, production, quality control, sales, engineering, purchasing, and receiving staff;

(2) A method to distribute all comprehensive design plans and installation instructions or other documentation that ensures all products used are installed correctly in all recreational park trailer models produced at each manufacturing location;

(2007 Ed.)

(3) Procedures for maintaining the quality assurance of each recreational park trailer model;

(4) Drawings and procedures displaying manufacturing processes including a schematic plant layout;

(5) Descriptions of production stations, including surge-hold stations, on-site or off-site repair-rework locations, and off-line construction sites. Descriptions should identify by station and location the work, tests, or inspections performed and the job title of the person performing the quality control review;

(6) Inspection and equipment maintenance instructions, including jig maintenance, check-off lists, and other documentation verifying quality control performance and accountability;

(7) Coordination of staff duties ensuring smooth transition of manufacturing responsibilities during the shift change;

(8) Instructions regarding the identification, control, and handling of damaged goods or materials that do not comply with existing rules and ANSI;

(9) Information about recreational park trailer material storage and environmental control including protection from the weather and the elimination of scrap and age-dated materials which have exceeded their life;

(10) Verification that testing equipment is properly calibrated and that your gauges are accurate;

(11) Information about production line testing which includes descriptions of procedures, test equipment, and the location of each test. The information should demonstrate accountability for test completion, for rework and repair, and for retesting;

(12) Instructions, procedures, descriptions, and responsibilities for insignia storage, security, application, and inventory;

(13) Procedures for mixed production lines, for variable production rates, for new or substitute personnel, and for new or changed inspections and tests;

(14) Instructions, procedures, and responsibilities for keeping recreational park trailer records which include the unit serial number, model, plan approval number, dealer location or destination, insignia number, inspection, and test results;

(15) Information about your quality control training program; and

(16) Procedures for introducing new designs, models, materials and equipment to staff that ensures products are built according to the standards and the manufacturer's instructions.

[Statutory Authority: RCW 43.22.340 and 43.22.420. 97-16-043, § 296-150P-0400, filed 7/31/97, effective 12/1/97.]

WAC 296-150P-0410 How do I apply to have my quality control manual approved? We will provide the form and instructions upon request.

[Statutory Authority: RCW 43.22.340 and 43.22.420. 97-16-043, § 296-150P-0410, filed 7/31/97, effective 12/1/97.]

WAC 296-150P-0420 What happens if my quality control manual is approved? (1) Your quality control manual will be approved if it meets the requirements of this chapter and ANSI.

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(2) We will send you an approved copy of your quality control manual.

(3) If your quality control manual is not approved, you will be notified in writing of the deficiencies. You may send us a corrected quality control manual.

[Statutory Authority: RCW 43.22.340 and 43.22.420. 97-16-043, § 296-150P-0420, filed 7/31/97, effective 12/1/97.]

DESIGN PLAN/QUALITY CONTROL MANUAL— REVIEW, CHANGE/ADDENDUM, EXPIRATION, AND RENEWAL

WAC 296-150P-0440 Do I need approval to change my design plan or quality control manual after I receive state-plan approval? (1) Once you have received state-plan approval and you want to change your design plan or quality control manual, we must approve the changes/addenda.

(2) You should send design plan or quality control manual changes to us thirty days before you want the changes/addenda to take effect.

[Statutory Authority: RCW 43.22.340 and 43.22.420. 97-16-043, § 296-150P-0440, filed 7/31/97, effective 12/1/97.]

WAC 296-150P-0450 When does state-plan insignia approval expire? (1) As a state-plan manufacturer, your approval for insignia is based upon approval of your design plan and quality control manual. Design plans are considered approved until a new ANSI code edition is adopted or unless revisions to ANSI prior to code changes would not support our design-plan approval.

(2) If, after the new ANSI code edition is adopted, your design plan and quality control manual remain identical (you may change the model name or designation) to your original design plan, you only need to submit the new plan fee and the plan approval request. **(Do not send plans.)**

Note: ANSI codes are normally adopted for a three-year period.

[Statutory Authority: RCW 43.22.340 and 43.22.420. 97-16-043, § 296-150P-0450, filed 7/31/97, effective 12/1/97.]

INSPECTION

WAC 296-150P-0600 When does a manufacturer, individual builder, or a dealer need to request a recreational park trailer inspection? If you are a manufacturer, individual builder, or a dealer, you must request a recreational park trailer inspection by us:

(1) If you have approval of your design plan and quality control manual and need to complete the state-plan process;

(2) If you are making a recreational park trailer alteration which must be inspected and approved by us; or

(3) If you are correcting a violation which must be inspected and approved by us.

Note: An individual who is building a recreational park trailer to own, sell, or lease must obtain an identification number from the state patrol prior to our issuance of certification insignia.

[Statutory Authority: RCW 43.22.340 and 43.22.420. 97-16-043, § 296-150P-0600, filed 7/31/97, effective 12/1/97.]

WAC 296-150P-0610 How do I request a recreational park trailer inspection and what documentation is

[Title 296 WAC—p. 1955]

required? (1) Complete an inspection application which can be obtained from us.

(2) Send the completed application, application fee, and inspection fee to us prior to the date you would like an inspection performed. (See WAC 296-150P-3000.)

(3) During the inspection, have your approved design plans, specifications, and test results available for our inspector.

(4) A recreational park trailer inspection will be completed in two or more phases. The "cover" inspection during the construction of the unit before the electrical, plumbing, mechanical, heating, and structural systems are covered. The final inspection takes place after the recreational park trailer is complete.

[Statutory Authority: RCW 43.22.340 and 43.22.420. 97-16-043, § 296-150P-0610, filed 7/31/97, effective 12/1/97.]

WAC 296-150P-0620 What happens if my recreational park trailer passes inspection? (1) If your recreational park trailer passes inspection and you have met the other requirements of this chapter and ANSI, you will be approved to purchase state-plan insignia from us.

(2) If you send your insignia application and fee to us prior to the inspection, we will attach your insignia when we approve the recreational park trailer.

[Statutory Authority: RCW 43.22.340 and 43.22.420. 97-16-043, § 296-150P-0620, filed 7/31/97, effective 12/1/97.]

WAC 296-150P-0630 What happens if my recreational park trailer does not pass inspection? (1) If your recreational park trailer does not pass inspection, you will receive a notice of noncompliance.

(2) You have ten days after receiving the notice of noncompliance to send us a written response explaining how you will correct the violation(s) and prevent its reoccurrence.

(3) You are not allowed to move, sell or lease a recreational park trailer until:

- (a) You correct the violation(s);
- (b) We inspect and approve the correction(s); and
- (c) You pay the inspection fee and the insignia fee, if required. (See WAC 296-150P-3000.)

(4) If you fail to make the corrections, the sale or lease of your recreational park trailer is prohibited by RCW 43.22.-340 until the corrections are made.

Note: You will be allowed to return a recreational park trailer to the manufacturing location or to another location for correction with our approval.

[Statutory Authority: RCW 43.22.340 and 43.22.420. 97-16-043, § 296-150P-0630, filed 7/31/97, effective 12/1/97.]

WAC 296-150P-0640 Am I charged if I request an inspection but I am not prepared? (1) If you ask us to inspect recreational park trailers within Washington state but are not prepared when we arrive, you must pay the minimum inspection fee and travel.

(2) If you ask us to inspect recreational park trailers outside Washington state but are not prepared when we arrive, you must pay the minimum inspection fee, travel, and per diem expenses.

[Statutory Authority: RCW 43.22.340 and 43.22.420. 97-16-043, § 296-150P-0640, filed 7/31/97, effective 12/1/97.]

[Title 296 WAC—p. 1956]

AUDIT

WAC 296-150P-0700 What does our annual quality control program audit for state-plan insignia include? (1) During your annual audit for state-plan insignia, we will review your quality control program and randomly inspect your recreational park trailer.

(2) If our audit indicates that you are complying with the requirements of this chapter and ANSI, you may purchase state-plan insignia.

(3) If we discover a quality control program deficiency or a recreational park trailer violation during our audit, you will receive a notice of noncompliance and cannot purchase state-plan insignia until the deficiency or violation is corrected.

(a) You can correct the deficiency or violation during the audit; or

(b) You have fourteen days after receiving the notice of noncompliance to send us a written response explaining your correction of the deficiency or violation; and

(c) You are subject to a follow-up audit.

[Statutory Authority: RCW 43.22.340 and 43.22.420. 97-16-043, § 296-150P-0700, filed 7/31/97, effective 12/1/97.]

LOSS OF STATE-PLAN APPROVAL

WAC 296-150P-0710 Can you withdraw my state-plan insignia approval? Should you fail to meet the requirements of this chapter or ANSI after you have been approved to purchase state-plan insignia, we will withdraw your certification.

[Statutory Authority: RCW 43.22.340 and 43.22.420. 97-16-043, § 296-150P-0710, filed 7/31/97, effective 12/1/97.]

WAC 296-150P-0720 What happens if my state-plan insignia approval is withdrawn? If your state-plan insignia approval is withdrawn because you have failed to comply with this chapter and ANSI:

(1) You must return any issued but unused insignia to us; and

(2) You cannot sell or lease recreational park trailers in Washington.

[Statutory Authority: RCW 43.22.340 and 43.22.420. 97-16-043, § 296-150P-0720, filed 7/31/97, effective 12/1/97.]

RECREATIONAL PARK TRAILER ALTERATIONS

WAC 296-150P-1000 Who needs approval to alter a recreational park trailer? Any alteration by a manufacturer, dealer, or individual to a recreational park trailer with state-certified insignia must be approved by us before the alteration is made. "Alteration" is defined in WAC 296-150P-0020.

Note: We may remove your insignia if you alter or have someone alter a recreational park trailer without our approval.

[Statutory Authority: RCW 43.22.340 and 43.22.420. 97-16-043, § 296-150P-1000, filed 7/31/97, effective 12/1/97.]

(2007 Ed.)

WAC 296-150P-1010 Must I purchase a separate insignia for an alteration? You are required to purchase an alteration insignia from us.

[Statutory Authority: RCW 43.22.340 and 43.22.420. 97-16-043, § 296-150P-1010, filed 7/31/97, effective 12/1/97.]

WAC 296-150P-1020 How do I apply for alteration approval and obtain the alteration insignia? (1) To apply for alteration approval and the alteration insignia, you must:

(a) Complete an alteration permit form and an application for alteration insignia. We will provide the forms.

(b) Submit the completed forms, with the inspection fee and altered recreational park trailer insignia fee, to us. (See WAC 296-150P-3000.)

(2) Our recreational park trailer inspection of the alteration will be in two or more phases. The "cover" inspection during the alteration of the unit before the electrical, plumbing, mechanical, heating, structural or other systems are covered. The final inspection takes place after the alteration inspection is complete.

(3) Once we approve your alteration, we will attach the alteration insignia.

[Statutory Authority: RCW 43.22.340 and 43.22.420. 97-16-043, § 296-150P-1020, filed 7/31/97, effective 12/1/97.]

MANUFACTURER'S NOTICE TO THE DEPARTMENT

WAC 296-150P-2000 Must state-plan manufacturers notify you if they manufacture at more than one location?

(1) We must approve each recreational park trailer manufacturing location producing units for sale or lease in Washington state.

(2) You must send us the following information for each manufacturing location when you are certified:

- (a) Company name;
- (b) Mailing and physical address;
- (c) Phone and fax number if available;
- (d) Type of recreational park trailer(s) manufactured;
- (e) Contact person for plan review; and
- (f) Contact person for plant audit.

(3) You must update the information as it changes.

[Statutory Authority: RCW 43.22.340 and 43.22.420. 97-16-043, § 296-150P-2000, filed 7/31/97, effective 12/1/97.]

WAC 296-150P-2010 Must state-plan manufacturers notify you if they change a business name or address? (1)

If you are moving your business from an approved manufacturing location, the new location must be approved before shipping units from that location for sale or lease in Washington state.

(2) You must notify us in writing prior to a change of business name or address.

[Statutory Authority: RCW 43.22.340 and 43.22.420. 97-16-043, § 296-150P-2010, filed 7/31/97, effective 12/1/97.]

WAC 296-150P-2020 Must state-plan manufacturers notify you of a change in business ownership? (1) When a recreational park trailer manufacturing business changes ownership, the new owner must notify us in writing immediately.

(2) A new owner may continue to manufacture recreational park trailers using approved design plans or comprehensive design plans according to this chapter.

(3) The department will perform an audit of the manufacturer after the ownership change to ensure you are meeting the requirements of this chapter and ANSI.

[Statutory Authority: RCW 43.22.340 and 43.22.420. 97-16-043, § 296-150P-2020, filed 7/31/97, effective 12/1/97.]

WAC 296-150P-2030 Must state-plan manufacturers notify you of their Washington dealers? (1) You must send us the following information about yourself and each of your Washington dealers when you are certified:

(a) Dealership name;

(b) Mailing and physical address;

(c) Phone and fax number if available;

(d) Type of recreational park trailer(s); and

(e) Contact person.

(2) You must update this information as it changes.

[Statutory Authority: RCW 43.22.340 and 43.22.420. 97-16-043, § 296-150P-2030, filed 7/31/97, effective 12/1/97.]

RECREATIONAL PARK TRAILER FEES

WAC 296-150P-3000 Recreational park trailer fees.

INITIAL FILING FEE	\$32.30
DESIGN PLAN FEES:	
NEW PLAN REVIEW FEE WITHOUT STRUCTURAL REQUIREMENTS	\$91.20
NEW PLAN REVIEW FEE WITH STRUCTURAL REQUIREMENTS	\$120.50
RESUBMITTAL FEE	\$65.10
ADDENDUM (Approval expires on same date as original plan.)	\$65.10
ELECTRONIC PLAN SUBMITTAL FEE \$4.90 per page for the first set of plans and \$0.30 per page for each additional set of plans. These fees are in addition to any applicable design plan fees required under this section.	
QUALITY CONTROL/MANUAL FEES:	
INITIAL APPROVAL	\$12.20
RESUBMITTAL FEE	\$65.10
ADDENDUM	\$65.10
DEPARTMENT AUDIT FEES:	
AUDIT (per hour)*	\$65.10
TRAVEL (per hour)*	\$65.10
PER DIEM**	
HOTEL***	

MILEAGE**	
RENTAL CAR***	
PARKING**	
AIRFARE***	
DEPARTMENT INSPECTION FEES:	
INSPECTION (per hour)*	\$65.10
TRAVEL (per hour)*	\$65.10
PER DIEM**	
HOTEL***	
MILEAGE**	
RENTAL CAR***	
PARKING**	
AIRFARE***	
ALTERATION INSPECTION (One hour plus insignia alteration fee)	\$97.40
INSIGNIA FEES:	
STATE CERTIFIED	\$12.00
ALTERATION	\$32.30
REISSUED-LOST/DAMAGED	\$12.00
OTHER FEES:	
FIELD TECHNICAL SERVICE (per hour* plus travel time* and mileage**)	\$65.10
PUBLICATION PRINTING AND DISTRIBUTION OF RCWs AND WACs (One free copy per year upon request)	\$12.20
* Minimum charge of 1 hour; time spent greater than 1 hour is charged in 1/2 hour increments.	
** Per state guidelines.	
*** Actual charges incurred.	

[Statutory Authority: Chapters 18.27, 43.22, and 70.87 RCW. 05-12-032, § 296-150P-3000, filed 5/24/05, effective 6/30/05. Statutory Authority: Chapters 18.27 and 43.22 RCW. 04-12-048, § 296-150P-3000, filed 5/28/04, effective 6/30/04. Statutory Authority: RCW 43.22.350, 43.22.434, 43.22.480, 43.22.500, 70.87.030, 18.106.070, 18.106.125, 2001 c 7, and chapters 18.106, 43.22, and 70.87 RCW. 03-12-045, § 296-150P-3000, filed 5/30/03, effective 6/30/03. Statutory Authority: RCW 43.22.350, 43.22.434, 43.22.480, 43.22.500, 18.27.040, 18.27.070, 18.27.075, 70.87.030, 19.28.041, 19.28.051, 19.28.101, 19.28.121, 19.28.161, 19.28.201, 19.28.211, 19.28.341, 2001 c 7, 2002 c 249, and chapters 19.28, 43.22, 18.27, and 70.87 RCW. 02-12-022, § 296-150P-3000, filed 5/28/02, effective 6/28/02. Statutory Authority: RCW 43.22.350, 43.22.434, 43.22.480, 43.22.500, 18.27.070, 18.27.075, 70.87.030, 19.28.041, 19.28.051, 19.28.101, 19.28.121, 19.28.161, 19.28.201, 19.28.211, 19.28.341, 2001 c 159, and chapters 43.22, 19.28, 18.27, and 70.87 RCW. 01-12-035, § 296-150P-3000, filed 5/29/01, effective 6/29/01. Statutory Authority: RCW 43.22.340, 43.22.350, 43.22.355, 43.22.360, 43.22.400, 43.22.432, 43.22.433, 43.22.434, 43.22.450, 43.22.480, and 43.22.485. 00-17-148, § 296-150P-3000, filed 8/22/00, effective 9/30/00. Statutory Authority: Chapters 43.22, 18.27, 70.87 and 19.28 RCW. 99-12-080, § 296-150P-3000, filed 5/28/99, effective 6/28/99. Statutory Authority: Chapters 18.106, 18.27 and 43.22 RCW. 98-12-041, § 296-150P-3000, filed 5/29/98, effective 6/30/98. Statutory Authority: RCW 43.22.340 and 43.22.420. 97-16-043, § 296-150P-3000, filed 7/31/97, effective 12/1/97.]

Chapter 296-150R WAC RECREATIONAL VEHICLES

WAC

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VEHICLE ALTERATIONS

- 296-150R-1000 Who needs approval to alter a recreational vehicle?
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- 296-150R-2000 Must state-plan and self-certified manufacturers notify you if they manufacture at more than one location?
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 296-150R-2020 Must state-plan and self-certified manufacturers notify you of a change in business ownership?
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RECREATIONAL VEHICLE AND PARK TRAILER FEES

- 296-150R-3000 Recreational vehicle fees.

WAC 296-150R-0010 Authority, purpose, and scope.

(1) This chapter is authorized by RCW 43.22.335 through 43.22.434 and covers the requirements for:

(a) Obtaining state-plan or self-certified status if you manufacture recreational vehicles for sale or lease in Washington state.

(b) Obtaining state-plan or self-certified insignia if you manufacture recreational vehicles for sale or lease in Washington state.

(2) This chapter applies to:

(a) Manufacturers, dealers and individuals who build for sale, sell, or lease recreational vehicles in Washington state; and

(b) Manufacturers, dealers, and individuals who alter recreational vehicles for sale or lease in Washington state.

[Statutory Authority: RCW 43.22.340 and 43.22.420. 97-16-043, § 296-150R-0010, filed 7/31/97, effective 12/1/97. Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150R-0010, filed 10/23/96, effective 11/25/96.]

(2007 Ed.)

WAC 296-150R-0020 What definitions apply to this chapter? "Alteration" is the replacement, addition, modification, or removal of any equipment or material that affects the fire and life safety provisions, plumbing systems, fuel systems and equipment or electrical systems of a recreational vehicle.

The following changes are not considered alterations for purposes of this chapter:

- Repairs with approved parts;
- Modification of a fuel burning appliance according to the terms of its listing; and
- Adjustment and maintenance of equipment.

"Alteration insignia" is an insignia which indicates a vehicle alteration was approved by the department.

"ANSI" is the American National Standards Institute, Inc., and the institute's rules applicable to recreational vehicles. For the purposes of this chapter, references to ANSI mean ANSI A119.2 Recreational Vehicles, 2002 edition.

"Approved" is approved by the department of labor and industries.

"Audit" by the department can be either a comprehensive audit or a performance audit. A comprehensive audit is the department inspection of a manufacturer's quality control procedures, comprehensive plans, and vehicles. A performance audit is the department's review of the manufacturer's audit performed by the industry association or other independent auditor.

"Comprehensive design plan" consists of the design plans and copies of drawings such as:

- Floor plans relating to fire and life safety, electrical, plumbing, liquefied petroleum (LP) and/or natural gas systems and appliances and air conditioning systems, if applicable to the plan of each vehicle.
- Plumbing line drawings which describe the size, length and location of gas piping lines, liquid and body waste lines, liquid and body waste tanks, and potable water tanks.
- Electrical drawings. (See WAC 296-150R-0330 and 296-150R-0820.)

"Consumer" is a person or organization who buys or leases recreational vehicles.

"Dealer" is a person or organization whose business is offering recreational vehicles for sale or lease.

"Department" is the department of labor and industries. The department may be referred to as "we" or "us" in this chapter. Note: You may contact us at: Department of Labor and Industries, Specialty Compliance, PO Box 44430, Olympia, WA 98504-4430.

"Equipment" is all material, appliances, fixtures, and accessories used in the manufacture or alteration of recreational vehicles or park trailers.

"Manual" is a reference containing instructions, procedures, responsibilities and other information used to implement and maintain the quality control program of a recreational vehicle manufacturer.

"National Electrical Code" see Chapter 2 of ANSI A119.2 for reference to the appropriate edition to use for compliance.

"Quality control" is the plan and method for ensuring that the manufacture, fabrication, assembly, installation, storing, handling, and use of materials complies with this chapter and ANSI.

"Recreational vehicle" is a vehicular type unit primarily designed as temporary living quarters for recreational camping, travel, or seasonal use that either has its own motive power or is mounted on, or towed by, another vehicle. Recreational vehicles include: Camping trailers, fifth-wheel trailers, motor homes, travel trailers, and truck campers.

"Self-certification insignia" is an insignia which is obtained under the self-certification approval process.

"State-plan insignia" is an insignia which is obtained under the state design-plan approval process.

"System" is a part of a recreational vehicle that is designed to serve a particular function such as plumbing, electrical, heating, or mechanical system.

"Vehicle" for the purposes of this chapter, is a recreational vehicle.

[Statutory Authority: RCW 43.22.340, 43.22.400, 43.22.432, 43.22.433, 43.22.434, 43.22.480, and 43.22.485, 2002 c 268, and chapter 43.22 RCW. 03-12-044, § 296-150R-0020, filed 5/30/03, effective 6/30/03. Statutory Authority: RCW 43.22.340 and 43.22.480. 99-13-010, § 296-150R-0020, filed 6/4/99, effective 7/5/99. Statutory Authority: RCW 43.22.340 and 43.22.420. 97-16-043, § 296-150R-0020, filed 7/31/97, effective 12/1/97. Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150R-0020, filed 10/23/96, effective 11/25/96.]

WAC 296-150R-0030 How is this chapter enforced?

(1) We enforce this chapter through:

(a) The state plan insignia approval process (see WAC 296-150R-0300 through 296-150R-0720); or

(b) The self-certification insignia approval process (see WAC 296-150R-0800 through 296-150R-0930).

(2) Vehicle inspections occur where the recreational vehicles are manufactured, sold, or leased. We conduct inspections during normal work hours or at other reasonable times. We may require you to remove a part of the recreational vehicle in order to conduct our inspection.

[Statutory Authority: RCW 43.22.340 and 43.22.420. 97-16-043, § 296-150R-0030, filed 7/31/97, effective 12/1/97. Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150R-0030, filed 10/23/96, effective 11/25/96.]

WAC 296-150R-0040 Will you keep my manufacturing information confidential? We will only release manufacturing information, such as design plans, specifications, test results, and manuals, according to the Public Records Act (see RCW 42.17.310 (1)(h)) unless we are ordered to do so by a court or otherwise required by law.

[Statutory Authority: RCW 43.22.340 and 43.22.420. 97-16-043, § 296-150R-0040, filed 7/31/97, effective 12/1/97. Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150R-0040, filed 10/23/96, effective 11/25/96.]

WAC 296-150R-0050 Can you prohibit the sale or lease of my recreational vehicle? (1) We may prohibit the sale or lease of your recreational vehicle because it is unlawful for any person to sell, lease, or offer for sale a recreational vehicle within this state if it violates any of the requirements of this chapter (see RCW 43.22.345).

(2) If an inspection reveals that a recreational vehicle violates this chapter, we may post a notice prohibiting the sale or lease of the recreational vehicle.

[Statutory Authority: RCW 43.22.340 and 43.22.480. 99-13-010, § 296-150R-0050, filed 6/4/99, effective 7/5/99.]

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WAC 296-150R-0060 Who handles consumer complaints about recreational vehicles? (1) Consumers may file complaints with us, if they have reason to believe a manufacturer and/or dealer is in violation of this chapter and ANSI.

(2) The complaint should be in writing and describe the items that may not comply with this chapter and ANSI.

(3) After we receive the complaint, we will send the manufacturer and/or the dealer a copy of the complaint. The manufacturer and/or dealer has thirty days to respond to the complaint.

(4) If we decide an inspection is warranted and specific code violation(s) are found during the inspection, the manufacturer or dealer is charged for the inspection.

[Statutory Authority: RCW 43.22.340 and 43.22.420. 97-16-043, § 296-150R-0060, filed 7/31/97, effective 12/1/97. Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150R-0060, filed 10/23/96, effective 11/25/96.]

WAC 296-150R-0100 What happens if I disagree with the department's decision regarding my compliance with this chapter and ANSI? (1) If we determine that you are in violation of this chapter and ANSI, you will receive a notice of noncompliance and we may withdraw your certification. (See WAC 296-150R-0710, 296-150R-0920.)

(2) If you disagree with our decision, you can send us a written request for a hearing, stating why you disagree.

(3) After we receive your hearing request, we will:

(a) Schedule a hearing within thirty days after we receive your request.

(b) Notify you of the time, date, and place for the hearing. If you fail to appear, your case will be dismissed.

(c) Hear your case.

(d) Send you written notice of our decision.

If you disagree with our decision, you may appeal it under the Administrative Procedure Act (chapter 34.05 RCW).

[Statutory Authority: RCW 43.22.340 and 43.22.420. 97-16-043, § 296-150R-0100, filed 7/31/97, effective 12/1/97. Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150R-0100, filed 10/23/96, effective 11/25/96.]

WAC 296-150R-0110 Do you have an advisory board to address recreational vehicle issues? The factory assembled structures (FAS) board advises us on issues relating to plumbing, heating, electrical, installation, alterations, inspections, and rules for recreational vehicles. (See RCW 43.22.420.)

[Statutory Authority: RCW 43.22.340 and 43.22.420. 97-16-043, § 296-150R-0110, filed 7/31/97, effective 12/1/97. Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150R-0110, filed 10/23/96, effective 11/25/96.]

WAC 296-150R-0120 Where can I obtain technical assistance regarding recreational vehicles? We provide field technical service to recreational vehicle manufacturers for an hourly fee (see WAC 296-150R-3000). Field technical service may include an evaluation, consultation, plan examination, interpretation, and clarification of technical data relating to the application of our rules. It does not include inspections.

[Statutory Authority: RCW 43.22.340 and 43.22.420. 97-16-043, § 296-150R-0120, filed 7/31/97, effective 12/1/97. Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150R-0120, filed 10/23/96, effective 11/25/96.]

WAC 296-150R-0130 Do you allow recreational vehicles to be displayed without an insignia? We allow one recreational vehicle to be displayed without an insignia, if you:

(1) Get written approval from us in advance of displaying the unit; we should receive your written request at least thirty days prior to display of the unit. Your request must include:

- (a) The model and serial number of the unit;
- (b) The location where the unit will be displayed; and
- (c) The date(s) the unit will be displayed.

(2) Are licensed in Washington state through the department of licensing;

- (3) Have your approval letter available at the display;
- (4) Place three visible signs on the display unit:

- (a) One at the main entry door;
- (b) One inside the front of the unit; and
- (c) One inside the back of the unit.

The signs must read: *Not For Sale - Display Only*.

The letters on the sign must be one inch or higher.

[Statutory Authority: RCW 43.22.340 and 43.22.420. 97-16-043, § 296-150R-0130, filed 7/31/97, effective 12/1/97. Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150R-0130, filed 10/23/96, effective 11/25/96.]

WAC 296-150R-0140 Do you allow the use of alternate materials, alternate design and method of construction? An applicant may apply for the use of alternate materials, alternate design and methods of construction different from the requirements of this chapter by filing a written request with the department.

(1) Responsibilities of applicant. The applicant must submit in writing the following information and sign and date the request.

- (a) The applicant's name, address and phone number;
- (b) The specific requirement or requirements from which the alternate material, alternate design or method of construction is requested;

(c) Justification that the requirements of this chapter cannot be met without using alternate materials, alternate design or method of construction;

(d) How the use of alternate materials, alternate design or method of construction will achieve the same result as the requirement and any specific alternative measures to be taken to show the alternate provides the same level of protection to life, safety and health as the requirements.

The department has a form that you may use for your request. Contact the department at the address shown in the definition section.

(2) Responsibilities of the department. The department will provide a written response to the applicant within thirty days of receipt of the written request. The written response will state the acceptance or denial of the request, including the reasons for the department's decision. At a minimum the department will base its decision based on:

(a) The applicant's request as described in subsection (1) of this section;

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(b) Research into the request;

(c) Expert advice.

(3) Applicant's response to denials. The applicant may appeal the department's decision by following the procedure in WAC 296-150R-0100.

[Statutory Authority: RCW 43.22.340, 43.22.350, 43.22.355, 43.22.360, 43.22.400, 43.22.432, 43.22.433, 43.22.434, 43.22.450, 43.22.480, and 43.22.485. 00-17-148, § 296-150R-0140, filed 8/22/00, effective 9/30/00. Statutory Authority: RCW 43.22.340 and 43.22.480. 99-13-010, § 296-150R-0140, filed 6/4/99, effective 7/5/99.]

REQUIREMENTS FOR INSIGNIA AND OTHER VEHICLE IDENTIFICATION

WAC 296-150R-0200 Who should obtain recreational vehicle insignia? (1) If you manufacture recreational vehicles to be sold or leased in Washington, you must purchase either a state-plan or self-certified insignia for each vehicle.

(2) Individuals that build recreational vehicles to sell or lease in Washington must purchase an insignia.

(3) If you have a vehicle with either a state-plan or self-certified insignia and you plan to alter or have another person alter it, you must obtain an alteration insignia from us.

Note: You do not need to purchase our insignia if you manufacture recreational vehicles in Washington for sale outside the state.

[Statutory Authority: RCW 43.22.340 and 43.22.420. 97-16-043, § 296-150R-0200, filed 7/31/97, effective 12/1/97. Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150R-0200, filed 10/23/96, effective 11/25/96.]

WAC 296-150R-0210 How do I obtain insignia information and the forms you require? Upon request, we will provide you with a packet of information that includes required forms and fee schedule for obtaining the state-plan or self-certified insignia. Our address is noted in the definition of department.

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150R-0210, filed 10/23/96, effective 11/25/96.]

WAC 296-150R-0220 How do I obtain insignia based on state-plan approval? (1) If you are approved to purchase insignia based on state-plan approval, you may purchase the insignia by submitting the insignia application with the required fees. (See WAC 296-150R-3000.)

(2) The application must include:

(a) A signed statement from you certifying that you are manufacturing your units according to your approved design plans and your quality control program; and

(b) A list of the approved design plans against which you will apply the insignia.

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150R-0220, filed 10/23/96, effective 11/25/96.]

WAC 296-150R-0230 How do I obtain insignia based on self-certification approval? If you are approved to purchase insignia based on self-certification approval, you may purchase the insignia by submitting the insignia application with the required fees. (See WAC 296-150R-3000.) The application must include the design plan with a signed state-

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ment from you certifying that you are manufacturing your units according to your comprehensive design plans and your quality control program.

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150R-0230, filed 10/23/96, effective 11/25/96.]

WAC 296-150R-0250 How do I replace lost or damaged insignia? (1) If an insignia is lost or damaged after it is placed on a recreational vehicle and you are the manufacturer or owner, you must notify us in writing immediately.

(2) Your notification should include the following information:

- (a) Your name, address, and telephone number;
- (b) The vehicle identification number or serial number and model;
- (c) The insignia number and design-plan approval number, if applicable; and
- (d) The required fee. (See WAC 296-150R-3000.)

(3) If we can determine that your unit previously had an insignia, we will attach the insignia to your vehicle once we receive your insignia fee. (See WAC 296-150R-3000.)

[Statutory Authority: RCW 43.22.340 and 43.22.420. 97-16-043, § 296-150R-0250, filed 7/31/97, effective 12/1/97. Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150R-0250, filed 10/23/96, effective 11/25/96.]

WAC 296-150R-0280 What other vehicle identification is required? Every *new* recreational vehicle manufactured, offered for sale or lease, or sold or leased in Washington must also have a vehicle identification number (VIN) label in compliance with the Federal Department of Transportation (DOT) safety standards.

Note: Truck campers do not require a vehicle identification number (VIN). They have a manufacturer's serial number.

[Statutory Authority: RCW 43.22.340 and 43.22.420. 97-16-043, § 296-150R-0280, filed 7/31/97, effective 12/1/97. Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150R-0280, filed 10/23/96, effective 11/25/96.]

WAC 296-150R-0290 When and where should the insignia and the vehicle identification label be attached to the vehicle? (1) Insignia must be attached to the finished vehicle before it leaves the approved manufacturer's location.

(2) The state-plan or self-certification insignia must be attached adjacent to the main door, on the strike side of the door, at least twelve inches above the floor line. The strike side of the door is opposite the hinge side of the door.

(3) The alteration insignia must be attached next to the certification insignia.

(4) The vehicle identification number (VIN) label must be attached on the vehicle as required by the Federal Department of Transportation. Any other vehicle identification label must be attached next to the certification insignia or on the exterior front half of the left side of the vehicle, at least six inches above the floor line.

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150R-0290, filed 10/23/96, effective 11/25/96.]

STATE PLAN

WAC 296-150R-0300 What is required to obtain insignia based on state-plan approval? If you want to obtain insignia based on state-plan approval, you must:

(1) Have your design plan and quality control manual approved by us; and

(2) Pass a quality control program comprehensive audit which includes a random inspection of your vehicles.

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150R-0300, filed 10/23/96, effective 11/25/96.]

WAC 296-150R-0310 What is required after I am approved as a state-plan manufacturer? Once you have obtained approval as a state-plan manufacturer:

(1) You are required to submit comprehensive design plans to us for approval;

(2) You can inspect your own vehicles based upon your quality control manual specifications; and

(3) You are subject to an annual comprehensive audit at your manufacturing location(s).

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150R-0310, filed 10/23/96, effective 11/25/96.]

DESIGN PLAN

WAC 296-150R-0320 How do I apply for design-plan approval? Upon request, we will send you a design-plan approval request form.

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150R-0320, filed 10/23/96, effective 11/25/96.]

WAC 296-150R-0330 What is required for comprehensive design-plan approval? If you are the manufacturer applying for state-plan approval:

(1) You must submit two sets of comprehensive design plans (do not send originals) to us for approval. Design plans must be accompanied by the initial filing fee, if appropriate, and the design plan fee. (See WAC 296-150R-3000.)

(2) Your comprehensive design plan must indicate compliance with the appropriate ANSI standards in the following plans and drawings:

(a) Floor plans relating to fire and life safety, electrical, plumbing, liquefied petroleum (LP) and/or natural gas systems and appliances, and air conditioning systems, if applicable, of each vehicle.

(b) Plumbing line drawings which describe the size, length and location of gas piping lines, liquid and body waste lines, liquid and body waste tanks, and potable water tanks.

(c) Electrical drawings.

Note: We will provide a check list with detailed requirements for each type of plan upon request.

(3) Current comprehensive design plans must be available at each manufacturing location.

(4) You must have an approved quality control manual. (See WAC 296-150R-0400, 296-150R-0410.)

Note: You do not need a quality control manual if you are an individual asking us to inspect a vehicle.

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150R-0330, filed 10/23/96, effective 11/25/96.]

WAC 296-150R-0340 What happens if you approve my design plan? (1) Your design plan will be approved if it complies with the requirements of this chapter and ANSI.

(2) We will send you an approved copy of the design plan with the approval number.

(3) You must keep copies of the approved design plan for all models produced at the manufacturing location.

(4) If your design plan is not approved, you will be notified in writing of plan deficiencies. You may send a corrected design plan to us.

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150R-0340, filed 10/23/96, effective 11/25/96.]

WAC 296-150R-0350 If my design plan is not approved, how much time do I have to submit a corrected plan? (1) You have ninety days to correct and resubmit your original design plan and send us the resubmittal fee once we notify you of plan deficiencies. After ninety days, your initial design plan is returned to you.

(2) If you submit your corrected design plan after ninety days, you must send the initial design plan fee instead of the resubmittal fee. (See WAC 296-150R-3000.)

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150R-0350, filed 10/23/96, effective 11/25/96.]

QUALITY CONTROL PROGRAM/MANUAL

WAC 296-150R-0400 What constitutes an acceptable quality control program/manual for state-plan insignia? Your quality control program must implement your approved quality control manual. The quality control manual must provide instructions, procedures, and assign responsibilities to assure quality control requirements are met when vehicles are manufactured. The minimum quality control manual requirements are:

(1) An organization chart which identifies quality assurance positions and describes quality control responsibilities and accountability for the following plant personnel: General manager, plant production manager, plant foreperson, lead persons, production, quality control, sales, engineering, purchasing, and receiving staff;

(2) A method to distribute all comprehensive design plans and installation instructions or other documentation that ensures all products used are installed correctly in all recreational vehicle models produced at each manufacturing location;

(3) Procedures for maintaining the quality assurance of each vehicle model;

(4) Drawings and procedures displaying manufacturing processes including a schematic plant layout;

(5) Descriptions of production stations, including surgehold stations, on-site or off-site repair-rework locations, and off-line construction sites. Descriptions should identify by station and location the work, tests, or inspections performed and the job title of the person performing the quality control review;

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(6) Inspection and equipment maintenance instructions, including jig maintenance, check-off lists, and other documentation verifying quality control performance and accountability;

(7) Coordination of staff duties ensuring smooth transition of manufacturing responsibilities during the shift change;

(8) Instructions regarding the identification, control, and handling of damaged goods or materials that do not comply with existing rules and ANSI;

(9) Information about recreational vehicle material storage and environmental control including protection from the weather and the elimination of scrap and age-dated materials which have exceeded their life;

(10) Verification that testing equipment is properly calibrated and that your gauges are accurate;

(11) Information about production line testing which includes descriptions of procedures, test equipment, and the location of each test. The information should demonstrate accountability for test completion, for rework and repair, and for retesting;

(12) Instructions, procedures, descriptions, and responsibilities for insignia storage, security, application, and inventory;

(13) Procedures for mixed production lines, for variable production rates, for new or substitute personnel, and for new or changed inspections and tests;

(14) Instructions, procedures, and responsibilities for keeping vehicle records which include the unit serial number, model, plan approval number, dealer location or destination, insignia number, inspection, and test results;

(15) Information about your quality control training program; and

(16) Procedures for introducing new designs, models, materials and equipment to staff that ensures products are built according to the standards and the manufacturer's instructions.

[Statutory Authority: RCW 43.22.340 and 43.22.420. 97-16-043, § 296-150R-0400, filed 7/31/97, effective 12/1/97. Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150R-0400, filed 10/23/96, effective 11/25/96.]

WAC 296-150R-0410 How do I apply to have my quality control manual approved? We will provide the form and instructions upon request.

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150R-0410, filed 10/23/96, effective 11/25/96.]

WAC 296-150R-0420 What happens if my quality control manual is approved? (1) Your quality control manual will be approved if it meets the requirements of this chapter and ANSI.

(2) We will send you an approved copy of your quality control manual.

(3) If your quality control manual is not approved, you will be notified in writing of the deficiencies. You may send us a corrected quality control manual.

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150R-0420, filed 10/23/96, effective 11/25/96.]

DESIGN PLAN/QUALITY CONTROL MANUAL— REVIEW, CHANGE/ADDENDUM, EXPIRATION, AND RENEWAL

WAC 296-150R-0440 Do I need approval to change my design plan or quality control manual after I receive state-plan approval? (1) Once you have received state-plan approval and you want to change your design plan or quality control manual, we must approve the changes/addendums.

(2) You should send design plan or quality control manual changes to us thirty days before you want the changes/addendums to take effect.

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150R-0440, filed 10/23/96, effective 11/25/96.]

WAC 296-150R-0450 When does state-plan insignia approval expire? As a state-plan manufacturer, your approval for insignia is based upon approval of your design plan and quality control manual. Design plans are considered approved until a new ANSI code edition is adopted or unless revisions to ANSI prior to code changes would not support our design plan approval.

Note: ANSI codes are normally adopted for a three-year period.

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150R-0450, filed 10/23/96, effective 11/25/96.]

INSPECTION

WAC 296-150R-0600 When does a manufacturer, individual builder, or a dealer need to request a vehicle inspection? If you are a manufacturer, individual builder, or a dealer, you must request a vehicle inspection by us:

(1) If you have approval of your design plan and quality control manual and need to complete the state-plan process;

(2) If you are making a vehicle alteration which must be inspected and approved by us; or

(3) If you are correcting a violation which must be inspected and approved by us.

Note: An individual who is building a vehicle to own, sell, or lease must obtain a vehicle identification number from the state patrol prior to our issuance of certification insignia.

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150R-0600, filed 10/23/96, effective 11/25/96.]

WAC 296-150R-0610 How do I request a vehicle inspection and what documentation is required? (1) Complete an inspection application which can be obtained from us.

(2) Send the completed application, application fee, and inspection fee to us prior to the date you would like an inspection performed. (See WAC 296-150R-3000.)

(3) During the inspection, have your approved design plans, specifications, and test results available for our inspector.

(4) A vehicle inspection will be completed in two phases. The "cover" inspection during the construction of the unit before the electrical, plumbing, mechanical, heating, and

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structural systems are covered. The final inspection takes place after the vehicle is complete.

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150R-0610, filed 10/23/96, effective 11/25/96.]

WAC 296-150R-0620 What happens if my vehicle passes inspection? (1) If your vehicle passes inspection and you have met the other requirements of this chapter and ANSI, you will be approved to purchase state-plan insignia from us.

(2) If you send your insignia application and fee to us prior to the inspection, we will attach your insignia when we approve the vehicle.

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150R-0620, filed 10/23/96, effective 11/25/96.]

WAC 296-150R-0630 What happens if my vehicle does not pass inspection? (1) If your vehicle does not pass inspection, you will receive a notice of noncompliance.

(2) You have ten days after receiving the notice of noncompliance to send us a written response explaining how you will correct the violation(s) and prevent its reoccurrence.

(3) You are not allowed to move, sell or lease a vehicle until:

(a) You correct the violation(s);

(b) We inspect and approve the correction(s); and

(c) You pay the inspection fee and the insignia fee, if required. (See WAC 296-150R-3000.)

(4) If you fail to make the corrections, the sale or lease of your vehicle is prohibited by RCW 43.22.340 until the corrections are made.

Note: You will be allowed to return a vehicle to the manufacturing location or to another location for correction with our approval.

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150R-0630, filed 10/23/96, effective 11/25/96.]

WAC 296-150R-0640 Am I charged if I request an inspection but I am not prepared? (1) If you ask us to inspect recreational vehicles within Washington state but are not prepared when we arrive, you must pay the minimum inspection fee and travel.

(2) If you ask us to inspect recreational vehicles outside Washington state but are not prepared when we arrive, you must pay the minimum inspection fee, travel, and per diem expenses.

[Statutory Authority: RCW 43.22.340 and 43.22.420. 97-16-043, § 296-150R-0640, filed 7/31/97, effective 12/1/97. Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150R-0640, filed 10/23/96, effective 11/25/96.]

AUDIT

WAC 296-150R-0700 What does our annual quality control program audit for state-plan insignia include? (1) During your annual comprehensive audit for state-plan insignia, we will review your quality control program and randomly inspect your vehicles.

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(2) If our comprehensive audit indicates that you are complying with the requirements of this chapter and ANSI, you may purchase state-plan insignia.

(3) If we discover a quality control program deficiency or a vehicle violation during our comprehensive audit, you will receive a notice of noncompliance and cannot purchase state-plan insignia until the deficiency or violation is corrected.

(a) You can correct the deficiency or violation during the comprehensive audit; or

(b) You have fourteen days after receiving the notice of noncompliance to send us a written response explaining your correction of the deficiency or violation;

(c) You are subject to a follow-up comprehensive audit.

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150R-0700, filed 10/23/96, effective 11/25/96.]

LOSS OF STATE-PLAN APPROVAL

WAC 296-150R-0710 Can you withdraw my state-plan insignia approval? Should you fail to meet the requirements of this chapter and ANSI after you have been approved to purchase state-plan insignia, we will withdraw your certification.

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150R-0710, filed 10/23/96, effective 11/25/96.]

WAC 296-150R-0720 What happens if my state-plan insignia approval is withdrawn? If your state-plan insignia approval is withdrawn because you have failed to comply with this chapter and ANSI:

(1) You must return any issued but unused insignia to us; and

(2) You cannot sell or lease vehicles in Washington.

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150R-0720, filed 10/23/96, effective 11/25/96.]

SELF-CERTIFICATION

AUDIT TO RECEIVE SELF-CERTIFICATION

WAC 296-150R-0800 What is required for self-certification? If you want to be self-certified, you must:

(1) Send us a written request for self-certification;

(2) Have us approve your self-certification quality control manual;

(3) Have us approve your comprehensive design plans for the current models you sell in Washington state if you do not already have approved design plans;

(4) Initially be audited by us, and then be audited at least every six months by an industry association or independent inspection auditor who conducts quality control audits;

(5)(a) The manufacturer must designate an industry association or other independent auditor to perform audits of the manufacturer at least every six months.

(b) The manufacturer must provide written approval from the auditor designated under (a) of this subsection and provide a copy of such approval to the department. The

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approval form must allow us to review all documentation and information collected by the auditor during the auditor's periodic audits of the manufacturer. The department shall conduct a performance audit of the industry association or other independent inspection auditor at least once every two years.

(c) If the designated auditor refuses to allow the department to conduct a performance audit, then the department may conduct a performance audit of the manufacturer's quality control program. If both the designated auditor and manufacturer refuse to allow a performance audit, then the department may conduct a comprehensive audit as authorized by RCW 43.22.355(4).

Note: If you do not use an industry association or independent inspection auditor to conduct your quality control audits, you may apply for insignia under the state-plan process for insignia approval.

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150R-0800, filed 10/23/96, effective 11/25/96.]

WAC 296-150R-0810 What does the initial self-certification audit include? During the initial self-certification comprehensive audit, we will:

(1) Review your quality control program;

(2) Review your comprehensive design plans; and

(3) Randomly inspect your vehicles.

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150R-0810, filed 10/23/96, effective 11/25/96.]

WAC 296-150R-0820 How will I know if I am approved for self-certification? (1) If the initial self-certification comprehensive audit indicates that you are complying with this chapter and ANSI, we will send you a self-certification approval letter. Once you are approved as self-certified you may purchase self-certification insignia.

(2) If we discover a quality control program deficiency or a vehicle violation during our initial audit, you will receive a notice of noncompliance and cannot purchase the self-certification insignia until the deficiency or violation is corrected.

(a) You can correct the deficiency or violation during the audit; or

(b) You have fourteen days after receiving the notice of noncompliance to send us a written response explaining your correction of the deficiency or violation;

(c) You are subject to a follow-up comprehensive audit, to verify correction of the deficiency or violation.

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150R-0820, filed 10/23/96, effective 11/25/96.]

WAC 296-150R-0830 What are the self-certification fees? (1) If you are a new manufacturer applying for self-certification, you must pay the initial filing fee, the quality control manual fee, the audit fee, travel and per diem expenses.

(2) If you are a current state-plan manufacturer applying for self-certification who has approved design plans with the department, you must pay the self-certification quality control manual fee, the audit fee, travel and per diem expenses.

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150R-0830, filed 10/23/96, effective 11/25/96.]

SELF-CERTIFICATION COMPREHENSIVE DESIGN PLAN/QUALITY CONTROL PROGRAM/QUALITY CONTROL MANUAL

WAC 296-150R-0840 What is required for comprehensive design plan approval for self-certification? (1) If you are a *new manufacturer* applying for self-certification:

(a) You must send us two sets of comprehensive design plans (do not send originals) for approval. Design plans must be accompanied by the appropriate fees. (See WAC 296-150R-3000.)

(b) Your comprehensive design plan must indicate compliance with the appropriate ANSI standards in the following plans and drawings:

(i) Floor plans relating to fire and life safety, electrical, plumbing, liquefied petroleum (LP) and/or natural gas systems and appliances, and air conditioning systems, if applicable to the plan of each vehicle.

(ii) Plumbing line drawings which describe the size, length and location of gas piping lines, liquid and body waste lines, liquid and body waste tanks, and potable water tanks.

(iii) Electrical drawings.

Note: We will provide you with a check list with detailed requirements for each type of plan upon request.

(c) Current comprehensive design plans must be available at each manufacturing location.

(2) If you are a state-plan approved manufacturer applying for self-certification, you must have approved comprehensive design plans on file with us and at each manufacturing location.

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150R-0840, filed 10/23/96, effective 11/25/96.]

WAC 296-150R-0850 What constitutes an acceptable quality control program/manual for self-certification? Your quality control program must implement your approved quality control manual. The quality control manual must provide instructions, procedures, and assign responsibilities to assure quality control expectations are met when vehicles are manufactured. The minimum quality control manual requirements are:

(1) An organization chart which identifies quality assurance positions and describes quality control responsibilities and accountability for the following plant personnel: General manager, plant production manager, plant foreperson, lead persons, production, quality control, sales, engineering, purchasing and receiving staff;

(2) A method to distribute all comprehensive design plans and installation instructions or other documentation that ensures all products used are installed correctly in all recreational vehicle models produced at each manufacturing location;

(3) Procedures for maintaining the quality assurance of each vehicle model;

(4) Drawings and procedures displaying manufacturing processes including a schematic plant layout;

(5) Descriptions of production stations, including surge-hold stations, on-site or off-site repair-rework locations, and off-line construction sites. Descriptions should identify by

station and location the work, tests, or inspections performed and the job title of the person performing the quality control review;

(6) Inspection and equipment maintenance instructions, including jig maintenance, check-off lists, and other documentation verifying quality control performance and accountability;

(7) Coordination of staff duties ensuring smooth transition of manufacturing responsibilities during the shift change;

(8) Instructions regarding the identification, control, and handling of damaged goods or materials that do not comply with existing rules and ANSI;

(9) Information about recreational vehicle material storage and environmental control including protection from the weather and the elimination of scrap and age-dated materials which have exceeded their life;

(10) Verification that testing equipment is properly calibrated and that your gauges are accurate;

(11) Information about production line testing which includes descriptions of procedures, test equipment, and the location of each test. The information should demonstrate accountability for test completion, for rework and repair, and for retesting;

(12) Instructions, procedures, descriptions, and responsibilities for insignia storage, security, application, and inventory;

(13) Procedures for mixed production lines, for variable production rates, for new or substitute personnel, and for new or changed inspections and tests;

(14) Instructions, procedures, and responsibilities for keeping vehicle records which include the unit serial number, model, plan approval number (if applicable), dealer location or destination, insignia number, inspection, and test results;

(15) Information about your quality control training program;

(16) Procedures for introducing new designs, models, materials and equipment to staff that ensures products are built according to the standards and the manufacturer's instructions; and

(17) Written authorization as required in WAC 296-150R-0800(5).

[Statutory Authority: RCW 43.22.340 and 43.22.420. 97-16-043, § 296-150R-0850, filed 7/31/97, effective 12/1/97. Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150R-0850, filed 10/23/96, effective 11/25/96.]

WAC 296-150R-0860 After becoming self-certified, do I need approval to change my comprehensive design plan? (1) Once you are self-certified, you are not required to send us your comprehensive design plans nor are we required to approve your comprehensive design plan changes.

(2) You are required to maintain your comprehensive design plans for each model at each manufacturing location where the models are produced.

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150R-0860, filed 10/23/96, effective 11/25/96.]

WAC 296-150R-0870 After becoming self-certified, do I need approval to change my quality control manual?

Once you are self-certified, you are required to have any changes to your quality control manual approved by us.

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150R-0870, filed 10/23/96, effective 11/25/96.]

AUDIT AFTER SELF-CERTIFICATION

WAC 296-150R-0900 When do you audit self-certified manufacturers? (1) We audit self-certified manufacturers, if we have reason to believe, you are not complying with this chapter and ANSI.

(2) Reasons to believe that you may not be complying with this chapter and ANSI may include, but are not limited to:

(a) Consolidation of manufacturing locations or relocation of your manufacturing plant;

(b) Complaints from dealers, consumers, or other interested parties that you are not complying with this chapter and ANSI;

(c) Change of business ownership; or

(d) Noncompliance with the requirements of this chapter.

(3) A comprehensive or performance audit based on WAC 296-150R-0800 (5)(c).

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150R-0900, filed 10/23/96, effective 11/25/96.]

WAC 296-150R-0910 After I am self-certified, what does an audit include? A performance audit after you are self-certified includes:

(1) A review of your quality control program;

(2) Verification that you are manufacturing vehicles according to this chapter and ANSI; and

(3) Verification that your comprehensive design plans are available at all locations where the vehicles are manufactured.

Note: Our audit may include a review of the comprehensive design plans at your manufacturing location.

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150R-0910, filed 10/23/96, effective 11/25/96.]

LOSS OF SELF-CERTIFICATION

WAC 296-150R-0920 Can you withdraw my self-certification? Should you fail to meet the requirements of this chapter and ANSI after you have been approved for self-certification, your self-certification can be withdrawn.

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150R-0920, filed 10/23/96, effective 11/25/96.]

WAC 296-150R-0930 What happens if my self-certification is withdrawn? If your self-certification is withdrawn because you have failed to comply with this chapter and ANSI:

(1) You must return any issued but unused insignia to us; and

(2) You cannot sell or lease vehicles in Washington.

(2007 Ed.)

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150R-0930, filed 10/23/96, effective 11/25/96.]

VEHICLE ALTERATIONS

WAC 296-150R-1000 Who needs approval to alter a recreational vehicle? (1) Any alteration by a manufacturer, dealer, or individual to a vehicle with state-certified insignia must be approved by us before the alteration is made. "Alteration" is defined in WAC 296-150R-0020.

(2) Any alteration by a manufacturer, dealer, or individual to a vehicle with self-certified insignia after it leaves the manufacturer's location must be approved by us before the alteration is made.

Note: We may remove your insignia if you alter or have someone alter a vehicle without our approval.

[Statutory Authority: RCW 43.22.340 and 43.22.420. 97-16-043, § 296-150R-1000, filed 7/31/97, effective 12/1/97. Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150R-1000, filed 10/23/96, effective 11/25/96.]

WAC 296-150R-1010 Must I purchase a separate insignia for an alteration? You are required to purchase an alteration insignia from us.

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150R-1010, filed 10/23/96, effective 11/25/96.]

WAC 296-150R-1020 How do I apply for alteration approval and obtain the alteration insignia? (1) To apply for alteration approval and the alteration insignia, you must:

(a) Complete an alteration permit form and an application for alteration insignia. We will provide the forms.

(b) Submit the completed forms, with the inspection fee and altered vehicle insignia fee, to us. (See WAC 296-150R-3000.)

(2) Our vehicle inspection of the alteration will be in two phases. The "cover" inspection during the alteration of the unit before the electrical, plumbing, mechanical, heating, or other systems are covered. The final inspection takes place after the vehicle is complete.

(3) Once we approve your alteration, we will attach the alteration insignia.

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150R-1020, filed 10/23/96, effective 11/25/96.]

MANUFACTURER'S NOTICE TO THE DEPARTMENT

WAC 296-150R-2000 Must state-plan and self-certified manufacturers notify you if they manufacture at more than one location? (1) We must approve each recreational vehicle manufacturing location producing units for sale or lease in Washington state.

(2) You must send us the following information for each manufacturing location when you are certified:

(a) Company name;

(b) Mailing and physical address;

(c) Phone and fax number if available;

(d) Type of recreational vehicle(s) manufactured;

[Title 296 WAC—p. 1967]

- (e) Contact person for plan review; and
- (f) Contact person for plant audit.
- (3) You must update the information as it changes.

[Statutory Authority: RCW 43.22.340 and 43.22.420. 97-16-043, § 296-150R-2000, filed 7/31/97, effective 12/1/97. Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150R-2000, filed 10/23/96, effective 11/25/96.]

WAC 296-150R-2010 Must state-plan and self-certified manufacturers notify you if they change a business name or address? (1) If you are moving your business from an approved manufacturing location, the new location must be approved before shipping units from that location for sale or lease in Washington state.

(2) You must notify us in writing prior to a change of business name or address.

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150R-2010, filed 10/23/96, effective 11/25/96.]

WAC 296-150R-2020 Must state-plan and self-certified manufacturers notify you of a change in business ownership? (1) When a recreational vehicle manufacturing business changes ownership, the new owner must notify us in writing immediately.

(2) A new owner may continue to manufacture vehicles using approved design plans or comprehensive design plans according to this chapter.

(3) The department will perform a comprehensive audit of the manufacturer after the ownership change to ensure you are meeting the requirements of this chapter and ANSI.

[Statutory Authority: RCW 43.22.340 and 43.22.420. 97-16-043, § 296-150R-2020, filed 7/31/97, effective 12/1/97. Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150R-2020, filed 10/23/96, effective 11/25/96.]

WAC 296-150R-2030 Must state-plan and self-certified manufacturers notify you of their Washington dealers? (1) You must send us the following information about yourself and each of your Washington dealers when you are certified:

- (a) Dealership name;
- (b) Mailing and physical address;
- (c) Phone and fax number if available;
- (d) Type of recreational vehicle(s); and
- (e) Contact person.

(2) You must update this information as it changes.

[Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150R-2030, filed 10/23/96, effective 11/25/96.]

RECREATIONAL VEHICLE AND PARK TRAILER FEES

WAC 296-150R-3000 Recreational vehicle fees.

STATE PLAN	
INITIAL FILING FEE	\$32.30
DESIGN PLAN FEES:	
NEW PLAN REVIEW FEE	\$90.00
RESUBMITTAL FEE	\$65.00
ADDENDUM (Approval expires on same date as original plan.)	\$65.00
QUALITY CONTROL/MANUAL FEES:	
INITIAL APPROVAL	\$12.20
RESUBMITTAL FEE	\$65.00
ADDENDUM	\$65.00
ELECTRONIC PLAN SUBMITTAL FEE \$4.90 per page for the first set of plans and \$0.30 per page for each additional set of plans. These fees are in addition to any applicable design plan fees required under this section.	
DEPARTMENT AUDIT FEES:	
AUDIT (per hour)*	\$65.10
TRAVEL (per hour)*	\$65.10
PER DIEM**	
HOTEL***	
MILEAGE**	
RENTAL CAR***	
PARKING	
AIRFARE***	
DEPARTMENT INSPECTION FEES:	
INSPECTION (per hour)*	\$65.10
TRAVEL (per hour)*	\$65.10
PER DIEM**	
HOTEL***	
MILEAGE**	
RENTAL CAR***	
PARKING***	
AIRFARE***	
ALTERATION INSPECTION (One hour plus insignia alteration fee)	\$97.40
INSIGNIA FEES:	
STATE CERTIFIED	\$11.60
ALTERATION	\$32.30

REISSUED-LOST/DAMAGED	\$11.60
OTHER FEES:	
FIELD TECHNICAL SERVICE (per hour* plus travel time* and mileage**)	\$65.10
PUBLICATION PRINTING AND DISTRIBUTION OF RCWs AND WACs (One free copy per year)	\$12.20
* Minimum charge of 1 hour; time spent greater than 1 hour is charged in 1/2 hour increments.	
** Per state guidelines.	
*** Actual charges incurred.	
SELF CERTIFICATION	
INITIAL FILING FEE	\$32.30
DESIGN PLAN FEES:	
NEW PLAN REVIEW FEE (one time fee)	\$91.20
RESUBMITTAL FEE	\$65.10
ADDENDUM (Approval expires on same date as original plan.)	\$65.10
ELECTRONIC PLAN SUBMITTAL FEE \$4.90 per page for the first set of plans and \$0.30 per page for each additional set of plans. These fees are in addition to any applicable design plan fees required under this section.	
SELF CERTIFICATION/MANUAL FEES:	
INITIAL APPROVAL	\$12.20
RESUBMITTAL FEE	\$65.10
ADDENDUM	\$65.10
DEPARTMENT AUDIT FEES:	
AUDIT (per hour)*	\$65.10
TRAVEL (per hour)*	\$65.10
PER DIEM**	
HOTEL***	
MILEAGE**	
RENTAL CAR***	
PARKING	
AIRFARE***	
DEPARTMENT INSPECTION FEES:	
INSPECTION (per hour)*	\$65.10
TRAVEL (per hour)*	\$65.10
PER DIEM**	
HOTEL***	
MILEAGE**	
RENTAL CAR***	
PARKING***	
AIRFARE***	
INSIGNIA FEES:	
SELF CERTIFIED	\$11.60
ALTERATION	\$32.30
REISSUED-LOST/DAMAGED	\$11.60
OTHER FEES:	
FIELD TECHNICAL SERVICE (per hour* plus travel time* and mileage**)	\$65.10
PUBLICATION PRINTING AND DISTRIBUTION OF RCWs AND WACs (One free copy per year)	\$12.20
* Minimum charge of 1 hour; time spent greater than 1 hour is charged in 1/2 hour increments.	
** Per state guidelines.	
*** Actual charges incurred.	

[Statutory Authority: Chapters 18.27, 43.22, and 70.87 RCW. 05-12-032, § 296-150R-3000, filed 5/24/05, effective 6/30/05. Statutory Authority: Chapters 18.27 and 43.22 RCW. 04-12-048, § 296-150R-3000, filed 5/28/04, effective 6/30/04. Statutory Authority: RCW 43.22.350, 43.22.434, 43.22.480, 43.22.500, 70.87.030, 18.106.070, 18.106.125, 2001 c 7, and chapters 18.106, 43.22, and 70.87 RCW. 03-12-045, § 296-150R-3000, filed 5/30/03, effective 6/30/03. Statutory Authority: RCW 43.22.350, 43.22.434, 43.22.480, 43.22.500, 18.27.040, 18.27.070, 18.27.075, 70.87.030, 19.28.041, 19.28.051, 19.28.101, 19.28.121, 19.28.161, 19.28.201, 19.28.211, 19.28.341, 2001 c 7, 2002 c 249, and chapters 19.28, 43.22, 18.27, and 70.87 RCW. 02-12-022, § 296-150R-3000, filed 5/28/02, effective 6/28/02. Statutory Authority: RCW 43.22.350, 43.22.434, 43.22.480, 43.22.500, 18.27.070, 18.27.075, 70.87.030, 19.28.041, 19.28.051, 19.28.101, 19.28.121, 19.28.161, 19.28.201, 19.28.211, 19.28.341, 2001 c 159, and chapters 43.22, 19.28, 18.27, and 70.87 RCW. 01-12-035, § 296-150R-3000, filed 5/29/01, effective 6/29/01. Statutory Authority: RCW 43.22.340, 43.22.350, 43.22.355, 43.22.360, 43.22.400, 43.22.432, 43.22.433, 43.22.434, 43.22.450, 43.22.480, and 43.22.485. 00-17-148, § 296-150R-3000, filed 8/22/00, effective 9/30/00. Statutory Authority: Chapters 43.22, 18.27, 70.87 and 19.28 RCW. 99-12-080, § 296-150R-3000, filed 5/28/99, effective 6/28/99. Statutory Authority: Chapters 18.106, 18.27 and 43.22 RCW. 98-12-041, § 296-150R-3000, filed 5/29/98, effective 6/30/98. Statutory Authority: RCW 43.22.340 and 43.22.420. 97-16-043, § 296-150R-3000, filed 7/31/97, effective 12/1/97. Statutory Authority: RCW 43.22.340, [43.22.]355, [43.22.]360, [43.22.]432, [43.22.]440 and [43.22.]480. 96-21-146, § 296-150R-3000, filed 10/23/96, effective 11/25/96.]

Chapter 296-150T WAC
FACTORY-BUILT TEMPORARY WORKER
HOUSING STRUCTURES

WAC

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MANUFACTURER'S NOTICE TO THE DEPARTMENT

296-150T-0700	Must manufacturers of factory-built temporary worker housing structures notify you if they manufacture at more than one location?
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296-150T-0710	Must manufacturers of factory-built temporary worker housing structures notify you of a change in business name or address?
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FACTORY-BUILT TEMPORARY WORKER HOUSING FEES

296-150T-3000	Factory-built temporary worker housing fees.
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WAC 296-150T-0010 Authority, purpose, and scope.

(1) This chapter is authorized by RCW 43.22.420, 43.22.434 and 43.22.450 through 43.22.490 and 43.70.337, covering the construction and approval of factory-built temporary worker housing.

(2) This chapter applies to the approval:

(a) Of factory-built temporary worker housing structures; and

(b) After occupancy of a factory-built temporary worker housing structure, all inspections are done by the department of health.

[Statutory Authority: RCW 43.22.480, 99-12-079, § 296-150T-0010, filed 5/28/99, effective 6/28/99.]

WAC 296-150T-0020 What definitions apply to this chapter? "Approved" is approved by the department of labor and industries.

"Damaged in transit" is damage that effects the integrity of the structural design or damage to any other system referenced in the codes required by the temporary worker housing construction standard.

"Department" is the department of labor and industries. The department may also be referred to as "we" or "us" in this chapter. Note: You may contact us at: Department of Labor and Industries, Specialty Compliance, PO Box 44440, Olympia, WA 98504-4440.

"Department of health" is the state agency responsible for adopting by rule a "temporary worker housing construction standard." You may contact them for copies of the "temporary worker housing construction standards" at: Department of Health, PO Box 47852, Olympia, WA 98504-7852.

"Design option" is a design that a manufacturer may use as an option to its design plan.

"Design plan" is a plan for the construction of factory-built temporary worker housing that includes floor plans, elevation drawings, specifications, engineering data, or test results necessary for a complete evaluation of the design. The design plan expires one year after approval or when a new temporary worker housing construction standard becomes effective or the electrical code as adopted by chapter 296-46 WAC adopts a new code. Electrical code changes if minor may be made by submitting an addendum.

"Equipment" is all material, appliances, devices, fixtures, fittings, or accessories used in the manufacture, assembly, installation, or alteration of factory-built temporary worker housing structures.

"Factory assembled structure (FAS) advisory board" is a board authorized to advise the director of the department regarding the issues and adoption of rules relating to factory-built temporary worker housing structures. (See RCW 43.22.420.)

"Factory-built temporary worker housing" is housing designed and constructed to the requirements in chapter

246-359 WAC, "temporary worker housing construction standard" as promulgated by the department of health for human occupancy. The structure which is entirely or substantially prefabricated or assembled at a place other than a building site. (See RCW 43.22.450(3).)

"Insignia" is a label that we attach to a structure to verify that a factory-built temporary worker housing structure meets the requirements of this chapter.

"Install" is to erect or set in place a structure at a building site. It may also be the construction or assembly of a component as part of a factory-built temporary worker housing.

"Listed" is a piece of equipment, a component, or an installation that appears in a list published by a testing or listing agency and is suitable for use in a specified manner.

"Listing agency" is an organization whose business is approving equipment, components, or installations for publication.

"Local enforcement agency" is the department of health with power to enforce regulations governing the installation of factory-built temporary worker housing.

"Manufacturing" is making, fabricating, forming, or assembling a factory-built temporary worker housing structure.

"Repair" is the replacement, addition, modification, or removal of any construction, equipment, system, or installation to correct damage in transit or during on-site installation before occupancy.

"Unit" is a factory-built temporary worker structure.

[Statutory Authority: RCW 43.22.480. 99-12-079, § 296-150T-0020, filed 5/28/99, effective 6/28/99.]

WAC 296-150T-0030 How is this chapter enforced?

(1) To enforce this chapter, we or another governmental inspection agency will inspect each factory-built temporary worker housing structure that is sited in Washington. Inspections will be conducted during normal work hours or at other reasonable times. (See WAC 296-150T-0070.)

(2) We will inspect each unit as required by the temporary worker housing construction standard and the electrical code. (See WAC 296-150T-0500.)

[Statutory Authority: RCW 43.22.480. 99-12-079, § 296-150T-0030, filed 5/28/99, effective 6/28/99.]

WAC 296-150T-0040 Will you keep my manufacturing information confidential? We will only release manufacturing information such as design plans, specifications, and test results according to the requirements of the Public Records Act (see RCW 42.17.310 (1)(h)) unless we are ordered to do so by a court or otherwise required by law.

[Statutory Authority: RCW 43.22.480. 99-12-079, § 296-150T-0040, filed 5/28/99, effective 6/28/99.]

WAC 296-150T-0050 Can you prohibit the installation of factory-built temporary worker housing structures? (1) We may prohibit the installation of factory-built temporary worker housing structures if they do not conform to the requirements of this chapter. (See RCW 43.22.465.)

(2) If an inspection reveals that a factory-built temporary worker housing structure violates this chapter, we may obtain a temporary injunction enjoining the installation of any non-

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conforming structure. The injunction may be made permanent at the discretion of the court.

[Statutory Authority: RCW 43.22.480. 99-12-079, § 296-150T-0050, filed 5/28/99, effective 6/28/99.]

WAC 296-150T-0070 Do you have reciprocal agreements with other states to inspect factory-built temporary worker housing structures? (1) We may enter into reciprocal agreements with states who have construction standards that are equal to or greater than our standards for factory-built structures.

(2) When we have a reciprocal agreement with another state:

(a) The reciprocal state inspects factory-built temporary worker housing structures manufactured in that state before shipment into Washington to ensure compliance with our laws. After inspection, the reciprocal state applies our insignia.

(b) The department inspects factory-built structures manufactured in Washington before shipment into the reciprocal state to ensure compliance with their laws. After inspection, we apply the insignia of the reciprocal state.

(3) Reciprocal agreements shall remain on file.

[Statutory Authority: RCW 43.22.480. 99-12-079, § 296-150T-0070, filed 5/28/99, effective 6/28/99.]

WAC 296-150T-0080 Do you allow a local enforcement agency to inspect factory-built temporary worker housing at the manufacturing location? (1) A local enforcement agency (city or county), under contract with us, can inspect factory-built temporary worker housing. In some cases their contract may be limited to specific portions of an inspection at specified manufacturing locations.

(2) After approving a unit, the local enforcement agency will attach the insignia, which indicates the unit has passed inspection.

[Statutory Authority: RCW 43.22.480. 99-12-079, § 296-150T-0080, filed 5/28/99, effective 6/28/99.]

WAC 296-150T-0100 What happens if I disagree with your decision regarding my compliance with this chapter? (1) If we determine you are in violation of this chapter, you will receive a notice of noncompliance.

(2) If you disagree with our decision, you can send us a written request for a hearing, stating why you disagree.

(3) After we receive your hearing request, we will:

(a) Schedule a hearing within thirty days after we receive your request. The hearing and proceedings will be conducted according to the Administrative Procedure Act (chapter 34.05 RCW).

(b) Notify you of the time, date, and place for the hearing. If you fail to appear, your case will be dismissed.

(c) Hear your case.

(d) Send you written notice of our decision.

If you disagree with our decision, you may appeal it under the Administrative Procedure Act (chapter 34.05 RCW).

[Statutory Authority: RCW 43.22.480. 99-12-079, § 296-150T-0100, filed 5/28/99, effective 6/28/99.]

WAC 296-150T-0110 Do you have an advisory board to address factory-built temporary worker housing structure issues? The factory assembled structures (FAS) board advises us on issues relating to structural, plumbing, mechanical, electrical, installation, inspections, and rules for factory-assembled structures. (See RCW 43.22.420.)

[Statutory Authority: RCW 43.22.480. 99-12-079, § 296-150T-0110, filed 5/28/99, effective 6/28/99.]

WAC 296-150T-0120 Where can I obtain technical assistance regarding factory-built temporary worker housing structures? We provide field technical service to factory-built temporary worker housing manufacturers for an hourly fee. Field technical service may include an evaluation, consultation, plan examination, interpretation, and clarification of technical data relating to the application of our rules. It does not include inspections.

[Statutory Authority: RCW 43.22.480. 99-12-079, § 296-150T-0120, filed 5/28/99, effective 6/28/99.]

WAC 296-150T-0130 How do I register a complaint? A person who believes that a structure or component does not meet the requirements of this chapter may register a complaint with the department. The complaint must be in writing and must specifically describe the alleged violations of this chapter. Upon receipt of the complaint, the department will forward a copy to the appropriate manufacturer and/or dealer and they shall have thirty days to respond to it. If the department determines that an inspection is necessary, the manufacturer/dealer shall pay the department for the cost of the inspection. The cost of the inspection is based upon the fee schedule in WAC 296-150T-3000 and includes the hourly inspection fee, travel costs and other expenses incurred as a result of the inspection.

[Statutory Authority: RCW 43.22.480. 99-12-079, § 296-150T-0130, filed 5/28/99, effective 6/28/99.]

WAC 296-150T-0140 Do you allow the use of alternate materials, alternate design and method of construction? An applicant may apply for the use of alternate materials, alternate design and methods of construction different from the requirements of this chapter by filing a written request with the department.

(1) Responsibilities of applicant. The applicant must submit in writing the following information and sign and date the request.

- (a) The applicant's name, address and phone number;
- (b) The specific requirement or requirements from which the alternate material, alternate design or method of construction is requested;
- (c) Adequate justification that the requirements of this chapter cannot be met without using alternate materials, alternate design or method of construction;
- (d) How the use of alternate materials, alternate design or method of construction will achieve the same result as the requirement and any specific alternative measures to be taken to show the alternate provides the same level of protection to life, safety and health as the requirements.

The department has a form that you may use for your request. Contact the department at the address shown in the definition section.

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(2) Responsibilities of the department. The department will provide a written response to the applicant within thirty days of receipt of the written request. The written response will state the acceptance or denial of the request, including the reasons for the department's decision. At a minimum the department will base its decision based on:

- (a) The applicant's request as described in subsection (1) of this section;
 - (b) Research into the request;
 - (c) Expert advice.
- (3) Applicant's response to denials. The applicant may appeal the department's decision by following the procedure in WAC 296-150T-0100.

[Statutory Authority: RCW 43.22.480. 99-12-079, § 296-150T-0140, filed 5/28/99, effective 6/28/99.]

INSIGNIA

WAC 296-150T-0200 Who must purchase factory-built temporary worker housing insignia? (1) You must obtain insignia from us for each factory-built temporary worker housing unit sited in Washington state.

(2) You must have an approved design plan and have passed inspection before an insignia can be attached to your factory-built temporary worker housing structure by us or our authorized agent.

(3) If a unit is damaged in transit after leaving the manufacturing location or during an on-site installation, and a repair is necessary, you must purchase a new insignia from us. The new insignia indicates that the unit was repaired.

[Statutory Authority: RCW 43.22.480. 99-12-079, § 296-150T-0200, filed 5/28/99, effective 6/28/99.]

WAC 296-150T-0210 What are the insignia requirements? (1) If you are applying for insignia for factory-built temporary worker housing structures you must have your design plan approved and your units inspected and approved by us.

- (2) We will attach the insignia after:
 - (a) We receive the required forms and fees from you (see WAC 296-150T-3000); and
 - (b) Your unit or component has passed final inspection. (See WAC 296-150T-0500.)

[Statutory Authority: RCW 43.22.480. 99-12-079, § 296-150T-0210, filed 5/28/99, effective 6/28/99.]

WAC 296-150T-0220 How do I obtain insignia information and the required forms? Upon request, we will provide you with a packet of information that includes the required forms.

[Statutory Authority: RCW 43.22.480. 99-12-079, § 296-150T-0220, filed 5/28/99, effective 6/28/99.]

WAC 296-150T-0230 What are the insignia application requirements? (1) If you are requesting insignia for units that you intend to manufacture under a *new design plan*, your completed application must include:

- (a) A completed design plan approval request form;
- (b) One complete set of design plans, specifications, engineering analysis if required, test procedures and results if

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required, plus one additional set for each manufacturing location where the design plan will be used;

(c) If required, at least one set of design plans must have an original wet stamp from a professional engineer or architect licensed in Washington state. We will retain the set with the original wet stamp; and

(d) A one-time initial filing fee, the design plan fee (if we approve your design plan) and the fee for each insignia. (See WAC 296-150T-3000.)

(2) If you are requesting insignia under an *approved design plan*, your completed application must include:

(a) A completed application for insignia form; and

(b) The fee for each insignia requested. (See WAC 296-150T-3000.)

[Statutory Authority: RCW 43.22.480. 99-12-079, § 296-150T-0230, filed 5/28/99, effective 6/28/99.]

WAC 296-150T-0250 How do I replace lost or damaged insignia? (1) If an insignia is lost or damaged after it is attached to your factory-built temporary worker housing structure you may obtain a replacement insignia.

(2) You should contact us and provide the following information:

(a) Your name, address, and telephone number;

(b) The name of the manufacturer;

(c) The serial number;

(d) The manufacturer number (T#), if available;

(e) The insignia number, if available; and

(f) The required fee. (See WAC 296-150T-3000.)

(3) If we can determine that your unit previously had an insignia, we will attach an insignia to your unit once we receive your insignia fee. (See WAC 296-150T-3000.)

[Statutory Authority: RCW 43.22.480. 99-12-079, § 296-150T-0250, filed 5/28/99, effective 6/28/99.]

DESIGN PLAN

WAC 296-150T-0300 When is design plan approval required? Design plans for factory-built temporary worker housing structures prior to installation at the building site in Washington must be approved when:

(1) You build a new unit;

(2) You modify an approved design plan through an addendum; or

(3) You add options to an approved design plan through an addendum.

[Statutory Authority: RCW 43.22.480. 99-12-079, § 296-150T-0300, filed 5/28/99, effective 6/28/99.]

DESIGN-PLAN APPROVAL

WAC 296-150T-0320 What must I provide with my request for design-plan approval by the department? All requests for design-plan approval must include:

(1) A completed design-plan approval request form;

(2) One complete set of design plans, specifications, engineering analysis when required, test procedures and results plus one additional set for each manufacturing location where the design plan will be used (see WAC 296-150T-0340 and 296-150T-0350);

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(3) If required, at least one set of design plans must have an original wet stamp from a professional engineer or architect licensed in Washington state. All new, renewed, and resubmitted plans, specifications, reports and structural calculations prepared by or prepared under his or her direct supervision shall be signed, dated and stamped with their seal. Specifications, reports, and structural calculations may be stamped only on the first sheet, provided this first sheet identifies all of the sheets that follow are included and identified in the same manner. Plans that have not been prepared by or under the engineer's or architect's supervision shall be reviewed by them and they shall prepare a report concerning the plans reviewed. This report shall:

(a) Identify which drawings have been reviewed by drawing number and date;

(b) Include a statement that the plans are in compliance with current Washington state regulations; and

(c) The report shall be stamped and signed by the reviewer.

Any deficiencies shall be corrected on the drawings before submitting to the department or be included in the report and identify as to how they are to be corrected. This report shall be attached to the plan(s) that were reviewed. We will retain the set with the original wet stamp;

(4) A one-time initial filing fee and the design-plan fee (see WAC 296-150T-3000); and

(5) A "key drawing" to show the arrangement of modules if the plan covers three or more modules.

[Statutory Authority: RCW 43.22.480. 99-12-079, § 296-150T-0320, filed 5/28/99, effective 6/28/99.]

WAC 296-150T-0340 What must an engineering analysis for design plans include? (1) The engineering analysis if required must show that the structural design meets the requirements of this chapter.

(2) An engineering analysis if required must be conducted according to accepted engineering practices and must be signed by a professional engineer or architect licensed in Washington state.

[Statutory Authority: RCW 43.22.480. 99-12-079, § 296-150T-0340, filed 5/28/99, effective 6/28/99.]

WAC 296-150T-0350 What must the test procedures and results for design plans include? (1) Tests to a design for a factory-built temporary worker housing structure must be witnessed by a professional engineer or architect licensed in Washington state.

(2) Test reports must contain the following items:

(a) A description of the methods or standards that applied to the test;

(b) Drawings and a description of the item tested;

(c) A description of the test set-up;

(d) The procedure used to verify the correct load;

(e) The procedure used to measure each condition;

(f) Test data, including applicable graphs and observations of the characteristics and behavior of the item tested; and

(g) Analysis, comments, and conclusion.

(3) The written test procedures, results and conclusions must reference the applicable design plan.

[Statutory Authority: RCW 43.22.480. 99-12-079, § 296-150T-0350, filed 5/28/99, effective 6/28/99.]

WAC 296-150T-0380 What happens if you approve my design plan? (1) Your design plan will be approved if it meets the requirements of this chapter.

(2) We will send you an approved copy of the design plan with the design-plan approval number.

(3) You must keep copies of the approved design plan at each location where a factory-built temporary worker housing structure is built.

(4) If your design plan is not approved, you will be notified in writing of plan deficiencies. You may send a corrected design plan to us. (See WAC 296-150T-3000.)

[Statutory Authority: RCW 43.22.480. 99-12-079, § 296-150T-0380, filed 5/28/99, effective 6/28/99.]

WAC 296-150T-0390 If my design plan is not approved, how much time do I have to submit a corrected design plan? (1) You have ninety days to correct and resubmit your original design plan and send us the resubmittal fee after we notify you of plan deficiencies. After ninety days, your initial design plan is returned to you.

(2) If you submit your corrected design plan after ninety days, you must send the initial design plan fee instead of the resubmittal fee. (See WAC 296-150T-3000.)

[Statutory Authority: RCW 43.22.480. 99-12-079, § 296-150T-0390, filed 5/28/99, effective 6/28/99.]

WAC 296-150T-0400 What happens after my design plan is approved? Once your design plan is approved, we will inspect each related factory-built temporary worker housing structure.

[Statutory Authority: RCW 43.22.480. 99-12-079, § 296-150T-0400, filed 5/28/99, effective 6/28/99.]

WAC 296-150T-0410 When does my design plan expire? Your factory-built temporary worker housing design plan expires either one year after approval or when there is a code change. You must submit new design plans for approval when there is a change to the temporary worker housing construction standard. You may use your design plan to order insignia as long as they comply with the applicable codes.

All National Electrical Code amendments may be incorporated by an addendum to your design plan.

[Statutory Authority: RCW 43.22.480. 99-12-079, § 296-150T-0410, filed 5/28/99, effective 6/28/99.]

INSPECTIONS PRIOR TO ISSUANCE OF AN INSIGNIA

WAC 296-150T-0500 When is an inspection required? (1) Before we issue an insignia, each factory-built temporary worker housing structure must be inspected at the manufacturing location as many times as are required by the temporary worker housing construction standard. (See WAC 296-150T-0600.) Inspections may include:

(a) A "cover" inspection during construction of the unit before the electrical, plumbing, mechanical, and structural systems are covered;

(b) Insulation inspection, if installed;

[Title 296 WAC—p. 1974]

(c) A final inspection after the factory-built temporary worker housing structure is complete;

Note: Each factory-built temporary worker housing structure must have a serial number to enable us to track inspections.

(2) If we discover a violation during inspection, we will issue a notice of noncompliance. You can correct the violation during the inspection. If you cannot correct the violation during inspection, you must leave the item uncovered until we approve your correction.

(3) After a unit is manufactured but before occupancy, we must inspect a factory-built temporary worker housing structure if it is damaged in transit to the building site or during on-site installation. This is considered a repair inspection. (See WAC 296-150T-0540.)

(4) Approved design plans must be available for all inspections.

(5) Once your unit is inspected and approved we will attach the insignia.

Note: We only inspect factory-built temporary worker housing structures before occupancy. After occupancy, the department of health agency is the inspection agency.

[Statutory Authority: RCW 43.22.480. 99-12-079, § 296-150T-0500, filed 5/28/99, effective 6/28/99.]

WAC 296-150T-0510 How do I request an inspection? (1) You must contact us, and we will let you know where your request for inspection should be submitted. Our address is noted in the definition of department.

(2) We must receive in-state inspection requests at least seven calendar days prior to the date that you want the inspection.

(3) We must receive out-of-state inspection requests at least fourteen calendar days prior to the date that you want the inspection.

[Statutory Authority: RCW 43.22.480. 99-12-079, § 296-150T-0510, filed 5/28/99, effective 6/28/99.]

WAC 296-150T-0520 What happens if my factory-built temporary worker housing structure passes inspection? (1) If your factory-built temporary worker housing structure passes inspection and you have met the other requirements of this chapter, we will attach the insignia.

(2) After our final inspection, we will send a notice to the local enforcement agency (NLEA) indicating whether further inspection is necessary. (See WAC 296-150T-0550.)

[Statutory Authority: RCW 43.22.480. 99-12-079, § 296-150T-0520, filed 5/28/99, effective 6/28/99.]

WAC 296-150T-0530 Am I charged if I request an inspection but I am not prepared? (1) If you ask us to inspect a factory-built temporary worker housing structure within Washington state but you are not prepared when we arrive, you must pay the minimum inspection fee and travel. (See WAC 296-150T-3000.)

(2) If you ask us to inspect a factory-built home, commercial structure, or component outside Washington state but you are not prepared when we arrive, you must pay the minimum inspection fee, travel, and per diem expenses. (See WAC 296-150T-3000.)

(2007 Ed.)

[Statutory Authority: RCW 43.22.480. 99-12-079, § 296-150T-0530, filed 5/28/99, effective 6/28/99.]

WAC 296-150T-0540 Who inspects factory-built temporary worker housing structures for installation at the temporary worker housing site? (1) The department of health must approve the installation.

(2) The department of health may also request a set of design plans and specifications for the unit from you.

(3) After the unit is manufactured but before occupancy, we must inspect a factory-built temporary worker housing structure if it is damaged in transit to the temporary worker housing site or during on-site installation. This is considered a repair inspection.

Note: The department of health may not open the concealed construction of a factory-built temporary worker housing structure to inspect if our insignia is attached.

[Statutory Authority: RCW 43.22.480. 99-12-079, § 296-150T-0540, filed 5/28/99, effective 6/28/99.]

WAC 296-150T-0550 Do you notify the department of health after your final inspection of factory-built structures at a manufacturing location? After we perform a final inspection of a factory-built temporary worker housing structure we will send a notice to the department of health that:

(1) Specifies what connections, standards, and incomplete items the department of health must check when the unit is installed; and/or

(2) Estimates the expected time of arrival of the factory-built temporary worker housing structure to the site.

[Statutory Authority: RCW 43.22.480. 99-12-079, § 296-150T-0550, filed 5/28/99, effective 6/28/99.]

USED FACTORY-BUILT STRUCTURES WITHOUT AN INSIGNIA

WAC 296-150T-0580 Must I obtain an insignia for used factory-built structures? All used factory-built housing and commercial structures that are to be for temporary worker housing must have an insignia of approval from us prior to being installed as temporary worker housing.

[Statutory Authority: RCW 43.22.480. 99-12-079, § 296-150T-0580, filed 5/28/99, effective 6/28/99.]

WAC 296-150T-0590 How do I obtain insignia for used factory-built structures? We consider used factory-built housing and commercial structures as new structures for purposes of use as temporary worker housing and an insignia approval as temporary worker housing must be obtained. To obtain insignia, you must:

(1) Have the design plan approved by us (see WAC 296-150T-0300 through 296-150T-0480);

(2) Purchase insignia (see WAC 296-150T-0200 through 296-150T-0230); and

(3) Pass a unit inspection (see WAC 296-150T-0500 through 296-150T-0550).

Note: You will be required to open up as much of the construction of the unit as is necessary for inspection to show compliance with your approved design plan.

(2007 Ed.)

[Statutory Authority: RCW 43.22.480. 99-12-079, § 296-150T-0590, filed 5/28/99, effective 6/28/99.]

CODES FOR FACTORY-BUILT TEMPORARY WORKER HOUSING

WAC 296-150T-0600 What manufacturing codes apply to factory-built temporary worker housing? (1) All design, construction, installations, and alterations of factory-built temporary worker housing structures must conform with the following codes and the requirements of this chapter:

(a) The temporary worker housing construction code, chapter 246-359 WAC;

(b) The National Electrical Code as referenced in chapter 19.28 RCW and in chapter 296-46 WAC.

(2) All construction methods and installations must comply with chapter 246-359 WAC and use accepted engineering practices when used, provide minimum health and safety to the occupants of factory-built temporary worker housing structures and the public, and demonstrate journey person quality of work of the various trades.

(3) Requirements for any size, weight, or quality of material modified by the terms "minimum," "not less than," "at least," and similar expressions are minimum standards. The manufacturer may exceed these standards, provided the deviation does not result in inferior installation or defeat the purpose and intent of the standard.

Note: The codes, RCWs, and WACs referenced in this rule are available for reference at the Washington State Library, the Washington State Law Library, and may be available at your local library.

[Statutory Authority: RCW 43.22.480. 99-12-079, § 296-150T-0600, filed 5/28/99, effective 6/28/99.]

MANUFACTURER'S NOTICE TO THE DEPARTMENT

WAC 296-150T-0700 Must manufacturers of factory-built temporary worker housing structures notify you if they manufacture at more than one location? (1) If you are manufacturing factory-built temporary worker housing structures at more than one location, approved design plans must be available at each manufacturing location.

(2) You are required to send us the following information for each manufacturing location:

(a) Company name;

(b) Mailing and physical address; and

(c) Phone and fax number if available.

(3) You must update this information as it changes.

[Statutory Authority: RCW 43.22.480. 99-12-079, § 296-150T-0700, filed 5/28/99, effective 6/28/99.]

WAC 296-150T-0710 Must manufacturers of factory-built temporary worker housing structures notify you of a change in business name or address? (1) If you are moving, notify us in writing prior to a change of business name or address.

(2) Your notice must include the change of name and address.

[Statutory Authority: RCW 43.22.480. 99-12-079, § 296-150T-0710, filed 5/28/99, effective 6/28/99.]

[Title 296 WAC—p. 1975]

WAC 296-150T-0720 Must manufacturers of factory-built temporary worker housing structures notify you of a change in business ownership? (1) When a manufacturer changes ownership, the new owner must notify us in writing immediately.

(2) A new owner may continue to manufacture the units according to a prior approved design plan if the prior owner releases the design plan.

[Statutory Authority: RCW 43.22.480, 99-12-079, § 296-150T-0720, filed 5/28/99, effective 6/28/99.]

FACTORY-BUILT TEMPORARY WORKER HOUSING FEES

WAC 296-150T-3000 Factory-built temporary worker housing fees.

INITIAL FILING FEE	\$46.50
DESIGN PLAN FEES:	
INITIAL ONE YEAR DESIGN	\$134.30
RENEWAL FEE	\$46.50
RESUBMIT FEE	\$66.90
ADDENDUM (Approval expires on same date as original plan)	\$66.90
ELECTRONIC PLAN SUBMITTAL FEE \$4.80 per page for the first set of plans and \$0.30 per page for each additional set of plans. These fees are in addition to any applicable design plan fees required under this section.	
Supplemental submissions of plans (resubmittals, addendums, renewals, code updates, etc.) shall be charged per hour or fraction of an hour*	\$79.30
APPROVAL OF EACH SET OF DESIGN PLANS BEYOND FIRST TWO SETS	\$12.50
DEPARTMENT INSPECTION FEES	
INSPECTION/REINSPECTION (Per hour* plus travel time* and mileage**)	\$66.90
TRAVEL (Per hour)*	\$66.90
PER DIEM**	
HOTEL***	
MILEAGE**	
RENTAL CAR***	
PARKING***	
AIRFARE***	
DEPARTMENT AUDIT FEES:	
AUDIT (Per hour*)	\$66.90
TRAVEL (Per hour*)	\$66.90
PER DIEM**	
HOTEL***	
MILEAGE**	
RENTAL CAR***	
PARKING***	
AIRFARE***	
INSIGNIA FEES:	
FIRST SECTION	\$188.30
EACH ADDITIONAL SECTION	\$18.30
REISSUED-LOST/DAMAGED	\$46.50
ELECTRICAL COMMERCIAL/INDUSTRIAL	
Electrical Service/feeders Ampacity	212.80 plus
Service/feeder	\$195.10
Additional Feeder	\$37.00
ELECTRICAL MULTIFAMILY RESIDENTIAL	
Electrical Service/feeders	212.80 plus
Service/feeder	\$103.50
Additional Feeder	\$26.40
OTHER FEES:	
FIELD TECHNICAL SERVICE (Per hour* plus travel time* and mileage**)	\$66.90
PUBLICATION PRINTING AND DISTRIBUTION OF RCW'S AND WAC'S (One free per year)	\$12.50
* Minimum charge of 1 hour; time spent greater than 1 hour is charged in 1/2 hour increments	
** Per state guidelines	
*** Actual charges incurred	

[Statutory Authority: Chapters 18.106, 43.22, and 70.87 RCW. 06-10-066, § 296-150T-3000, filed 5/2/06, effective 6/30/06. Statutory Authority: Chapters 18.27, 43.22, and 70.87 RCW. 05-12-032, § 296-150T-3000, filed 5/24/05, effective 6/30/05. Statutory Authority: Chapter 43.22 RCW and 2003 c 291. 05-01-102, § 296-150T-3000, filed 12/14/04, effective 2/1/05. Statutory Authority: Chapters 18.27 and 43.22 RCW. 04-12-048, § 296-150T-3000, filed 5/28/04, effective 6/30/04. Statutory Authority: RCW 43.22.350, 43.22.434, 43.22.480, 43.22.500, 70.87.030, 18.106.070, 18.106.125, 2001 c 7, and chapters 18.106, 43.22, and 70.87 RCW. 03-12-045, § 296-150T-3000, filed 5/30/03, effective 6/30/03. Statutory Authority: RCW 43.22.350, 43.22.434, 43.22.480, 43.22.500, 18.27.040, 18.27.070, 18.27.075, 70.87.030, 19.28.041, 19.28.051, 19.28.101, 19.28.121, 19.28.161, 19.28.201, 19.28.211, 19.28.341, 2001 c 7, 2002 c 249, and chapters 19.28, 43.22, 18.27, and 70.87 RCW. 02-12-022, § 296-150T-3000, filed 5/28/02, effective 6/28/02. Statutory Authority: RCW 43.22.350, 43.22.434, 43.22.480, 43.22.500, 18.27.070, 18.27.075, 70.87.030, 19.28.041, 19.28.051, 19.28.101, 19.28.121, 19.28.161, 19.28.201, 19.28.211, 19.28.341, 2001 c 159,

and chapters 43.22, 19.28, 18.27, and 70.87 RCW. 01-12-035, § 296-150T-3000, filed 5/29/01, effective 6/29/01. Statutory Authority: RCW 43.22.480. 99-12-079, § 296-150T-3000, filed 5/28/99, effective 6/28/99.]

Chapter 296-150V WAC

CONVERSION VENDOR UNITS AND MEDICAL UNITS

WAC

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296-150V-3000	Conversion vendor units and medical units—Fees.

DISPOSITION OF SECTIONS FORMERLY CODIFIED IN THIS CHAPTER

296-150V-1220	What code and installation requirements apply to conversion vendor unit or medical unit electrical systems? [Statutory Authority: RCW 43.22.340, 43.22.350, 43.22.355, 43.22.360, 43.22.400, 43.22.432, 43.22.433, 43.22.434, 43.22.450, 43.22.480, and 43.22.485. 00-17-148, § 296-150V-1220, filed 8/22/00, effective 9/30/00. Statutory Authority: Chapter 43.22 RCW. 99-18-069, § 296-150V-1220, filed 8/31/99, effective 10/1/99.] Repealed by 03-12-044, filed 5/30/03, effective 6/30/03. Statutory Authority: RCW 43.22.340, 43.22.400, 43.22.432, 43.22.433, 43.22.434, 43.22.480, and 43.22.-485, 2002 c 268, and chapter 43.22 RCW.
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WAC 296-150V-0010 Authority, purpose, and scope.

(1) This chapter is authorized by RCW 43.22.340 through 43.22.434 covering the construction, alteration, and approval of conversion vendor units and medical units sold, leased, or used in Washington state.

(2) This chapter applies to the approval of conversion vendor unit and medical unit manufacturers, dealers, and to any person who manufactures or alters the plumbing, mechanical, or electrical system of a conversion vendor unit or medical unit.

[Statutory Authority: Chapter 43.22 RCW. 99-18-069, § 296-150V-0010, filed 8/31/99, effective 10/1/99.]

WAC 296-150V-0020 What definitions apply to this chapter? "Alteration" is the replacement, addition, modification, or removal of any equipment or installation that affects the construction for concentrated floor loads, fire and life safety, or the plumbing, mechanical, and electrical systems of a conversion vendor unit or medical unit.

The following are not considered alterations:

- Repairs with approved parts;
- Modifications of a fuel-burning appliance according to the listing agency's specifications; or
- Adjustment and maintenance of equipment.

"Approved" is approved by the department of labor and industries.

"Consumer" is a person or organization, excluding a manufacturer or dealer of conversion vendor units or medical units, who buys or leases a conversion vendor unit or medical unit.

"Conversion vendor unit" means a motor vehicle or other structure that has been converted or built for the purpose of being used for commercial sales at temporary locations. The units must be 8 feet 6 inches or less in width (exterior floor measurement) in the set-up position, and the inside working area must be less than 40 feet in length (interior floor measurement). Conversion vendor units:

- Are transported in only one section;
- Are designed for highway use;
- Are temporarily occupied for distribution of items, e.g., food;
- Are built on a permanent chassis; and
- Include at least one of the following systems: Plumbing, mechanical or 120 and/or 240 volt electrical.

Note: The conversion vendor unit may NOT include a dining area.

"Damaged in transit" means damage that affects the integrity of a concentrated floor load design or any of the systems.

"Dealer" is a person, company, or corporation whose business is leasing, selling, offering for lease or sale, buying, or trading conversion vendor units, or medical units.

"Department" is the department of labor and industries. The department may be referred to as "we" or "us" in this chapter. Note: You may contact us at: Department of Labor and Industries, Specialty Compliance, P.O. Box 44440, Olympia, WA 98504-4440.

"Design plan" is a plan for the construction or alteration of a conversion vendor unit or medical unit or conversion of a vehicle to a conversion vendor unit or medical unit includ-

ing floor plans, specifications, or test results necessary for a complete evaluation of the design, if applicable.

"Design option" is a design that a manufacturer may use as an option to its conversion vendor unit or medical unit design plan.

"Educational facility" is a building or portion of a building used primarily for educational purposes by six or more persons at one time for twelve hours per week or four hours in any one day. Educational occupancy includes: Schools (preschool through grade twelve), colleges, academies, universities, and trade schools.

"Equipment" is all material, appliances, devices, fixtures, fittings, or accessories used in the manufacture, assembly, conversion to, or alteration of a conversion vendor unit or medical unit.

"Factory assembled structure (FAS) advisory board" is a board authorized to advise the director of the department regarding the issues and adoption of rules relating to conversion vendor units and medical units.

"Health or personal care facilities" are buildings or parts of buildings that contain, but are not limited to, facilities that are required to be licensed by the department of social and health services or the department of health (e.g., hospitals, nursing homes, private alcoholism hospitals, private psychiatric hospitals, boarding homes, alcoholism treatment facilities, maternity homes, birth centers or childbirth centers, residential treatment facilities for psychiatrically impaired children and youths, and renal hemodialysis clinics) and medical, dental or chiropractic offices or clinics, outpatient or ambulatory surgical clinics, and such other health care occupancies where patients who may be unable to provide for their own needs and safety without the assistance of another person are treated. (Further defined in WAC 296-46B-010.)

"Insignia" is a label that we attach to a conversion vendor unit or medical unit to verify that the structure meets the requirements of this chapter and the applicable codes.

"Install" is to erect, construct, assemble, or set a conversion vendor unit or medical unit in place.

"Institutional facility" is a building or portion of a building used primarily for detention and correctional occupancies where some degree of restraint or security is required for a time period of twenty-four or more hours. Such occupancies include, but are not restricted to: Penal institutions, reformatories, jails, detention centers, correctional centers, and residential-restrained care.

"Labeled" is to bear the department's insignia.

"Listed" is a piece of equipment or apparatus that has been approved by a testing agency to the appropriate standard.

"Local enforcement agency" is an agency of city or county government with power to enforce local regulations governing the installation of a conversion vendor unit or medical unit.

"Medical unit" is a type of self-propelled unit used to provide medical examinations, treatments, and medical and dental services or procedures, not including emergency response vehicles, and which:

- Is transportable;
- Is temporarily placed and used;
- Is built on a permanent chassis;
- Includes at least one system;

- Is for temporary use only.

"One-year design plan" is a design plan that expires one year after approval or when a new state building code has been adopted.

"System" is part of a conversion vendor unit or medical unit designed to serve a particular function. Examples include plumbing, electrical, or mechanical systems.

[Statutory Authority: Chapter 43.22 RCW. 05-23-002, § 296-150V-0020, filed 11/3/05, effective 12/4/05. Statutory Authority: RCW 43.22.340, 43.22.400, 43.22.432, 43.22.433, 43.22.434, 43.22.480, and 43.22.485, 2002 c 268, and chapter 43.22 RCW. 03-12-044, § 296-150V-0020, filed 5/30/03, effective 6/30/03. Statutory Authority: Chapter 43.22 RCW. 99-18-069, § 296-150V-0020, filed 8/31/99, effective 10/1/99.]

WAC 296-150V-0030 How is this chapter enforced?

(1) To enforce this chapter, we or another governmental inspection agency will inspect each conversion vendor unit or medical unit manufactured, sold, leased, or used in Washington state as required by this chapter.

(2) We will inspect all alterations.

(3) We will conduct inspections during normal work hours or at other reasonable times.

[Statutory Authority: Chapter 43.22 RCW. 99-18-069, § 296-150V-0030, filed 8/31/99, effective 10/1/99.]

WAC 296-150V-0040 Is manufacturing information kept confidential? We will only release manufacturing information such as design plans, specifications, and test results according to the requirements of the Public Records Act (see RCW 42.17.310 (1)(h)) unless we are ordered to do so by a court or otherwise required by law.

[Statutory Authority: Chapter 43.22 RCW. 99-18-069, § 296-150V-0040, filed 8/31/99, effective 10/1/99.]

WAC 296-150V-0050 Can you prohibit the sale or lease of a conversion vendor unit or medical unit? (1) We may prohibit the sale or lease of your conversion vendor unit or medical unit because it is unlawful for any person to sell, lease, or offer for sale a conversion vendor unit or medical unit within this state if it violates any of the requirements of this chapter.

(2) If an inspection reveals that a conversion vendor unit or medical unit violates this chapter, we may post a notice prohibiting the sale or lease of a conversion vendor unit or medical unit.

[Statutory Authority: Chapter 43.22 RCW. 99-18-069, § 296-150V-0050, filed 8/31/99, effective 10/1/99.]

WAC 296-150V-0060 Who handles consumer complaints about conversion vendor units or medical units?

(1) Consumers may file complaints within one year of the date of manufacture.

(2) The complaint should be in writing and describe the item(s) that may not comply with this chapter.

(3) After we receive the complaint, we will send the manufacturer and the dealer a copy of the complaint.

(4) The manufacturer and/or dealer have thirty days to respond. We will base our actions on the response.

[Statutory Authority: Chapter 43.22 RCW. 99-18-069, § 296-150V-0060, filed 8/31/99, effective 10/1/99.]

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WAC 296-150V-0070 Do you have reciprocal agreements with other states to inspect conversion vendor units and medical units? (1) We will enter into reciprocal agreements with states that have inspection standards equal or greater than our standard.

(2) When we have a reciprocal agreement with another state:

(a) The reciprocal state inspects the conversion vendor units and medical units manufactured in that state before shipment into Washington to ensure compliance with our laws. After inspection, the reciprocal state applies our insignia.

(b) The department inspects conversion vendor units and medical units manufactured in Washington before shipment into the reciprocal state to ensure compliance with their laws. After inspection, we apply the insignia of the reciprocal state.

(3) We have reciprocal agreements on file.

[Statutory Authority: Chapter 43.22 RCW. 99-18-069, § 296-150V-0070, filed 8/31/99, effective 10/1/99.]

WAC 296-150V-0080 Do you allow a local enforcement agency to inspect conversion vendor units and medical units at the manufacturing location? (1) A local enforcement agency (city or county), under contract with us, can inspect conversion vendor units and medical units. In some cases, another agency's contracts may be limited to specific portions of an inspection at specified manufacturing locations.

(2) After approving a unit, the local enforcement agency will attach the insignia which indicates that the unit has passed inspection.

[Statutory Authority: Chapter 43.22 RCW. 99-18-069, § 296-150V-0080, filed 8/31/99, effective 10/1/99.]

WAC 296-150V-0100 What happens if I disagree with your decision regarding my compliance with this chapter? (1) If we determine that you are in violation of this chapter, you will receive a notice of noncompliance.

(2) If you disagree with our decision, you can send us a written request for a hearing, stating why you disagree.

(3) After we receive your hearing request, we will:

(a) Schedule a hearing within thirty days after we receive your request;

(b) Notify you of the time, date, and place for the hearing. If you fail to appear, your case will be dismissed;

(c) Hear your case;

(d) Send written notice of our decision to you.

(4) If you disagree with our decision, you may appeal it under the Administrative Procedure Act, chapter 34.05 RCW.

[Statutory Authority: Chapter 43.22 RCW. 99-18-069, § 296-150V-0100, filed 8/31/99, effective 10/1/99.]

WAC 296-150V-0110 Do you have an advisory board to address conversion vendor unit and medical unit issues? The factory assembled structures (FAS) board advises us on issues relating to plumbing, mechanical, electrical, inspections, and rule adoption for conversion vendor units and medical units. (See RCW 43.22.420.)

[Statutory Authority: Chapter 43.22 RCW. 99-18-069, § 296-150V-0110, filed 8/31/99, effective 10/1/99.]

WAC 296-150V-0120 Where can I obtain technical assistance regarding conversion vendor units or medical units? We offer field technical service to conversion vendor unit and medical unit manufacturers for an hourly fee. (See WAC 296-150V-3000.) Field technical service may include evaluation, consultation, plan examination, interpretation, and clarification of technical data relating to the application of our rules. It does not include inspections.

[Statutory Authority: Chapter 43.22 RCW. 99-18-069, § 296-150V-0120, filed 8/31/99, effective 10/1/99.]

WAC 296-150V-0140 Do you allow the use of alternate materials, design, or method of construction? An applicant may apply for the use of alternate materials, design, or methods of construction different from the requirements of this chapter by filing a written request with the department.

(1) **Responsibilities of the applicant.** The applicant must submit in writing the following information:

- (a) Name, address, and phone number;
- (b) The specific requirement or requirements from which the alternate material, design, or method of construction is requested;
- (c) Justification that the requirements of this chapter cannot be met without using alternate materials, design, or method of construction;
- (d) How the use of alternate materials, design, or method of construction will achieve the same result as the requirement and any specific alternative measures to be taken to show the alternate provides the same level of protection to life, safety and health as the requirements;

The department has a form that you may use for your request. Please contact us at the address shown in WAC 296-150V-0020, Definitions.

(2) **Responsibilities of the department.** The department will provide a written response to the applicant within thirty days of receipt of the written request. The written response will state the acceptance or denial of the request, including the reasons for the department's decision. At a minimum the department will base its decision on:

- (a) The applicant's request as described in subsection (1) of this section;
- (b) Research into the request;
- (c) Expert advice.

(3) **Applicant's response to denials.** The applicant may appeal the department's decision by following the procedure in WAC 296-150V-0100.

[Statutory Authority: RCW 43.22.340, 43.22.350, 43.22.355, 43.22.360, 43.22.400, 43.22.432, 43.22.433, 43.22.434, 43.22.450, 43.22.480, and 43.22.485. 00-17-148, § 296-150V-0140, filed 8/22/00, effective 9/30/00. Statutory Authority: Chapter 43.22 RCW. 99-18-069, § 296-150V-0140, filed 8/31/99, effective 10/1/99.]

WAC 296-150V-0200 Who must obtain conversion vendor unit or medical unit insignia? (1) You must obtain an insignia from us for each conversion vendor unit or medical unit manufactured, sold, leased, or used in Washington state.

(2) You do not need an insignia for a conversion vendor unit or medical unit:

(a) When a unit has been used outside of the state for six months before being brought into Washington state (see RCW 43.22.380); or

(b) If a unit was manufactured prior to July 1, 1968. (See RCW 43.22.370.)

(3) You must obtain an insignia when conversion vendor units or medical units are altered in Washington state.

(4) You must obtain an alteration insignia when a conversion vendor unit or medical unit is damaged in transit after leaving the manufacturing location or during an on-site installation and an alteration or repair is necessary. The insignia indicates the conversion vendor unit or medical unit was altered or repaired.

(5) You must have an approved design plan and pass our inspection before we will attach an insignia.

Note: All conversion vendor units and medical units must have insignia if they are altered; this includes the exceptions in subsection (2)(a) and (b) of this section.

[Statutory Authority: Chapter 43.22 RCW. 99-18-069, § 296-150V-0200, filed 8/31/99, effective 10/1/99.]

WAC 296-150V-0205 Can I obtain an exempt vendor/medical insignia? For approval of an exempt vendor/medical insignia, you must complete a factory built structures alteration request with:

(1) Documentation that shows that the unit was used outside of the state for six months before being brought into Washington state (see RCW 43.22.380).

Types of documentation to include state or local health certificates.

(2) Payment of the factory built structures alteration permit and exempt insignia fee.

(3) Completion of a fire and life safety inspection.

[Statutory Authority: Chapter 43.22 RCW and 2003 c 291. 05-01-102, § 296-150V-0205, filed 12/14/04, effective 2/1/05.]

WAC 296-150V-0210 What are the insignia requirements? (1) If you are applying for insignia, you must have your design plan approved and your conversion vendor unit or medical unit inspected and approved by us.

(2) If you are a manufacturer, dealer, or owner applying for an alteration insignia, your alteration must be inspected and approved by us. Approval of the design plan may also be required.

(3) We will attach the insignia to your conversion vendor unit or medical unit after:

(a) We receive from you the required forms and fees listed in WAC 296-150V-3000; and

(b) Your conversion vendor unit or medical unit has passed final inspection.

[Statutory Authority: Chapter 43.22 RCW. 99-18-069, § 296-150V-0210, filed 8/31/99, effective 10/1/99.]

WAC 296-150V-0220 How do I obtain insignia information and the required forms? Upon request, we will provide you with a packet of information that includes the required forms. Our address is noted in the definition of "department" in WAC 296-150V-0020.

[Statutory Authority: Chapter 43.22 RCW. 99-18-069, § 296-150V-0220, filed 8/31/99, effective 10/1/99.]

WAC 296-150V-0230 What are the insignia application requirements? (1) If you are requesting insignia for conversion vendor units or medical units that you intend to manufacture under a new design plan, your completed application must include:

- (a) A completed design plan approval request form;
- (b) One complete set of design plans, specifications, engineering analysis and test procedures and results (when applicable), plus one additional set for each manufacturing location where the design plan will be used;
- (c) At least one set of design plans must have an original wet stamp from a professional engineer or architect licensed in Washington state. We will retain the set with the original wet stamp; and
- (d) A one-time initial filing fee, the design plan fee, and the fee for each insignia (see WAC 296-150V-3000).

(2) If you are requesting insignia under an approved design plan, your completed application must include:

- (a) A completed insignia application form; and
- (b) The fee for each conversion vendor unit or medical unit insignia (see WAC 296-150V-3000).

[Statutory Authority: Chapter 43.22 RCW. 99-18-069, § 296-150V-0230, filed 8/31/99, effective 10/1/99.]

WAC 296-150V-0240 What documentation do you need to perform an alteration inspection? If you alter a conversion vendor unit or medical unit, we must inspect the alteration.

(1) Before we perform an alteration inspection and attach an alteration insignia, you must send us:

- (a) Description of the proposed alteration;
- (b) The plan review fee;
- (c) The inspection fee; and
- (d) The insignia application and fee.

(2) A design plan review is not required if the alteration can be made without altering any of the existing structure.

Note: All fees are listed in WAC 296-150V-3000 at the end of this chapter.

[Statutory Authority: Chapter 43.22 RCW. 99-18-069, § 296-150V-0240, filed 8/31/99, effective 10/1/99.]

WAC 296-150V-0250 How do I replace lost or damaged insignia? (1) If an insignia is lost or damaged after it is placed on a conversion vendor unit or medical unit, you may obtain a replacement insignia by contacting us and providing the following:

- (a) Your name, address, and telephone number;
- (b) The name of the manufacturer or person converting the conversion vendor unit or medical unit;
- (c) The serial number;
- (d) The manufacturer number (V#) if available;
- (e) The insignia number if available;
- (f) The required fee from WAC 296-150V-3000; and
- (2) If we can determine that your unit previously had an insignia, we will:

(a) Perform an inspection to ensure that no unauthorized remodeling has occurred; and

(b) Attach an insignia to your unit once we receive your insignia fee listed in WAC 296-150V-3000.

Note: If unauthorized remodeling has occurred see WAC 296-150V-0200.

[Statutory Authority: Chapter 43.22 RCW. 99-18-069, § 296-150V-0250, filed 8/31/99, effective 10/1/99.]

WAC 296-150V-0300 When is design-plan approval required? Design plans for conversion vendor units and medical units are required for units that are sold, leased, or used in Washington state and must be approved when:

- (1) You build a new unit;
- (2) You modify an approved design plan through addendums;
- (3) You add options to an approved design plan through addendums.

[Statutory Authority: Chapter 43.22 RCW. 99-18-069, § 296-150V-0300, filed 8/31/99, effective 10/1/99.]

WAC 296-150V-0310 Who can approve design plans? Your design plan must be approved by the department.

[Statutory Authority: Chapter 43.22 RCW. 99-18-069, § 296-150V-0310, filed 8/31/99, effective 10/1/99.]

WAC 296-150V-0320 What must I provide with my request for conversion vendor unit or medical unit design-plan approval by the department? (1) All requests for design-plan approval must include:

- (a) A completed design-plan approval request form;
- (b) Two sets of design plans, specifications and test results and procedures necessary for a complete evaluation of the design;
- (c) Receipt of the design-plan fee listed in WAC 296-150V-3000;
- (d) Receipt of the initial design-plan filing fee and the initial design-plan fee.

(2) If a structural analysis or test is required for a concentrated floor load, at least one set of design plans must have an original wet stamp from a professional engineer or architect licensed in Washington state. All new, renewed, and resubmitted plans, specifications, reports and structural calculations prepared by or prepared under the engineer or architect's direct supervision shall be signed, dated and stamped with his or her seal. Specifications, reports, and structural calculations may be stamped only on the first sheet, provided this first sheet identifies all of the sheets that follow are included and identified in the same manner. Plans that have not been prepared by or under the engineer's or architect's supervision shall be reviewed and he or she must prepare a report concerning the plans. This report must:

- (a) Identify which drawings have been reviewed by drawing number and date;
- (b) Include a statement that the plans are in compliance with current Washington state regulations; and
- (c) Be stamped and signed by the reviewer.
- (3) Any deficiencies shall be corrected on the drawings before submitting to the department or be included in the report and identify as to how they are to be corrected. This report shall be attached to the plan(s) that were reviewed. We will retain the set with the original wet stamp.

(4) Electrical plan review for educational, institutional or health care facilities and other buildings. Plan review is a part of the electrical inspection process; its primary purpose is to determine:

(a) That loads and service/feeder conductors are calculated and sized according to the proper NCE or WAC article or section;

(b) The classification of hazardous locations; and

(c) The proper design of emergency and standby systems.

(5) All electrical plans for new or altered electrical installations in educational, institutional, and health or personal care occupancies classified or defined in this chapter must be reviewed and approved before the electrical installation or alteration is started. Approved plans must be available for use during the electrical installation or alteration and for use by the electrical inspector.

(6) All electrical plans for educational facilities, hospitals and nursing homes must be prepared by, or under the direction of, a consulting engineer registered under chapter 18.43 RCW in compliance with chapters 246-320, 180-29, and 388-97 WAC as applicable, and stamped with the engineer's mark and signature.

(7) Plans to be reviewed by the department must be legible, identify the name and classification of the facility, clearly indicate the scope and nature of the installation and the person or firm responsible for the electrical plans. The plans must clearly show the electrical installation or alteration in floor plan view, include switchboard and/or panel board schedules and when a service or feeder is to be installed or altered, must include a riser diagram, load calculation, fault current calculation and interrupting rating of equipment. Where existing electrical systems are to supply additional loads, the plans must include documentation that proves adequate capacity and ratings. The plans must be submitted with a plan review submittal form available from the department.

[Statutory Authority: Chapter 43.22 RCW. 05-23-002, § 296-150V-0320, filed 11/3/05, effective 12/4/05; 99-18-069, § 296-150V-0320, filed 8/31/99, effective 10/1/99.]

WAC 296-150V-0340 When is an engineering analysis or structural load test for design plans required? An engineering analysis or structural load test may be required when there are concentrated loads of 500 pounds or more in a 16 square feet or less area.

[Statutory Authority: Chapter 43.22 RCW. 99-18-069, § 296-150V-0340, filed 8/31/99, effective 10/1/99.]

WAC 296-150V-0350 What must test procedures and results for design plans include? (1) Test to a design must be witnessed by a professional engineer or architect licensed in Washington or by a department employee.

(2) Test reports must contain the following items:

(a) A description of the methods or standards that applied to the test;

(b) Drawings and a description of the item tested;

(c) A description of the test set-up;

(d) The procedure used to verify the correct load;

(e) The procedure used to measure each condition;

(f) Test data, including applicable graphs and observations of the characteristics and behavior of the item tested; and

(g) Analysis, comments, and conclusion.

[Title 296 WAC—p. 1982]

[Statutory Authority: Chapter 43.22 RCW. 99-18-069, § 296-150V-0350, filed 8/31/99, effective 10/1/99.]

WAC 296-150V-0380 What happens if you approve my design plan? (1) Your design plan will be approved if it meets the requirements of this chapter.

(2) We will send you an approved copy of the design plan with the design-plan approval number.

(3) You must keep copies of the approved design plan available for inspection at each location where the conversion vendor unit or medical unit is built.

(4) If your design plan is not approved, you will be notified in writing of plan deficiencies. You may send a corrected design plan to us along with the resubmittal fee listed in WAC 296-150V-3000.

[Statutory Authority: Chapter 43.22 RCW. 99-18-069, § 296-150V-0380, filed 8/31/99, effective 10/1/99.]

WAC 296-150V-0390 If my design plan is not approved, how much time do I have to submit a corrected design plan? (1) You have ninety days to correct and resubmit your original design plan and send us the resubmittal fee after we notify you of plan deficiencies. After ninety days, your initial design plan is returned to you.

(2) If you submit your corrected design plan after ninety days, the initial design-plan fee is required instead of the resubmittal fee. (See WAC 296-150V-3000.)

[Statutory Authority: Chapter 43.22 RCW. 99-18-069, § 296-150V-0390, filed 8/31/99, effective 10/1/99.]

WAC 296-150V-0400 What happens after my design plan is approved? Once your design plan is approved, we will inspect each conversion vendor unit and medical unit.

[Statutory Authority: Chapter 43.22 RCW. 99-18-069, § 296-150V-0400, filed 8/31/99, effective 10/1/99.]

WAC 296-150V-0410 When does my design plan expire? (1) Your conversion vendor unit or medical unit one-year design plan expires either one year after approval or when there is an electrical code change. You must submit new design plans for approval when there is a state building code cycle change. You may use your design plans to order insignia as long as they comply with the applicable codes.

(2) All National Electrical Code (NEC) amendments may be incorporated by an addendum to your design plan.

[Statutory Authority: Chapter 43.22 RCW. 99-18-069, § 296-150V-0410, filed 8/31/99, effective 10/1/99.]

WAC 296-150V-0415 Who approves addendums to design plans? Any addendums to a design plan must be approved by the department.

[Statutory Authority: Chapter 43.22 RCW. 99-18-069, § 296-150V-0415, filed 8/31/99, effective 10/1/99.]

WAC 296-150V-0500 When is an inspection required? (1) Before we issue an insignia, each unit manufactured or converted must be inspected as many times as required to show compliance with this chapter.

(2) Before we issue an insignia, a conversion vendor unit or medical unit must be inspected at the manufacturing loca-

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tion as many times as required. Inspections may include, but are not limited to:

(a) A "cover" inspection during construction of the unit before the electrical, plumbing, mechanical, and structural systems (if required) are covered;

(b) Insulation and vapor barrier inspection, if required; and

(c) A final inspection after the conversion vendor unit or medical unit is complete.

(3) If we discover a violation during inspection, we will issue a notice of noncompliance. You can correct the violation during the inspection. If you cannot correct the violation during inspection, you must leave the item uncovered until we approve your correction.

(4) If a conversion vendor unit or medical unit is damaged in transit to the building site or during on-site installation, it must be inspected. This is considered an alteration inspection. (See WAC 296-150V-0240.)

(5) Approved plans must be available.

(6) Once your unit is inspected and approved we will attach the insignia. Before we issue an insignia, each conversion vendor unit or medical unit is inspected as follows:

(a) Inspection(s) during conversion or alteration of a conversion vendor unit or medical unit; and

(b) A final inspection after the conversion vendor unit or medical unit is complete.

Note: Each conversion vendor unit or medical unit must have a serial number so we can track inspections.

[Statutory Authority: Chapter 43.22 RCW. 99-18-069, § 296-150V-0500, filed 8/31/99, effective 10/1/99.]

WAC 296-150V-0510 How do I request an inspection? You must contact us and we will let you know where your request for inspection should be submitted. Our address is noted in the definition of department in WAC 296-150V-0020.

(1) We must receive in-state inspection requests at least seven calendar days prior to the date that you want the inspection.

(2) We must receive out-of-state inspection requests at least fourteen calendar days prior to the date that you want the inspection.

[Statutory Authority: Chapter 43.22 RCW. 99-18-069, § 296-150V-0510, filed 8/31/99, effective 10/1/99.]

WAC 296-150V-0520 What happens if my conversion vendor unit or medical unit passes inspection? If your conversion vendor unit or medical unit passes inspection and you have met the other requirements of this chapter, we will attach the insignia.

[Statutory Authority: Chapter 43.22 RCW. 99-18-069, § 296-150V-0520, filed 8/31/99, effective 10/1/99.]

WAC 296-150V-0530 Am I charged if I request an inspection but I am not prepared? (1) If you ask us to inspect a conversion vendor unit or medical unit within Washington state but you are not prepared when we arrive, you must pay the inspection fee and travel (see WAC 296-150V-3000).

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(2) If the inspection is outside of Washington state and you are not prepared, you must pay the inspection fee, travel, and per diem expenses (see WAC 296-150V-3000).

[Statutory Authority: RCW 43.22.340, 43.22.350, 43.22.355, 43.22.360, 43.22.400, 43.22.432, 43.22.433, 43.22.434, 43.22.450, 43.22.480, and 43.22.485. 00-17-148, § 296-150V-0530, filed 8/22/00, effective 9/30/00. Statutory Authority: Chapter 43.22 RCW. 99-18-069, § 296-150V-0530, filed 8/31/99, effective 10/1/99.]

WAC 296-150V-0540 Who inspects a conversion vendor unit or medical unit installation at the building site or event location? The local enforcement agency (city or county) must approve the installation. Alterations to conversion vendor units or medical units must be inspected and approved by us.

Note: The local enforcement agency may not open the concealed construction of a conversion vendor unit or medical unit to inspect it if our insignia is attached.

[Statutory Authority: Chapter 43.22 RCW. 99-18-069, § 296-150V-0540, filed 8/31/99, effective 10/1/99.]

WAC 296-150V-0550 Do you allow a conversion vendor unit or medical unit to be completed at the installation site? No. Conversion vendor units or medical units must be completed at the manufacturing location before an insignia is attached.

[Statutory Authority: Chapter 43.22 RCW. 99-18-069, § 296-150V-0550, filed 8/31/99, effective 10/1/99.]

WAC 296-150V-0560 What happens if I receive a notice of noncompliance after inspection of the alteration to my conversion vendor unit or medical unit? (1) If your conversion vendor unit or medical unit alteration does not pass our inspection, you will receive a notice of noncompliance. The notice of noncompliance explains what items must be corrected.

(2) You have twenty days after receiving the notice of noncompliance to send us a written response to explain how you will correct the violations.

(3) You are not allowed to sell, lease, offer for sale or use the altered conversion vendor unit or medical unit until you correct the violations. We must inspect and approve the corrections, and you must pay any required inspection and insignia fees listed in WAC 296-150V-3000.

[Statutory Authority: Chapter 43.22 RCW. 99-18-069, § 296-150V-0560, filed 8/31/99, effective 10/1/99.]

WAC 296-150V-0580 Must I obtain an insignia for used conversion vendor units or medical units? All used conversion vendor units or medical units that are to be installed on a building site or used in Washington state must have an insignia of approval from us, with the exception of those in WAC 296-150V-0200(2).

[Statutory Authority: Chapter 43.22 RCW. 99-18-069, § 296-150V-0580, filed 8/31/99, effective 10/1/99.]

WAC 296-150V-0590 How do I obtain insignia for used conversion vendor units or medical units? We consider used conversion vendor units and medical units as new units for purposes of insignia approval. To obtain insignia, you must:

- (1) Have the design plan approved (see WAC 296-150V-0300 and 296-150V-0320);
- (2) Purchase insignia (see WAC 296-150V-0200 through 296-150V-0230); and
- (3) Pass a unit inspection (see WAC 296-150V-0500 through 296-150V-0560).

Note: You will be required to open up as much of the construction of the unit as is necessary for inspection to show compliance with your approved design plan.

[Statutory Authority: Chapter 43.22 RCW. 99-18-069, § 296-150V-0590, filed 8/31/99, effective 10/1/99.]

WAC 296-150V-0700 Must manufacturers of conversion vendor units and medical units notify you if they manufacture at more than one location? (1) If you are manufacturing conversion vendor units and medical units at more than one location, approved design plans must be available at each manufacturing location.

(2) You must send us the following information for each manufacturing location:

- (a) Company name;
- (b) Mailing and physical address; and
- (c) Phone and fax number, if available.

(3) You must update this information as it changes.

[Statutory Authority: Chapter 43.22 RCW. 99-18-069, § 296-150V-0700, filed 8/31/99, effective 10/1/99.]

WAC 296-150V-0710 Must manufacturers of conversion vendor units and medical units notify you of a change in business name or address? If you are moving you must notify us in writing prior to a change of business name or address and include the change of name and address.

[Statutory Authority: Chapter 43.22 RCW. 99-18-069, § 296-150V-0710, filed 8/31/99, effective 10/1/99.]

WAC 296-150V-0720 Must manufacturers of conversion vendor units and medical units notify you of a change in business ownership? (1) When a manufacturer changes ownership, the new owner must notify us in writing immediately.

(2) A new owner may continue to manufacture the units according to a prior approved design plan if the prior owner provides written releases of the design plan.

[Statutory Authority: Chapter 43.22 RCW. 99-18-069, § 296-150V-0720, filed 8/31/99, effective 10/1/99.]

WAC 296-150V-0800 What codes apply to conversion vendor units or medical units? (1) A conversion vendor unit or medical unit must comply with the following codes where applicable:

(a) The Uniform Mechanical Code, with the amendments made by the Washington State Building Code Council, chapter 51-42 WAC.

(b)(i) For conversion vending units Article 551, Parts I through VI of National Electrical Code/National Fire Protection Agency (NFPA) 70, 2002 edition or Article 552, Parts I through V Article of National Electrical Code/National Fire Protection Agency (NFPA) 70, 2002 edition.

(ii) For medical units the National Electrical Code as referenced in chapter 19.28 RCW and chapter 296-46A WAC, installing electric wires and equipment.

[Title 296 WAC—p. 1984]

(c) Chapter 7 of American National Standards Institute (ANSI) A119.2, 2002 edition or the Uniform Plumbing Code as adopted and amended according to chapter 19.27 RCW.

(d) The Washington State Building Code Council, chapter 51-40 WAC, Uniform Building Code, Chapter 11, Accessibility as applies to the exterior of the unit relating to customer service facilities in section 1105.4.7.

(e) The Washington State Energy Code, as adopted according to chapter 19.27A RCW, and the Washington State Ventilation and Indoor Air Quality Code, chapter 51-13 WAC, when heating and/or air conditioning is installed.

(2) Provide minimum health and safety to the occupants of conversion vendor units and medical units and the public, and demonstrate journeyman quality of work of the various trades.

(3) Requirements for any size, weight, or quality of material modified by the terms "minimum," "not less than," "at least," and similar expressions are minimum standards. The conversion vendor unit or medical unit may exceed these rules provided the deviation does not result in inferior installation or defeat the purpose and intent of this chapter.

Exception: Sign circuits required by Article 600 of the National Electrical Code will not be required.

[Statutory Authority: RCW 43.22.340, 43.22.400, 43.22.432, 43.22.433, 43.22.434, 43.22.480, and 43.22.485, 2002 c 268, and chapter 43.22 RCW. 03-12-044, § 296-150V-0800, filed 5/30/03, effective 6/30/03. Statutory Authority: RCW 43.22.350, 43.22.434, 43.22.480, 43.22.500, 18.27.040, 18.27.070, 18.27.075, 70.87.030, 19.28.041, 19.28.051, 19.28.101, 19.28.121, 19.28.161, 19.28.201, 19.28.211, 19.28.341, 2001 c 7, 2002 c 249, and chapters 19.28, 43.22, 18.27, and 70.87 RCW. 02-12-022, § 296-150V-0800, filed 5/28/02, effective 6/28/02. Statutory Authority: Chapter 43.22 RCW. 99-18-069, § 296-150V-0800, filed 8/31/99, effective 10/1/99.]

WAC 296-150V-0930 When are structural load tests or structural calculations required? (1) A structural analysis is required when a unit has a concentrated floor load of 500 pounds or more in a 16 square feet or less area.

(2) The structural load test can be used as an alternative.

(a) A structural assembly tested for qualification must sustain the design dead load plus the superimposed design live loads for vendor units and medical units assembly.

(b) An assembly failure is defined as a rupture, fracture, or residual deflection which is greater than the limits.

Note: We will provide test procedure forms upon request.

[Statutory Authority: Chapter 43.22 RCW. 99-18-069, § 296-150V-0930, filed 8/31/99, effective 10/1/99.]

WAC 296-150V-0950 What requirements apply to roof coverings? (1) The roof covering must be securely fastened in an approved manner to the supporting roof construction and must provide weather protection for the vendor unit and the occupants.

(2) Exterior covering materials, including metal coverings, must be moisture and weather resistant and contain corrosion resistant fasteners to prevent wind and rain deterioration.

Note: Electro-plated, electro-deposited zinc, and electro-galvanized staples are not considered corrosion-resistant materials.

(3) All exterior openings or penetrations into the conversion vendor unit or medical unit around piping, ducts, ple-

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nums, or vents must be sealed with moisture-resistant material.

[Statutory Authority: Chapter 43.22 RCW. 99-18-069, § 296-150V-0950, filed 8/31/99, effective 10/1/99.]

WAC 296-150V-1040 Are there floor requirements?

Wood floors must be made moisture resistant by an overlay of nonabsorbent material applied with water-resistant adhesive.

[Statutory Authority: Chapter 43.22 RCW. 99-18-069, § 296-150V-1040, filed 8/31/99, effective 10/1/99.]

WAC 296-150V-1070 What requirements apply to floor closure material? (1) Floor closure material around piping, ducts, plenums, or vents must prevent damage to the underside of the vendor unit due to air, water, insects, dust, and be rodent resistant.

(2) The floor closure material must meet ASTM D-781 standard or equal and be installed as follows:

(a) Fibrous material (with or without patches) must meet or exceed the level of 48 inch-pounds of puncture resistance as tested.

(b) Patching material must be installed according to installation instructions furnished by the supplier of the material.

(c) The material must be suitable for patches and the patch life must be equivalent to the material life.

Note: ASTM D-781 is a puncture test for bottom board materials.

[Statutory Authority: Chapter 43.22 RCW. 99-18-069, § 296-150V-1070, filed 8/31/99, effective 10/1/99.]

WAC 296-150V-1090 What are the standards for equipment and installations? The manufacturer's equipment and installation specifications must be followed. Other approved standards are acceptable when:

- Installed according to the manufacturer's installation instructions; and
- Approved by a listing or testing agency.

Note: Gas furnaces, gas water heaters, and gas refrigerators must be sealed combustion or completely separated from the interior of the conversion vendor unit or medical unit.

[Statutory Authority: RCW 43.22.340, 43.22.400, 43.22.432, 43.22.433, 43.22.434, 43.22.480, and 43.22.485, 2002 c 268, and chapter 43.22 RCW. 03-12-044, § 296-150V-1090, filed 5/30/03, effective 6/30/03. Statutory Authority: Chapter 43.22 RCW. 99-18-069, § 296-150V-1090, filed 8/31/99, effective 10/1/99.]

WAC 296-150V-1100 What are the flame-spread limitations? The flame-spread requirements are that all walls and ceilings must be of 200 flame-spread or less.

[Statutory Authority: Chapter 43.22 RCW. 99-18-069, § 296-150V-1100, filed 8/31/99, effective 10/1/99.]

WAC 296-150V-1110 Combustible limitations. (1) The exposed wall adjacent to the cooking range must be 50 flame-spread or less, such as 5/16 inch gypsum board or material having equivalent fire protective properties.

(2) All openings for pipes and vents in furnace and water heater spaces shall be tight-fitted or fire-stopped.

[Statutory Authority: Chapter 43.22 RCW. 99-18-069, § 296-150V-1110, filed 8/31/99, effective 10/1/99.]

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WAC 296-150V-1120 What are the standards for wall and cabinet protection? The bottom and sides of combustible cabinets over cooking appliances or tops including a space of 6 inches from the edge of the burners must be protected with at least 5/16 inch sheetrock with a 25 flame-spread. This material must be behind deep-fat fryers, grills, ranges, and other cooking appliances. It must extend 6 inches beyond the edge of the appliance and range hood.

(1) Range hoods for commercial equipment must meet the requirements of the mechanical code such as fire suppression, etc.

(2) Range hoods for noncommercial equipment may be of a residential type.

(3) The hood must be centered over and at least as wide as the top of the cooking appliance.

[Statutory Authority: Chapter 43.22 RCW. 99-18-069, § 296-150V-1120, filed 8/31/99, effective 10/1/99.]

WAC 296-150V-1170 What are the light and ventilation requirements? Each bathroom must be provided with artificial light and with a window having at least 1/2 square feet of glazed area that can be fully opened, except where a mechanical ventilation system is installed. Any mechanical ventilation system must exhaust directly to the outside of the conversion vendor unit or medical unit.

[Statutory Authority: Chapter 43.22 RCW. 99-18-069, § 296-150V-1170, filed 8/31/99, effective 10/1/99.]

WAC 296-150V-1180 What requirements apply to conversion vendor unit exits on all units approved after December 31, 1999? At least one conversion vending unit exit or medical unit exit must meet the following requirements:

(1) Exterior doors must be constructed for exterior use.

(2) The exterior door must be at least a 28 inch wide clear opening by 72 inches high.

(3) Locks must be operable from the interior of the unit without use of a key.

(4) Exit doors may either be hinged or sliding. Roll-up doors may not be used to meet the requirements of this section.

(5) Existing units with doors less than 28 inches in width must have a second means of exit. The second means of exit for converted units shall be 24 inches by 17 inches, and for newly built units exits must be a minimum of 5 square feet of openable area.

(6) Pass-through windows shall be safety glazed based on the IBC Section 2406.1.

Exception: When there are employees, a minimum of 28 inches clear opening must be provided.

[Statutory Authority: Chapter 43.22 RCW and 2003 c 291. 05-01-102, § 296-150V-1180, filed 12/14/04, effective 2/1/05. Statutory Authority: RCW 43.22.340, 43.22.350, 43.22.355, 43.22.360, 43.22.400, 43.22.432, 43.22.433, 43.22.434, 43.22.450, 43.22.480, and 43.22.485. 00-17-148, § 296-150V-1180, filed 8/22/00, effective 9/30/00. Statutory Authority: Chapter 43.22 RCW. 99-18-069, § 296-150V-1180, filed 8/31/99, effective 10/1/99.]

WAC 296-150V-1185 What exit door requirements apply to self-propelled medical unit exits? Exit door(s) on self-propelled medical units must meet the following requirements:

- (1) Exterior doors must be constructed for exterior use.
- (2) The exterior door must be at least a 28 inches wide clear opening by 72 inches high.
- (3) Locks must be operable from the interior of the unit without use of a key.
- (4) Exit doors may either be hinged or sliding. Roll-up doors may not be used to meet the requirements of this section.
- (5) Units over 24 feet in length must have a minimum of 2 exit doors.

[Statutory Authority: Chapter 43.22 RCW. 99-18-069, § 296-150V-1185, filed 8/31/99, effective 10/1/99.]

WAC 296-150V-1190 Interior privacy locks. If a conversion vendor unit or medical unit has an interior door, such as a bathroom door, which has a privacy lock, the lock must contain an emergency release. The emergency release must be on the outside to permit entry when the door is locked from the inside.

[Statutory Authority: Chapter 43.22 RCW. 99-18-069, § 296-150V-1190, filed 8/31/99, effective 10/1/99.]

WAC 296-150V-1303 How must storage batteries be installed in a conversion vendor unit or medical unit? Storage batteries subject to the provisions of this standard must be securely attached to the conversion vendor unit or medical unit. They must be installed in an area which is vapor-tight to the interior and ventilated directly to the exterior of the unit. When batteries are installed in a compartment, the compartment must be ventilated with openings of not less than 2 square inches at the top and 2 square inches at the bottom. Batteries must not be installed in a compartment containing spark or flame producing equipment, except in an engine generator compartment if the only charging source is the generator itself.

[Statutory Authority: Chapter 43.22 RCW. 99-18-069, § 296-150V-1303, filed 8/31/99, effective 10/1/99.]

WAC 296-150V-1330 What are the mechanical requirements for a conversion vendor unit or medical unit? When mechanical and ventilation equipment is installed in or on a conversion vendor unit or medical unit, it must be installed according to the requirements of the Uniform Mechanical Code, and to the conditions of the equipment approval or listing.

[Statutory Authority: Chapter 43.22 RCW. 99-18-069, § 296-150V-1330, filed 8/31/99, effective 10/1/99.]

WAC 296-150V-1350 What are the LPG system enclosure and mounting requirements for a conversion vendor unit or medical unit? (1) LPG containers must not be installed, nor stored temporarily, inside any unit. Exception: This prohibition does not apply to completely self-contained hand torches, lanterns, or similar equipment with containers having a maximum water capacity of two and one-half pounds (approximately one pound LPG capacity).

(2) Containers, control valves and regulating equipment, when installed, must meet one of the following requirements:

- (a) Be mounted on the "A" frame and not lower than the bottom of the trailer frame; or

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(b) Installed in a compartment that is vapor-tight to the inside of the conversion vendor unit or medical unit and accessible only from the outside; or

(c) Be mounted on the chassis or to the floor and neither the container nor its supports may be lower than the top of the axle height.

(3) The compartment must be ventilated at top and bottom to diffuse vapors. The compartment must be ventilated with two vents having an aggregate area of not less than two percent of the floor area of the compartment and must open without restriction to the outside. The required vents must be equally distributed between the floor and ceiling of the compartment. If the lower vent is located in the access door or wall, the bottom edge of the vent must be flush with the floor level of the compartment. The top vent must be located in the access door or wall with the bottom of the vent not more than 12 inches below the ceiling level of the compartment. All vents must have an unrestricted discharge to the outside atmosphere. Access doors or panels of compartments must not be equipped with locks or require special tools or knowledge to open.

(4) Doors, hoods, domes, or portions of housings and enclosures required to be removed or opened for container replacement must incorporate means for clamping them firmly in place and preventing them from working loose during transit. Provisions must be incorporated in the assembly to hold the containers firmly in position and prevent their movement during transit.

(5) LPG containers must be mounted on a substantial support or a base secured firmly to the conversion vendor unit or medical unit chassis. Neither the container nor its support can extend below the conversion vendor unit or medical unit frame.

[Statutory Authority: Chapter 43.22 RCW. 99-18-069, § 296-150V-1350, filed 8/31/99, effective 10/1/99.]

WAC 296-150V-1360 What are the fuel gas piping design requirements for a conversion vendor unit or medical unit? Conversion vendor units or medical units requiring fuel gas for any purpose must be equipped with a gas piping system that is designed for LPG only or combination LPG and natural gas.

[Statutory Authority: Chapter 43.22 RCW. 99-18-069, § 296-150V-1360, filed 8/31/99, effective 10/1/99.]

WAC 296-150V-1380 Can gas tubing be concealed in a conversion vendor unit or medical unit? (1) Tubing must not be run inside walls, floors, partitions, or roofs.

(2) If tubing passes through walls, floors, partitions, roofs, or similar installations, the tubing must be protected by the use of weather resistant grommets that snugly fit both the tubing and the hole through which the tubing passes.

[Statutory Authority: Chapter 43.22 RCW. 99-18-069, § 296-150V-1380, filed 8/31/99, effective 10/1/99.]

WAC 296-150V-1390 What are the pipe-joint compound requirements for gas piping in a conversion vendor unit or medical unit? (1) Screw joints must be made tight with pipe-joint compound that is insoluble in liquefied petroleum gas.

(2) Pipe-joint compound must be approved for the type of gas used. The pipe-joint compound must be applied to the male threads only.

[Statutory Authority: Chapter 43.22 RCW. 99-18-069, § 296-150V-1390, filed 8/31/99, effective 10/1/99.]

WAC 296-150V-1400 What are the gas piping hanger and support requirements for a conversion vendor unit or medical unit? (1) All gas piping must be adequately supported by galvanized or equivalently protected metal straps or hangers at intervals of not more than 4 feet, except where adequate support and protection is provided by structural members.

(2) Gas pipe supply connections must be rigidly anchored to a structural member within 6 inches of the supply connections.

[Statutory Authority: Chapter 43.22 RCW. 99-18-069, § 296-150V-1400, filed 8/31/99, effective 10/1/99.]

WAC 296-150V-1410 What are the electrical bonding requirements for gas piping in a conversion vendor unit or medical unit? (1) Gas piping must not be used for an electrical ground.

(2) The gas line must be bonded.

[Statutory Authority: Chapter 43.22 RCW. 99-18-069, § 296-150V-1410, filed 8/31/99, effective 10/1/99.]

WAC 296-150V-1420 How are gas supply connections in a conversion vendor unit or medical unit identified? A label must be permanently attached on the outside of the exterior wall of the conversion vendor unit or medical unit adjacent to the gas supply connection which provides the following information:

(1) The type of system (i.e., liquid petroleum system or natural gas system or combination liquid petroleum and natural gas system);

(2) The appropriate Btuh input rating; and

(3) If excess ("or more") Btuh input is allowed.

(4) An example of a label would be: Natural Gas System, 250,000 Btuh or more.

[Statutory Authority: Chapter 43.22 RCW. 99-18-069, § 296-150V-1420, filed 8/31/99, effective 10/1/99.]

WAC 296-150V-1430 What requirements apply to gas piping system openings? All openings in the gas piping system must be closed gas-tight with threaded pipe plugs or pipe caps.

[Statutory Authority: Chapter 43.22 RCW. 99-18-069, § 296-150V-1430, filed 8/31/99, effective 10/1/99.]

WAC 296-150V-1440 Are gas piping shut-off valves required in a conversion vendor unit or medical unit? (1) In addition to any valve on the appliance, a shut-off valve must be installed in the fuel piping outside of each gas appliance but inside the conversion vendor unit or medical unit structure and upstream of the union or connector. The shut-off valve must be located within six feet of a cooking appliance and within three feet of any other appliance. A shut-off valve may serve more than one appliance if located as required above.

(2) Shut-off valves used in connection with gas piping must be of a type designed for use with liquefied petroleum gas. Shut-off valves must be tested and approved to ANSI Z21.15 standard or equal.

[Statutory Authority: Chapter 43.22 RCW. 99-18-069, § 296-150V-1440, filed 8/31/99, effective 10/1/99.]

WAC 296-150V-1450 What requirements apply to testing for gas piping leaks before conversion vendor unit or medical unit appliances are connected? (1) The piping system must stand a pressure of at least 10 psi gauge for a period of not less than 15 minutes without showing any drop in pressure.

(2) Pressure must be measured with a gauge calibrated to be read in increments of not greater than 1/10 pound.

(3) The source of pressure must be isolated before the pressure tests are made. Before a test is begun, the temperature of the ambient air and of the piping must be approximately the same, and constant air temperature must be maintained throughout the test.

[Statutory Authority: Chapter 43.22 RCW. 99-18-069, § 296-150V-1450, filed 8/31/99, effective 10/1/99.]

WAC 296-150V-1460 What requirements apply to testing for gas piping leaks after conversion vendor unit or medical unit appliances are connected? (1) After gas appliances have been connected, the gas-piping system must be subjected to a pressure test with the burner valves closed. The test consists of air at not less than 10 inches nor more than 14 inches pressure of water column (6 to 8 ounces). The system must hold this pressure for a period of not less than 10 minutes with no leakage. Before beginning the test, the temperature of the gas-piping system and the test air must be equalized, and this shall be maintained throughout the test.

(2) Appliance shut-off valves ahead of gas cooking appliances may be closed for the performance of this test. When the test is satisfactorily performed, these valves must be opened and, while the system is under pressure, the appliance connectors must be tested with an approved leak detector or approved bubble solution.

[Statutory Authority: Chapter 43.22 RCW. 99-18-069, § 296-150V-1460, filed 8/31/99, effective 10/1/99.]

WAC 296-150V-1470 What are the requirements for appliance installations? (1) The installation of each appliance must conform to the manufacturer's installation instructions. The manufacturer's instructions must be attached to the appliance.

(2) Combustion air inlets and flue gas outlets must be listed as components of the appliance and must be completely separated. The required separation may be obtained by:

(a) The installation of direct vent system (sealed combustion system) appliances; or

(b) The installation of appliances within enclosures so that the appliance combustion system and venting system are separate from the interior atmosphere of the conversion vendor unit or medical unit. There must not be any door, removable access panel, or other opening into the enclosure from the inside of the conversion vendor unit or medical unit. Any openings for ducts, piping, wiring, etc., must be sealed.

(3) Ranges, cooktops, and ovens must not burn outside combustion air.

[Statutory Authority: Chapter 43.22 RCW. 99-18-069, § 296-150V-1470, filed 8/31/99, effective 10/1/99.]

WAC 296-150V-1530 What general plumbing requirements apply? This chapter also applies to the installation of plumbing equipment in any conversion vendor unit or medical unit bearing or required to bear a department insignia. Plumbing fixtures, equipment, and installations in conversion vendor units and medical units must conform to the provisions of Chapter 7 of ANSI 119.2, 2002 edition or the Uniform Plumbing Code and the amendments adopted by the State Building Code Council, except part 1, unless specifically exempted or required by this section. The following also apply:

(1) We will allow a 1-1/4 inch drain for handwashing sinks with an antisiphon vent.

(2) An antisiphon vent will be allowed on one and two compartment sinks in units as long as there is one vent to the exterior so the system will function. Sinks with three or more compartments must be installed as required by the Uniform Plumbing Code.

[Statutory Authority: RCW 43.22.340, 43.22.400, 43.22.432, 43.22.433, 43.22.434, 43.22.480, and 43.22.485, 2002 c 268, and chapter 43.22 RCW. 03-12-044, § 296-150V-1530, filed 5/30/03, effective 6/30/03. Statutory Authority: Chapter 43.22 RCW. 99-18-069, § 296-150V-1530, filed 8/31/99, effective 10/1/99.]

WAC 296-150V-1540 What are the plumbing definitions? Definitions contained in the Uniform Plumbing Code apply to this chapter:

"Drain outlet" is the discharge end of the conversion vendor unit or medical unit main drain to which a drain connector may be attached.

"Main drain" is the principal artery of the conversion vendor unit or medical unit drainage system to which drain-ages may be connected.

"Water-supply connection" is the fitting or point of connection of the conversion vendor unit or medical unit water distribution system to a water connector.

[Statutory Authority: Chapter 43.22 RCW. 99-18-069, § 296-150V-1540, filed 8/31/99, effective 10/1/99.]

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WAC 296-150V-1550 What requirements apply to drain outlets? Drain outlets must be equipped with a watertight cap or plug that must be permanently attached to the unit.

[Statutory Authority: Chapter 43.22 RCW. 99-18-069, § 296-150V-1550, filed 8/31/99, effective 10/1/99.]

WAC 296-150V-1560 What is the minimum clearance for drain outlets? The drain outlet and couplers must have a minimum clearance of 3 inches in any direction from all parts of the structure or appurtenances and with at least 18 inches unrestricted clearance directly in front of the drain outlet.

[Statutory Authority: Chapter 43.22 RCW. 99-18-069, § 296-150V-1560, filed 8/31/99, effective 10/1/99.]

WAC 296-150V-1570 What requirements apply to water-supply connections? Water-supply connections must be equipped with a watertight cap or plug that must be permanently attached to the vehicle.

Note: The department of health may have more restrictive requirements. Before modifying your unit to comply with these requirements, be sure to contact that agency.

[Statutory Authority: Chapter 43.22 RCW. 99-18-069, § 296-150V-1570, filed 8/31/99, effective 10/1/99.]

WAC 296-150V-1580 What requirements apply to water heater relief valves and safety devices? (1) All water heaters must be installed with approved fully automatic valve or valves designed to provide temperature and pressure relief. Temperature and pressure relief valves must be tested and approved to ANSI Z21.22 standard or equal.

(2) Any temperature relief valve or combined pressure and temperature relief valve installed for this purpose must have the temperature sensing element immersed in the hottest water within the upper 6 inches of the tank. It must be set to start relieving at a pressure of 150 psi or the rated working pressure of the tank, whichever is lower, and at or below a water temperature of 210 degrees Fahrenheit.

(3) Relief valves must be provided with full-sized drains. Drains must be directed to the exterior of the unit, exiting at least 6 inches above the ground, and must exhaust downward. Drain lines must be of a material approved for hot water distribution and must drain fully by gravity, must not be trapped, and must not have their outlets threaded.

[Statutory Authority: Chapter 43.22 RCW. 99-18-069, § 296-150V-1580, filed 8/31/99, effective 10/1/99.]

WAC 296-150V-1590 What requirements apply to waste holding tanks for conversion vendor units? Conversion vendor units may use either portable waste holding tanks approved by the department of health or permanently mounted waste holding tanks.

(1) All portable waste holding tanks must be listed for the intended use and used per their listing.

(2) All permanently mounted waste holding tanks must meet the following specifications:

(a) Tanks must be listed for the intended use, installed per their listing, and be securely installed to prevent displacement during transportation;

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(b) Tanks must be easily removable for service, repair or replacement without having to remove any permanent construction;

(c) Neither the inlet nor vent fitting may extend downward into the tank more than 1-1/2 inches;

(d) The drain opening must be located at the lowest point of the tank;

(e) Tanks must be vented at the highest point in the top of the tank by one of the following methods:

(i) A 1-1/4 inch diameter vent pipe;

(ii) A continuous vent serving as a drain from one additional fixture provided the drain portion is increased one pipe size larger than the connected trap arm;

(iii) Two or more vented drains when at least one is wet-vented and each drain is separately connected to the top of the tank;

(f) A fullway termination valve must be installed in the tank; and

(g) No drain connection may be made between liquid and body waste holding tanks upstream of fullway termination valves.

[Statutory Authority: Chapter 43.22 RCW. 99-18-069, § 296-150V-1590, filed 8/31/99, effective 10/1/99.]

WAC 296-150V-1600 What are the requirements associated with medical and conversion vending units that have been manufactured and used outside the state according to RCW 43.22.380? (1) If the unit does not have any alterations made to body and frame design, construction, plumbing, heating or electrical installations since it was constructed, it will need an insignia issued by the department. In order to receive the insignia, the unit must have been:

(a) Manufactured outside the state of Washington. Proof of this must be demonstrated by a certificate of origin, bill of sale, proof of purchase of materials, manufacture identification tag or serial number, or any other means acceptable to the department that shows that the unit was manufactured outside the state.

(b) Used outside the state for at least six months or more. Proof of this must be demonstrated by showing the purchase of a license plate, a permit(s) issued by another state agency for use in another state, insurance certificate, bill of sale, or any other means acceptable to the department that shows that the unit was used outside the state for at least six months.

(2) If the unit has had alterations made to the body and frame design, construction, plumbing, heating or electrical installations since it was constructed, it will need an insignia issued by the department. In order to receive the insignia, the alterations to the unit must be inspected and approved by the department and the unit must have been:

(a) Manufactured outside the state of Washington. Proof of this must be demonstrated by a certificate of origin, bill of sale, proof of purchase of materials, manufacture identification tag or serial number, or any other means acceptable to the department that shows that the unit was manufactured outside the state.

(b) Used outside the state for at least six months or more. Proof of this must be demonstrated by showing the purchase of a license plate, a permit(s) issued by another state agency for use in another state, insurance certificate, bill of sale, or any other means acceptable to the department that shows that the unit was used outside the state for at least six months.

[Statutory Authority: RCW 43.22.340, 43.22.400, 43.22.432, 43.22.433, 43.22.434, 43.22.480, and 43.22.485, 2002 c 268, and chapter 43.22 RCW. 03-12-044, § 296-150V-1600, filed 5/30/03, effective 6/30/03.]

WAC 296-150V-3000 Conversion vendor units and medical units—Fees.

INITIAL FILING FEE	\$33.20
INITIAL FEE - MASTER DESIGN	\$229.00
INITIAL FEE - ONE YEAR DESIGN	\$93.70
RENEWAL FEE	\$39.90
RESUBMIT FEE	\$66.90
ADDENDUM (Approval expires on same date as original plan)	\$66.90
ELECTRONIC PLAN SUBMITTAL FEE \$4.80 per page for the first set of plans and \$0.30 per page for each additional set of plans. These fees are in addition to any applicable design plan fees required under this section.	
ELECTRICAL PLAN REVIEW (Plan review for educational, institutional or health care facilities and other buildings)	
Electrical plan submission fee	\$66.90
Service/feeder ampacity:	
0 - 100	\$29.60
101 - 200	\$36.90
201 - 400	\$69.30
401 - 600	\$81.70
601 - 800	\$105.30
801 - 1000	\$128.90
Over 1000	\$139.90
Over 600 volts surcharge	\$22.10
Thermostats:	
First	\$13.00
Each additional	\$3.00
Low voltage fire alarm and burglar alarm:	
Each control panel and up to four circuits or zones	\$11.90
Each additional circuit or zone	\$2.00
Generators, refer to appropriate service/feeder ampacity fees	
<i>Note: Altered services or feeders shall be charged the above rate per the service/feeder ampacity fees.</i>	
Supplemental submissions of plans (resubmittals, addendums, renewals, code updates, etc.) shall be charged per hour or fraction of an hour*	\$79.20

RECIPROCAL PLAN REVIEW:	
INITIAL FEE - MASTER DESIGN	\$102.10
INITIAL FEE - ONE YEAR DESIGN	\$61.70
RENEWAL FEE	\$61.70
ADDENDUM	\$61.70
APPROVAL OF EACH SET OF DESIGN PLANS BEYOND FIRST TWO SETS	
	\$12.50
DEPARTMENT INSPECTION FEES:	
INSPECTION/REINSPECTION (Per hour* plus travel time* and mileage**)	\$66.90
TRAVEL (Per hour)*	\$66.90
PER DIEM**	
HOTEL***	
MILEAGE**	
RENTAL CAR***	
PARKING***	
AIRFARE***	
ALTERATION INSPECTION (One hour plus insignia alteration fee)	\$100.10
DEPARTMENT AUDIT FEES:	
AUDIT (Per hour*)	\$66.90
TRAVEL (Per hour*)	\$66.90
PER DIEM**	
HOTEL***	
MILEAGE**	
RENTAL CAR***	
PARKING***	
AIRFARE***	
INSIGNIA FEES:	
FIRST SECTION/ALTERATION	\$19.30
REISSUED-LOST/DAMAGED	\$12.50
EXEMPT	\$33.20
ELECTRICAL COMMERCIAL/INDUSTRIAL	
Electrical Service/feeders Ampacity	212.80 plus
Service/feeder	\$195.10
Additional Feeder	\$37.00
ELECTRICAL MULTIFAMILY RESIDENTIAL	
Electrical Service/feeders	212.80 plus
Service/feeder	\$103.50
Additional Feeder	\$26.40
OTHER FEES:	
FIELD TECHNICAL SERVICE (Per hour* plus travel time* and mileage**)	\$66.90
PUBLICATION PRINTING AND DISTRIBUTION OF RCW'S AND WAC'S (One free copy per year upon request)	\$12.50
* Minimum charge of 1 hour; time spent greater than 1 hour is charged in 1/2 hour increments.	
** Per state guidelines.	
*** Actual charges incurred.	

[Statutory Authority: Chapters 18.106, 43.22, and 70.87 RCW. 06-10-066, § 296-150V-3000, filed 5/2/06, effective 6/30/06. Statutory Authority: Chapter 43.22 RCW. 05-23-002, § 296-150V-3000, filed 11/3/05, effective 12/4/05. Statutory Authority: Chapters 18.27, 43.22, and 70.87 RCW. 05-12-032, § 296-150V-3000, filed 5/24/05, effective 6/30/05. Statutory Authority: Chapter 43.22 RCW and 2003 c 291. 05-01-102, § 296-150V-3000, filed 12/14/04, effective 2/1/05. Statutory Authority: Chapters 18.27 and 43.22 RCW. 04-12-048, § 296-150V-3000, filed 5/28/04, effective 6/30/04. Statutory Authority: RCW 43.22.350, 43.22.434, 43.22.480, 43.22.500, 70.87.030, 18.106.070, 18.106.125, 2001 c 7, and chapters 18.106, 43.22, and 70.87 RCW. 03-12-045, § 296-150V-3000, filed 5/30/03, effective 6/30/03. Statutory Authority: RCW 43.22.350, 43.22.434, 43.22.480, 43.22.500, 18.27.040, 18.27.070, 18.27.075, 70.87.030, 19.28.041, 19.28.051, 19.28.101, 19.28.121, 19.28.161, 19.28.201, 19.28.211, 19.28.341, 2001 c 7, 2002 c 249, and chapters 19.28, 43.22, 18.27, and 70.87 RCW. 02-12-022, § 296-150V-3000, filed 5/28/02, effective 6/28/02. Statutory Authority: RCW 43.22.350, 43.22.434, 43.22.480, 43.22.500, 18.27.070, 18.27.075, 70.87.030, 19.28.041, 19.28.051, 19.28.101, 19.28.121, 19.28.161, 19.28.201, 19.28.211, 19.28.341, 2001 c 159, and chapters 43.22, 19.28, 18.27, and 70.87 RCW. 01-12-035, § 296-150V-3000, filed 5/29/01, effective 6/29/01. Statutory Authority: Chapter 43.22 RCW. 99-18-069, § 296-150V-3000, filed 8/31/99, effective 10/1/99.]